



EMPOWERING PEOPLE AND TECHNOLOGY

HYBRID & HYPERSCALE

Industry's First Software-Defined Data Center



2019 Annual Report

Letter From Our CEO



Dear Fellow Stockholders,

Looking back over 2019, I am proud of the significant accomplishments of our "powered by people" QTS'ers. I am most proud that our people always feel we can serve each other and our customers better than the year before. Our commitment to continued improvement toward the highest standards in Environmental, Social and Governance ("ESG") initiatives is documented in our annual ESG initiatives report. We remain committed to making the investments in our business to enable QTS to continue to deliver consistent results for stockholders, customers and our QTS employees and communities. 2019 was a year of strong execution for our team and I am pleased that those efforts were reflected in our industry-leading operating and financial results with tremendous visibility into our growth in 2020 and beyond. Our success in 2019 would not have been possible without the continued dedication of our QTS employees across the company and I'd like to thank each one of you for your commitment to serving each other, our customers and our communities.

The demand environment for third-party data centers is robust and expanding, and I am confident in the capability of QTS' platform to continue to deliver consistent growth in stockholder value. During 2019, QTS delivered the strongest leasing performance in our history. Importantly, this achievement was driven by significant contributions from each of our target customer groups: hyperscale, hybrid colocation and federal. The diversity of our sources of growth enables our business to consistently perform in a variety of different demand cycles, even during periodic slowdowns in hyperscale absorption as the industry witnessed at times over the past year. We strongly believe that having a business approach that balances the consistent performance of diversified, higher-return hybrid colocation and federal businesses, and growth acceleration opportunities with strategic hyperscale customers is the best path to optimize growth and risk-adjusted performance for QTS.

Providing differentiated solutions within each part of our business remains a core focus to drive enhanced risk-adjusted returns and performance both today, and in the future. These differentiators include industry leadership in sustainability initiatives, cost-advantaged mega scale infrastructure, operational capability and track record in our federal business, and our continued strong commitment to a fully digitized, premium customer experience through QTS' software-defined data center platform. Our base of 1,200+ customers continues to demonstrate that they value these unique capabilities, and we are pleased with

our resulting growth in market share as evidenced by our financial performance and leasing momentum.

Hyperscale

QTS continues to actively pursue strategic growth acceleration opportunities with the largest and fastest-growing hyperscale technology companies in the world. Our target hyperscale customer vertical is comprised of the thirty or so largest technology companies whose data center requirements are expanding at an accelerated pace. Although their data center requirements are significant, they also are inherently lumpy with often unpredictable sales cycles. For this reason, our financial model is built on an assumption of signing only one to three larger, 5+ megawatt hyperscale opportunities each year. This allows QTS to be more selective in the strategic growth opportunities with the hyperscale customers we pursue, while prioritizing our risk-adjusted return on capital profile.

2019 was an important year for our hyperscale team. Following the decision in 2017 to invest in additional locations to support our hyperscale business combined with a more deliberate hyperscale sales strategy, I believe that 2019 was the year that QTS demonstrated its capability as a top-tier hyperscale player. While bookings activity in the sector was relatively quiet during the first half of the year, we experienced a significant acceleration in hyperscale leasing during 2019. In total, we ended 2019 having signed over 30 megawatts of new hyperscale leasing, which represents a meaningful acceleration relative to approximately 20 megawatts signed in 2018. Key hyperscale wins during the year included a 10 megawatt lease in Ashburn with one of the industry's fastest growing consumers of hyperscale data center capacity, a 4 megawatt expansion in Manassas with a global software-as-a-service provider as part of its continued ramp in that facility, and a 12 megawatt lease with a large social media company that will anchor our new expansion in Atlanta. In addition, we are proud that the majority of hyperscale leases signed during 2019 came in at the higher end of our 9-11% target hyperscale return on invested capital range, demonstrating the value of our cost-advantaged powered shell capacity and differentiated value proposition.

In addition to the three new strategic logos, existing QTS hyperscale customers grew within our platform. Incumbency with hyperscale customers is crucial as they typically prefer to buy on a recurring basis with existing partners given the complexities and time commitment related to their

internal procurement and approved vendor processes. In our experience, once you have established yourself as an approved-vendor, hyperscale customers tend to continue to expand with their existing relationships.

We are pleased with the progress we continue to make building relationships with our target hyperscale customers and are confident that hyperscale will remain an attractive growth opportunity for QTS and our sector for years to come.

Hybrid Colocation

Even as we experienced a strong acceleration in leasing activity with our target hyperscale customers in 2019, QTS' core engine of growth remains hybrid colocation, which continues to represent approximately two thirds of our recurring revenue base. Our hybrid colocation business is predominantly comprised of a diversified set of enterprise customers from a variety of industries including retail, healthcare, financial and technology. Ongoing outsourcing of data center infrastructure by enterprise customers has been the primary driver of growth for the third-party data center industry for nearly the last two decades and we fully anticipate this trend to continue for many years to come. As businesses across nearly every industry incorporate a digital presence into their strategy, enterprises continue to migrate from legacy, internally-managed data center infrastructure to scalable, third-party data center providers like QTS.

Our hybrid colocation business had another solid year in 2019 with strength in enterprise demand in Atlanta, Ashburn, Piscataway and Chicago. During the year we signed 158 hybrid colocation logos, reflecting an increase in average deal size of more than 40% year-over-year and we remain encouraged by the growing number of larger enterprise deals in our pipeline so far in 2020.

Within the enterprise customer vertical, QTS' software-defined data center platform continues to prove to be a valuable differentiator. The space and power solutions that most operators have delivered the same way for over a decade isn't sustainable in an environment where digitization is impacting nearly every industry. We believe a higher bar has been established to win market share and the investments QTS has made in a software-defined platform have positioned us to deliver the next generation solutions Enterprise customers will soon come to expect.

Federal

The federal vertical remains a core focus area for QTS. Due to the years of hard work and investments we have made and the unique security requirements for this customer base and higher barriers to entry, the return on capital profile for federal data center deployments is typically well in excess of the return profile we see for other customer segments. Incumbency and industry expertise are powerful differentiators for federal customers. QTS has committed to the necessary processes, operational capability, and talent, including QTS personnel capable of supporting highly compliant government agencies, to position our business to succeed in the federal vertical.

Although meaningful opportunities within the federal space have been relatively slow to materialize over the past several years, we have started to see a growing number of sizable federal opportunities in our pipeline. These opportunities are growing as data requirements supporting federal programs continue to rapidly expand. At the same time, these programs are running into pressure internally to find outsourced solutions, be it within data centers or the cloud.

As evidence of this trend, in 2019 our federal sales team posted a strong acceleration in leasing activity year-over-year. The highlight of the year for the federal team came in the second quarter with the signing of a 5+ megawatt, multi-site deployment with a hyperscale customer supporting a large federal program. We are excited about the momentum we see building within the federal customer vertical and look forward to leveraging our unique capability and relationships to further drive our growth.

Strong 2020 Growth Outlook

As CEO of QTS, I view my primary role as being a steward of people and a steward of capital. If we focus on the greatest strength of QTS, our people, they will be great stewards of our capital that our stockholders entrust us with. This will ensure our industry-leading customer engagement and an environment that encourages the pursuit of excellence every day in our mission and purpose of "empowering people and technology." Our commitment to enriching the lives of our employees and communities is unwavering while we remain focused on allocating capital with a healthy balance to drive both near- and long-term stockholder returns, understanding that investors have a variety of return thresholds and time horizons.

Across our three target customer verticals, we believe our platform is uniquely positioned in the market to drive enhanced value for our customers and outsized stockholder returns. QTS' record-setting leasing performance in 2019 resulted in the highest backlog of signed but not yet commenced revenue in our company's history exiting the year, which provides tremendous visibility into growth in 2020 and beyond. As with any business, there is much we can continue to improve upon. However, I am encouraged by the momentum we are seeing in our underlying business fundamentals and look forward to the opportunity to continue to execute against our strategic initiatives to drive consistent incremental performance.

I would like to thank our Board of Directors for their continued guidance and insight as well as our customers, partners and stockholders for their ongoing trust and confidence in QTS. We truly appreciate your support and look forward to another successful year of performance in 2020.



Chad L. Williams
Chairman & CEO

Consistent Performance Enabled by Differentiated Platform

Software-defined data center:

- First of its kind monitoring and orchestration platform
- Fully integrated and hybrid enabled
- SDN-enabled universal connectivity
- Premium customer experience

Significant powered shell capacity:

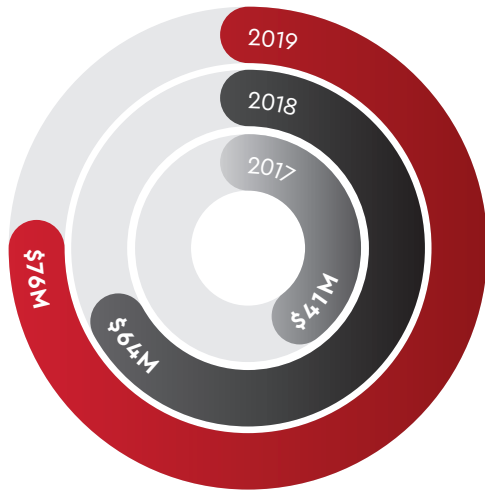
- Cost advantage
- Ability to deliver quickly
- Growth capacity
- Strategically located in Tier 1 markets

Leading provider with established expertise:

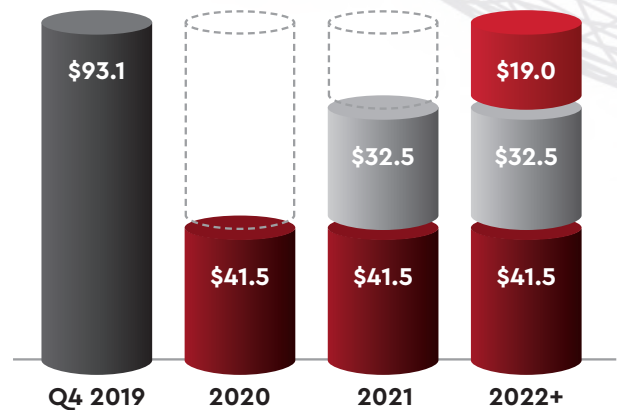
- High-end security & compliance platform
- Operational capability
- Demonstrated track record



2019 Achievements

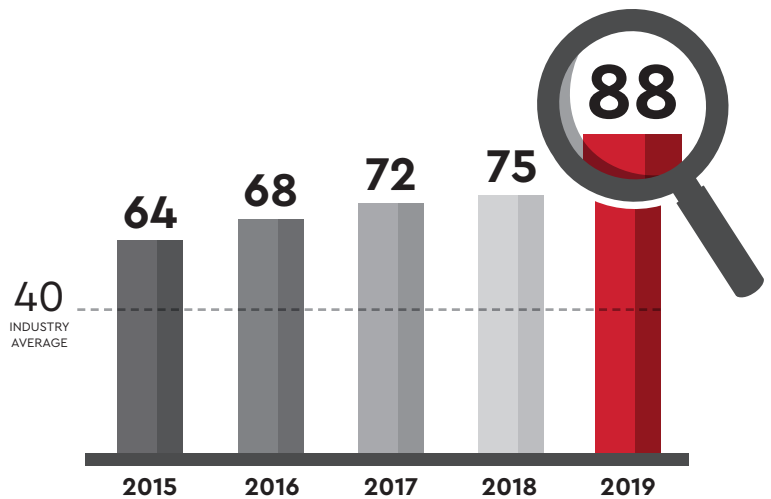


Record Leasing Performance¹



Record \$93.1M Annualized Booked-Not-Billed Backlog (\$M)²

10 CONSECUTIVE YEARS OF
5 NINES OR GREATER FACILITY UPTIME PERFORMANCE



Industry-Leading Net Promoter Score

¹ Incremental annualized rent signed from new and modified leases, net of downgrades. Reflects results for core business in 2018 and 2017.

² Represents annualized revenue from signed, but not commenced leases, as of December 31, 2019; may not sum due to rounding.

The Industry's First Software-Defined Data Center

We have implemented a digitization-first strategy at QTS, and after two plus years of intense work, we are now seeing the benefits of our initiatives. The data center market continues to grow, but customers are changing their buying expectations of data center services, with data visibility and multi-cloud access becoming the new norm.

In late 2017, we introduced our software-defined data center platform, the first of its kind in the data center industry, and have continued to enhance this offering into 2020. Our software-defined data center platform, or SDP, which empowers customers to interact with their data and QTS services, remains a powerful differentiator in the market. Through this platform and QTS' application programming interface, or API, we can enable real-time access to all aspects of data center operations including security, power, cooling, sensors, provisioning and many other key metrics.

However, our SDP platform is more than just a critical infrastructure monitoring tool and interface. Through this platform, we are able to seamlessly integrate our customers' infrastructure with the world's largest and most advanced IT partners, cloud service providers and carriers, accelerating the ecosystems developing within our facilities. Customer-demand for cloud solutions is a theme that has continued for the last several years. It is for this reason that we have strategically invested in SDP which acts as the facilitator for customers to solve hybrid IT needs, integrating their colocation and connecting with cloud environments. Customers leveraging cloud environments is a trend that we expect will continue, and these customers are choosing QTS because we have the platform, technology and capability to integrate their complex IT requirements.

In fact, industry analysts from 451 were recently quoted as saying, "QTS is one of the first data center service providers to leverage data for customer use and to improve visibility across hybrid and multi-cloud environments."

During 2019, SDP accelerated as a key differentiator for QTS. During the year, we averaged more than 17,000 active users of SDP across a base of 1,200+ customers, with average session time on the platform doubling year-over-year to nearly 20 minutes. SDP remains a primary differentiator with our customers and continues to drive value for QTS in three primary areas. First, as evidenced by our strong leasing activity over the past two years since introducing the platform, we believe SDP is increasing our win rate in customer engagements and allowing us to grow our market share. Second, we have leveraged SDP as a valuable tool to identify qualified leads for the large majority of our sales team. And third, we are actively using SDP internally to drive operating efficiencies which has contributed to our continued margin improvement.

The visibility and dynamic control that SDP affords also continues to support our industry-leading customer satisfaction. 2019 marked the fourth consecutive year that QTS has led the data center industry in customer satisfaction, as measured by Net Promoter Score, or NPS. We achieved an NPS score of 88 in 2019 which was approximately double the average NPS score for the data center industry.

I am excited about our 2020 roadmap for SDP including enabling broader online transaction capability, opening up more automation within our data centers and continuing to enhance how we engage with prospects and customers.

2019

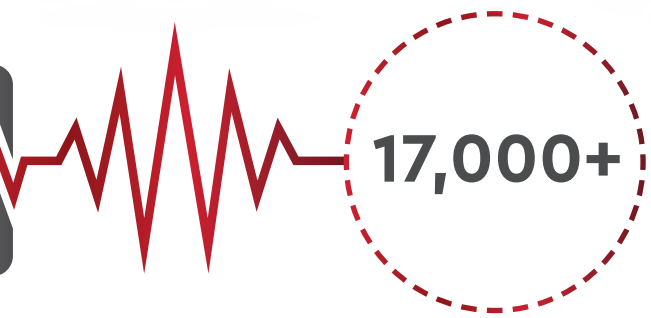


2018

Enhancements & Features

“We use Power Analytics on a daily basis to keep our environment operating at an 80% utilization threshold and to plan for expansion projects at the data center. Power Analytics is driving engineering decisions every day.”

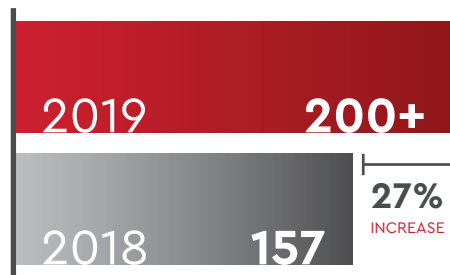
Major U.S. Semiconductor Data Center Manager



ACTIVE SDP USERS

“Through your APIs, I am able to make our work visible to the leadership team with near real-time reporting. The best part is they can see how our environment is operating and to what level, on-demand. Our company has never had this level of visibility – from any provider.”

Client Data Center Manager, QTS Atlanta



Customer-Facing API's

Footprint Expansion

Approximately 2,500 MWs of potential power capacity across 3.2 million square feet of data hall space within QTS' existing owned powered shell combined with nearly 730 acres of adjacent land holdings to support future growth.

New Site Expansion



Continued Expansion Within QTS' Existing Owned Powered Shell



³ Subject to long-term ground lease.

ESG Highlights

Sustainability

As a commercial energy consumer, we believe it is our industry's responsibility to accelerate efforts to mitigate growth in the usage of our world's resources. Consistent with our commitment to deliver the highest standards in ESG principles, in 2019 we published our first ESG Initiatives Report. The report is intended to provide transparency to our key stakeholders and allow them to evaluate the progress we are making in executing on our commitments. Among the key highlights of the report is our goal of procuring 100% renewable energy by 2025. We already are well on our way to that target with 100% of our current power in our mega data center sites in Irving, Piscataway, Chicago, Hillsboro and Groningen currently supported by renewable-sourced power. The availability of carbon-free energy sources continues to grow and we are successfully finding opportunities to procure renewable energy sources at costs comparable to nonrenewable. QTS is proud to take a leadership role in that effort, and we were recently recognized as the top-ranked data center globally in sustainability by GRESB (Global Real Estate Sustainability Benchmark), a leading ESG assessment firm for real estate and infrastructure across the world.

Community

At QTS, we believe that how we deliver our services is equally as important as what is delivered. That is why we adhere to a "powered by people" approach in all matters of our business, supported by our core values. QTS recognizes that a healthy community provides a healthy environment to conduct business. We have a responsibility as a steward of people to actively support the communities in which our employees live, work and do business. As a **team-oriented** organization whose core values include **integrity, character and trust**, there is a conscious emphasis on **support of family, faith and community volunteerism** which we live out through the QTS Community Impact program. We encourage and facilitate our employees serving their communities. In 2019, QTS employees donated over 3,000 volunteer hours to various communities, and provided over 80 different organizations with charitable contributions amounting to over \$700,000.



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number 001-36109

QTS Realty Trust, Inc.

QualityTech, LP

(Exact name of registrant as specified in its charter)

Maryland (QTS Realty Trust, Inc.)
Delaware (QualityTech, LP)
(State or other jurisdiction of
incorporation or organization)

12851 Foster Street, Overland Park, Kansas
(Address of principal executive offices)

(913) 312-5503

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

46-2809094
27-0707288
(I.R.S. Employer
Identification No.)

66213
(Zip Code)

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Class A common stock, \$0.01 par value	QTS	New York Stock Exchange
Preferred Stock, 7.125% Series A Cumulative Redeemable Perpetual, \$0.01 par value	QTS.PRA	New York Stock Exchange
Preferred Stock, 6.50% Series B Cumulative Convertible Perpetual, \$0.01 par value	QTS.PRB	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

QTS Realty Trust, Inc. Yes No QualityTech, LP Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act.

QTS Realty Trust, Inc. Yes No QualityTech, LP Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

QTS Realty Trust, Inc. Yes No QualityTech, LP Yes No

(1) QualityTech, LP is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, but has filed all such reports during the preceding 12 months.

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

QTS Realty Trust, Inc. Yes No QualityTech, LP Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.:

QTS Realty Trust, Inc.

Large accelerated filer Accelerated filer
Non-accelerated filer Smaller reporting company
Emerging growth company

QualityTech, LP

Large accelerated filer Accelerated filer
Non-accelerated filer Smaller reporting company
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

QTS Realty Trust, Inc. Yes No QualityTech, LP Yes No

The aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the Class A common stock, \$0.01 par value per share, was last sold at June 30, 2019 was approximately \$2.6 billion. There were 58,105,122 shares of Class A common stock and 128,408 shares of Class B common stock, \$0.01 par value per share, of the registrant outstanding on February 25, 2020.

Documents Incorporated by Reference

Portions of the Definitive Proxy Statement for our 2020 Annual Meeting of Stockholders are incorporated by reference into Part III of this report. We expect to file our proxy statement within 120 days after December 31, 2019.

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EXPLANATORY NOTE

This report combines the annual reports on Form 10-K of QTS Realty Trust, Inc. (“QTS”) and QualityTech, LP, a Delaware limited partnership, which is our operating partnership (the “Operating Partnership”). This report also includes the financial statements of QTS and those of the Operating Partnership, although it presents only one set of combined notes for QTS’ financial statements and those of the Operating Partnership.

Substantially all of QTS’s assets are held by, and its operations are conducted through, the Operating Partnership. QTS is the sole general partner of the Operating Partnership, and, as of December 31, 2019, its only material asset consisted of its ownership of approximately 89.7% of the Operating Partnership. Management operates QTS and the Operating Partnership as one business. The management of QTS consists of the same employees as the management of the Operating Partnership. QTS does not conduct business itself, other than acting as the sole general partner of the Operating Partnership and issuing public equity from time to time. QTS has not issued or guaranteed any indebtedness. Except for net proceeds from public equity issuances by QTS, which are contributed to the Operating Partnership in exchange for units of limited partnership interest of the Operating Partnership, the Operating Partnership generates all remaining capital required by our business through its operations, the direct or indirect incurrence of indebtedness, and the issuance of partnership units. Therefore, as general partner with control of the Operating Partnership, QTS consolidates the Operating Partnership for financial reporting purposes.

We believe, therefore, that a combined presentation with respect to QTS and the Operating Partnership, including providing one set of notes for the financial statements of QTS and the Operating Partnership, provides the following benefits:

- enhances investors’ understanding of QTS and the Operating Partnership by enabling investors to view the business as a whole in the same manner as management views and operates the business;
- eliminates duplicative disclosure and provides a more streamlined and readable presentation since a substantial portion of the disclosure in this report applies to both QTS and the Operating Partnership; and
- creates time and cost efficiencies through the preparation of one presentation instead of two separate presentations.

In addition, in light of these combined disclosures, we believe it is important for investors to understand the few differences between QTS and the Operating Partnership in the context of how QTS and the Operating Partnership operate as a consolidated company. With respect to balance sheets, the presentation of stockholders’ equity and partners’ capital are the main areas of difference between the consolidated balance sheets of QTS and those of the Operating Partnership. On the Operating Partnership’s consolidated balance sheets, partners’ capital includes partnership units that are owned by QTS and other partners. On QTS’ consolidated balance sheets, stockholders’ equity includes common stock, additional paid-in capital, accumulated other comprehensive income (loss) and accumulated dividends in excess of earnings. The remaining equity reflected on QTS’s consolidated balance sheet is the portion of net assets that are retained by partners other than QTS, referred to as noncontrolling interests. With respect to statements of operations, the primary difference in QTS’ Statements of Operations and Statements of Comprehensive Income is that for net income (loss), QTS retains its proportionate share of the net income (loss) based on its ownership of the Operating Partnership, with the remaining balance being retained by the Operating Partnership.

In order to highlight the few differences between QTS and the Operating Partnership, there are sections and disclosure in this report that discuss QTS and the Operating Partnership separately, including separate financial statements, separate audit reports, separate controls and procedures sections, separate Exhibit 31 and 32 certifications, and separate presentation of certain accompanying notes to the financial statements, including Note 10 – Partners’ Capital, Equity and Incentive Compensation Plans and Note 18 – Quarterly Financial Information (unaudited). In the sections that combine disclosure for QTS and the Operating Partnership, this report refers to actions or holdings as being actions or holdings of “we,” “our,” “us,” “our company” and “the Company.” Although the Operating Partnership is generally the entity that enters into contracts, holds assets and issues debt, we believe that these general references to “we,” “our,” “us,” “our company” and “the Company” in this context are appropriate because the business is one enterprise operated through the Operating Partnership.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Some of the statements contained in this Form 10-K constitute forward-looking statements within the meaning of the federal securities laws. Forward-looking statements relate to expectations, beliefs, projections, future plans and strategies, anticipated events or trends and similar expressions concerning matters that are not historical facts. In particular, statements pertaining to our capital resources, portfolio performance, results of operations, anticipated growth in our funds from operations and anticipated market conditions contain forward-looking statements. In some cases, you can identify forward-looking statements by the use of forward-looking terminology such as “may,” “will,” “should,” “expects,” “intends,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” or “potential” or the negative of these words and phrases or similar words or phrases which are predictions of or indicate future events or trends and which do not relate solely to historical matters. You also can identify forward-looking statements by discussions of strategy, plans or intentions.

The forward-looking statements contained in this Form 10-K reflect our current views about future events and are subject to numerous known and unknown risks, uncertainties, assumptions and changes in circumstances that may cause our actual results to differ significantly from those expressed in any forward-looking statement. We do not guarantee that the transactions and events described will happen as described (or that they will happen at all). The following factors, among others, could cause actual results and future events to differ materially from those set forth or contemplated in the forward-looking statements:

- adverse economic or real estate developments in our markets or the technology industry;
- obsolescence or reduction in marketability of our infrastructure due to changing industry demands;
- global, national and local economic conditions;
- risks related to our international operations;
- difficulties in identifying properties to acquire and completing acquisitions;
- our failure to successfully develop, redevelop and operate acquired properties or lines of business
- significant increases in construction and development costs;
- the increasingly competitive environment in which we operate;
- defaults on, or termination or non-renewal of, leases by customers;
- decreased rental rates or increased vacancy rates;
- increased interest rates and operating costs, including increased energy costs;
- financing risks, including our failure to obtain necessary outside financing;
- dependence on third parties to provide Internet, telecommunications and network connectivity to our data centers;
- our failure to qualify and maintain QTS’ qualification as a real estate investment trust (“REIT”);
- environmental uncertainties and risks related to natural disasters;
- financial market fluctuations;
- violations of our prohibition on harassment could result in liabilities and/or litigation;
- the expansion of social media platform presents new risks and challenges;
- changes in real estate and zoning laws, revaluations for tax purposes and increases in real property tax rates; and;
- limitations inherent in our current and any future joint venture investments, such as lack of sole-decision making authority and reliance on our partners’ financial condition

While forward-looking statements reflect our good faith beliefs, they are not guarantees of future performance. We disclaim any obligation to publicly update or revise any forward-looking statement to reflect changes in underlying assumptions or factors, of new information, data or methods, future events or other changes. For a further discussion of these and other factors that could cause our future results to differ materially from any forward-looking statements, see the section entitled “Risk Factors.”

PART I

ITEM 1. BUSINESS

Unless the context requires otherwise, references in this Form 10-K to “we,” “our,” “us,” “our company” and “the Company” refer to QTS Realty Trust, Inc. (“QTS”), a Maryland corporation, together with its consolidated subsidiaries, including QualityTech, LP, a Delaware limited partnership, which we refer to in this Form 10-K as the “Operating Partnership” or “predecessor.”

Overview

QTS is a leading provider of data center solutions to the world’s largest and most sophisticated hyperscale technology companies, enterprises and government agencies. Through our technology-enabled platform, delivered across mega scale data center infrastructure, we offer a comprehensive portfolio of secure and compliant IT solutions. Our data centers are facilities that power and support our customers’ IT infrastructure equipment and provide seamless access and connectivity to a range of cloud, communications and IT services providers. Across our broad footprint of strategically-located data centers, we provide flexible, scalable, and secure IT solutions including data center space, power and cooling, connectivity and value-add managed services for more than 1,200 customers in the financial services, healthcare, retail, government, and technology industries, among others. We build out our data center facilities to accommodate both multi-tenant environments (hybrid colocation) and dedicated build-to-suit requirements that involve significant amounts of space and power (hyperscale), depending on the needs and availability of each facility at that time. We believe that we own and operate one of the largest portfolios of multi-tenant data centers in the United States, as measured by gross square footage, and have the capacity to nearly double our sellable data center raised floor space without constructing or acquiring any new buildings. In addition, we own approximately 730 acres of land that is available at our data center properties that provides us with the opportunity to significantly expand our capacity to further support future demand from current and new potential customers.

We operate a portfolio of 24 data centers located throughout the United States, Canada and Europe. Across our footprint, our data centers are concentrated in the markets which we believe offer the highest growth opportunities. Our data centers are highly specialized, mission-critical facilities utilized by our customers to store, power and cool the server, storage, and networking equipment that support their most critical business systems and processes. We believe that our data centers are best-in-class and engineered to adhere to the highest specifications commercially available to customers, providing fully redundant, high-density power and cooling sufficient to meet the needs of the largest companies and organizations in the world. We have demonstrated a strong operating track record of “five-nines” (99.999%) reliability since QTS’ inception.

QTS is a Maryland corporation formed on May 17, 2013 and is the sole general partner and majority owner of QualityTech, LP, our operating partnership (the “Operating Partnership”). Substantially all of our assets are held by, and our operations are conducted through, the Operating Partnership. QTS’ Class A common stock trades on the New York Stock Exchange under the ticker symbol “QTS.”

The Operating Partnership is a Delaware limited partnership formed on August 5, 2009 and was QTS’ historical predecessor prior to QTS’s initial public offering on October 15, 2013 (the “IPO”), having operated the Company’s business until the IPO. As of December 31, 2019, QTS owned an approximate 89.7% ownership interest in the Operating Partnership.

We believe that QTS has operated and has been organized in conformity with the requirements for qualification and taxation as a REIT commencing with its taxable year ended December 31, 2013. Our qualification as a REIT, and maintenance of such qualification, depends upon our ability to meet, on a continuing basis, various complex requirements under the Internal Revenue Code of 1986, as amended (the “Code”) relating to, among other things, the sources of our gross income, the composition and values of our assets, our distributions to our stockholders and the concentration of ownership of our equity shares.

Our Portfolio

We operate 24 data centers located throughout the United States, Canada and Europe, containing an aggregate of approximately 7.2 million gross square feet of space, including approximately 3.2 million “basis-of-design” raised floor

square feet (approximately 96.0% of which is wholly owned by us including our data center in Santa Clara which is subject to a long-term ground lease), which represents the total sellable data center raised floor potential of our existing data center facilities. This reflects the maximum amount of space in our existing buildings that could be leased following full build-out, depending on the space and power configuration that we deploy. As of December 31, 2019, this space included approximately 1.7 million raised floor operating net rentable square feet, or NRSF, plus approximately 1.6 million square feet of additional raised floor in our development pipeline, of which approximately 167,000 raised floor square feet is expected to become operational by December 31, 2020. Of the total 167,000 raised floor square feet in our development pipeline that is expected to become operational by December 31, 2020, approximately 142,000 square feet was related to customer leases which had been executed as of December 31, 2019 but not yet commenced. Our facilities collectively have access to approximately 894 megawatts (“MW”) of available utility power. Access to power is typically the most limiting and expensive component in developing a data center and, as such, we believe our significant access to power represents an important competitive advantage.

We account for the operations of all our properties in one reporting segment.

Our Customer Base

Our data center facilities are designed with the flexibility to support a diverse set of solutions and customers. Our customer base is comprised of more than 1,200 different companies of all sizes representing an array of industries, each with unique and varied business models and needs. We serve Fortune 1000 companies as well as small and medium-sized businesses, or SMBs, including financial institutions, healthcare companies, retail companies, government agencies, communications service providers, software companies and global Internet companies.

We have customers that range from large enterprise and technology companies with significant IT expertise and data center requirements, including financial institutions, “Big Four” accounting firms and the world’s largest global Internet and cloud companies, to major healthcare, telecommunications and software and web-based companies.

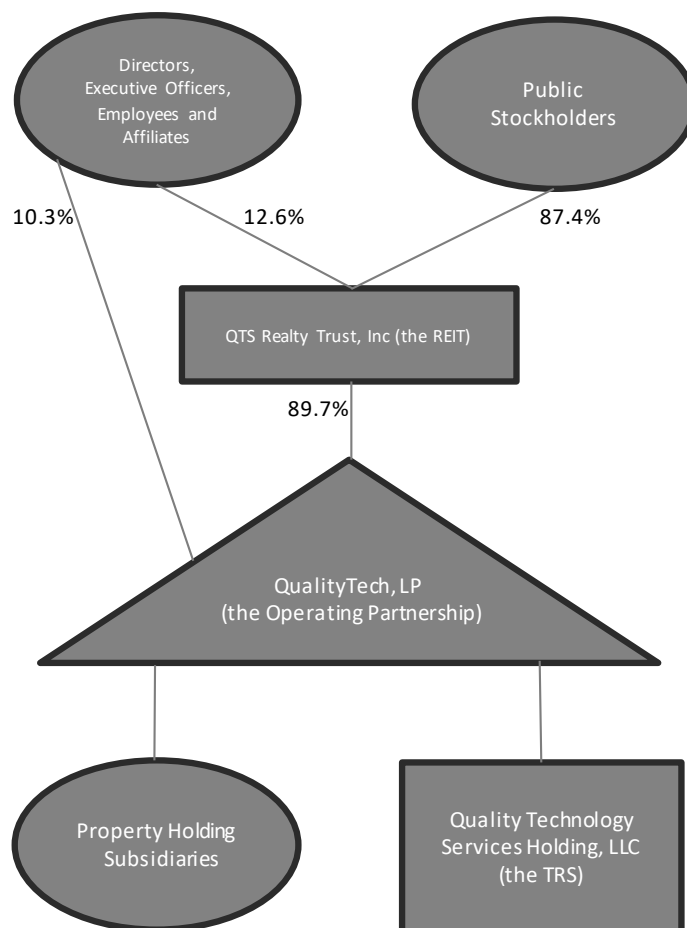
As a result of our diverse customer base, customer concentration in our portfolio is limited. As of December 31, 2019, only five of our more than 1,200 customers individually accounted for more than 3% of our monthly recurring revenue (“MRR”), with the largest customer accounting for approximately 10.9% of our MRR and the next largest customer accounting for only 5.8% of our MRR.

The majority of our MRR is generated from customers deployed in our U.S. data center locations. Customers deployed in our U.S. data center locations accounted for \$33.6 million, \$31.0 million and \$31.3 million of total MRR as of December 31, 2019, 2018 and 2017, respectively, and MRR from our international locations represented \$0.5 million, \$0.2 million and \$0.4 million of MRR as of December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, our booked-not-billed MRR balance (which represents customer leases that have been executed, but for which lease payments have not commenced as of December 31, 2019) was approximately \$7.8 million, or \$93.1 million of annualized rent. As of December 31, 2018, our booked-not-billed MRR balance (which represents customer leases that have been executed, but for which lease payments have not commenced as of December 31, 2018) was approximately \$5.2 million, or \$62.6 million of annualized rent.

Our Structure

Substantially all of our assets are held by, and our operations are conducted through, the Operating Partnership. Our interest in the Operating Partnership entitles us to share in cash distributions from, and in the profits and losses of, the Operating Partnership in proportion to our percentage ownership. As the sole general partner of the Operating Partnership, we generally have the exclusive power under the Operating Partnership’s partnership agreement to manage and conduct the Operating Partnership’s business and affairs.

The following diagram depicts our ownership structure, on a non-diluted basis as of December 31, 2019.



Our Competitive Strengths

We believe that we are uniquely positioned in the data center industry and distinguish ourselves from other data center providers through the following competitive strengths:

- Software-Defined Data Center Platform.** QTS’ Service Delivery Platform (“SDP”) is a software-defined orchestration platform that empowers customers to interact with their data and QTS services by providing real-time visibility, access and dynamic control of critical metrics across hybrid environments from a single platform. Collectively, the ability to digitize, analyze and automate significant amounts of data through SDP enables customers to innovate, make better business decisions and maximize their outsourced IT investments both within QTS and across multiple integrated service providers.
- Platform Anchored by Strategically Located, Owned “Mega” Data Centers.** Our larger “mega” data centers are located in Ashburn, Atlanta (DC-1) (formerly known as our Atlanta Metro facility), Atlanta-Suwanee, Chicago, Fort Worth, Irving, Piscataway, Princeton, Richmond and Manassas (which we contributed to an unconsolidated entity), with future sites available in Phoenix and Hillsboro. Our facilities are constructed with the flexibility and capacity to support multi-tenant environments across a broad range of customer types, sizes and IT infrastructure requirements, which we believe delivers greater efficiency than single-use or smaller scale data centers. We believe that our data centers are engineered to among the highest specifications commercially available. As of December 31, 2019, our portfolio of 24 data centers (16 of which are wholly

owned, representing 96.0% of our raised square feet, including our data center in Santa Clara which is subject to a long-term ground lease) provides the opportunity to nearly double our sellable data center raised floor capacity without constructing or acquiring any new buildings. In addition, we own approximately 730 acres of land at our existing data center properties that provides us with the opportunity to significantly expand our capacity to further support future demand from current and new potential customers.

- **Substantial Data Center Development Expertise.** We have gained substantial expertise in developing data center facilities through the acquisition and redevelopment and/or construction of our operating facilities. Our data center development strategy is primarily focused on “mega” scale facilities that allow for significant incremental growth opportunity, either through ground up development or redevelopment of existing data center powered shell footprint. Our data center development strategy allows us to rapidly scale our developments in a modular manner to coincide with customer demand, and drives higher efficiency into our model through increased operating and build cost leverage at scale.
- **Balanced Approach to Hyperscale and Hybrid Colocation Verticals.** The scale of our facilities combined with our innovative SDP platform and world-class customer service capability, gives us the ability to meet the needs of a broad set of customers ranging from large hyperscale users to smaller enterprises and government agencies. We believe customers will continue to have evolving and diverse IT needs and will prefer providers that can offer the flexibility, scalability and technology solutions that de-risk their future IT journey. We believe our ability to provide solutions to a broad addressable market enhances our leasing velocity, diversifies our customer mix, results in more balanced lease terms and optimizes cash flows from our assets.
- **Diversified, High-Quality Customer Base.** As of December 31, 2019, our customer base consists of over 1,200 customers, with our largest customer accounting for approximately 10.9% of our MRR and no others greater than 5.8%. Only five of our customers exceeded 3% of our MRR. Our focus on premium customer service and our ability to grow with their IT needs allows us to achieve a low rental churn rate (which is the MRR lost in the period to a customer intending to fully exit our platform in the near term compared to the total MRR at the beginning of the period).
- **Robust In-House Sales Capabilities.** Our in-house sales force has deep knowledge of our customers’ businesses and IT infrastructure needs and is supported by sophisticated sales management, reporting and incentive systems. Our internal sales force is structured by product offerings, specialized industry segments and, with respect to our colocation product, by geographical region. Therefore, unlike certain other data center companies, we are less dependent on data center brokers to identify and acquire or renew our customers, which we believe is a key enabler of our integrated strategy.
- **Security and Compliance Focused.** Our operations and compliance teams, led by seasoned management, are focused on providing a high level of physical security, cybersecurity and compliance solutions and consulting in all of our data centers and integrated across our product offerings.
- **Balance Sheet Positioned to Fund Continued Growth.** As of December 31, 2019 we had approximately \$872 million of available liquidity consisting of cash and cash equivalents, net proceeds available under forward equity agreements, and the ability to borrow under our unsecured senior revolving credit facility. As we continue to expand our real estate portfolio, we can increase availability under our unsecured revolving credit facility by an additional \$500 million through an accordion feature, as well as access additional net proceeds available under forward equity agreements.
- **Seasoned Management Team with Proven Track Record and Strong Alignment with Our Stockholders.** Our senior management team represents a strong balance of significant experience across the commercial real estate and technology services industries. We believe our senior management team’s experience will enable us to capitalize on industry relationships by accessing capital from various sources and by providing an ongoing pipeline of attractive leasing and development opportunities while ensuring the future differentiation of our technology-enabled platform.
- **Ability to Increase Our Margins Through Our Operating Leverage.** We anticipate that our business and growth strategies can be substantially supported by our existing platform. The scale of our data center

facilities provides a significant opportunity to realize positive operating leverage as we achieve higher customer occupancy.

- ***Continuing to Selectively Expand Our Platform to Other Strategic Markets.*** We expect to continue to selectively pursue attractive opportunities in strategic locations where we believe our fully integrated platform would give us a competitive advantage in the leasing of a facility or portfolio of assets. We also believe we can integrate additional data center facilities into our platform without adding significant incremental headcount or general and administrative expenses.
- ***Commitment to Environmental Sustainability.*** We have committed to leading the industry in sustainability by implementing cost effective, impactful programs that create value for investors and benefit society. We have committed to procuring 100% of our energy from renewable sources by 2025. We build world class LEED-designed facilities, and conserve millions of gallons of water each year through rainwater collection and greywater reuse systems. Our second annual ESG report will come out in April 2020, in which we intend to highlight 2019 environmental results, introduce new social programs, and discuss our governance structure.

Competition

We compete with developers, owners and operators of data centers and with IT infrastructure companies in the market for data center customers, properties for acquisition and the services of key third-party providers. In addition, we continue to compete with owners and operators of data centers and providers of cloud and managed services that follow other business models and may offer one or more of these services. We believe, however, that our product offerings set us apart from our competitors in the data center industry and makes us more attractive to customers, both large and small. In addition, we believe other providers are seeking ways to enter or strengthen their positions in the data center market.

We compete for customers based on factors including location, network connectivity, critical load capacity, flexibility and expertise in the design and operation of data centers. New customers who consider leasing space at our properties and using our products and existing customers evaluating whether to renew or extend a lease also may consider our competitors, including wholesale infrastructure providers and colocation and managed services providers. In addition, our customers may choose to own and operate their own data centers rather than lease from us.

As an owner, developer and operator of data centers, we depend on certain third-party service providers, including engineers and contractors with expertise in the development of data centers and the provision of managed services. The level of competition for the services of specialized contractors and other third-party providers increases the cost of engaging such providers and the risk of delays in operating our data centers and completing our development and redevelopment projects. We also rely upon the services of specialized contractors for the provision of internet connectivity and software-related platforms and services. Competition for their services could lead to a negative impact on our business if they became unavailable to us.

In addition, we face competition for the acquisition of additional properties suitable for the development of data centers from real estate developers in our industry and in other industries and from customers who develop their own data center facilities. Such competition may have the effect of reducing the number of available properties for acquisition, increasing the price of any acquisition and reducing the demand for data center space in the markets we seek to serve.

Regulation

General

Data centers in our markets are subject to various laws, ordinances and regulations, including regulations relating to common areas. We believe that each of our properties has the necessary permits and approvals to operate its business.

Americans With Disabilities Act

Our properties must comply with Title III of the Americans With Disabilities Act (“ADA”) to the extent that such properties are “public accommodations” or “commercial facilities” as defined by the ADA. The ADA may require, for example, removal of structural barriers to access by persons with disabilities in certain public areas of our properties

where such removal is readily achievable. We believe that our properties are in substantial compliance with the ADA and that we will not be required to make substantial capital expenditures to address the requirements of the ADA. However, noncompliance with the ADA could result in imposition of fines or an award of damages to private litigants. The obligation to make readily achievable accommodations is an ongoing one, and we will continue to assess our properties and to make alterations as appropriate in this respect.

Environmental Matters

Under various federal, state and local laws and regulations, a current or former owner or operator of real property may be liable for the cost to remove or remediate contamination resulting from the presence or discharge of hazardous or toxic substances, wastes or petroleum products on, under, from or in such property. These costs could be substantial, liability under these laws may attach without regard to whether the owner or operator knew of, or was responsible for, the presence of the contaminants, and the liability may be joint and several. Most of our properties presently contain large underground or aboveground fuel storage tanks for emergency power, which is critical to our operations. If any of our tanks has a release of fuel to the environment, we likely would have to pay to clean up the contamination. In addition, prior owners and operators used some of our current properties for industrial and other purposes, which could have resulted in environmental contamination. Moreover, the presence of contamination or the failure to remediate contamination at our properties may (1) expose us to third-party liability (e.g., for cleanup costs, bodily injury or property damage), (2) subject our properties to liens in favor of the government for damages and costs the government incurs in connection with the contamination, (3) impose restrictions on the manner in which a property may be used or businesses may be operated, or (4) materially adversely affect our ability to sell, lease or develop the real estate or to borrow using the real estate as collateral. We also may be liable for the costs of remediating contamination at off-site disposal or treatment facilities where we arranged for disposal or treatment of hazardous substances at such facilities, without regard to whether we comply with environmental laws in doing so. Finally, there may be material environmental liabilities at our properties of which we are not aware. Any of these matters could have a material adverse effect on us.

Our properties are subject to federal, state, and local environmental, health, and safety laws and regulations and zoning requirements, including those regarding the handling of regulated substances and wastes, emissions to the environment, and fire codes. For instance, our properties are subject to regulations regarding the storage of petroleum for auxiliary or emergency power and air emissions arising from the use of power generators. In particular, generators at our data center facilities are subject to strict emissions limitations, which could preclude us from using critical back-up systems and lead to significant business disruptions at such facilities and loss of our reputation. In addition, we lease some of our properties to our customers who also are subject to such environmental, health and safety laws and zoning requirements. If we, or our customers, fail to comply with these various requirements, we might incur costs and liabilities, including governmental fines and penalties. Moreover, we do not know whether existing requirements will change or whether future requirements will require us to make significant unanticipated expenditures that will materially and adversely affect us. Environmental noncompliance liability also could affect a customer's ability to make rental payments to us. We require our customers to comply with these environmental and health and safety laws and regulations.

See ITEM 1A. RISK FACTORS, Risks Related to the Real Estate Industry, for additional information regarding these risks.

Privacy and Cybersecurity

We may be directly and/or contractually subject to laws, regulations and policies for protecting sensitive data, consumer privacy and vital national interests, some of which are new or evolving. For example, the U.S. government has promulgated regulations and standards subject to authority provided through the enactment of a number of laws, such as the Health Insurance Portability and Accountability Act ("HIPAA"), the Health Information Technology for Economic and Clinical Health Act ("HITECH Act"), the Gramm-Leach-Bliley Act ("GLBA"), and the Federal Information Security Management Act of 2002 ("FISMA"), which require many corporations and federal, state and local governmental entities to control the security of, access to and configuration of their IT systems. A number of states also have enacted laws and regulations that require covered entities, such as data center operators, to implement and maintain security measures to protect certain types of information, such as Social Security numbers, payment card information, and other types of data, from unauthorized use and disclosure. In recent years, three states have passed biometric data security laws and a number of other states are exploring similar laws. QTS designed its policies and practices based on the Illinois Biometric Information Privacy Act ("BIPA"), which we believe is the most comprehensive and restrictive law. In addition, industry organizations have adopted and implemented various security and compliance policies. For

example, the Payment Card Industry Security Standards Council has issued its mandatory Payment Card Industry Data Security Standard (“PCI DSS”) which is applicable to all organizations processing payment card transactions. In addition to federal laws, the California Consumer Privacy Act (“CCPA”), which regulates data collection and privacy collection, took effect on January 1, 2020. As drafted, the CCPA presents significant compliance challenges, including assessing how to respond to rights request and structure internal processes. California’s law may still be subject to change based on regulations from the California Attorney General’s office and other states are considering similar laws.

In connection with certain of these laws, we are subject to audits and assessments, and we may be required to obtain certain certifications. Audit failure or findings of non-compliance can lead to significant fines or decertification from engaging in certain activities. For example, violations of HIPAA/HITECH Act regulations can lead to fines of up to \$1.5 million for all violations of a particular provision in a calendar year and our failure to demonstrate compliance in an annual PCI DSS audit may result in fines and exclusion from payment card networks. Additionally, violations of privacy or security laws, regulations or standards increasingly lead to class-action litigation, which can result in substantial monetary judgments or settlements. We cannot assure you that future laws, regulations and standards, or future interpretations of current laws, regulations and standards, related to privacy and security will not have a material adverse effect on us.

As a company that may process European personal data, we also may be subject to European data protection laws and regulations. The European General Data Protection Regulation (“GDPR”) which took effect in May 2018, increases the likelihood of applicability of European law to entities like us, which are established outside the EU but may process data of European data subjects. Under the GDPR, there can be fines of up to €10,000,000 or up to 2% of the global sales, whichever is greater, for certain comparatively minor offenses, or up to €20,000,000 or up to 4% of the global sales, whichever is greater, for more serious offenses.

To facilitate and legitimize the transfer of both client and personnel data from the European Union (“EU”) to the United States, we self-certified to the U.S. Department of Commerce that we adhere to the EU-U.S. Privacy Shield Framework, which requires organizations operating in the United States to provide assurance that they are adhering to relevant European standards for data protection for such transfers. QTS complies with the EU-U.S. Privacy Shield Framework as set forth by the Department of Commerce regarding the collection, use and retention of personal information transferred from the EU to the United States. However, our self-certification under the EU-U.S. Privacy Shield Framework may not be sufficient to ensure compliance with GDPR. Legal challenges have been brought in European courts seeking to declare the Privacy Shield Framework invalid under European law as a mechanism to legitimize transfers of personal data from the EU to the United States, which could require us to implement alternative means to address European cross border data transfer requirement. Also in 2018, EU member states were required to enact national laws to enforce the EU’s “Directive on security of network and information systems” (the “NIS Directive”), which lays out a number of cybersecurity expectations and notification obligations for regulated entities.

Insurance

We carry comprehensive general liability, property, earthquake, flood, business interruption and rental loss insurance covering all of the properties in our portfolio. We also carry coverage for technology professional liability, and cybersecurity. We have selected policy specifications and insured limits that we believe to be appropriate given the relative risk of loss, the cost of the coverage and industry practice. In the opinion of our management, the properties in our portfolio are currently adequately insured and the risk for any failure related to professional liability or a physical or cybersecurity breach are adequately covered by our insurance. We will not carry insurance for generally uninsured losses such as loss from riots, war, wet or dry rot, vermin and, in some cases, flooding and earthquake, because such coverage is not available or is not available at commercially reasonable rates. In addition, although we carry earthquake and flood insurance on our properties in an amount and with deductibles that we believe are commercially reasonable, such policies are subject to limitations in certain flood and seismically active zones. Certain of the properties in our portfolio are located in areas known to be seismically active. See “Risk Factors—Risks Related to the Real Estate Industry—Uninsured and underinsured losses could have a material adverse effect on us.”

Employees

As of December 31, 2019, we employed approximately 612 persons, none of whom were represented by a labor union. We believe our relations with our employees are good.

Offices

Our executive headquarters is located at 12851 Foster Street, Overland Park, Kansas 66213, where our telephone number is (913) 814-9988. We believe that our current offices are adequate for our present operations; however, based on the anticipated growth of our company, we may add regional offices depending upon our future operational needs.

Available Information

Our Internet website address is www.qtsdatacenters.com. You can obtain on our website, free of charge, a copy of our Annual Report on Form 10-K, our quarterly reports on Form 10-Q, our current reports on Form 8-K, and any amendments to those reports, as soon as reasonably practicable after we electronically file such reports or amendments with, or furnish them to, the SEC. Our Internet website and the information contained therein or connected thereto are not intended to be incorporated into this Annual Report on Form 10-K.

Also available on our website, free of charge, are copies of our Code of Business Conduct and Ethics, our Corporate Governance Guidelines, and the charters for each of the committees of our board of directors—the Audit Committee, the Nominating and Corporate Governance Committee, the Compensation Committee and the Security Committee.

ITEM 1A. RISK FACTORS

Set forth below are the risks that we believe are material to our stockholders. You should carefully consider the following risks in evaluating our Company and our business. If any of the risks discussed in this Form 10-K were to occur, our business, prospects, financial condition, liquidity, funds from operations and results of operations and our ability to service our debt and make distributions to our stockholders could be materially and adversely affected, which we refer to herein collectively as a “material adverse effect on us,” the market price of our common stock could decline significantly and you could lose all or part of your investment. Some statements in this Form 10-K, including statements in the following risk factors, constitute forward-looking statements. Please refer to the section entitled “Special Note Regarding Forward-Looking Statements” at the beginning of this Form 10-K.

Risks Related to Our Business and Operations

Because we are focused on the ownership, operation, redevelopment and/or construction of data centers, any decrease in the demand for data center space could have a material adverse effect on us.

Because our portfolio consists entirely of data centers, or land to be developed or converted into data centers, we are subject to risks inherent in investments in a single industry. Adverse developments in the data center market or in the industries in which our customers operate could lead to a decrease in the demand for data center space, which could have a greater material adverse effect on us than if we owned a more diversified real estate portfolio. These adverse developments could include: a decline in the technology industry, such as a decrease in the use of mobile or web-based commerce, industry slowdowns, business layoffs or downsizing, relocation of businesses, increased costs of complying with existing or new government regulations and other factors; a slowdown in the growth of the Internet generally as a medium for commerce and communication; a downturn in the market for data center space generally such as oversupply of or reduced demand for space; and the rapid development of new technologies or the adoption of new industry standards that render our or our customers’ current products and services obsolete or unmarketable and, in the case of our customers, that contribute to a downturn in their businesses, increasing the likelihood of a default under their leases or that they become insolvent or file for bankruptcy protection. To the extent that any of these or other adverse conditions occur, they are likely to impact market rents for, and cash flows from, our data center space, which could have a material adverse effect on us.

Our data center infrastructure may become obsolete or unmarketable and we may not be able to upgrade our power, cooling, security or connectivity systems cost-effectively or at all.

The markets for the data centers we own and operate, as well as certain of the industries in which our customers operate, are characterized by rapidly changing technology, evolving industry standards, frequent new service introductions, shifting distribution channels and changing customer demands. As a result, the infrastructure at our data centers may become obsolete or unmarketable due to demand for new processes and/or technologies, including, without limitation: (i) new processes to deliver power to, or eliminate heat from, computer systems; (ii) customer demand for additional

redundancy capacity or, conversely, reduced redundancy capacity; or (iii) new technology that permits lower levels of critical load and heat removal than our data centers are currently designed to provide. In addition, the systems that connect our data centers to the Internet and other external networks may become outdated, including with respect to latency, reliability and diversity of connectivity. When customers demand new processes or technologies, we may not be able to upgrade our data centers on a cost-effective basis, or at all, due to, among other things, increased expenses to us that cannot be passed on to customers or insufficient revenue to fund the necessary capital expenditures. The obsolescence of our power and cooling systems and/or our inability to upgrade our data centers, including associated connectivity, could reduce revenue at our data centers and could have a material adverse effect on us. Furthermore, potential future regulations that apply to industries we serve may require customers in those industries to seek specific requirements from their data centers that we are unable to provide. These may include physical security regulations applicable to the defense industry and government contractors and privacy and security requirements applicable to the financial services and health care industries. If such regulations were adopted, we could lose customers or be unable to attract new customers in certain industries, which could have a material adverse effect on us.

We face considerable competition in the data center industry and may be unable to renew existing leases, lease vacant space or re-let space on more favorable terms, or at all, as leases expire, which could have a material adverse effect on us.

Leases representing approximately 16% of our leased raised floor and approximately 29% of our annualized rent (including all month-to-month leases), in each case as of December 31, 2019, are scheduled to expire by the end of 2020. The global multi-tenant data center market is highly fragmented and we compete with numerous developers, owners and operators in the data center industry, including managed service providers and other REITs, some of which own or lease properties similar to ours, or may do so in the future, in the same submarkets in which our properties are located. Our competitors may have significant advantages over us, including greater name recognition, longer operating histories, higher operating margins, pre-existing relationships with current or potential customers, greater financial, marketing and other resources, and access to greater and less expensive power. These advantages could allow our competitors to respond more quickly to strategic opportunities or changes in our industry or markets. If our competitors offer space at rental rates below current market rates or below the rental rates we currently charge our customers, or if our competitors offer products and services in a greater variety, that are more state-of-the-art or that are more competitively priced than the products and services we offer, we may lose customers or be unable to attract new customers without lowering our rental rates and improving the quality, mix and technology of our products and services. We cannot assure you that we will be able to lease vacant space, renew leases with our existing customers or re-let space to new customers if our current customers do not renew their leases. Even if our customers renew their leases or we are able to re-let the space, the terms (including rental rates and lease periods) and costs (including capital) of renewal or re-letting may be less favorable than the terms of our current leases. In addition, there can be no assurances that the type of space and/or services currently available at our properties will be sufficient to retain current customers or attract new customers in the future. Although we offer a full spectrum of data center products from hyperscale to hybrid colocation to certain cloud and managed services, our competitors that specialize in only one of our product and service offerings may have competitive advantages in that space. If rental rates for our properties decline, we are unable to lease vacant space, our existing customers do not renew their leases or we do not re-let space from expiring leases, in each case, on favorable terms, it could have a material adverse effect on us.

Our business could be negatively affected as a result of actions by activist stockholders.

Stockholder campaigns to effect changes in publicly-traded companies are sometimes led by activist investors through various corporate actions, including proxy contests. Responding to these actions can disrupt our operations by diverting the attention of management and our employees as well as our financial resources. Stockholder activism could create perceived uncertainties as to our future direction, which could result in the loss of potential business opportunities and make it more difficult to attract and retain qualified personnel and business partners. Furthermore, the election of individuals to our board of directors with a specific agenda could adversely affect our ability to effectively and timely implement our strategic plans.

The long sales cycle for data center products could have a material adverse effect on us.

A customer's decision to lease space in one of our data centers typically involves a significant commitment of resources, time-consuming contract negotiations regarding the service level commitments and substantial due diligence on the part of the customer regarding the adequacy of our infrastructure and attractiveness of our products and services. As a result,

the leasing of data center space has a long sales cycle. Furthermore, we may expend significant time and resources in pursuing a particular sale or customer that may not result in any revenue. Our inability to adequately manage the risks associated with leasing the space and products within our facilities could have a material adverse effect on us.

Our customers may choose to develop new data centers, expand their own existing data centers, or choose to go to a cloud provider, which could result in the loss of one or more key customers or reduce demand and pricing for our data centers and could have a material adverse effect on us.

Some of our customers may develop or expand their own data center facilities or choose to take their data to a cloud provider. Our customers may also merge with or be acquired by other entities that are not our customers, and may discontinue or reduce the use of our data centers in the future. If any of these events occurs with respect to our key customers, it could result in a loss of business to us or put downward pressure on our pricing. If we lose a customer, there is no assurance that we would be able to replace that customer at the same or a higher rate, or at all, which could have a material adverse effect on us.

The bankruptcy, insolvency or financial difficulties of a major customer could have a material adverse effect on us.

The bankruptcy or insolvency of a major customer could have significant consequences for us. If any customer becomes a debtor in a case under the federal Bankruptcy Code, we cannot evict the customer solely because of the bankruptcy. In addition, the bankruptcy court might authorize the customer to reject and terminate its lease with us. Our claim against the customer for unpaid future rent would be subject to a statutory cap that might be substantially less than the remaining rent owed under the lease. In either case, our claim for unpaid rent likely would not be paid in full. If any of our significant customers were to become bankrupt or insolvent or suffer a downturn in their business, they may fail to renew, or reject or terminate, their leases with us and/or fail to pay unpaid or future rent owed to us, which could have a material adverse effect on us.

Any inability, temporarily or permanently, to fully and consistently operate either of our Atlanta (DC-1) and Atlanta-Suwanee properties could have a material adverse effect on us.

Our two largest wholly-owned properties in terms of annualized rent, Atlanta (DC-1) (formerly known as our Atlanta Metro facility) and Atlanta-Suwanee, collectively accounted for approximately 43% of our consolidated annualized rent as of December 31, 2019. Therefore, any inability, temporarily or permanently, to fully and consistently operate either of these properties could have a material adverse effect on us. In addition, because both properties are located in the Atlanta metropolitan area, we are particularly susceptible to adverse developments in that area, including as a result of natural disasters (such as hurricanes, floods, tornadoes and other events), that could cause, among other things, permanent damage to the properties and electrical power outages that may last beyond our backup and alternative power arrangements. Further, Atlanta (DC-1) and Atlanta-Suwanee account for several of our largest leases in terms of MRR. Any nonrenewal, credit or other issues with large customers could adversely affect the performance of these properties.

We may be adversely affected by the economies and other conditions of the markets in which we operate, particularly in Atlanta and other metropolitan areas, where we have a high concentration of our data center properties.

We are susceptible to adverse economic or other conditions in the geographic markets in which we operate, such as periods of economic slowdown or recession, the oversupply of, or a reduction in demand for, data centers in a particular area, industry slowdowns, layoffs or downsizings, relocation of businesses, increases in real estate and other taxes and changing demographics. The occurrence of these conditions in the specific markets in which we have concentrations of properties could have a material adverse effect on us. Our Atlanta area data centers and our data centers in Virginia (including Richmond, Ashburn, the Vault facility in Dulles, Virginia and leased facilities acquired in 2015), accounted for approximately 43% and 16%, respectively, of our consolidated annualized rent as of December 31, 2019. We also own a 50% interest in the Manassas, Virginia data center that was contributed to an unconsolidated entity. As a result, we are particularly susceptible to adverse market conditions in these areas. In addition, other geographic markets could become more attractive for developers, operators and customers of data center facilities based on favorable costs and other conditions to construct or operate data center facilities in those markets. For example, some states have created tax incentives for developers and operators to locate data center facilities in their jurisdictions. These changes in other markets may increase demand in those markets and result in a corresponding decrease in demand in our markets. Any adverse economic or real estate developments in the geographic markets in which we have a concentration of properties,

or in any of the other markets in which we operate, or any decrease in demand for data center space resulting from the local business climate or business climate in other markets, could have a material adverse effect on us.

Challenging economic and other market conditions could have a material adverse effect on us.

The cost and availability of credit may be limited if global or national market conditions deteriorate. Furthermore, deteriorating economic and other market conditions that affect our customers could negatively impact commercial real estate fundamentals and result in lower occupancy, lower rental rates and declining values in our real estate portfolio. Additionally, the economic climate could have an impact on our lenders or customers, causing them to fail to meet their obligations to us. For example, the United Kingdom withdrew from the European Union effective January 31, 2020 (commonly known as “Brexit”), and is now in a period of transition until the end of 2020. The transition period of at least eleven months, which can be extended up to two additional years, commenced following such departure. While the announcement of Brexit in June 2016 caused significant volatility in global stock markets and currency exchange rate fluctuations that resulted in the strengthening of the U.S. dollar against the U.K. Pound Sterling, the impact of the United Kingdom’s January 2020 departure from the European Union did not trigger similar volatility. Any impact of Brexit depends on the terms of the United Kingdom’s withdrawal from the European Union, which remain under negotiation between the parties during the transition period.

Future consolidation and competition in our customers’ industries could reduce the number of our existing and potential customers and make us dependent on a more limited number of customers.

Mergers or consolidations in our customers’ industries in the future could reduce the number of our existing and potential customers and make us dependent on a more limited number of customers. If our customers merge with or are acquired by other entities that are not our customers, they may discontinue or reduce the use of our data centers in the future. Any of these developments could have a material adverse effect on us.

Our failure to develop and maintain a diverse customer base could have a material adverse effect on us.

Our customers are a mix of hyperscale and hybrid colocation. Each type of customer and their leases with us have certain features that distinguish them from our other customers, such as operating margin, space and power requirements and lease term. In addition, our customers engage in a variety of professional, financial, technological and other businesses. A diverse customer base helps to minimize exposure to economic fluctuations in any one industry, business sector or customer type, or any particular customer. Our relative mix of products used by our customers may change over time, as may the industries represented by our customers, the concentration of customers within specified industries and the economic value and risks associated with each customer, and there is no assurance that we will be able to maintain a diverse customer base, which could have a material adverse effect on us.

Our government customers, contracts and subcontracts may subject us to additional risks, including early termination, audits, investigations, sanctions and penalties, which could have a material adverse effect on us.

We derive revenue from contracts with the U.S. government, state and local governments and from subcontracts with government contractors. Some of these customers may be entitled to terminate all or part of their contracts at any time, without cause.

Recently, political pressure has increased for governments and their agencies, both domestically and internationally, to reduce spending. Some of our federal government contracts and subcontracts are directly or indirectly subject to Congressional approval of appropriations to fund the expenditures under these contracts. Similarly, some of our state and local contracts and subcontracts are subject to government funding authorizations. To the extent that funding underlying any of these government contracts or subcontracts is reduced or eliminated, whether by failure to get Congressional approval or as a result of partial U.S. government shutdowns, there is an increased risk of termination by the counterparties, which could have a material adverse effect on us.

Government contracts and subcontracts also are generally subject to government audits and investigations. To the extent we fail to comply with laws or regulations related to such contracts, any such audit or investigation of us could result in various civil and criminal penalties and administrative sanctions, including termination of such contracts, refund of a portion of fees received, forfeiture of profits, suspension of payments, fines and suspensions or debarment from future government business, any of which could have a material adverse effect on us.

We derive significant revenue from our largest customers, and the loss or significant reduction in business from one or more of these customers could have a material adverse effect on us.

Our top 10 customers collectively accounted for approximately 36% of our portfolio's total MRR as of December 31, 2019. We have one customer that accounted for approximately 10.9% of our MRR and the next largest customer accounted for only 5.8% of our MRR as of December 31, 2019. As a result, if we lose and are unable to replace one or more of these customers, if these customers significantly reduce their business with us or default on their obligations to us or if we choose not to enforce, or to enforce less vigorously, any rights that we may have now or in the future against these significant customers because of our desire to maintain our relationship with them, our business, financial condition and results of operations, including the amount of cash available for distribution to our stockholders, could be materially adversely affected.

Our future growth depends upon the successful expansion or redevelopment of our existing properties, the development of new properties, and any delays or unexpected costs in such expansion, redevelopment or development could have a material adverse effect on us.

We have initiated or are contemplating the redevelopment of multiple of our existing data center properties including: Atlanta (DC-1), Irving, Piscataway, Chicago, Fort Worth, Ashburn and the Manassas facility which was contributed to an unconsolidated entity. Our future growth depends upon the successful completion of these efforts, as well as on development of new properties including Atlanta (DC-2) and Hillsboro. With respect to our current and any future expansions, developments and redevelopments, we will be subject to certain risks, including the following:

- financing risks;
- increases in interest rates or credit spreads;
- site selection and lack of availability of adequate properties for development;
- construction and/or lease-up delays;
- changes to plans or specifications;
- construction site accidents or other casualties;
- lack of availability of, and/or increased costs for, specialized data center components, including long lead-time items such as generators;
- cost overruns, including construction or labor costs that exceed our original estimates;
- failure of contractors to perform on a timely basis or at all, or other misconduct on the part of contractors;
- contractor and subcontractor disputes, strikes, labor disputes or supply disruptions;
- environmental issues, fire, flooding, earthquakes and other natural disasters;
- delays with respect to obtaining or the inability to obtain necessary zoning, occupancy, environmental, land use and other governmental permits, and changes in zoning and land use laws, particularly with respect to build-outs at our Santa Clara facility;
- failure to achieve expected occupancy and/or rental rate levels within the projected time frame, if at all; and
- sub-optimal mix of products.

In addition, with respect to any expansions, developments or redevelopments, we will be subject to risks and, potentially, unanticipated costs associated with obtaining access to a sufficient amount of power from local utilities, including the need, in some cases, to develop utility substations on our properties in order to accommodate our power needs, constraints on the amount of electricity that a particular locality's power grid is capable of providing at any given time, and risks associated with the negotiation of long-term power contracts with utility providers. Local utilities may also experience unexpected costs relating to the production or transmission of power, including environmental and other variability associated with downed utility lines. Similarly, we will be subject to the risks and, potentially, unanticipated costs associated with obtaining access to sufficient internet, telecommunication and fiber optic network connectivity. We may not be able to successfully negotiate such contracts on favorable terms, or at all. Any inability to negotiate utility or telecommunications contracts on a timely basis or on favorable terms or in volumes sufficient to supply the critical load and connectivity anticipated for future developments could have a material adverse effect on us.

While we intend to develop data center properties primarily in markets with which we are familiar, we have and may in the future acquire properties in new geographic markets where we expect to achieve favorable risk-adjusted returns on our investment. We may not possess the same level of familiarity with development or redevelopment in these new

markets and therefore cannot assure you that our development activities will generate attractive returns. Furthermore, development and redevelopment activities, regardless of whether they are ultimately successful, also typically require a substantial portion of our management's time and attention. This may distract our management from focusing on other operational activities of our business.

These and other risks could result in delays, increased costs and a lower stabilized return on invested capital and could prevent completion of our development and expansion projects once undertaken, which could have a material adverse effect on us.

We may commence development of a data center facility prior to having received any commitments from customers to lease any space in the facility and any extended vacancies could have a material adverse effect on our business, results of operations and financial condition.

As part of our growth strategy, we intend to commit substantial operational and financial resources to develop new data centers and expand existing ones. However, we may not require pre-leasing commitments from customers before we develop or expand a data center, and we may not have sufficient customer demand to lease the new data center space when completed. Once development of a data center is complete, we incur a certain amount of operating expenses even if there are no tenants occupying the space. A lack of customer demand for data center space or excess capacity in the data center market could impair our ability to achieve our expected rate of return on our investment, which could have a material adverse effect on our financial condition, operating results and the market price of our common stock.

Our properties are designed primarily for lease as data centers, which could make it difficult to reposition them if we are not able to lease or re-let available space.

Our properties are highly specialized properties that contain extensive electrical, communications and mechanical systems. Such systems are often custom-designed to house, power and cool certain types of computer systems and networking equipment. Any office space (such as private office space, open office areas and conference centers) located at our properties is merely complementary to such systems, to facilitate our ability to service and maintain them. As a result, our properties are not well-suited for primary use by customers as anything other than data centers. Major renovations and expenditures would be required to convert the properties for use as commercial office space, or for any other use, which would substantially reduce the benefits from such a conversion. In the event of a conversion, the value of our properties may be impaired due to the costs of reconfiguring the real estate for alternate purposes and the removal or modification of the specialized systems and equipment. The highly specialized nature of our data center properties could make it difficult and costly to reposition them if we are not able to lease or re-let available space on favorable terms, or at all, which could have a material adverse effect on us.

We lease space in several locations under long-term non-cancellable lease agreements and the non-renewal or loss of such leases, or the continuing obligations under such leases in the event of a loss of customers or customer revenues, could have a material adverse effect on us.

We lease the space that houses our data centers in several locations under long-term lease agreements. For example, we lease the space housing our data centers in Jersey City, New Jersey and Overland Park, Kansas, where our corporate headquarters is located, under leases expiring (taking into account our extension options) in 2031 and 2028 respectively. We also lease data center space in several locations under non-cancellable leases expiring through 2026 and, in turn, sublease that space to our customers. The landlords could attempt to evict us for reasons beyond our control and we may incur costs if we are forced to vacate this space due to the high costs of relocating the equipment in these facilities and installing the necessary infrastructure in a new data center property. If we are forced to vacate any of these facilities, we could lose customers that chose our services based on our location. In addition, we cannot assure you that we will be able to renew these leases prior to their expiration dates on favorable terms or at all. Certain of such leases relate to data centers owned by companies that may view us as a competitor, which may impact their willingness to extend these leases upon expiration. If we are unable to renew these lease agreements, we could lose a significant number of customers who are unwilling to relocate their equipment to another one of our data center properties, which could have a material adverse effect on us. Even if we are able to renew these leases, the terms and other costs of renewal may be less favorable than our existing lease arrangements. Failure to sufficiently increase revenue from customers at these facilities to offset these projected higher costs could have a material adverse effect on us. Further, we may be unable to maintain good working relationships with our landlords, which would adversely affect our relationship with our customers and could result in the loss of current customers.

In addition, the terms of our customer contracts are, in many cases, of shorter duration than the non-cancellable lease agreements for data center space described above. We are obligated to make payments on these long-term non-cancellable leases regardless of whether our customer contracts are terminated or expire and regardless of whether our customers continue to make payments under their contracts. To the extent we experience a loss of customers or customer revenue, including upon expiration or termination of customer contracts, our continuing obligations under the non-cancellable lease agreements for data center space may result in expenses to us without offsetting revenue, which could have a material adverse effect on us.

The ground sublease structure at our Santa Clara property could prevent us from developing the property as we desire, and we may have to incur additional expenses prior to the end of the ground sublease to restore the property to its prelease state.

Our interest in the Santa Clara property is subject to a ground sublease granted by a third party, as ground sublessor, to our indirect subsidiary Quality Investment Properties Santa Clara, LLC (“QIP Santa Clara”). The ground sublease terminates in 2052 and we have two options to extend the original term for consecutive ten-year terms. The ground sublease structure presents special risks. We, as ground sublessee, will own all improvements on the land, including the buildings in which the data centers are located during the term of the ground sublease. Upon the expiration or earlier termination of the ground sublease, however, the improvements on the land will become the property of the ground sublessor. Unless we purchase a fee interest in the land and improvements subject to the ground sublease, we will not have any economic interest in the land or improvements at the expiration of the ground sublease. Therefore, we will not share in any increase in value of the land or improvements beyond the term of the ground sublease, notwithstanding our capital outlay to purchase our interest in the data center or fund improvements thereon, and will lose our right to use the building on the subleased property. In addition, upon the expiration of the ground sublease, the ground sublessor may require the removal of the improvements or the restoration of the improvements to their condition prior to any permitted alterations at our sole cost and expense. If we do not meet a certain net worth test, we also will be required to provide the ground sublessor with a bond in connection with such removal and restoration requirements. In addition, while we generally have the right to undertake alterations to the demised premises, the ground sublessor has the right to reasonably approve the quality of such work and the form and content of certain financial information of QIP Santa Clara. The ground sublessor need not give its approval to alterations if it or its affiliate determines that the work will have a material adverse impact on the fee interest in property adjacent to the demised premises. In addition, though the ground sublease provides that we may exercise the rights of ground lessor in the event of a rejection of the master ground lease, each of the master ground lease and the ground sublease may be rejected in bankruptcy. Finally, in the event of a condemnation, the ground lessor is entitled to an allocable share of any condemnation proceeds. The ground sublease, however, does contain important nondisturbance protections and provides that, in event of the termination of the master ground lease, the ground sublease will become a direct lease between the ground lessor and QIP Santa Clara.

We depend on third parties to provide Internet, telecommunication and fiber optic network connectivity to the customers in our data centers, and any delays or disruptions in service, availability, or additional costs could have a material adverse effect on us.

Our products and infrastructure rely on third-party service providers. In particular, we depend on third parties to provide Internet, telecommunication and fiber optic network connectivity to the customers in our data centers, and we have no control over the reliability of the services provided by these suppliers. Our customers may in the future experience difficulties due to service failures unrelated to our systems and services. Any Internet, telecommunication or fiber optic network failures may result in significant loss of connectivity to our data centers, which could reduce the confidence of our customers and could consequently impair our ability to retain existing customers or attract new customers and could have a material adverse effect on us.

Similarly, we depend upon the presence of Internet, telecommunications and fiber optic networks serving the locations of our data centers in order to attract and retain customers. The construction required to connect multiple carrier facilities to our data centers is complex, requiring a sophisticated redundant fiber network, and involves matters outside of our control, including regulatory requirements and the availability of construction resources. Each new data center that we develop requires significant amounts of capital for the construction and operation of a sophisticated redundant fiber network. We believe that the availability of carrier capacity affects our business and future growth. We cannot assure you that any carrier will elect to offer its services within our data centers or that once a carrier has decided to provide connectivity to our data centers that it will continue to do so for any period of time or at a cost that is feasible to our

customers. Furthermore, some carriers are experiencing business difficulties or have announced consolidations or mergers. As a result, some carriers may be forced to downsize or terminate connectivity within our data centers, which could adversely affect our customers and could have a material adverse effect on us.

Power outages, limited availability of electrical resources and increased energy costs could have a material adverse effect on us.

Our data centers are subject to electrical power outages, regional competition for available power and increased energy costs. We attempt to limit exposure to system downtime by using backup generators and power supplies generally at a significantly higher operating cost than we would pay for an equivalent amount of power from a local utility. However, we may not be able to limit our exposure entirely even with these protections in place. Power outages, which have and may last beyond our backup and alternative power arrangements, may harm our customers and our business. During power outages, changes in humidity and temperature can cause permanent damage to servers and other electrical equipment. We could incur financial obligations or be subject to lawsuits by our customers in connection with a loss of power. Any loss of services or equipment damage could reduce the confidence of our customers in our services and could consequently impair our ability to attract and retain customers, which could have a material adverse effect on us.

In addition, power and cooling requirements at our data centers are increasing as a result of the increasing power and cooling demands of modern servers. Since we rely on third parties to provide our data centers with sufficient power to meet our customers' needs, and we generally do not control the amount of power drawn by our customers, our data centers could have a limited or inadequate amount of electrical resources.

We also may be subject to risks and unanticipated costs associated with obtaining power from various utility companies. Utilities that serve our data centers may be dependent on, and sensitive to price increases for, a particular type of fuel, such as coal, oil or natural gas. The price of these fuels and the electricity generated from them could increase as a result of proposed legislative measures related to climate change or efforts to regulate carbon emissions. For example, under the U.S. Environmental Protection Agency's "Affordable Clean Energy" rule, coal-fired power plants are required to make efficiency improvements to reduce their greenhouse gases emissions, and they may increase their prices to make these improvements. While our wholesale customers are billed on a pass-through basis for their direct energy usage, our retail customers pay a fixed cost for services, including power, so any excess energy costs above such fixed costs are borne by us. Although, for technical and practical reasons, our retail customers often use less power than the amount we are required to provide pursuant to their leases, there is no assurance that this will always be the case. Although we have a diverse customer base, the concentration and mix of our customers may change and increases in the cost of power at any of our data centers would put those locations at a competitive disadvantage relative to data centers served by utilities that can provide less expensive power. This could adversely affect our relationships with our customers and hinder our ability to operate our data centers, which could have a material adverse effect on us.

We rely on the proper and efficient functioning of computer and data-processing systems, and a large-scale malfunction could have a material adverse effect on us.

Our ability to keep our data centers operating depends on the proper and efficient functioning of computer and data-processing systems. Since computer and data-processing systems are susceptible to malfunctions and interruptions, including those due to equipment damage, power outages, cyber-attacks and a range of other hardware, software and network problems, we cannot guarantee that our data centers will not experience such malfunctions or interruptions in the future. Additionally, expansions and developments in the products and services that we offer, including our Cloud and Managed Services, could increasingly add a measure of complexity that may overburden our data center, network resources and human capital, making service interruptions and failures more likely. A significant or large-scale malfunction or interruption of one or more of any of our data centers' computer or data-processing systems could adversely affect our ability to keep such data centers running efficiently. If a malfunction results in a wider or sustained disruption to business at a property, it could have a material adverse effect on us.

Interruptions in our provision of products or services could result in a loss of customers and damage our reputation, which could have a material adverse effect on us.

Our business and reputation could be adversely affected by any interruption or failure in the provision of products and services, even if such events occur as a result of a natural disaster, human error, landlord maintenance failure, water damage, fiber cuts, extreme temperature or humidity, sabotage, vandalism, terrorist acts, unauthorized entry or other

unanticipated problems. If a significant disruption occurs, we may be unable to implement disaster recovery or security measures in a timely manner or, if and when implemented, these measures may not be sufficient or could be circumvented through the reoccurrence of a natural disaster or other unanticipated problem, or as a result of accidental or intentional actions. Furthermore, such disruptions can cause damage to servers and may result in legal liability where interruptions in service violate service commitments in customer leases. Resolving network failures or alleviating security problems also may require interruptions, delays, or cessation of service to our customers. Accordingly, failures in our products and services, including problems at our data centers or network interruptions may result in significant liability, a loss of customers and damage to our reputation, which could have a material adverse effect on us.

Security breaches at our facilities or affecting our networks may result in disclosure of sensitive customer information that could harm our reputation and expose us to liability from customers and government agencies, and we may incur increasing or uncertain compliance and prevention costs, all of which could have a material adverse effect on us.

Our network could be subject to unauthorized access, computer viruses, cyber-attacks or cyber intrusions and other disruptive problems, including malware, computer viruses and attachments to e-mails caused by customers, employees, or others inside or outside of our organization. Our exposure to cybersecurity threats and negative consequences of security breaches will likely increase as we store increasing amounts of customer data. Additionally, as we increasingly market the security features in our data centers, our data centers may be further targeted by cyber attackers seeking to compromise data security. Because a portion of our business focuses on serving U.S. government agencies and their contractors with a general focus on data security and information technology, we may be especially likely to be targeted by cyber-attacks, including by organizations or persons that may be affiliated with nation-states or otherwise hostile to the U.S. government. Despite our activities to maintain the security and integrity of our networks and related systems, there can be no assurance that these activities will be effective.

Unauthorized access, computer viruses or other disruptive problems could lead to interruptions, delays and cessation of service to our customers and the compromise or loss of our, our customers' or our customers' end-users' information. We routinely process, store and transmit large amounts of data for our customers, which includes sensitive and personally identifiable information. Loss or compromise of this data could cost us both monetarily and in terms of customer goodwill and lost business, even if we do not ourselves process the data. Unauthorized access could also potentially jeopardize the security of our confidential information or confidential information of our customers or our customers' end-users, which might expose us to liability from customers and from the government agencies that regulate us or our customers, as well as harm our brand and deter potential customers from renting our space and purchasing our services. For example, violations of HIPAA and its implementing regulations, as amended by the HITECH Act, can lead to fines of up to \$1.5 million for identical violations of a particular provision in a calendar year, and under the GDPR, there can be fines of up to €10,000,000 or up to 2% of the global sales, whichever is greater, for certain comparatively minor offenses and up to €20,000,000 or up to 4% of the global sales, whichever is greater, for more serious offenses. Additionally, violations of privacy or cybersecurity laws (including the recently-passed CCPA), regulations or standards increasingly lead to class-action and other types of litigation, which can result in substantial monetary judgments or settlements. We also may suffer increased remediation, security, and insurance costs in the event of a security breach. Therefore, any such security breaches could have a material adverse effect on us.

In addition, the regulatory framework around data custody, cybersecurity, data privacy and breaches varies by jurisdiction and is an evolving area of law. We cannot predict how future laws, regulations and standards, or future interpretations of current laws, regulations and standards, related to privacy and cybersecurity will affect our business, and we cannot predict the cost of compliance. Furthermore, we may be required to expend significant attention and financial resources to protect against physical or cybersecurity breaches that could result in the misappropriation of our or our customers' information. As techniques used to breach security change frequently, and generally are not recognized until launched against a target, we may not be able to implement security measures in a timely manner or, if and when implemented, we may not be able to determine the extent to which these measures could be circumvented. Any internal or external breach in our network could severely harm our business and result in costly litigation and potential liability for us. We also may be liable for, and suffer reputational harm if, any of our third-party service providers or subcontractors suffers security breaches. To the extent our customers demand that we accept unlimited liability and to the extent there is a competitive trend to accept it, such a trend could affect our ability to retain these limitations in our leases at the risk of losing the business. Such a trend may be particularly likely to occur with regard to our Cloud and Managed Services. These potential costs and liabilities could have a material adverse effect on us.

The loss of key personnel, including our executive officers, could have a material adverse effect on us.

Our continued success depends, to a significant extent, on the continued services of key personnel, particularly our executive officers, who have extensive market knowledge and long-standing business relationships. In particular, our reputation among and our relationships with our key customers are the direct result of a significant investment of time and effort by these individuals to build our credibility in a highly specialized industry. The loss of services of one or more key members of our executive management team could diminish our business and investment opportunities and our relationships with lenders, business partners and existing and prospective customers and could have a material adverse effect on us.

Violations of our prohibition on harassment, sexual or otherwise, could result in liabilities and/or litigation.

We prohibit harassment or discrimination in the workplace, whether sexual harassment or any other form. This policy applies to all aspects of employment. Notwithstanding our conducting training and taking disciplinary action against alleged violations, we may encounter additional costs from claims made and/or legal proceedings brought against us. Any such claims or allegations, or even just stories or rumors about such misconduct at the Company, could also harm our reputation and therefore our business, including our ability to recruit future employees or secure contracts with new customers, even if such allegations do not result in any legal liability or direct financial losses.

The expansion of social media platforms presents new risks and challenges.

The inappropriate use of certain social media vehicles could cause brand damage or information leakage or the improper dissemination of material non-public information. In addition, negative posts or comments about us on any social networking web site could seriously damage our reputation. Further, the disclosure of non-public company sensitive information through external media channels could lead to information loss as there might not be structured processes in place to secure and protect information. If our non-public sensitive information is disclosed or if our reputation is seriously damaged through social media, it could have a material adverse effect on our business, financial condition, results of operations, cash flows, and/or ordinary share price.

Any inability to recruit or retain qualified personnel, or maintain access to key third-party service providers and software developers, could have a material adverse effect on us.

We must continue to identify, hire, train, and retain IT professionals, technical engineers, operations employees, and sales and senior management personnel who maintain relationships with our customers and who can provide the technical, strategic and marketing skills required to grow our company, develop and expand our data centers, maximize our rental and services income and achieve the highest sustainable rent levels at each of our facilities. There is a shortage of qualified personnel in these fields, and we compete with other companies for the limited pool of these personnel. Competitive pressures may require that we enhance our pay and benefits package to compete effectively for such personnel. An increase in these costs or our inability to recruit and retain necessary technical, managerial, sales and marketing personnel or to maintain access to key third-party providers could have a material adverse effect on us. For example, for certain products, we partner or collaborate with third parties such as software developers. Our failure to maintain such relationships could impact our ability to provide certain services, in particular, government-related services, which could have a material adverse effect on us.

We may be unable to identify and complete acquisitions on favorable terms or at all, which may inhibit our growth and have a material adverse effect on us.

We continually evaluate the market of available properties and businesses and may acquire additional properties and businesses when opportunities exist. Our ability to acquire properties and businesses on favorable terms is subject to the following significant risks:

- we may be unable to acquire a desired property or business because of competition from other real estate investors with significant resources and/or access to capital, including both publicly traded REITs and institutional investment funds;
- even if we are able to acquire a desired property or business, competition from other potential acquirers may significantly increase the purchase price or result in other less favorable terms;

- even if we enter into agreements for the acquisition of a desired property or business, these agreements are subject to customary conditions to closing, including completion of due diligence investigations to our satisfaction, and we may incur significant expenses for properties or businesses we never actually acquire;
- we may be unable to finance acquisitions on favorable terms or at all; and
- we may acquire properties subject to liabilities and without any recourse, or with only limited recourse, with respect to such liabilities such as liabilities for clean-up of environmental contamination, claims by customers, vendors or other persons dealing with the former owners of the properties and claims for indemnification by general partners, directors, officers and others indemnified by the former owners of the properties.

Any inability to complete property or business acquisitions on favorable terms or at all could have a material adverse effect on us.

We may be unable to successfully integrate and operate acquired properties and achieve the intended benefits of our other acquisitions, which could have a material adverse effect on us.

Even if we are able to make acquisitions on favorable terms, our ability to successfully integrate and operate them is subject to various risks. We may be unable to accomplish the integration of an acquired property smoothly, successfully or within anticipated cost estimates. The diversion of our management's attention from our operations to any such integration efforts, and any difficulties encountered, could prevent us from realizing the full benefits we anticipated to result from such acquisition and could have a material adverse effect on us. Additional risks include, among others:

- we may spend more than budgeted amounts to make necessary improvements or renovations to acquired properties, as well as require substantial management time and attention;
- the inability to successfully integrate the operations, particularly acquisitions of operating businesses or portfolios of properties, into our existing operations, maintain consistent standards, controls, policies and procedures, or realize the benefits we anticipate of the acquisition within the anticipated timeframe or at all;
- the inability to effectively monitor and manage our expanded business, retain customers, suppliers and business partners, attract new customers, retain key employees or attract highly qualified new employees;
- anticipated future synergies, accretion, revenues, cost savings or operating metrics may fail to materialize or our estimates thereof may prove to be inaccurate;
- the acquired business may fail to perform as expected;
- certain portions of businesses we may acquire may be located in new markets, including foreign markets, in which we have not previously operated and in which we may face risks associated with an incomplete knowledge or understanding of the local market;
- the market price of our common stock may decline if we do not achieve the benefits we anticipate of the transaction as rapidly or to the extent anticipated by financial or industry analysts or if the effect of the transaction on our financial results is not consistent with the expectations of financial or industry analysts; and
- potential unknown liabilities with limited or no recourse against the seller and unforeseen increased expenses related to the acquisitions.

We cannot assure you that we will be able to complete any integration without encountering difficulties or that any such difficulties will not have a material adverse effect on us. Failure to realize the intended benefits of an acquisition could have a material adverse effect on us.

We may be subject to unknown or contingent liabilities related to properties or businesses that we acquire, which may result in damages and investment losses.

Assets and entities that we have acquired or may acquire in the future may be subject to unknown or contingent liabilities for which we may have limited or no recourse against the sellers. Unknown or contingent liabilities might include liabilities for clean-up or remediation of environmental conditions, claims of customers, vendors or other persons dealing with the acquired entities, tax liabilities and other liabilities whether incurred in the ordinary course of business or otherwise. In the future we may enter into transactions with limited representations and warranties or with representations and warranties that do not survive the closing of the transactions, in which event we would have no or limited recourse against the sellers of such properties. Customers increasingly are looking to pass through their regulatory obligations and other liabilities to their outsourced data center providers and we may not be able to limit our

liability or damages in an event of loss suffered by such customers whether as a result of our breach of agreement or otherwise.

While we usually require the sellers to indemnify us with respect to breaches of representations and warranties that survive, such indemnification is often limited and subject to various materiality thresholds, a significant deductible or an aggregate cap on losses. As a result, there is no guarantee that we will recover any amounts with respect to losses due to breaches by the sellers of their representations and warranties. In addition, the total amount of costs and expenses that we may incur with respect to liabilities associated with acquired properties and entities may exceed our expectations. Finally, indemnification agreements between us and the sellers typically provide that the sellers will retain certain specified liabilities relating to the assets and entities acquired by us. While the sellers are generally contractually obligated to pay all losses and other expenses relating to such retained liabilities, there can be no guarantee that such arrangements will not require us to incur losses or other expenses as well. Additionally, in connection with our acquisitions, we may assume agreements with customers that may subject us to greater liability for an event of loss compared to our typical customer agreements. If an event of loss occurred, we could be liable for material monetary damages and could incur significant legal fees in defending against such an action. Any of these matters could have a material adverse effect on us.

Our international operations expose us to regulatory, currency, legal, tax and other risks distinct from those faced by us in the United States.

Although our operations are primarily based in the United States, we also have a presence outside of the United States. Foreign operations involve risks not generally associated with investments in the United States, including:

- our limited knowledge of and relationships with customers, contractors, suppliers or other parties in these markets;
- complexity and costs associated with managing international development and operations;
- difficulty in hiring qualified management, sales and other personnel and service providers;
- differing employment practices and labor issues;
- multiple, conflicting, changing and uncertain legal, regulatory, entitlement and permitting, and tax and treaty environments;
- rapid changes in governmental, economic and political policy, political or civil unrest, acts of terrorism or the threat of international boycotts or U.S. anti-boycott legislation;
- exposure to increased taxation, confiscation or expropriation and the risk of forced nationalization;
- currency transfer restrictions and limitations on our ability to distribute cash earned in foreign jurisdictions to the United States;
- difficulty in enforcing agreements in non-U.S. jurisdictions, including those entered into in connection with our acquisitions or in the event of a default by one or more of our customers, suppliers or contractors;
- compliance with anti-bribery and corruption laws;
- local business and cultural factors;
- political and economic instability, including sovereign credit risk, in certain geographic regions; and
- difficulties in complying with U.S. rules governing REITs while operating outside of the United States.

In addition, the GDPR, which took effect in May 2018, imposes detailed privacy requirements and increases the likelihood of applicability of European law to entities like us, which are established outside the EU but may process data of European data subjects. Also, while we have signed up to the EU-U.S. Privacy Shield Framework, which requires organizations operating in the United States to provide assurance that they are adhering to relevant European standards for data protection for such transfers, our self-certification under the EU-U.S. Privacy Shield Framework may not be sufficient to ensure compliance with GDPR. Legal challenges have been brought in European courts seeking to declare the Privacy Shield Framework invalid under European law as a mechanism to legitimize transfers of personal data from the EU to the United States, which could require us to implement alternative means to address European cross border data transfer requirement. To the extent we are not in compliance with the GDPR, the EU authorities may investigate or bring enforcement actions against us that may result in criminal and administrative sanctions. Such actions could have a material adverse effect on us and harm our reputation.

Our inability to overcome these risks could adversely affect our foreign operations and growth prospects and could have a material adverse effect on us.

Government regulation could have a material adverse effect on us.

Various laws and governmental regulations, both in the U.S. and abroad, governing internet related services, related communications services and information technologies remain largely unsettled, even in areas where there has been some legislative action. We remain focused on whether and how existing and changing laws, such as those governing cybersecurity, data privacy and data security, intellectual property, libel, telecommunications services, consumer protection and taxation, apply to the internet and to related offerings such as ours, and substantial resources may be required to comply with regulations or bring any non-compliant business practices into compliance with such regulations.

In addition, the regulatory framework around data custody, data privacy and breaches varies by jurisdiction and is an evolving area of law with increasingly complex and rigorous regulatory standards enacted to protect business and personal data in the U.S. and elsewhere. We may not be able to limit our liability or damages in the event of such a loss. Data protection legislation is becoming increasingly common in the United States at both the federal and state level and may require us to further modify our data processing practices and policies. For example, the CCPA, which took effect on January 1, 2020, and is intended to provide California residents with increased privacy rights and protections with respect to their personal information. Compliance with existing and proposed laws and regulations can be costly; any failure to comply with these regulatory standards could subject us to legal and reputational risks. Misuse of or failure to secure personal information could also result in violation of data privacy laws and regulations, proceedings against us by governmental entities or others, fines and penalties, damage to our reputation and credibility and could have a negative impact on our business and results of operations.

We are exposed to ongoing litigation and other legal and regulatory actions, which may divert management's time and attention, require us to pay damages and expenses or restrict the operation of our business.

We are subject to the risk of legal claims and proceedings and regulatory enforcement actions in the ordinary course of our business and otherwise, and we could incur significant liabilities and substantial legal fees as a result of these actions. Our management may devote significant time and attention to the resolution (through litigation, settlement or otherwise) of these actions, which would detract from our management's ability to focus on our business. Any such resolution could involve payment of damages or expenses by us, which may be significant. In addition, any such resolution could involve our agreement to terms that restrict the operation of our business. The results of legal proceedings cannot be predicted with certainty. We cannot guarantee losses incurred in connection with any current or future legal or regulatory proceedings or actions will not exceed any provisions we may have set aside in respect of such proceedings or actions or will not exceed any available insurance coverage. The occurrence of any of these events could have a material adverse effect on us.

We may co-invest in joint ventures with third parties from time to time, and such investments could be adversely affected by the capital markets, lack of sole decision-making authority, reliance on joint venture partners' financial condition and any disputes that may arise between us and our joint venture partners.

On February 22, 2019, we entered into a joint venture agreement with Alinda Capital Partners ("Alinda"), an infrastructure investment firm, with respect to our Manassas data center. At closing, we contributed cash and our Manassas data center (a 118,000 square foot hyperscale data center under development in Manassas, Virginia), and Alinda contributed cash, in each case, in exchange for a 50% interest in the unconsolidated entity (which includes a 50% interest in future income). Under the joint venture agreement, we serve as the entity's operating member, subject to authority and oversight of a board appointed by us and Alinda, and separately we serve as manager and developer of the facility in exchange for management and development fees. The agreement includes various transfer restrictions and rights of first offer that will allow us to repurchase Alinda's interest should Alinda wish to exit in the future. In addition, we have agreed to provide Alinda an opportunity to invest in future similar joint ventures based on similar terms and a comparable capitalization rate. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Factors That May Influence Future Results of Operations and Cash Flows—Joint Ventures."

In addition to this agreement, we may in the future co-invest with third parties through partnerships, joint ventures or other structures in which we acquire noncontrolling interests in, or share responsibility for, managing the affairs of a property, partnership, co-tenancy or other entity. Even if we have general management authority over joint ventures, we expect that our joint venture partners would have customary approval rights over certain major decisions. We may not be in a position to exercise sole decision-making authority regarding any properties owned through joint ventures or similar

ownership structures. In addition, investments in joint ventures may, under certain circumstances, involve risks not present when a third party is not involved, including potential deadlocks in making major decisions, restrictions on our ability to exit the joint venture, reliance on joint venture partners and the possibility that a joint venture partner might become bankrupt or fail to fund its share of required capital contributions, thus exposing us to liabilities in excess of our share of the joint venture or jeopardizing our REIT status. Furthermore, our joint venture partners may take actions that are not within our control that could jeopardize our REIT status. The funding of our capital contributions to such joint ventures may be dependent on proceeds from asset sales, credit facility advances or sales of equity securities. Joint venture partners may have business interests or goals that are inconsistent with our business interests or goals, and may be in a position to take actions contrary to our policies or objectives. We may, in specific circumstances, be liable for the actions of our joint venture partners. In addition, any disputes that may arise between us and joint venture partners may result in litigation or arbitration that would increase our expenses. Any of the foregoing may have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Financing

An inability to access external sources of capital on favorable terms or at all could limit our ability to execute our business and growth strategies.

In order to qualify and maintain our qualification as a REIT, we are required under the Code to distribute at least 90% of our “REIT taxable income” (determined before the deduction for dividends paid and excluding net capital gains) annually. In addition, we will be subject to income tax at regular corporate rates to the extent that we distribute less than 100% of our “REIT taxable income,” including any net capital gains. In addition, QTS will be subject to a 4% nondeductible excise tax on the amount, if any, by which distributions paid by us in any calendar year are less than the sum of 85% of our ordinary income, 95% of our capital gain net income and 100% of our undistributed income from prior years. Because of these distribution requirements, we may not be able to fund future capital needs, including capital for development projects and acquisition opportunities, from operating cash flow. Consequently, we intend to rely on third-party sources of capital to fund a substantial amount of our future capital needs. We may not be able to obtain such financing on favorable terms or at all. Any additional debt we incur will increase our leverage, expose us to the risk of default and impose operating restrictions on us. In addition, any equity financing could be materially dilutive to the equity interests held by our stockholders. Our access to third-party sources of capital depends, in part, on general market conditions, the market’s perception of our growth potential, our leverage, our current and expected results of operations, liquidity, financial condition and cash distributions to stockholders and the market price of our common stock. If we cannot obtain capital when needed, we may not be able to execute our business and growth strategies (including redeveloping or acquiring properties when strategic opportunities exist), satisfy our debt service obligations, make the cash distributions to our stockholders necessary to qualify and maintain our qualification as a REIT (which would expose us to significant penalties and corporate level taxation), or fund our other business needs, which could have a material adverse effect on us.

Our indebtedness outstanding as of December 31, 2019 was approximately \$1,463.9 million, which exposes us to interest rate fluctuations and the risk of default thereunder, among other risks.

Our net indebtedness outstanding as of December 31, 2019 was approximately \$1,463.9 million. Approximately \$617.0 million of this indebtedness bears interest at a variable rate after taking into account \$400 million of swaps that were entered into in April 2017 effectively converting our floating rate debt into fixed rate debt. In addition, the Company has entered into \$200 million of additional swaps that will convert floating rate debt into fixed rate debt effective January 2, 2020. Increases in interest rates, or the loss of the benefits of our existing or future hedging agreements, would increase our interest expense, which would adversely affect our cash flow and our ability to service our debt. Our organizational documents contain no limitations regarding the maximum level of indebtedness, as a percentage of our market capitalization or otherwise, that we may incur. We may incur significant additional indebtedness, including mortgage indebtedness, in the future. Our substantial outstanding indebtedness, and the limitations imposed on us by our debt agreements, could have other significant adverse consequences, including the following:

- our cash flow may be insufficient to meet our required principal and interest payments;
- we may use a substantial portion of our cash flows to make principal and interest payments and we may be unable to obtain additional financing as needed or on favorable terms, which could, among other things, have a material adverse effect on our ability to complete our development and redevelopment pipeline, capitalize

upon acquisition opportunities, fund working capital, make capital expenditures, make cash distributions to our stockholders, or meet our other business needs;

- we may be unable to refinance our indebtedness at maturity or the refinancing terms may be less favorable than the terms of our original indebtedness;
- we may be forced to dispose of one or more of our properties, possibly on unfavorable terms or in violation of certain covenants to which we may be subject;
- we may be required to maintain certain debt and coverage and other financial ratios at specified levels, thereby reducing our financial flexibility;
- our vulnerability to general adverse economic and industry conditions may be increased;
- greater exposure to increases in interest rates for our variable rate debt and to higher interest expense on future fixed rate debt;
- we may be at a competitive disadvantage relative to our competitors that have less indebtedness;
- our flexibility in planning for, or reacting to, changes in our business and the markets in which we operate may be limited; and
- we may default on our indebtedness by failure to make required payments or violation of covenants, which would entitle holders of such indebtedness and possibly other indebtedness to accelerate the maturity of their indebtedness and, if such indebtedness is secured, to foreclose on our properties that secure their loans and receive an assignment of our rents and leases.

The occurrence of any one of these events could have a material adverse effect on us.

The agreements governing our existing indebtedness contain various covenants and other provisions which limit management's discretion in the operation of our business, reduce our operational flexibility and create default risks.

The agreements governing our existing indebtedness contain, and agreements governing our future indebtedness may contain, covenants and other provisions that impose significant restrictions on us and our subsidiaries. These covenants restrict, among other things, our and our subsidiaries' ability to:

- incur or guarantee additional indebtedness;
- pay dividends and make certain investments and other restricted payments;
- incur restrictions on the payment of dividends or other distributions from subsidiaries of the Operating Partnership;
- create or incur certain liens;
- transfer or sell certain assets;
- engage in certain transactions with affiliates; and
- merge or consolidate with other companies or transfer or sell all or substantially all of our assets.

These covenants may restrict our ability to engage in certain transactions that may be in our best interest.

Our unsecured credit facility and the indenture governing our 4.750% Senior Notes due 2025 (the "Senior Notes") also contain provisions that may limit QTS' ability to make distributions to its stockholders and the Operating Partnership's ability to make distributions to QTS. The unsecured credit facility generally provides that if a default occurs and is continuing, QTS will be precluded from making distributions on common stock and partnership interests, as applicable (other than those required to allow QTS to qualify and maintain its status as a REIT, so long as such default does not arise from a payment default or event of insolvency) and lenders under the unsecured credit facility and, potentially, other indebtedness, could accelerate the maturity of the related indebtedness. The indenture governing the Senior Notes contains provisions that restrict the Operating Partnership's ability to make distributions to QTS, except distributions required to allow QTS to qualify and maintain its status as a REIT, so long as no event of default has occurred and is continuing.

These covenants could impair our ability to grow our business, take advantage of attractive business opportunities or successfully compete. In addition, failure to meet the covenants may result in an event of default under the applicable indebtedness, which could result in the acceleration of the applicable indebtedness and potentially other indebtedness, which could have a material adverse effect on us.

The documents that govern our outstanding indebtedness require that we maintain certain financial ratios and, if we fail to do so, we will be in default under the applicable debt instrument, which in turn could trigger defaults under our other debt instruments, which could result in the maturities of all of our debt obligations being accelerated.

Each of our significant debt instruments requires that we maintain certain financial ratios. Our unsecured credit facility provides that the outstanding principal balance of the loans and letter of credit liabilities under the unsecured credit facility cannot exceed the lesser of the \$1.7 billion total commitment or the unencumbered asset pool availability. In addition, the unsecured credit facility requires that we maintain, among other things, (i) a maximum leverage ratio of total indebtedness to gross asset value not in excess of 60% (or 65% for one or more periods of up to four consecutive fiscal quarters immediately following a material acquisition for which the Operating Partnership has provided written notice to the administrative agent), (ii) a minimum fixed charge coverage ratio (defined as the ratio of consolidated EBITDA, subject to certain adjustments, to consolidated fixed charges) of not less than 1.50 to 1.00 and (iii) tangible net worth, as defined in the credit agreement, of at least \$1,686,000,000 plus 75% of the sum of net equity offering proceeds. In addition, the indenture that governs the Senior Notes requires the Operating Partnership and its Restricted Subsidiaries (as defined in the indenture that governs the Senior Notes) to maintain at all times total unencumbered assets of at least 150% of the aggregate principal amount of all of their outstanding unsecured indebtedness.

If we do not continue to satisfy these ratios or tests, we will be in default under the applicable debt instrument, which in turn may trigger defaults under our other debt instruments, which could result in the maturities of all of our debt obligations being accelerated. These events would have a material adverse effect on our liquidity.

Any hedging transactions involve costs and expose us to potential losses.

Hedging agreements enable us to convert floating rate liabilities to fixed rate liabilities or fixed rate liabilities to floating rate liabilities. Hedging transactions expose us to certain risks, including that losses on a hedge position may reduce the cash available for distribution to stockholders and such losses may exceed the amount invested in such instruments and that counterparties to such agreements could default on their obligations, which could increase our exposure to fluctuating interest rates.

In addition, we have used and may use interest rate swaps to hedge our exposure to interest rate fluctuations. For example, On April 5, 2017, we entered into forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from January 2, 2018 through December 17, 2021 and April 27, 2022, respectively. On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from December 17, 2021 through December 17, 2023 and April 27, 2022 through April 27, 2024, respectively. On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$200 million. The forward swap agreements effectively fix the interest rate on \$100 million of additional term loan borrowings from January 2, 2020 through December 17, 2023 as well as \$100 million of additional term loan borrowings from January 2, 2020 through April 27, 2024. We may use interest rate swaps or other forms of hedging again in the future.

The REIT rules impose certain restrictions on our ability to utilize hedges, swaps and other types of derivatives to hedge our liabilities. We may use hedging instruments in our risk management strategy to limit the effects of changes in interest rates on our operations. However, future hedges may be ineffective in eliminating all of the risks inherent in any particular position due to the fact that, among other things, the duration of the hedge may not match the duration of the related liability, the credit quality of the hedging counterparty owing money on the hedge may be downgraded to such an extent that it impairs our ability to sell or assign our side of the hedging transaction and the hedging counterparty owing money in the hedging transaction may default on its obligation to pay. The use of derivatives could have a material adverse effect on us.

We may be adversely affected by changes in LIBOR reporting practices, the method in which LIBOR is determined or the use of alternative reference rates.

As of December 31, 2019, we had approximately \$1.0 billion of debt outstanding that was indexed to the London Interbank Offered Rate (“LIBOR”). In July 2017, the United Kingdom regulator that regulates LIBOR announced its

intention to phase out LIBOR rates by the end of 2021. In April 2018, the New York Federal Reserve commenced publishing an alternative reference rate to LIBOR as calculated for the U.S. dollar (“USD-LIBOR”), the Secured Overnight Financing Rate (“SOFR”), proposed by a group of major market participants (the Alternative Reference Rates Committee (“ARRC”)), convened by the U.S. Federal Reserve with participation by SEC Staff and other regulators. SOFR is based on transactions in the more robust U.S. Treasury repurchase market and has been proposed as the alternative to USD-LIBOR for use in derivatives and other financial contracts that currently rely on USD-LIBOR as a reference rate. ARRC has proposed a paced market transition plan to SOFR from LIBOR and organizations are currently working on industry-wide and company-specific transition plans as it relates to derivatives and cash markets exposed to LIBOR. At this time, no consensus exists as to what rate or rates may become accepted alternatives to LIBOR, and it is impossible to predict whether and to what extent banks will continue to provide LIBOR submissions to the administrator of LIBOR, whether LIBOR rates will cease to be published or supported before or after 2021 or whether additional reforms to LIBOR may be enacted. Such developments and any other legal or regulatory changes in the method by which LIBOR is determined or the transition from LIBOR to a successor benchmark may result in, among other things, a sudden or prolonged increase or decrease in LIBOR, a delay in the publication of LIBOR, and changes in the rules or methodologies of LIBOR, which may discourage market participants from continuing to administer or to participate in LIBOR’s determination and, in certain situations, could result in LIBOR no longer being determined and published. The transition from USD-LIBOR to SOFR or any other replacement rate adopted is likely to cause uncertainty due to a mismatch in the LIBOR maturities and the terms of SOFR. If a published USD-LIBOR rate is unavailable, the interest rates on our debt which is indexed to LIBOR will be determined using various alternative methods, any of which may result in interest obligations which are more than or do not otherwise correlate over time with the payments that would have been made on such debt if USD-LIBOR was available in its current form. Further, the same costs and risks that may lead to the unavailability of USD-LIBOR may make one or more of the alternative methods impossible or impracticable to determine. Any of these proposals or consequences could have a material adverse effect on our financing costs, and consequently, on our financial condition, operating results and cash flows. In addition, confusion related to the transition from USD-LIBOR to SOFR or another replacement reference rate for our debt which is indexed to LIBOR and hedging instruments could have an uncertain economic effect on these instruments, hinder our ability to establish effective hedges and result in a different economic value over time for these instruments than they otherwise would have had under USD-LIBOR.

Risks Related to the Real Estate Industry

The operating performance and value of our properties are subject to risks associated with the real estate industry.

As a real estate company, we are subject to all of the risks associated with owning and operating real estate, including:

- adverse changes in international, national or local economic and demographic conditions;
- vacancies or our inability to rent space on favorable terms, including possible market pressures to offer customers rent abatements, customer improvements, early termination rights or below-market renewal options;
- adverse changes in the financial condition or liquidity of buyers, sellers and customers (including their ability to pay rent to us) of properties, including data centers;
- the attractiveness of our properties to customers;
- competition from other real estate investors with significant resources and assets to capital, including other real estate operating companies, publicly traded REITs and institutional investment funds;
- reductions in the level of demand for data center space;
- increases in the supply of data center space;
- fluctuations in interest rates, which could have a material adverse effect on our ability, or the ability of buyers and customers of properties, including data centers, to obtain financing on favorable terms or at all;
- increases in expenses that are not paid for by or cannot be passed on to our customers, such as the cost of complying with laws, regulations and governmental policies;
- the relative illiquidity of real estate investments, especially the specialized real estate properties that we hold and seek to acquire and develop;
- changes in, and changes in enforcement of, laws, regulations and governmental policies, including, without limitation, health, safety, environmental, zoning and tax laws, and governmental fiscal policies;
- property restrictions and/or operational requirements pursuant to restrictive covenants, reciprocal easement agreements, operating agreements or historical landmark designations; and

- civil unrest, acts of war, terrorist attacks and natural disasters, including earthquakes, tornados, hurricanes and floods, which may result in uninsured and underinsured losses.

In addition, periods of economic slowdown or recession, rising interest rates or declining demand for real estate, or the public perception that any of these events may occur, could result in a general decline in occupancy and rental sales, and therefore revenues, or an increased incidence of defaults under existing leases. Accordingly, we cannot assure you that we will be able to execute our business and growth strategies. Any inability to operate our properties to meet our financial, operational and strategic expectations could have a material adverse effect on us.

The illiquidity of real estate investments could significantly impede our ability to respond to adverse changes in economic, financial, investment and other conditions.

Because real estate investments are relatively illiquid, our ability to promptly sell one or more properties in our portfolio in response to changing economic, financial, investment or other conditions is limited. The real estate market is affected by many factors that are beyond our control, including those described above. In particular, data centers represent a particularly illiquid part of the overall real estate market. This illiquidity is driven by a number of factors, including the relatively small number of potential purchasers of such data centers—including other data center operators and large corporate users—and the relatively high cost per square foot to develop data centers, which substantially limits a potential buyer's ability to purchase a data center property with the intention of redeveloping it for an alternative use, such as an office building, or may substantially reduce the price buyers are willing to pay. Our inability to dispose of properties at opportune times or on favorable terms could have a material adverse effect on us.

In addition, the Code imposes restrictions on a REIT's ability to dispose of properties that are not applicable to other types of real estate companies. In particular, the tax laws applicable to REITs require that we hold our properties for investment, rather than primarily for sale in the ordinary course of business, which may cause us to forego or defer sales of properties that otherwise would be in our best interest. Therefore, we may not be able to vary our portfolio in response to economic, financial, investment or other conditions promptly or on favorable terms, which could have a material adverse effect on us.

Declining real estate valuations could result in impairment charges, the determination of which involves a significant amount of judgment on our part. Any impairment charge could have a material adverse effect on us.

We review our properties for impairment on a quarterly and annual basis and whenever events or changes in circumstances indicate that the carrying amount may not be recoverable, and in the fourth quarter of 2019 we recognized an impairment charge of \$11.5 million related to a write-down of certain data center assets and equipment in one of our Dulles, Virginia data centers. Indicators of impairment include, but are not limited to, a sustained significant decrease in the market price of or the cash flows expected to be derived from a property. A significant amount of judgment is involved in determining the presence of an indicator of impairment. If the total of the expected undiscounted future cash flows is less than the carrying amount of a property on our balance sheet, a loss is recognized for the difference between the fair value and carrying value of the property. The evaluation of anticipated cash flows requires a significant amount of judgment regarding assumptions that could differ materially from actual results in future periods, including assumptions regarding future occupancy, rental rates and capital requirements. Any impairment charge could have a material adverse effect on us.

Increased tax rates and reassessments could significantly increase our property taxes and have a material adverse effect on us.

Each of our properties is subject to real and personal property taxes. These taxes may increase as tax rates change and as the properties are assessed or reassessed by taxing authorities. It is likely that the properties will be reassessed by taxing authorities as a result of (i) the acquisition of the properties by us and (ii) the informational returns that we must file in connection with the formation transactions in connection with QTS' initial public offering. Some of our customer contracts do not contain provisions requiring our customers to pay their proportionate share of those taxes. Any increase in property taxes on the properties could have a material adverse effect on us.

If California changes its property tax scheme, our California properties could be subject to significantly higher tax levies.

Owners of California property are subject to particularly high property taxes. Voters in the State of California previously passed Proposition 13, which generally limits annual real estate tax increases to 2% of assessed value per annum. From time to time, various groups have proposed repealing Proposition 13, or providing for modifications such as a “split roll tax,” whereby commercial property, for example, would be taxed at a higher rate than residential property. Given the uncertainty, it is not possible to quantify the risk to us of a tax increase or the resulting impact on us of any increase, but any tax increase could be significant at our California properties.

Uninsured and underinsured losses could have a material adverse effect on us.

We carry comprehensive liability, fire, extended coverage, earthquake, business interruption and rental loss insurance with respect to our properties, as well as cybersecurity insurance, and we plan to obtain similar coverage for properties we acquire in the future. However, certain types of losses, generally of a catastrophic nature, such as earthquakes and floods, may be either uninsurable or not economically insurable. Should a property sustain damage, we may incur losses due to insurance deductibles, to co-payments on insured losses or to uninsured losses. In the event of a substantial property loss, the insurance coverage may not be sufficient to pay the full current market value or current replacement cost of the property. Inflation, changes in building codes and ordinances, environmental considerations, and other factors also might make it infeasible to use insurance proceeds to replace a property after it has been damaged or destroyed. Under such circumstances, the insurance proceeds we receive might not be adequate to restore our economic position with respect to such property. Lenders may require such insurance and our failure to obtain such insurance may constitute default under loan agreements, which could have a material adverse effect on us. Finally, a disruption in the financial markets may make it more difficult to evaluate the stability, net assets and capitalization of insurance companies and any insurer’s ability to meet its claim payment obligations. A failure of an insurance company to make payments to us upon an event of loss covered by an insurance policy could have a material adverse effect on us. In the event of an uninsured or partially insured loss, we could lose some or all of our capital investment, cash flow and revenues related to one or more properties, which could also have a material adverse effect on us.

As the current or former owner or operator of real property, we could become subject to liability for environmental contamination, regardless of whether we caused such contamination, which could have a material adverse effect on us.

Under various federal, state and local statutes, regulations and ordinances relating to the protection of the environment, a current or former owner or operator of real property may be liable for the cost to remove or remediate contamination resulting from the presence or discharge of hazardous substances, wastes or petroleum products on, under, from or in such property. These costs could be substantial, liability under these laws may attach without regard to whether the owner or operator knew of, or was responsible for, the presence of the contaminants, and the liability may be joint and several. Most of our properties presently contain large underground or above ground fuel storage tanks used to fuel generators for emergency power, which is critical to our operations. If any of the tanks that we own or operate releases fuel to the environment, we would likely have to pay to clean up the contamination. In addition, prior owners and operators used some of our current properties for industrial and commercial purposes, which could have resulted in environmental contamination, including our Irving and Richmond data center properties, which were previously used as semiconductor plants. Moreover, the presence of contamination or the failure to remediate contamination at our properties may (1) expose us to third-party liability (e.g., for cleanup costs, bodily injury or property damage), (2) subject our properties to liens in favor of the government for damages and costs the government incurs in connection with the contamination, (3) impose restrictions on the manner in which a property may be used or businesses may be operated, or (4) materially adversely affect our ability to sell, lease or develop the real estate or to borrow using the real estate as collateral. In addition, there may be material environmental liabilities at our properties of which we are not aware. We also may be liable for the costs of remediating contamination at off-site facilities at which we have arranged, or will arrange, for disposal or treatment of our hazardous substances without regard to whether we complied or will comply with environmental laws in doing so. Any of these matters could have a material adverse effect on us.

We could become subject to liability for failure to comply with environmental, health and safety requirements or zoning laws, which could cause us to incur additional expenses.

Our properties are subject to federal, state and local environmental, health and safety laws and regulations and zoning requirements, including those regarding the handling of regulated substances and wastes, emissions to the environment and fire codes. For instance, our properties are subject to regulations regarding the storage of petroleum for auxiliary or emergency power and air emissions arising from the use of power generators. In particular, generators at our data center facilities are subject to strict emissions limitations, which could preclude us from using critical back-up systems and lead to significant business disruptions at such facilities and loss of our reputation. If we exceed these emissions limits, we may be exposed to fines and/or other penalties. In addition, we lease some of our properties to our customers who also are subject to such environmental, health and safety laws and zoning requirements. If we, or our customers, fail to comply with these various laws and requirements, we might incur costs and liabilities, including governmental fines and penalties. Moreover, we do not know whether existing laws and requirements will change or, if they do, whether future laws and requirements will require us to make significant unanticipated expenditures that could have a material adverse effect on us. Environmental noncompliance liability also could affect a customer's ability to make rental payments to us.

We could become subject to liability for asbestos-containing building materials in the buildings on our property, which could cause us to incur additional expenses.

Some of our properties may contain, or may have contained, asbestos-containing building materials. Environmental, health and safety laws require that owners or operators of or employers in buildings with asbestos-containing materials ("ACM") properly manage and maintain these materials, adequately inform or train those who may come into contact with ACM and undertake special precautions, including removal or other abatement, in the event that ACM is disturbed during building maintenance, renovation or demolition. These laws may impose fines and penalties on employers, building owners or operators for failure to comply with these laws. In addition, third parties may seek recovery from employers, owners or operators for personal injury associated with exposure to asbestos. If we become subject to any of these penalties or other liabilities as a result of ACM at one or more of our properties, it could have a material adverse effect on us.

Our properties may contain or develop harmful mold or suffer from other adverse conditions, which could lead to liability for adverse health effects and costs of remediation.

When excessive moisture accumulates in buildings or on building materials, mold growth may occur, particularly if the moisture problem remains undiscovered or is not addressed over a period of time. Some molds may produce airborne toxins or irritants. Indoor air quality issues also can stem from inadequate ventilation, chemical contamination from indoor or outdoor sources and other biological contaminants such as pollen, viruses and bacteria. Indoor exposure to airborne toxins or irritants above certain levels can be alleged to cause a variety of adverse health effects and symptoms, including allergic or other reactions. As a result, the presence of significant mold or other airborne contaminants at any of our properties could require us to undertake a costly remediation program to contain or remove the mold or other airborne contaminants from the affected property or increase indoor ventilation. In addition, the presence of significant mold or other airborne contaminants could expose us to liability from our customers, employees of our customers and others if property damage or personal injury occurs. Thus, conditions related to mold or other airborne contaminants could have a material adverse effect on us.

Laws, regulations or other issues related to climate change could have a material adverse effect on us.

If we, or other companies with which we do business, particularly utilities that provide our facilities with electricity, become subject to laws or regulations related to climate change, it could have a material adverse effect on us. The United States may enact new laws, regulations and interpretations relating to climate change, including potential cap-and-trade systems, carbon taxes and other requirements relating to reduction of carbon footprints and/or greenhouse gas emissions. Other countries have enacted climate change laws and regulations and the United States has been involved in discussions regarding international climate change treaties. The federal government and some of the states and localities in which we operate have enacted certain climate change laws and regulations and/or have begun regulating carbon footprints and greenhouse gas emissions. Although these laws and regulations have not had any known material adverse effect on us to date, they could limit our ability to develop new facilities or result in substantial costs, including compliance costs, retrofit costs and construction costs, monitoring and reporting costs and capital expenditures for environmental control facilities and other new equipment. In addition, these laws and regulations could lead to increased costs for the

electricity that we require to conduct our operations. Furthermore, our reputation could be damaged if we violate climate change laws or regulations. We cannot predict how future laws and regulations, or future interpretations of current laws and regulations, related to climate change will affect our business, results of operations, liquidity and financial condition. Lastly, the potential physical impacts of climate change on our operations are highly uncertain, and would be particular to the geographic circumstances in areas in which we operate. These may include changes in rainfall and storm patterns and intensities, water shortages, which may result in water use restrictions and water efficiency mandates, changing sea levels and changing temperatures. Any of these matters could have a material adverse effect on us.

We may incur significant costs complying with various federal, state and local regulations, which could have a material adverse effect on us.

The properties in our portfolio are subject to various federal, state and local laws, including the Americans with Disabilities Act (“ADA”) as well as state and local fire and life safety requirements. Under the ADA, all places of public accommodation and commercial facilities must meet federal requirements related to access and use by disabled persons. A number of additional federal, state and local regulations may also require modifications to our properties, or restrict our ability to renovate our properties. If we fail to comply with these various requirements, we might incur governmental fines or private damage awards. We cannot predict the ultimate amount of the cost of compliance with the ADA or other legislation. In addition, we do not know whether existing requirements will change, or if they do, whether future requirements will require us to make significant unanticipated expenditures that could have a material adverse effect on us.

Risks Related to Our Organizational Structure

As of December 31, 2019, Chad L. Williams, our Chairman and Chief Executive Officer, owned approximately 10.0% of QTS’ outstanding common stock on a fully diluted basis and has the ability to exercise significant influence on the company and any matter presented to its stockholders.

As of December 31, 2019, Chad L. Williams, our Chairman, President and Chief Executive Officer owned approximately 10.0% of QTS’ outstanding common stock on a fully diluted basis. Mr. Williams has a significant vote in matters submitted to a vote of stockholders as a result of his ownership of Class B common stock, which gives him voting power equal to his economic interest in QTS as if he had exchanged all of his OP units for shares of Class A common stock, including in the election of directors. No other stockholder is permitted to own more than 7.5% of the aggregate of the outstanding shares of its common stock, except for certain designated investment entities that may own up to 9.8% of the aggregate of the outstanding shares of its common stock, subject to certain conditions, and except as approved by the board of directors pursuant to the terms of QTS’ charter. Consequently, Mr. Williams may be able to significantly influence the outcome of matters submitted for stockholder action, including the election of the board of directors and approval of significant corporate transactions, such as business combinations, consolidations and mergers, as well as the determination of its day-to-day business decisions and management policies. As a result, Mr. Williams could exercise his influence on QTS in a manner that conflicts with the interests of other stockholders. Mr. Williams may have interests that differ from other stockholders, including by reason of his remaining interest in the Operating Partnership, and may accordingly vote in ways that may not be consistent with the interests of holders of Class A common stock. Moreover, if Mr. Williams were to sell, or otherwise transfer, all or a large percentage of his holdings, the market price of QTS’ common stock could decline and QTS could find it difficult to raise the capital necessary for it to execute its business and growth strategies.

The tax protection agreement, during its term, could limit our ability to sell or otherwise dispose of certain properties and may require the Operating Partnership to maintain certain debt levels and agree to certain terms with lenders that otherwise would not be required to operate our business.

In connection with the IPO, we entered into a tax protection agreement with Chad L. Williams, our Chairman and Chief Executive Officer, and his affiliates and family members who own OP units that provides that if (1) we sell, exchange, transfer, convey or otherwise dispose of our Atlanta (DC-1), Atlanta-Suwanee or Santa Clara data centers in a taxable transaction prior to January 1, 2026, referred to as the protected period, (2) cause or permit any transaction that results in the disposition by Mr. Williams or his affiliates and family members who own OP units of all or any portion of their interests in the Operating Partnership in a taxable transaction during the protected period or (3) fail prior to the expiration of the protected period to maintain approximately \$175 million of indebtedness that would be allocable to Mr. Williams and his affiliates for tax purposes or, alternatively, fail to offer Mr. Williams and his affiliates and family

members who own OP units the opportunity to guarantee specific types of the Operating Partnership's indebtedness in order to enable them to continue to defer certain tax liabilities, we will indemnify Mr. Williams and his affiliates and family members who own OP units against certain resulting tax liabilities. Therefore, although it may be in our stockholders' best interests that we sell, transfer, convey or otherwise dispose of one of these properties, it may be economically prohibitive for us to do so during the protected period because of these indemnity obligations. Moreover, these obligations may require us to maintain more or different indebtedness or agree to terms with our lenders that we would not otherwise agree to. As a result, the tax protection agreement will, during its term, restrict our ability to take actions or make decisions that otherwise would be in our best interests. As of December 31, 2019, our Atlanta (DC-1), Atlanta-Suwanee and Santa Clara data centers represented approximately 49% of our consolidated annualized rent.

QTS' charter and Maryland law contain provisions that may delay, defer or prevent a change in control of our company, even if such a change in control may be in your interest, and as a result may depress our common stock price.

The stock ownership limits imposed by the Code for REITs and imposed by QTS' charter may restrict our business combination opportunities that might involve a premium price for shares of our common stock or otherwise be in the best interest of our stockholders.

In order for QTS to maintain its qualification as a REIT under the Code, not more than 50% in value of our outstanding stock may be owned, directly or indirectly, by five or fewer individuals (defined in the Code to include certain entities) at any time during the last half of each taxable year. QTS' charter, with certain exceptions, authorizes our board of directors to take the actions that are necessary and desirable to preserve our qualification as a REIT. Unless exempted by our board of directors, no person may actually or constructively own more than 7.5% of the aggregate of the outstanding shares of our common stock by value or by number of shares, whichever is more restrictive, or 7.5% of the aggregate of the outstanding shares of our preferred stock by value or by number of shares, whichever is more restrictive. However, certain entities that are defined as designated investment entities in our charter are permitted to own up to 9.8% of the aggregate of the outstanding shares of our common stock or preferred stock, so long as each beneficial owner of the shares owned by such designated investment entity would satisfy the 7.5% ownership limit if those beneficial owners owned directly their proportionate share of the common stock owned by the designated investment entity.

In addition, QTS' charter provides an excepted holder limit that allows Chad L. Williams, his family members and entities owned by or for the benefit of them, and any person who is or would be a beneficial owner or constructive owner of shares of our common stock as a result of the beneficial ownership or constructive ownership of shares of our common stock by Chad L. Williams, his family members and certain entities controlled by them, as a group, to own more than 7.5% of the aggregate of the outstanding shares of our common stock, so long as, under the applicable tax attribution rules, no one such excepted holder treated as an individual would hold more than 19.8% of the aggregate of the outstanding shares of our common stock, no two such excepted holders treated as individuals would own more than 27.3% of the aggregate of the outstanding shares of our common stock, no three such excepted holders treated as individuals would own more than 34.8% of the aggregate of the outstanding shares of our common stock, no four such excepted holders treated as individuals would own more than 42.3% of the aggregate of the outstanding shares of our common stock and no five such excepted holders treated as individuals would own more than 49.8% of the aggregate of the outstanding shares of our common stock. Currently, Chad L. Williams would be attributed all of the shares of common stock owned by each such other excepted holder and, accordingly, the Williams excepted holders as a group would not be allowed to own in excess of 19.8% of the aggregate of the outstanding shares of our common stock. Our board of directors may, in its sole discretion, grant other exemptions to the stock ownership limits, subject to such conditions and the receipt by our board of directors of certain representations and undertakings.

In addition to these ownership limits, our charter also prohibits any person from (a) beneficially or constructively owning, as determined by applying certain attribution rules of the Code, our stock that would result in us being "closely held" under Section 856(h) of the Code or that would otherwise cause us to fail to qualify as a REIT, (b) transferring stock if such transfer would result in our stock being owned by fewer than 100 persons, (c) beneficially or constructively owning shares of our capital stock that would result in us owning (directly or indirectly) an interest in a tenant if the income derived by us from that tenant for our taxable year during which such determination is being made would reasonably be expected to equal or exceed the lesser of one percent of our gross income or an amount that would cause us to fail to satisfy any of the REIT gross income requirements and (d) beneficially or constructively owning shares of our capital stock that would cause us otherwise to fail to qualify as a REIT. The ownership limits imposed under the Code are based upon direct or indirect ownership by "individuals," but only during the last half of a tax year. The

ownership limits contained in our charter key off of the ownership at any time by any “person,” which term includes entities. These ownership limitations in our charter are common in REIT charters and are intended to provide added assurance of compliance with the tax law requirements, and to minimize administrative burdens. However, the ownership limits on our common stock also might delay, defer or prevent a transaction or a change in control of our company that might involve a premium price for shares of our common stock or otherwise be in the best interest of our stockholders.

Our authorized but unissued shares of common and preferred stock may prevent a change in control of our Company that might involve a premium price for shares of our common stock or otherwise be in the best interest of our stockholders.

QTS’ charter authorizes QTS to issue additional shares of common and preferred stock. In addition, our board of directors may, without stockholder approval, amend QTS’ charter to increase the aggregate number of shares of our common stock or the number of shares of stock of any class or series that we have authority to issue and classify or reclassify any unissued shares of common or preferred stock and set the preferences, rights and other terms of the classified or reclassified shares; provided that our board of directors may not amend QTS’ charter to increase the aggregate number of shares of Class B common stock that we have the authority to issue or reclassify any shares of our capital stock as Class B common stock without stockholder approval. In 2018, QTS issued 4,280,000 shares of 7.125% Series A Cumulative Redeemable Perpetual Preferred Stock (“Series A Preferred Stock”) and 3,162,500 shares of 6.50% Series B Cumulative Convertible Perpetual Preferred Stock (“Series B Preferred Stock”). As a result, the Series A Preferred Stock and Series B Preferred Stock, and the ability our board of directors to establish additional series of shares of common or preferred stock, could delay, defer or prevent a transaction or a change in control of our company that might involve a premium price for shares of our common stock or otherwise be in the best interest of our stockholders. In addition, our Series A Preferred Stock and Series B Preferred Stock rank, and any other Preferred Stock that we may issue would rank, senior to our common stock with respect to the payment of distributions and other amounts (including upon liquidation), in which case we could not pay any distributions on our common stock until full distributions have been paid with respect to such preferred stock.

Certain provisions of Maryland law could inhibit a change in control of our Company.

Certain provisions of the Maryland General Corporation Law (or MGCL) may have the effect of inhibiting a third party from making a proposal to acquire us or of impeding a change in control under circumstances that otherwise could provide the holders of shares of our common stock with the opportunity to realize a premium over the then-prevailing market price of such shares, including:

- “business combination” provisions that, subject to limitations, prohibit certain business combinations between us and an “interested stockholder” (defined generally as any person who beneficially owns 10% or more of our then outstanding voting power of our shares or an affiliate or associate of ours who, at any time within the two-year period prior to the date in question, was the beneficial owner of 10% or more of our then outstanding voting shares) or an affiliate thereof for five years after the most recent date on which the stockholder becomes an interested stockholder, and thereafter imposes special appraisal rights and special stockholder voting requirements on these combinations; and
- “control share” provisions that provide that “control shares” of our company (defined as shares which, when aggregated with other shares controlled by the stockholder, entitle the stockholder to exercise one of three increasing ranges of voting power in electing directors) acquired in a “control share acquisition” (defined as the direct or indirect acquisition of ownership or control of “control shares”) have no voting rights except to the extent approved by our stockholders by the affirmative vote of at least two-thirds of all the votes entitled to be cast on the matter, excluding all interested shares.

QTS has opted out of these provisions of the MGCL, in the case of the business combination provisions of the MGCL by resolution of its board of directors, and in the case of the control share provisions of the MGCL by a provision in its bylaws. However, our board of directors may by resolution elect to opt in to the business combination provisions of the MGCL and it may, by amendment to its bylaws (which such amendment could be adopted by its board of directors in its sole discretion), opt in to the control share provisions of the MGCL in the future.

Certain provisions in the partnership agreement of the Operating Partnership may delay, defer or prevent unsolicited acquisitions of us or changes in our control.

Provisions in the partnership agreement of the Operating Partnership may delay, defer or prevent unsolicited acquisitions of us or changes in our control. These provisions include, among others:

- redemption rights of qualifying parties;
- a requirement that we may not be removed as the general partner of the Operating Partnership without our consent;
- transfer restrictions on our OP units;
- our inability, as general partner, in some cases, to amend the partnership agreement without the consent of the limited partners; and
- the right of the limited partners to consent to transfers of the general partnership interest and mergers under specified circumstances.

These provisions could discourage third parties from making proposals involving an unsolicited acquisition of us or change of our control, although some stockholders might consider such proposals, if made, desirable.

QTS' charter and bylaws, the partnership agreement of the Operating Partnership and Maryland law also contain other provisions that may delay, defer or prevent a transaction or a change in control of our company that might involve a premium price for our common stock or that our stockholders otherwise believe to be in their best interests.

Our Chairman and Chief Executive Officer has outside business interests that could require time and attention and may interfere with his ability to devote time to our business.

Chad L. Williams, our Chairman and Chief Executive Officer, has outside business interests that could require his time and attention. These interests include the ownership of our Overland Park, Kansas facility, at which our corporate headquarters is also located (which is leased to us), and certain office and other properties and certain other non-real estate business ventures. Mr. Williams' employment agreement requires that he devote substantially all of his business time to our company, provided that he will be permitted to engage in other specified activities. Mr. Williams also may have fiduciary obligations associated with these business interests that interfere with his ability to devote time to our business and that could have a material adverse effect on us.

If we fail to maintain an effective system of integrated internal controls, we may not be able to accurately and timely report our financial results.

An inability to maintain effective disclosure controls and procedures and internal control over financial reporting could adversely affect our results of operation, could cause us to fail to meet our reporting obligations under the Exchange Act on a timely basis or could result in material misstatements or omissions in our Exchange Act reports (including our financial statements), any of which, as well as the perception thereof, could cause investors to lose confidence in the company and could have a material adverse effect on us and cause the market price of our common stock to decline significantly.

Conflicts of interest exist or could arise in the future with holders of OP units, which may impede business decisions that could benefit our stockholders.

Conflicts of interest exist or could arise in the future as a result of the relationships between QTS and its affiliates, on the one hand, and the Operating Partnership or any partner thereof, on the other. Our directors and officers have duties to QTS and its stockholders under applicable Maryland law in connection with their management of our company. At the same time, we, as general partner, have fiduciary duties to the Operating Partnership and to its limited partners under Delaware law in connection with the management of the Operating Partnership. QTS' duties as general partner to the Operating Partnership and its partners may come into conflict with the duties of our directors and officers to our company and our stockholders. These conflicts may be resolved in a manner that is not in the best interest of stockholders.

Additionally, the partnership agreement expressly limits our liability by providing that QTS and its officers, directors, agents and employees will not be liable or accountable to the Operating Partnership for losses sustained, liabilities

incurred or benefits not derived if we or such officer, director, agent or employee acted in good faith. In addition, the Operating Partnership is required to indemnify QTS, and its officers, directors, agents, employees and designees to the extent permitted by applicable law from and against any and all claims arising from operations of the Operating Partnership, unless it is established that (1) the act or omission was committed in bad faith, was fraudulent or was the result of active and deliberate dishonesty, (2) the indemnified party received an improper personal benefit in money, property or services or (3) in the case of a criminal proceeding, the indemnified person had reasonable cause to believe that the act or omission was unlawful. The provisions of Delaware law that allow the fiduciary duties of a general partner to be modified by a partnership agreement have not been resolved in a court of law, and we have not obtained an opinion of counsel covering the provisions set forth in the partnership agreement that purport to waive or restrict our fiduciary duties that would be in effect were it not for the partnership agreement.

Our rights and the rights of our stockholders to take action against our directors and officers are limited, which could limit our stockholders' recourse in the event of actions not in our stockholders' best interests.

Under Maryland law generally, a director is required to perform his or her duties in good faith, in a manner he or she reasonably believes to be in the best interests of our company and with the care that an ordinarily prudent person in a like position would use under similar circumstances. Under Maryland law, directors are presumed to have acted with this standard of care. In addition, our charter limits the liability of our directors and officers to us and our stockholders for money damages, except for liability resulting from:

- actual receipt of an improper benefit or profit in money, property or services; or
- active and deliberate dishonesty by the director or officer that was established by a final judgment as being material to the cause of action adjudicated.

QTS' charter obligates QTS to indemnify its directors and officers for actions taken by them in those capacities to the maximum extent permitted by Maryland law. QTS' bylaws require it to indemnify each director or officer, to the maximum extent permitted by Maryland law, in the defense of any proceeding to which he or she is made, or threatened to be made, a party by reason of his or her service to us. In addition, QTS may be obligated to advance the defense costs incurred by its directors and officers. As a result, QTS and its stockholders may have more limited rights against its directors and officers than might otherwise exist absent the current provisions in QTS' charter and bylaws or that might exist with other companies.

Our board of directors may change our policies and practices and enter into new lines of business without a vote of our stockholders, which limits your control of our policies and practices and could have a material adverse effect on us.

Our major policies, including our policies and practices with respect to investments, financing, growth and capitalization, are determined by our board of directors. Our board of directors may change these and other policies from time to time or enter into new lines of business, at any time, without the consent of our stockholders. Accordingly, our stockholders will have limited control over changes in our policies. These changes could result in our making investments and engaging in business activities that are different from, and possibly riskier than, the investments and business activities described in this Form 10-K. A change in our policies and procedures or our entry into new lines of business may increase our exposure to other risks or real estate market fluctuations and could have a material adverse effect on us.

Risks Related to our Class A Common Stock

Our cash available for distribution to stockholders may not be sufficient to pay distributions at expected or REIT-required levels, or at all, and we may need to borrow or rely on other third-party capital in order to make such distributions, as to which no assurance can be given, which could cause the market price of our common stock to decline significantly.

We intend to continue to pay regular quarterly distributions to our stockholders. However, no assurance can be given that our estimated cash available for distribution to our stockholders will be accurate or that our actual cash available for distribution to our stockholders will be sufficient to pay distributions to them at any expected or REIT-required level or at any particular yield, or at all. Accordingly, we may need to borrow or rely on other third-party capital to make distributions to our stockholders, and such third-party capital may not be available to us on favorable terms or at all. As a

result, we may not be able to pay distributions to our stockholders in the future. Our failure to pay any such distributions or to pay distributions that fail to meet our stockholders' expectations from time to time or the distribution requirements for a REIT could cause the market price of our common stock to decline significantly. All distributions will be made at the discretion of our board of directors and will depend on our historical and projected results of operations, liquidity and financial condition, our REIT qualification, our debt service requirements, operating expenses and capital expenditures, prohibitions and other restrictions under financing arrangements and applicable law and other factors as our board of directors may deem relevant from time to time. In addition, we may pay distributions some or all of which may constitute a return of capital. To the extent that we decide to make distributions in excess of our current and accumulated earnings and profits, such distributions would generally be considered a return of capital for U.S. federal income tax purposes to the extent of the holder's adjusted tax basis in its shares. A return of capital is not taxable, but it has the effect of reducing the holder's adjusted tax basis in its investment. To the extent that distributions exceed the adjusted tax basis of a holder's shares, they will be treated as gain from the sale or exchange of such shares. If we borrow to fund distributions, our future interest costs would increase, thereby reducing our earnings and cash available for distribution from what they otherwise would have been.

Future issuances or sales of our common stock, or the perception of the possibility of such issuances or sales, may depress the market price of our common stock.

We cannot predict the effect, if any, of our future issuances or sales of our common stock or OP units, or future resales of our common stock or OP units by existing holders, or the perception of such issuances, sales or resales, on the market price of our common stock. Any such future issuances, sales or resales, or the perception that such issuances, sales or resales might occur, could depress the market price of our common stock and also may make it more difficult and costly for us to sell equity or equity-related securities in the future at a time and upon terms that we deem desirable.

As of December 31, 2019, we had 58,099,115 shares of our Class A common stock outstanding. In addition, as of December 31, 2019, we had 128,408 shares of our Class B common stock and 6,673,634 OP units outstanding (each of which may, and in certain cases must, exchange into shares of Class A common stock on a one-for-one basis). In addition, as of December 31, 2019, we had 3,162,500 shares of Series B Preferred Stock, which are convertible into shares of Class A common stock at any time at the option of the holder. Subject to applicable law, our board of directors has the authority, without further stockholder approval, to issue additional shares of common stock and preferred stock on the terms and for the consideration it deems appropriate.

In addition to the restricted stock that we previously have granted to our directors, executive officers and other employees under our equity incentive plan, we may also issue additional shares of our common stock and securities convertible into, or exchangeable or exercisable for, our common stock under our equity incentive plan. We have filed with the SEC a registration statement on Form S-8 covering the common stock issuable under our equity incentive plan. Shares of our common stock covered by such registration statement are eligible for transfer or resale without restriction under the Securities Act, unless held by affiliates. We also may issue from time to time additional shares of our common stock or OP units in connection with acquisitions and may grant registration rights in connection with such issuances pursuant to which we would agree to register the resale of such securities under the Securities Act. In addition, we have granted registration rights to Chad L. Williams, our Chairman and Chief Executive Officer, and others with respect to shares of common stock owned by them or upon redemption of OP units held by them. The market price of our common stock may decline significantly upon the registration of additional shares of our common stock pursuant to these registration rights or future issuances of equity in connection with acquisitions or our equity incentive plan.

Future issuances of debt securities, which would rank senior to our common stock upon our liquidation, and future issuances of equity securities (including OP units), which would dilute the holdings of our existing common stockholders and may be senior to our common stock for the purposes of making distributions, periodically or upon liquidation, may negatively affect the market price of our common stock.

In the future, we may issue debt or equity securities or incur other borrowings. Upon our liquidation, holders of our debt securities and other loans and preferred stock will receive a distribution of our available assets before common stockholders. If we incur debt in the future, our future interest costs could increase and adversely affect our results of operations and liquidity.

We are not required to offer any additional equity securities to existing common stockholders on a preemptive basis. Therefore, additional common stock issuances, directly or through convertible or exchangeable securities (including OP

units), warrants or options, will dilute the holdings of our existing common stockholders and such issuances, or the perception of such issuances, may reduce the market price of our common stock. Our Series A Preferred Stock and our Series B Preferred Stock has a preference on distribution payments, periodically or upon liquidation, which could eliminate or otherwise limit our ability to make distributions to common stockholders. In addition, our Series B Preferred Stock is convertible, at any time, at the option of the holder thereof, into shares of our Class A common stock at an initial conversion rate of 2.1264 shares of our Class A common stock per share of Series B Preferred Stock, subject to certain adjustments including adjustments on a fundamental change transaction. As a result, the issuance of additional shares of our Class A common stock upon conversion of the Series B Preferred Stock will dilute the ownership interest of our Class A common stockholders and could have a dilutive effect on earnings per share of our Class A common stock and funds from operations per share of our Class A common stock. Because our decision to issue debt or equity securities or incur other borrowings in the future will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing, nature or success of our future capital-raising efforts. Thus, common stockholders bear the risk that our future issuances of debt or equity securities or our incurrence of other borrowings will negatively affect the market price of our common stock.

The trading volume and market price of our common stock may be volatile and could decline significantly in the future.

The market price of our common stock may be volatile. The stock markets, including the NYSE, on which our common stock is listed, have experienced significant price and volume fluctuations. As a result, the market price of our common stock is likely to be similarly volatile, and could decline significantly, unrelated to our operating performance or prospects. The market price of our common stock could be subject to wide fluctuations in response to a number of factors, including those listed in this “Risk Factors” section of this Form 10-K and others such as:

- our operating performance and prospects and those of other similar companies;
- actual or anticipated variations in our financial condition, liquidity, results of operations, FFO, Operating FFO, Adjusted Operating FFO, NOI, EBITDA^{re} or MRR in the amount of distributions, if any, paid to our stockholders;
- changes in our estimates or those of securities analysts relating to our earnings or other operating metrics;
- publication of research reports about us, our significant customers, our competition, data center companies generally, the real estate industry or the technology industry;
- additions or departures of key personnel;
- the passage of legislation or other regulatory developments that adversely affect us or our industry;
- changes in market valuations of similar companies;
- adverse market reaction to leverage we may incur or equity we may issue in the future;
- actions by institutional stockholders;
- actual or perceived accounting issues, including changes in accounting principles;
- compliance with NYSE requirements;
- our qualification as a REIT;
- terrorist acts;
- speculation in the press or investment community;
- the realization of any of the other risk factors presented in this Form 10-K;
- adverse developments in the creditworthiness, business or prospects of one or more of our significant customers; and
- general market, economic and political conditions.

In the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of their common stock. This type of litigation, if brought against us, could result in substantial costs and divert our management’s attention and resources, which could have a material adverse effect on us.

Increases in market interest rates may cause prospective purchasers to seek higher distribution yields and therefore reduce demand for our common stock and result in a decline in the market price of our common stock.

The price of our common stock may be influenced by our distribution yield (i.e., the amount of our annual or annualized distributions, if any, as a percentage of the market price of our common stock) relative to market interest rates. An increase in market interest rates, which are currently low relative to historical levels, may lead prospective purchasers

and holders of our common stock to expect a higher distribution yield, which we may not be able, or may choose not, to satisfy. As a result, prospective purchasers may decide to purchase other securities rather than our common stock, which would reduce the demand for our common stock, and existing holders of our common stock may decide to sell their shares, either of which could result in a decline in the market price of our common stock.

Risks Related to QTS' Status as a REIT

If QTS does not qualify as a REIT, or fails to remain qualified as a REIT, we will be subject to U.S. federal income tax as a regular corporation and could face significant tax liability, which could reduce the amount of cash available for distribution to our stockholders, could have a material adverse effect on QTS, and could adversely affect the Operating Partnership's ability to service its indebtedness.

QTS elected to be taxed as a REIT, commencing with our taxable year ended December 31, 2013, when we filed our tax return for that year. We believe that we have been organized and have operated and will continue to operate in conformity with the requirements for qualification and taxation as a REIT. QTS' qualification as a REIT, and maintenance of such qualification, depends upon our ability to meet, on a continuing basis, various complex requirements under the Code relating to, among other things, the sources of its gross income, the composition and values of its assets, its distributions to its stockholders and the concentration of ownership of its equity shares.

We have not requested and do not plan to request a ruling from the IRS that QTS qualifies as a REIT, and the statements in this Form 10-K are not binding on the IRS, or any court. If QTS loses its REIT status, we will face serious tax consequences that could adversely affect our ability to raise capital and the Operating Partnership's ability to service its indebtedness for each of the years involved because:

- we would not be allowed a deduction for distributions to stockholders in computing our taxable income and would be subject to U.S. federal income tax at regular corporate rates and, therefore, would have to pay significant income taxes;
- for taxable years beginning before December 31, 2017, we would be subject to the U.S. federal alternative minimum tax and possibly increased state and local taxes; and
- unless we are entitled to relief under applicable statutory provisions, we could not elect to be taxed as a REIT for four taxable years following the year during which it was disqualified.

In addition, if QTS fails to qualify as a REIT, we will not be required to make distributions to stockholders, and all distributions to stockholders will be subject to tax as dividend income to the extent of its current and accumulated earnings and profits. As a result of all these factors, QTS' failure to qualify as a REIT could impair our ability to execute our business and growth strategies, as well as make it more difficult for us to raise capital and for the Operating Partnership to service its indebtedness.

Qualifying as a REIT involves highly technical and complex provisions of the Code and therefore, in certain circumstances, may be subject to uncertainty.

In order to qualify as a REIT, QTS must satisfy a number of requirements, including requirements regarding the composition of our assets, the sources of our income and the diversity of our share ownership. Also, we must make distributions to stockholders aggregating annually at least 90% of our "REIT taxable income" (determined without regard to the dividends-paid deduction and excluding net capital gain). Compliance with these requirements and all other requirements for qualification as a REIT involves the application of highly technical and complex Code provisions for which there are only limited judicial and administrative interpretations. The complexity of these provisions and of the applicable U.S. Department of the Treasury regulations ("Treasury Regulations") that have been promulgated under the Code is greater in the case of a REIT that, like QTS, holds its assets through a partnership and conducts significant business operations through one or more taxable REIT subsidiaries (each a "TRS"). Even a technical or inadvertent mistake could jeopardize QTS' REIT status. In addition, the determination of various factual matters and circumstances relevant to REIT qualification is not entirely within our control and may affect its ability to qualify as a REIT. Accordingly, we cannot be certain that our organization and operation will enable QTS to qualify as a REIT for U.S. federal income tax purposes.

Even if QTS qualifies as a REIT, we will be subject to some taxes that will reduce our cash flow.

Even if QTS qualifies for taxation as a REIT, we may be subject to certain U.S. federal, state and local taxes on our income and assets, including taxes on any undistributed income, tax on income from some activities conducted as a result of a foreclosure, and state or local income, property and transfer taxes. For example, our TRSs and certain of our subsidiaries are subject to U.S. federal, state, and local corporate-level income taxes on their net taxable income, if any, which primarily consists of the revenues from the Cloud and Managed Service business. In addition, QTS may incur a 100% excise tax on transactions with our TRSs if they are not conducted on an arm's-length basis. See "The ownership limitation on TRS stock could limit the growth of the Cloud and Managed Services business, and our transactions with our TRSs will cause us to be subject to a 100% penalty tax on certain income or deductions if those transactions are not conducted on arm's-length terms" below.

Moreover, if we have net income from "prohibited transactions," that income will be subject to a 100% tax. In general, prohibited transactions are sales or other dispositions by the Operating Partnership of property held primarily for sale to customers in the ordinary course of business. The determination as to whether a particular sale is a prohibited transaction depends on the facts and circumstances related to that sale. The need to avoid prohibited transactions could cause the Operating Partnership to forgo or defer sales of properties that it otherwise would have sold or that might otherwise be in its best interest to sell. In addition, we could, in certain circumstances, be required to pay an excise or penalty tax (which could be significant in amount) in order to utilize one or more relief provisions under the Code to maintain our qualification as a REIT. Any of these taxes would reduce our cash flow and could decrease cash available for distribution to stockholders and decrease cash available to service the Operating Partnership's indebtedness.

If the structural components of our properties were not treated as real property for purposes of the REIT qualification requirements, QTS could fail to qualify as a REIT, which could have a material adverse effect on us.

A significant portion of the value of our properties is attributable to structural components related to the provision of electricity, heating ventilation and air conditioning, humidification regulation, security and fire protection, and telecommunication services. If rent attributable to personal property leased in connection with a lease of real property is greater than 15% of the total rent attributable to that lease, the portion of total rent that is attributable to the personal property will not be qualifying income for purposes of the REIT income tests. Therefore, if the Operating Partnership's structural components of the properties are determined not to constitute real property for purposes of the REIT qualification requirements, we could fail to qualify as a REIT, which could have a material adverse impact on us, depress the market price of our common stock, and adversely affect our ability to raise capital as well as the Operating Partnership's ability to service its indebtedness.

The REIT distribution requirements could adversely affect our ability to grow our business and may force us to seek third-party capital during unfavorable market conditions.

To qualify as a REIT, we generally must distribute to our stockholders at least 90% of its "REIT taxable income" (determined without regard to the dividends-paid deduction and excluding net capital gain) each year, and we will be subject to regular corporate income taxes to the extent that we distribute less than 100% of our "REIT taxable income" each year. In addition, we will be subject to a 4% nondeductible excise tax on the amount, if any, by which distributions paid by us in any calendar year are less than the sum of 85% of our ordinary income, 95% of our capital gain net income and 100% of our undistributed income from prior years. In order to maintain our REIT status and avoid the payment of income and excise taxes, we may be forced to seek third-party capital to meet the distribution requirements even if the then-prevailing market conditions are not favorable. These capital needs could result from differences in timing between the recognition of taxable income and the actual receipt of cash or the effect of non-deductible capital expenditures, the creation of reserves or required debt or amortization payments. If we do not have other funds available in these situations, the Operating Partnership could be required to borrow funds on unfavorable terms, or sell assets at disadvantageous prices. In addition, we may be forced to distribute amounts that would otherwise have been invested in future acquisitions to make distributions sufficient to enable us to pay out enough of our taxable income to satisfy the REIT distribution requirement and to avoid corporate income tax and the 4% excise tax in a particular year.

Dividends payable by REITs do not qualify for the reduced tax rates available for some dividends, which could depress the market price of our common stock if it is perceived as a less attractive investment.

The maximum tax rate applicable to income from "qualified dividends" payable by non-REIT "C" corporations to U.S. stockholders that are individuals, trusts and estates generally is 20% (excluding the 3.8% net investment income tax). Dividends payable by REITs, however, generally are not eligible for the current reduced rate, except to the extent that certain holding requirements have been met and a REIT's dividends are attributable to dividends received by a REIT from taxable corporations (such as a TRS), to income that was subject to tax at the REIT/corporate level, or to dividends properly designated by the REIT as "capital gains dividends." Effective for taxable years beginning after December 31, 2017, and before January 1, 2026, those U.S. stockholders may deduct 20% of their dividends from REITs (excluding qualified dividend income and capital gains dividends). For those U.S. stockholders in the top marginal tax bracket of 37%, the deduction for REIT dividends yields an effective income tax rate of 29.6% on REIT dividends, which is higher than the 20% tax rate on qualified dividend income paid by non-REIT "C" corporations. Although the reduced rates applicable to dividend income from non-REIT "C" corporations do not adversely affect the taxation of REITs or dividends payable by REITs, it could cause investors who are non-corporate taxpayers to perceive investments in REITs to be relatively less attractive than investments in the stock of non-REIT "C" corporations that pay dividends, which could depress the market price of the stock of REITs, including our common stock.

QTS may in the future choose to pay dividends in the form of shares of common stock, in which case stockholders may be required to pay income taxes in excess of the cash dividends they receive.

The Company may seek in the future to distribute taxable dividends that are payable in cash and shares of common stock, at the election of each stockholder. Taxable stockholders receiving such dividends will be required to include the full amount of the dividend as ordinary income to the extent of QTS' current and accumulated earnings and profits for U.S. federal income tax purposes. As a result, stockholders may be required to pay income taxes with respect to such dividends in excess of the cash dividends received. If a U.S. stockholder sells the shares of common stock that it receives as a dividend in order to pay this tax, the sales proceeds may be less than the amount included in income with respect to the dividend, depending on the market price of common stock at the time of the sale. In addition, in such case, a U.S. stockholder could have a capital loss with respect to the common stock sold that could not be used to offset such dividend income. Furthermore, with respect to certain non-U.S. stockholders, the Company may be required to withhold U.S. federal income tax with respect to such dividends, including in respect of all or a portion of such dividend that is payable in common stock. In addition, such a taxable share dividend could be viewed as equivalent to a reduction in QTS' cash distributions, and that factor, as well as the possibility that a significant number of QTS' stockholders could determine to sell shares of common stock in order to pay taxes owed on dividends, may put downward pressure on the market price of the QTS' common stock.

Complying with REIT requirements may cause the Operating Partnership to liquidate or forgo otherwise attractive investment opportunities.

To qualify as a REIT, we must ensure that, at the end of each calendar quarter, at least 75% of the value of our assets consists of cash, cash items, government securities and "real estate assets" (as defined in the Code), including certain mortgage loans and securities (the "75% asset test"). The remainder of our investments (other than securities includable in the 75% asset test, and securities issued by our TRSs) generally cannot include more than 10% of the outstanding voting securities of any one issuer or more than 10% of the total value of the outstanding securities of any one issuer. In addition, in general, no more than 5% of the value of our total assets (other than securities includable in the 75% asset test, and securities issued by our TRSs) can consist of the securities of any one issuer no more than 20% (25% for our tax years that began prior to December 31, 2017) of the value of our total assets can be represented by securities of one or more TRS, and debt instruments issued by publicly offered REITs, to the extent not secured by real property or interests in real property, cannot exceed 25% of the value of our total assets. If we fail to comply with these requirements at the end of any calendar quarter, we must correct the failure within 30 days after the end of the calendar quarter or qualify for certain statutory relief provisions to avoid losing our REIT qualification and suffering adverse tax consequences. As a result, the Operating Partnership may be required to liquidate or forgo otherwise attractive investment opportunities. These actions could have the effect of reducing our income and amounts available for distribution to our stockholders and the Operating Partnership's income and amounts available to service its indebtedness.

In addition to the asset tests set forth above, to qualify as a REIT, we must continually satisfy tests concerning, among other things, the sources of our income, the amounts we distribute to our stockholders and the ownership of our stock. The Operating Partnership may be unable to pursue investment opportunities that would be otherwise advantageous to it in order to satisfy the source-of-income or asset-diversification requirements for us to qualify as a REIT. Thus, compliance with the REIT requirements may hinder the Operating Partnership's ability to make certain attractive investments and, thus, reduce the Operating Partnership's income and amounts available to service its indebtedness.

Our ability to own stock and securities of TRSs is limited and our transactions with our TRSs will cause us to be subject to a 100% penalty tax on certain income or deductions if those transactions are not conducted on arm's-length terms.

A REIT may own up to 100% of the stock of one or more TRSs. A TRS may hold assets and earn income that would not be qualifying assets or income if held or earned directly by a REIT. Both the subsidiary and the REIT must jointly elect to treat the subsidiary as a TRS. A corporation of which a TRS directly or indirectly owns more than 35% of the voting power or value of the stock will automatically be treated as a TRS. Overall, no more than 20% of the value of a REIT's assets may consist of stock or securities of one or more TRSs. In addition, the rules applicable to TRSs limit the deductibility of interest paid or accrued by a TRS to its parent REIT to assure that the TRS is subject to an appropriate level of corporate taxation. The rules also impose a 100% excise tax on "redetermined rent," "redetermined deductions" or "excess interest" to the extent rent paid by a TRS exceeds an arm's-length amount, and a 100% excise tax on "redetermined TRS service income" (generally, gross income (less deductions allocable thereto) of a TRS attributable to services provided to, or on behalf of, the parent REIT that is less than the amounts that would have been paid by a REIT to the TRSs if based on arm's-length negotiations).

Our TRSs will pay U.S. federal, state and local income tax on its taxable income. The after-tax net income of our TRSs will be available for distribution to us but generally is not required to be distributed. We believe that the aggregate value of the stock and securities of our TRSs is less than 20% of the value of our total assets (including the stock and securities of our TRSs). Furthermore, we monitor the value of our respective investments in our TRSs for the purpose of ensuring compliance with the ownership limitations applicable to TRSs. We scrutinize all of our transactions involving our TRSs to ensure that they are entered into on arm's-length terms to avoid incurring the 100% excise tax described above. There can be no assurance, however, that we will be able to comply with the 20% limitation discussed above or avoid application of the 100% excise tax discussed above.

Complying with REIT requirements may limit the Operating Partnership's ability to hedge effectively and may cause QTS and/or QTS' TRSs to incur tax liabilities.

The REIT provisions of the Code substantially limit our ability to hedge our assets and liabilities. Any income from a hedging transaction that the Operating Partnership enters into to manage the risk of interest rate changes with respect to borrowings made or to be made to acquire or carry real estate assets, or manage the risk of certain currency fluctuations, does not constitute "gross income" for purposes of the 75% or 95% gross income tests that apply to REITs, provided that certain identification requirements are met. To the extent that the Operating Partnership enters into other types of hedging transactions or fails to properly identify such transaction as hedges, the income is likely to be treated as non-qualifying income for purposes of both of the gross income tests. As a result of these rules, the Operating Partnership may be required to limit its use of advantageous hedging techniques or implement those hedges through a TRS. This could increase the cost of the Operating Partnership's hedging activities because a TRS may be subject to tax on gains or expose the Operating Partnership to greater risks associated with changes in interest rates than it would otherwise want to bear. In addition, losses in a TRS will generally not provide any current tax benefit, except that such losses could be carried back or forward and therefore be applied against past or future taxable income of the TRSs.

If the Operating Partnership fails to qualify as a partnership for U.S. federal income tax purposes, QTS would fail to qualify as a REIT and suffer other adverse consequences.

The Operating Partnership believes that it has been organized and operated in a manner so as to be treated as a partnership, and not an association or publicly traded partnership taxable as a corporation for U.S. federal income tax purposes. As a partnership, it is not subject to U.S. federal income tax on its income. Instead, each of its partners, including QTS, is allocated that partner's share of the Operating Partnership's income. No assurance can be provided, however, that the IRS will not challenge its status as a partnership for U.S. federal income tax purposes, or that a court would not sustain such a challenge. If the IRS were successful in treating the Operating Partnership as an association or

publicly traded partnership taxable as a corporation for U.S. federal income tax purposes, QTS would fail to meet the gross income tests and certain of the asset tests applicable to REITs and, accordingly, would cease to qualify as a REIT, which could adversely affect our ability to raise capital and the Operating Partnership's ability to service its indebtedness. Also, the failure of the Operating Partnership to qualify as a partnership would cause it to become subject to U.S. federal corporate income tax, which would reduce significantly the amount of its cash available for debt service and for distribution to its partners, including QTS.

QTS has a carryover tax basis in respect of certain of its assets acquired in connection with the IPO, and the amount that QTS must distribute to its stockholders therefore may be higher.

As a result of the tax-free merger of General Atlantic REIT, Inc. ("GA REIT") with and into QTS in connection with the IPO, certain of the operating properties, including Atlanta-Metro, Atlanta-Suwanee, Richmond, Santa Clara and Miami, have carryover tax bases that are lower than the fair market values of these properties at the time QTS acquired them in connection with the IPO. As a result of this lower aggregate tax basis, QTS will recognize higher taxable gain upon the sale of these assets, and QTS will be entitled to lower depreciation deductions on these assets than if it had purchased these properties in taxable transactions at the time of the IPO. Lower depreciation deductions and increased gains on sales generally will increase the amount of QTS' required distribution under the REIT rules.

As a result of our formation transactions in connection with QTS' initial public offering, Quality Technology Services Holding, LLC ("QTS Holdings TRS") may be limited in using certain tax benefits and, consequently, may have greater taxable income and, thus, the Operating Partnership may have less after-tax cash available to service its indebtedness.

If a corporation undergoes an "ownership change" within the meaning of Section 382 of the Code and the Treasury Regulations thereunder, such corporation's ability to use net operating losses ("NOLs") generated prior to the time of that ownership change may be limited. To the extent the affected corporation's ability to use NOLs is limited, such corporation's taxable income may increase. As of December 31, 2019, QTS had approximately \$73.3 million of NOLs (all of which are attributable to QTS Holdings TRS (a TRS of QTS)) that will begin to expire in 20 years if not utilized. In general, an ownership change occurs if one or more large stockholders, known as "5% stockholders," including groups of stockholders that may be aggregated and treated as a single 5% stockholder, increase their aggregate percentage interest in a corporation by more than 50% over their lowest ownership percentage during the preceding three-year period. We believe that the formation transactions in connection with QTS' public offering, caused an ownership change within the meaning of Section 382 of the Code with respect to QTS Holdings TRS. Accordingly, to the extent QTS Holdings TRS has taxable income in future years, its ability to use NOLs incurred prior to our formation transactions in connection with QTS' initial public offering in such future years will be limited, and it will have greater taxable income as a result of such limitation. As a result of those limitations, the Operating Partnership may have less after-tax cash available to service its indebtedness.

The new tax law imposed further limits on the deductibility of certain executive compensation expense, which could result in greater taxes for our TRS or the need to increase distributions to our stockholders.

Under Section 162(m) of the Internal Revenue Code, a publicly held corporation is generally limited to a \$1 million annual tax deduction for compensation paid to each of its "covered employees." Prior to the enactment of the Tax Cuts and Jobs Act ("2017 Tax Law"), a publicly held corporation's covered employees included its chief executive officer and three other most highly compensated executive officers (other than the chief financial officer), and certain "qualified performance-based compensation" was excluded from the \$1 million deduction limit. As a result of the 2017 Tax Law, which became effective January 1, 2018, the definition of "covered employee" was expanded to include a publicly held corporation's chief financial officer, and the exception for "qualified performance-based compensation" was repealed, subject to a grandfather rule for compensation paid pursuant to a written, binding contract that was in effect on November 2, 2017, which was not modified in any material respect on or after that date.

As a REIT, we are generally not subject to federal income taxes other than through our TRS. Moreover, the IRS has previously issued private letter rulings holding that, under certain circumstances, Section 162(m) does not apply to compensation paid to employees of a REIT's operating partnership. With respect to tax years prior to 2019, we have determined that the compensation paid to our executive officers by our Operating Partnership or a subsidiary of our Operating Partnership for services to our Operating Partnership should not be subject to the \$1 million deduction limit. However, pursuant to the proposed regulations applicable for taxable years ending on or after December 20, 2019,

deductions for compensation paid to our executive officers that may have otherwise been allowable may be limited. Provided deductions for compensation paid to our executive officers is limited, we may be required to make additional distributions to stockholders to comply with our REIT distribution requirements and eliminate our U.S. federal income tax liability and a larger portion of stockholder distributions that would otherwise have been treated as a return of capital may be subject to U.S. federal income tax as dividend income as a result of our increased taxable income. Any such compensation allocated to our taxable REIT subsidiaries, whose income is subject to U.S. federal income tax, would result in an increase in income taxes due to the inability to deduct such compensation

Legislative or other actions affecting REITs could materially and adversely affect us and our investors as well as the Operating Partnership.

The rules dealing with U.S. federal income taxation are constantly under review by persons involved in the legislative process and by the IRS and the U.S. Department of the Treasury. Changes to the tax laws, with or without retroactive application, could materially and adversely affect us and our stockholders as well as the Operating Partnership. We cannot predict when or if any new U.S. federal income tax law, regulation, or administrative interpretation, or any amendment to any existing U.S. federal income tax law, regulation or administrative interpretation will be adopted, promulgated or become effective and any such law, regulation, or interpretation may take effect retroactively. New legislation, Treasury Regulations, administrative interpretations or court decisions could significantly and negatively affect our ability to qualify as a REIT or the U.S. federal income tax consequences of such qualification. We urge you to consult with your tax advisor with respect to the status of legislative, regulatory or administrative developments and proposals and their potential effect on an investment in our stock. Although REITs generally receive certain tax advantages compared to entities taxed as C corporations, it is possible that future legislation would result in a REIT having fewer tax advantages, and it could become more advantageous for a company that invests in real estate to elect to be treated for U.S. federal income tax purposes as a C corporation.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our Portfolio

We operate a portfolio of 24 data centers located throughout the United States, Canada and Europe. Within the U.S., we are located in some of the top U.S. data center markets and other high-growth markets. Our data centers are highly specialized, full-service, mission-critical facilities used by our customers to house, power and cool the networking equipment and computer systems that support their most critical business processes.

Operating Properties

The following table presents an overview of the portfolio of operating properties that we own or lease, referred to herein as our operating properties, based on information as of December 31, 2019. The table excludes data center development associated with land acquired in Phoenix, AZ and the 28 acres purchased in Ashburn, VA in 2017. On February 22, 2019, the Company entered into an agreement whereby it contributed the Manassas facility to a 50% owned

unconsolidated entity. Balances in the following table represent the unconsolidated entity at its 100% share. QTS's pro rata share of the unconsolidated entity is 50%.

Operating Net Rentable Square Feet (Operating NRSF) ⁽¹⁾

Property	Year Acquired ⁽²⁾	Gross Square Feet ⁽³⁾	Raised Floor ⁽⁴⁾	Office & Other ⁽⁵⁾	Supporting Infrastructure ⁽⁶⁾	Total	% Occupied ⁽⁷⁾	Annualized Rent ⁽⁸⁾	Available Utility Power (MW) ⁽⁹⁾	Basis of Design (BOD) NRSF	Current Raised Floor as a % of BOD
Richmond, VA	2010	1,318,353	117,309	51,093	131,654	300,056	83.8 %	\$ 32,682,862	110	557,309	21.0 %
Atlanta, GA (DC - 1) ⁽¹⁰⁾	2006	968,695	527,186	36,953	364,815	928,954	95.5 %	114,298,127	72	527,186	100.0 %
Irving, TX	2013	698,000	187,742	6,981	198,913	393,636	94.9 %	51,259,686	140	275,701	68.1 %
Princeton, NJ	2014	553,930	58,157	2,229	111,405	171,791	100.0 %	10,338,627	22	158,157	36.8 %
Chicago, IL	2014	474,979	70,000	1,786	71,622	143,408	95.2 %	17,999,785	24	215,855	32.4 %
Ashburn, VA	2017	445,000	68,487	6,096	76,650	151,233	95.1 %	6,474,751	50	178,000	38.5 %
Suwanee, GA	2005	369,822	205,608	8,697	107,128	321,433	93.4 %	60,550,226	36	205,608	100.0 %
Piscataway, NJ	2016	360,000	103,820	14,311	104,301	222,432	86.5 %	18,264,957	111	176,000	59.0 %
Fort Worth, TX	2016	261,836	37,960	14,106	69,466	121,532	99.8 %	4,977,718	50	80,000	47.5 %
Santa Clara, CA ⁽¹¹⁾	2007	135,322	59,905	944	45,094	105,943	87.6 %	21,357,660	11	80,940	74.0 %
Sacramento, CA	2012	92,644	54,595	2,794	23,916	81,305	36.5 %	10,426,795	8	54,595	100.0 %
Dulles, VA ⁽¹²⁾	2017	87,159	30,545	5,997	32,892	69,434	68.3 %	16,922,311	13	48,270	63.3 %
Leased facilities ⁽¹³⁾	2006 & 2015	192,513	63,862	18,650	41,901	124,413	81.8 %	25,935,576	14	84,474	75.6 %
Other ⁽¹⁴⁾	Misc.	459,549	51,561	49,337	70,636	171,534	84.1 %	12,711,754	98	180,380	28.6 %
		6,417,802	1,636,737	219,974	1,450,393	3,307,104	91.3 %	404,200,835	759	2,822,475	58.0 %
New Property Development											
Atlanta, GA (DC - 2) ⁽¹⁵⁾	2018	495,000	—	—	—	—	— %	—	—	240,000	— %
Hillsboro, OR	2017	158,000	—	—	—	—	— %	—	—	85,000	— %
		653,000	—	—	—	—	— %	—	—	325,000	— %
Unconsolidated Properties - at the Unconsolidated Entity's 100% Share ⁽¹⁶⁾											
Manassas, VA	2018	118,031	22,400	12,663	39,044	74,107	100.0 %	8,404,790	135	66,324	33.8 %
Total properties		7,188,833	1,659,137	232,637	1,489,437	3,381,211	91.5 %	\$ 412,605,625	894	3,213,799	51.6 %

- (1) Represents the total square feet of a building that is currently leased or available for lease plus developed supporting infrastructure, based on engineering drawings and estimates, but does not include space held for redevelopment or space used for our own office space.
- (2) Represents the year a property was acquired or, in the case of a property under lease, the year our initial lease commenced for the property.
- (3) With respect to our owned properties, gross square feet represents the entire building area. With respect to leased properties, gross square feet represents that portion of the gross square feet subject to our lease. This includes 383,761 square feet of our office and support space, which is not included in operating NRSF.
- (4) Represents management's estimate of the portion of NRSF of the facility with available power and cooling capacity that is currently leased or readily available to be leased to customers as data center space based on engineering drawings.
- (5) Represents the operating NRSF of the facility other than data center space (typically office and storage space) that is currently leased or available to be leased.
- (6) Represents required data center support space, including mechanical, telecommunications and utility rooms, as well as building common areas.
- (7) Calculated as data center raised floor that is subject to a signed lease for which billing has commenced divided by leasable raised floor based on the current configuration of the properties, expressed as a percentage.
- (8) We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set up fees and other one-time and variable revenues. MRR does not include the impact from booked-not-billed contracts as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect the accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.
- (9) Represents installed utility power and transformation capacity that is available for use by the facility as of December 31, 2019.
- (10) This property was formerly known as "Atlanta, GA (Metro)" but has been renamed "Atlanta, GA (DC-1)" to distinguish between the existing data center and the new property development shown as "Atlanta, GA (DC-2)" within the new property development section.
- (11) Subject to long-term ground lease.
- (12) The Dulles campus has two data center buildings and the Company is currently relocating customers from the smaller and older facility to the new facility in an effort to optimize its operating cost structure.
- (13) Includes 7 facilities. All facilities are leased, including those subject to finance leases. During the quarter ended December 31, 2019, the Company exited its Hong Kong and London leased facilities.
- (14) Consists of Miami, FL; Lenexa, KS; Overland Park, KS; Eemshaven, Netherlands and Groningen, Netherlands facilities.
- (15) Represents the development of a new data center building at our Atlanta, GA campus.
- (16) Represents the Company's unconsolidated entity at its 100% share. QTS's pro rata share of the unconsolidated entity is 50%.

Development Pipeline

The following table presents an overview of our development pipeline, based on information as of December 31, 2019.

Property	Raised Floor NRSF Overview as of December 31, 2019				Approximate Acreage of Available Land ⁽³⁾
	Current NRSF in Service	Under Construction ⁽¹⁾	Future Available ⁽²⁾	Basis of Design NRSF	
Richmond, VA.....	117,309	—	440,000	557,309	182.2
Atlanta, GA (DC - 1) ⁽⁴⁾	527,186	—	—	527,186	—
Irving, TX.....	187,742	20,000	67,959	275,701	29.4
Princeton, NJ.....	58,157	—	100,000	158,157	65.0
Chicago, IL.....	70,000	4,960	140,895	215,855	23.0
Ashburn, VA.....	68,487	74,000	35,513	178,000	62.9
Suwanee, GA.....	205,608	—	—	205,608	15.4
Piscataway, NJ.....	103,820	5,000	67,180	176,000	—
Fort Worth, TX.....	37,960	14,405	27,635	80,000	26.5
Santa Clara, CA.....	59,905	—	21,035	80,940	—
Sacramento, CA.....	54,595	—	—	54,595	—
Dulles, VA.....	30,545	—	17,725	48,270	—
Leased facilities ⁽⁵⁾	63,862	—	20,612	84,474	—
Phoenix, AZ.....	—	—	—	—	84.2
Manassas, VA.....	—	—	—	—	87.1
Other ⁽⁶⁾	51,561	—	128,819	180,380	—
	1,636,737	118,365	1,067,373	2,822,475	575.7
New Property Development					
Atlanta, GA (DC - 2) ⁽⁷⁾	—	36,132	203,868	240,000	61.3
Hillsboro, OR.....	—	7,000	78,000	85,000	92.0
	—	43,132	281,868	325,000	153.3
Unconsolidated Properties - at the Unconsolidated Entity's 100% Share ⁽⁸⁾					
Manassas, VA.....	22,400	5,600	38,324	66,324	—
Totals as of December 31, 2019.	1,659,137	167,097	1,387,565	3,213,799	729.0

(1) Reflects NRSF at a facility for which the initiation of substantial activities has begun to prepare the property for its intended use on or before December 31, 2020.

(2) Reflects NRSF at a facility for which the initiation of substantial activities has begun to prepare the property for its intended use after December 31, 2020.

(3) The total cost basis of available land, which is land available for future development, is approximately \$231.5 million, of which approximately \$199.4 million is included in Construction in Progress on the consolidated balance sheet. The Basis of Design NRSF does not include any build-out on the available land.

(4) This property was formerly known as "Atlanta, GA (Metro)" but has been renamed "Atlanta, GA (DC-1)" to distinguish between the existing data center and the new property development shown as "Atlanta, GA (DC - 2)" within the new property development section.

(5) Includes 7 facilities. All facilities are leased, including those subject to finance leases. During the quarter ended December 31, 2019, the Company exited its Hong Kong and London leased facilities.

(6) Consists of Miami, FL; Lenexa, KS; Overland Park, KS; Eemshaven, Netherlands; and Groningen, Netherlands facilities.

(7) Represents the development of a new data center building at our Atlanta, GA campus.

(8) On February 22, 2019, the Company entered into an agreement whereby it contributed the Manassas facility to a 50% owned unconsolidated entity. Balances herein represent the entity's full 100% share. QTS's pro rata share of the unconsolidated entity is 50%.

The table below sets forth our estimated costs for completion of our major development projects currently under construction and expected to be operational by December 31, 2020 (dollars in millions):

Property	Under Construction Costs ⁽¹⁾			Expected Completion date
	Actual ⁽²⁾	Estimated Cost to Completion ⁽³⁾	Total	
Ashburn, VA	\$ 118	\$ 65	\$ 183	Q1/Q2/Q4 2020
Atlanta, GA (DC - 1) ⁽⁴⁾	28	2	30	Q1 2020
Fort Worth, TX	25	2	27	Q1 2020
Irving, TX	10	1	11	Q2 2020
Chicago, IL	2	7	9	Q4 2020
Piscataway, NJ	3	1	4	Q3 2020
	<u>\$ 186</u>	<u>\$ 78</u>	<u>\$ 264</u>	
New Property Development				
Atlanta, GA (DC - 2) ⁽⁵⁾	48	99	147	Q3/Q4 2020
Hillsboro, OR	7	15	22	Q2 2020
Unconsolidated Properties - at the Company's 50% Share ⁽⁶⁾				
Manassas, VA	2	2	4	Q3 2020
Totals	<u>\$ 243</u>	<u>\$ 194</u>	<u>\$ 437</u>	

- (1) In addition to projects currently under construction, our near-term development projects are expected to be delivered in a modular manner, and we currently expect to invest additional capital to complete these near term projects. The ultimate timing and completion of, and the commitment of capital to, our future development projects are within our discretion and will depend upon a variety of factors, including the actual contracts executed, availability of financing and our estimation of the future market for data center space in each particular market.
- (2) Represents actual costs for NRSF under construction through December 31, 2019. In addition to the \$243 million of construction costs incurred through December 31, 2019 for development expected to be completed by December 31, 2020, as of December 31, 2019 we had incurred \$680 million of additional costs (including acquisition costs and other capitalized costs) for other development projects that are expected to be completed after December 31, 2020.
- (3) Represents management's estimate of the additional costs required to complete the current NRSF under development. There may be an increase in costs if customers' requirements exceed our current basis of design.
- (4) This property was formerly known as "Atlanta, GA (Metro)" but has been renamed "Atlanta, GA (DC-1)" to distinguish between the existing data center and the new property development shown as "Atlanta, GA (DC - 2)" within the new property development section.
- (5) Represents the development of a new data center building at our Atlanta, GA campus.
- (6) On February 22, 2019, the Company entered into an agreement whereby it contributed the Manassas facility to a 50% owned unconsolidated entity. Balances herein represent QTS' 50% ownership percentage at December 31, 2019.

We also own an aggregate of approximately 730 acres of additional available land at our Richmond, Atlanta-Metro Campus, Irving, Princeton, Chicago, Ashburn, Manassas, Atlanta-Suwanee, Fort Worth, Phoenix, and Hillsboro data center properties which can support the development of over 13.1 million additional square feet of raised floor.

Customer Diversification

Our portfolio is currently leased to more than 1,200 customers comprised of companies of all sizes representing an array of industries, each with unique and varied business models and needs. The following table sets forth information regarding the 10 largest customers in our portfolio based on annualized rent as of December 31, 2019:

<u>Principal Customer Industry</u>	<u>Number of Locations</u>	<u>Annualized Rent ⁽¹⁾</u>	<u>% of Portfolio Annualized Rent</u>	<u>Weighted Average Remaining Lease Term (Months) ⁽²⁾</u>
Content & Digital Media	1	\$ 44,322,809	10.9%	31
Cloud & IT Services	4	23,576,694	5.8%	62
Cloud & IT Services	1	18,801,601	4.6%	27
Content & Digital Media	3	15,227,599	3.7%	30
Cloud & IT Services	4	13,728,398	3.4%	50
Cloud & IT Services	6	7,547,448	1.8%	18
Cloud & IT Services	1	7,505,622	1.8%	45
Government & Security	1	6,807,642	1.6%	39
Retail	1	5,532,614	1.4%	30
Financial Services	1	4,952,232	1.2%	55
Total / Weighted Average		<u>\$ 148,002,659</u>	<u>36.2%</u>	<u>38</u>

(1) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases (which represent customer leases that have been executed but for which lease payments have not commenced) as of a particular date unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

(2) Weighted average based on customer's percentage of total annualized rent expiring as of December 31, 2019.

The following chart shows the breakdown of all our customers by industry based on annualized rent as of December 31, 2019:

<u>Industry</u>	<u>% of Total Annualized Rent as of December 31, 2019</u>
Cloud & IT Services	31.5 %
Content & Digital Media	19.2 %
Financial Services	15.3 %
Network	7.2 %
Healthcare	7.1 %
Retail	5.6 %
Government & Security	5.3 %
Other	8.8 %
Total	<u>100.0 %</u>

Lease Distribution by Product Type

Product Type (Square Feet) ⁽¹⁾	Total Leased Raised Floor ⁽²⁾	% of Portfolio Leased Raised Floor	Annualized Rent ⁽³⁾	% of Portfolio Annualized Rent
Hyperscale	659,922	55 %	\$ 136,232,356	33 %
Hybrid Colocation	546,340	45 %	272,170,874	67 %
Portfolio Total	1,206,262	100 %	\$ 408,403,230	100 %

- (1) Represents all leases in our portfolio for which billing has commenced as of December 31, 2019.
- (2) Represents the square footage of raised floor at a property under lease as specified in the lease and that has commenced billing as of December 31, 2019.
- (3) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Lease Expirations

The following table sets forth a summary schedule of the lease expirations as of December 31, 2019 at the properties in our portfolio, excluding leases that have been booked but not billed. Unless otherwise stated in the footnotes, the information set forth in the table assumes that customers exercise no renewal options and all early termination rights are exercised:

Year of Lease Expiration	Number of Leases Expiring ⁽¹⁾	Total Raised Floor of Expiring Leases	% of Portfolio Leased Raised Floor	Annualized Rent ⁽²⁾	% of Portfolio Annualized Rent
Month-to-Month ⁽³⁾	1,179	17,140	2 %	\$ 18,491,895	5 %
2020	1,763	174,172	14 %	100,400,380	24 %
2021	1,138	229,759	19 %	76,374,011	19 %
2022	881	341,031	28 %	110,079,995	27 %
2023	231	115,023	10 %	40,944,595	10 %
2024	192	172,480	14 %	44,101,949	11 %
2025	22	51,440	5 %	4,468,381	1 %
2026	13	26,111	2 %	3,904,800	1 %
2027	26	41,081	3 %	1,970,619	— %
2028	13	2,938	— %	939,240	— %
2029	7	35,079	3 %	6,727,365	2 %
After 2029	1	8	— %	—	— %
Portfolio Total	5,466	1,206,262	100 %	\$ 408,403,230	100 %

- (1) Represents each agreement with a customer signed as of December 31, 2019 for which billing has commenced; a lease agreement could include multiple spaces and a customer could have multiple leases.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.
- (3) Consists of annualized rent associated with customer leases whose original contract terms ended on December 31, 2019 and have signed a renewal or are eligible for renewal, as well as customers whose leases expired prior to December 31, 2019 and have continued on a month-to-month basis. We do not typically enter into month-to-month leases.

Description of Our Properties

Below is a description of our properties. More detail is provided for the properties that represent more than ten percent of our total assets or accounted for more than ten percent of our aggregate gross revenues or both as of and for the year ended December 31, 2019.

Atlanta, Georgia Campus

Our Atlanta (DC-1) facility, formerly known as Atlanta-Metro, is currently our largest data center based on total operating NRSF. As of December 31, 2019, the property consisted of approximately 969,000 gross square feet with approximately 929,000 total operating NRSF, including approximately 527,000 raised floor operating NRSF. An on-site Georgia Power substation supplies 72 MW of utility power to the facility, which is backed up by diesel generators, and the facility has 120 MW of transformer capacity. The facility also includes a small amount of private “Class A” office space. As of December 31, 2019, the facility was approximately 96% occupied by 241 customers across our product offerings.

Portions of the Atlanta (DC-1) facility are included in our development pipeline, as we plan to continue to expand the facility in multiple phases. During the year ended December 31, 2019, we placed approximately 49,000 NRSF of raised floor into service. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 938,000 total operating NRSF, including approximately 527,000 NRSF of raised floor.

We are the owner of our Atlanta (DC-1) facility. We were previously the owner of the facility through a bond-financed sale-leaseback structure. The structure was necessary in the State of Georgia to receive property tax abatement. In 2006, the Development Authority of Fulton County (“DAFC”) issued a taxable industrial development revenue bond to us with a face amount of \$300 million in exchange for legal title to the facility. The acquisition of the bond by us was “cashless” as the bond was issued to us in exchange for title to the facility. The bond matured on December 1, 2019, at which time we exercised our option to purchase the facility for \$10.

In October 2018, we completed the acquisition of approximately 55 acres of land in Atlanta, Georgia adjacent to our existing Atlanta (DC-1) data center. In addition, this facility is adjacent to approximately 72 acres of undeveloped land, inclusive of the land purchase in October 2018, owned by us that we estimate could be developed to provide, at a minimum, approximately 2.5 million additional NRSF of raised floor. Additionally, during the fourth quarter of 2019, the Company sold certain land improvements near its Atlanta (DC-1) facility and entered into an underlying ground lease and services agreement with the buyer.

We have begun the construction of a second megascale data center Atlanta (DC-2) on our land adjacent to the existing Atlanta (DC-1) facility. The Atlanta (DC-2) facility is included within our development pipeline, as we plan to construct the facility in multiple phases. Upon completion of the first phase of the facility, we anticipate that the facility would contain approximately 495,000 gross square feet, and 276,000 raised floor NRSF upon completion of the build-out. We anticipate that this first phase of development will cost (in addition to the \$48 million already incurred as of December 31, 2019) approximately \$99 million in the aggregate based on current estimates.

Lease Expirations. The following table sets forth a summary schedule of lease expirations for leases in place as of December 31, 2019 at the Atlanta (DC-1) facility. Unless otherwise stated in the footnotes, the information set forth in the table assumes that customers exercise no renewal options and all early termination rights.

Year of Lease Expiration	Number of Leases Expiring ⁽¹⁾	Total Raised Floor of Expiring Leases	% of Facility Leased Raised Floor	Annualized Rent ⁽²⁾	% of Facility Annualized Rent
Month-to-Month ⁽³⁾	214	3,888	1 %	\$ 3,775,610	3 %
2020	368	42,619	10 %	21,631,572	19 %
2021	182	121,314	28 %	27,942,972	24 %
2022	187	187,216	44 %	42,097,527	37 %
2023	32	36,768	9 %	9,765,277	8 %
2024	31	31,001	8 %	7,854,487	7 %
2025	4	2,086	— %	7,200	— %
2026	—	—	— %	—	— %
2027	11	1,216	— %	543,564	1 %
2028	—	—	— %	—	— %
2029	2	3,445	— %	679,918	1 %
After 2029	—	—	— %	—	— %
Total	1,031	429,553	100 %	\$ 114,298,127	100 %

- (1) Represents each lease with a customer signed as of December 31, 2019 for which billing has commenced; a lease agreement could include multiple spaces and/or service orders and a customer could have multiple leases.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.
- (3) Consists of annualized rent associated with customer leases whose original contract terms ended on December 31, 2019 and have signed a renewal or are eligible for renewal, as well as customers whose leases expired prior to December 31, 2019 and have continued on a month-to-month basis. We do not typically enter into month-to-month leases.

Primary Customers. The following table summarizes information regarding primary customers, which are customers occupying 10% or more of the leased raised floor of the Atlanta (DC-1) facility, as of December 31, 2019:

<u>Principal Customer Industry</u>	<u>Weighted Average Remaining Lease Term (Months) ⁽¹⁾</u>	<u>Renewal Option</u>	<u>Annualized Rent ⁽²⁾</u>	<u>% of Facility Annualized Rent</u>
Content & Digital Media . .	31	1x3 years & 1x5 years	\$ 44,322,809	39 %
Content & Digital Media . .	26	3x5 years	11,526,619	10 %

- (1) Weighted average based on customer's percentage of total annualized rent expiring as of December 31, 2019.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Historical Percentage Leased and Annualized Rental Rates. The following table sets forth the leasable raised floor, percentage leased, annualized rent and annualized rent per leased raised square foot for the Atlanta (DC-1) facility:

<u>Date</u>	<u>Facility Leasable Raised Floor</u>	<u>% Occupied and Billing ⁽¹⁾</u>	<u>Annualized Rent ⁽²⁾</u>	<u>Annualized Rent per Leased Square Foot</u>
December 31, 2019	449,712	96 %	\$ 114,298,127	\$ 266
December 31, 2018	408,986	99 %	101,394,293	250
December 31, 2017	392,114	96 %	96,559,779	256
December 31, 2016	388,227	94 %	92,848,008	254
December 31, 2015	353,967	96 %	82,563,392	243

- (1) Calculated as data center raised floor that is subject to a signed lease for which billing has commenced as of the applicable date, divided by leasable raised floor based on the then current configuration of the property, expressed as a percentage.
- (2) Annualized rent is presented for leases commenced as of the applicable date. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Atlanta-Suwanee

Our Suwanee, Georgia, or Atlanta-Suwanee, facility consists of approximately 370,000 gross square feet, and as of December 31, 2019 it had approximately 321,000 total operating NRSF, including approximately 206,000 raised floor operating NRSF. Georgia Power supplies 36 MW of utility power to the facility, which is backed up by diesel generators. The facility also contains a small amount of "Class A" private office space and our operating service center, which provides 24x7 support to all of our customers and data centers. As of December 31, 2019, the facility was approximately 93% occupied by 325 customers. We are the fee simple owner of the Atlanta-Suwanee facility.

We are not currently redeveloping significant portions the Atlanta-Suwanee facility.

The facility is adjacent to 15 acres of undeveloped land owned by us that we believe could be developed to provide, at a minimum, an additional approximately 310,000 total operating NRSF, of which approximately would be 210,000 NRSF of raised floor. These 15 acres of undeveloped land are not included in our current development plans.

Lease Expirations. The following table sets forth a summary schedule of the lease expirations for leases in place as of December 31, 2019 at the Atlanta-Suwanee facility. Unless otherwise stated in the footnotes, the information set forth in the table assumes that customers exercise no renewal options and all early termination rights.

<u>Year of Lease Expiration</u>	<u>Number of Leases Expiring ⁽¹⁾</u>	<u>Total Raised Floor of Expiring Leases</u>	<u>% of Facility Leased Raised Floor</u>	<u>Annualized Rent ⁽²⁾</u>	<u>% of Facility Annualized Rent</u>
Month-to-Month ⁽³⁾	303	3,716	3 %	\$ 3,804,408	5 %
2020	311	34,571	27 %	20,058,837	33 %
2021	279	28,248	22 %	16,275,855	27 %
2022	125	19,176	15 %	10,912,964	18 %
2023	45	17,457	15 %	6,999,245	12 %
2024	7	2,783	2 %	1,071,862	2 %
2025	—	—	— %	—	— %
2026	—	—	— %	—	— %
2027	12	20,194	16 %	1,427,055	3 %
After 2027	—	—	— %	—	— %
Total	1,082	126,145	100 %	\$ 60,550,226	100 %

- (1) Represents each lease with a customer signed as of December 31, 2019 for which billing has commenced; a lease agreement could include multiple spaces and/or service orders and a customer could have multiple leases.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.
- (3) Consists of annualized rent associated with customer leases whose original contract terms ended on December 31, 2019 and have signed a renewal or are eligible for renewal, as well as customers whose leases expired prior to December 31, 2019 and have continued on a month-to-month basis. We do not typically enter into month-to-month leases.

Primary Customers. The following table summarizes information regarding primary customers, which are customers occupying 10% or more of the leased raised floor of the Atlanta-Suwanee facility, as of December 31, 2019:

<u>Principal Customer Industry</u>	<u>Weighted Average Remaining Lease Term (Months) ⁽¹⁾</u>	<u>Renewal Option</u>	<u>Annualized Rent ⁽²⁾</u>	<u>% of Facility Annualized Rent</u>
Cloud & IT Services	35	2x5 years	\$ 5,292,091	9 %
Financial Services	11	2x5 years	3,781,696	6 %
Network	93	2x5 years	1,427,055	2 %

- (1) Weighted average based on customer's percentage of total annualized rent expiring as of December 31, 2019.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Historical Percentage Leased and Annualized Rental Rates. The following table sets forth the leasable raised floor, percentage leased, annualized rent and annualized rent per leased raised square foot for the Atlanta-Suwanee facility:

Date	Facility Leasable Raised Floor	% Occupied and Billing ⁽¹⁾	Annualized Rent ⁽²⁾	Annualized Rent per Leased Square Foot
December 31, 2019	135,050	93 %	\$ 60,550,226	\$ 480
December 31, 2018	134,684	92 %	55,080,296	445
December 31, 2017	135,544	92 %	56,998,497	459
December 31, 2016	138,722	80 %	59,206,902	537
December 31, 2015	117,013	84 %	56,769,086	576

- (1) Calculated as data center raised floor that is subject to a signed lease for which billing has commenced as of the applicable date, divided by leasable raised floor based on the then current configuration of the property, expressed as a percentage.
- (2) Annualized rent is presented for leases commenced as of the applicable date. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Irving

We purchased our Irving facility in February 2013. Prior to our purchase, the facility was operated as a semiconductor fabrication facility. Similar to our Richmond facility, the Irving facility has significant pre-existing infrastructure. Specifically, the Irving facility has diverse feeds of 140 MW of utility power and approximately 698,000 gross square feet on 39 acres. We are the fee simple owner of the Irving facility.

We acquired our Irving facility because we believe that we will be able to execute a redevelopment strategy similar to our Richmond facility. Given the infrastructure that was already in place due to its former use as a semiconductor fabrication facility, we believe that the incremental costs to redevelop data center raised floor space in this facility will be lower compared to typical costs for ground-up development or redevelopments of other building types. In addition, the access to a significant amount of utility power provides the necessary power capacity to support our growth strategy for our Irving data center. Furthermore, we believe that the Dallas market is an important data center market primarily due to its strong business environment and relatively affordable power costs.

The Irving facility is included in our development pipeline, as we continue to convert the entire facility into an operating data center in multiple phases. We placed approximately 25,000 raised floor NRSF and 26,000 raised floor NRSF into service during the years ended December 31, 2017 and 2018, respectively. During the year ended December 31, 2019, we placed approximately 14,000 raised floor NRSF into service. Our current under construction redevelopment plans call for the addition of up to approximately 49,000 total operating NRSF, including approximately 20,000 NRSF of raised floor. We anticipate that this expansion will cost (in addition to costs already incurred as of December 31, 2019) approximately \$1 million in the aggregate based on current estimates. Longer term, we can further expand the facility by approximately 226,000 total NRSF, of which approximately 68,000 NRSF would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 669,000 total operating NRSF, including approximately 276,000 NRSF of raised floor.

We own sufficient undeveloped land on the site, approximately 29 acres, that we believe could also be developed to provide an additional 1.3 million total operating NRSF, of which approximately 680,000 NRSF would be raised floor. These 29 acres of undeveloped land are not included in our current development plans.

As of December 31, 2019, the facility was approximately 95% occupied by 151 customers.

Lease Expirations. The following table sets forth a summary schedule of the lease expirations for leases in place as of December 31, 2019 at the Irving facility. Unless otherwise stated in the footnotes, the information set forth in the table assumes that customers exercise no renewal options and all early termination rights.

<u>Year of Lease Expiration</u>	<u>Number of Leases Expiring ⁽¹⁾</u>	<u>Total Raised Floor of Expiring Leases</u>	<u>% of Facility Leased Raised Floor</u>	<u>Annualized Rent ⁽²⁾</u>	<u>% of Facility Annualized Rent</u>
Month-to-Month ⁽³⁾	155	1,417	1 %	\$ 1,421,055	3 %
2020	244	4,862	3 %	4,320,937	8 %
2021	153	5,002	3 %	3,175,335	6 %
2022	136	75,386	48 %	22,036,728	43 %
2023	50	12,848	8 %	3,825,702	7 %
2024	26	50,377	32 %	14,820,052	30 %
2025	10	7,545	5 %	1,659,877	3 %
After 2025	—	—	— %	—	— %
Total	774	157,437	100 %	\$ 51,259,686	100 %

- (1) Represents each lease with a customer signed as of December 31, 2019 for which billing has commenced; a lease agreement could include multiple spaces and/or service orders and a customer could have multiple leases.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.
- (3) Consists of annualized rent associated with customer leases whose original contract terms ended on December 31, 2019 and have signed a renewal or are eligible for renewal, as well as customers whose leases expired prior to December 31, 2019 and have continued on a month-to-month basis. We do not typically enter into month-to-month leases.

Primary Customers. The following table summarizes information regarding primary customers, which are customers occupying 10% or more of the leased raised floor of the Irving facility, as of December 31, 2019:

<u>Principal Customer Industry</u>	<u>Weighted Average Remaining Lease Term (Months) ⁽¹⁾</u>	<u>Renewal Option</u>	<u>Annualized Rent ⁽²⁾</u>	<u>% of Facility Annualized Rent</u>
Cloud & IT Services	27	2x5years	\$ 18,801,601	37 %
Cloud & IT Services	57	2x5years	13,583,445	26 %

- (1) Weighted average based on customer's percentage of total annualized rent expiring as of December 31, 2019.
- (2) Annualized rent is presented for leases commenced as of December 31, 2019. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Historical Percentage Leased and Annualized Rental Rates. The following table sets forth the leasable raised floor, percentage leased, annualized rent and annualized rent per leased raised square foot for the Irving facility:

Date	Facility Leasable Raised Floor	% Occupied and Billing ⁽¹⁾	Annualized Rent ⁽²⁾	Annualized Rent per Leased Square Foot
December 31, 2019	165,838	95 %	\$ 51,259,686	\$ 326
December 31, 2018	165,518	95 %	50,666,209	323
December 31, 2017	138,307	96 %	43,876,400	331
December 31, 2016	120,776	97 %	29,318,582	251
December 31, 2015	47,722	90 %	9,133,696	213

- (1) Calculated as data center raised floor that is subject to a signed lease for which billing has commenced as of the applicable date, divided by leasable raised floor based on the then current configuration of the property, expressed as a percentage.
- (2) Annualized rent is presented for leases commenced as of the applicable date. We define annualized rent as MRR multiplied by 12. We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Below is a description of our other properties.

Richmond

Our Richmond, Virginia data center is situated on an approximately 292-acre site comprised of three large buildings available for data center redevelopment, each with two to three floors, and an administrative building that also has space available for data center redevelopment. As of December 31, 2019, the data center had approximately 1.3 million gross square feet with approximately 300,000 total operating NRSF, including approximately 117,000 of raised floor operating NRSF. The Richmond facility contains approximately 110 MW of utility power, which is backed up by diesel generators. As of December 31, 2019, one of these primary buildings was fully operational as a data center and another was partially operational. We believe that our Richmond facility is situated in an ideal location due to its proximity to Washington, DC, which offers numerous sources of demand for our products including the federal government, and provides geographical diversification from the Northern Virginia data center market. There are three core segments that we believe represent the most significant opportunity for our Richmond data center: entities associated with the federal government, given the highly secured nature of this facility and its proximity to Washington, DC; regulated industries, such as financial institutions, given our investments in security and regulatory compliance; and large enterprise customers, given the large scale of this facility. Our Richmond mega data center can accommodate large and growing customers, while also accommodating colocation and cloud and managed services customers, at attractive energy costs.

We acquired our Richmond facility in 2010 through a bankruptcy process. We estimate that the former owner, a semiconductor manufacturer, had invested over \$1 billion to develop the facility prior to the bankruptcy. Because the facility operated as a semiconductor fabrication facility prior to our acquisition, it had significant pre-existing infrastructure, including 110 MW of utility power, approximately 25,000 tons of chiller capacity, “Class A” private office space and other related supporting infrastructure. As a result, to date the incremental cost to redevelop the facility into a data center has been lower than the typical cost of ground-up data center development or redevelopment of other types of buildings into data centers. As of December 31, 2019, the facility was approximately 84% occupied by 144 customers across our product offerings.

We are the fee simple owner of the Richmond facility.

We are not currently redeveloping significant portions of the Richmond facility. Longer term, we can further expand the facility by approximately 888,000 total operating NRSF, of which approximately 440,000 NRSF would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 1.2 million total operating NRSF, including approximately 557,000 NRSF of raised floor.

In addition, we own approximately 182 acres of undeveloped land on the site that we estimate could be developed to provide, at a minimum, an additional approximately 6.3 million total operating NRSF, of which approximately

3.5 million NRSF would be raised floor. These 182 acres of undeveloped land are not included in our current development plans.

Chicago

Our Chicago facility, which we acquired on July 8, 2014, is the former Sun Times Press facility near downtown Chicago, Illinois. We are the fee simple owner of the Chicago facility. The facility consists of approximately 475,000 gross square feet, including approximately 70,000 raised floor operating NRSF.

The Chicago facility is included in our development pipeline, as we plan to convert the facility into an operating data center in multiple phases. We placed approximately 14,000 raised floor NRSF and 18,000 raised floor NRSF into service during the years ended December 31, 2017 and 2018, respectively. During the year ended December 31, 2019, we placed approximately 24,000 raised floor NRSF into service. Our current under construction redevelopment plans call for the addition of up to approximately 10,000 total operating NRSF, including approximately 5,000 NRSF of raised floor. We anticipate that this expansion will cost (in addition to costs already incurred as of December 31, 2019) approximately \$7 million in the aggregate based on current estimates. Longer term, we can further expand the facility by approximately 280,000 total operating NRSF, of which approximately 141,000 would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 433,000 total operating NRSF with raised floor capacity of approximately 216,000 square feet.

We own sufficient undeveloped land on the site, approximately 23 acres, that we believe could also be developed to provide an additional 350,000 total operating NRSF, of which approximately 200,000 NRSF would be raised floor. These 23 acres of undeveloped land are not included in our current development plans.

As of December 31, 2019, the facility was approximately 95% occupied by 79 customers.

Leased Facilities Acquired in 2015

We acquired leased facilities as part of our acquisition of Carpathia Hosting, Inc. (“Carpathia”) on June 16, 2015. As of December 31, 2019, these leased facilities, including those subject to finance leases, consisted of four domestic data centers located in Phoenix, Arizona; San Jose, California and Ashburn, Virginia; and two international data centers located in Toronto, Canada and Amsterdam, Netherlands. As of December 31, 2019, QTS is no longer leasing space at the Secaucus, New Jersey; London, United Kingdom and Hong Kong facilities.

These leased facilities consist of approximately 70,513 gross square feet with approximately 36,413 total operating NRSF, including approximately 31,862 raised floor operating NRSF. We are not currently redeveloping the leased facilities, we have no current plans to further build out or expand any of these leased facilities.

As of December 31, 2019, the facilities were approximately 85% occupied by 62 customers. The majority of the customers at these facilities are cloud and managed services customers which lease small amounts of space.

Santa Clara

Our Santa Clara, California facility was acquired in November 2007. The facility, which is owned subject to a long-term ground sublease as described below, consists of two buildings containing approximately 135,000 gross square feet with approximately 106,000 total operating NRSF, including approximately 60,000 raised floor operating NRSF. The facility is situated on a 6.5-acre site in Silicon Valley. Several Silicon Valley Power substations supply 11 MW of utility power to the facility, which is backed up by diesel generators. We believe that Silicon Valley is an ideal data center location due to the large concentration of technology companies and the high local demand for data centers and cloud and managed services.

As of December 31, 2019, the facility was approximately 88% occupied by 90 customers.

We are not currently redeveloping significant portions of the Santa Clara facility. Longer term, we can further expand the facility by approximately 25,000 total operating NRSF, of which approximately 21,000 NRSF would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 131,000 total operating NRSF, including approximately 81,000 NRSF of raised floor.

The Santa Clara facility is subject to a ground lease. We acquired a ground sublease interest in the land on which the Santa Clara facility is located in November 2007. The ground sublease expires in 2052, subject to two 10-year extension options. The annual rent payable under the ground sublease increases annually by the lesser of 6% or the increase in the Consumer Price Index for the San Francisco Bay area. The rent was recently adjusted effective October 1, 2018, and will also be adjusted in 2038, to equal one-twelfth of an amount equal to 8.5% of the product of (i) the then fair market value of the demised premises (without taking into account the value of the improvements existing on the land) calculated on a per square foot basis, and (ii) the net square footage of the demised premises. During the term of the ground lease, we have certain obligations to facilitate the provision of job training, seminars and research opportunities for students of a community college that is adjacent to the property. We are the indirect holder of this ground sublease.

Sacramento

Our Sacramento, California facility, which we acquired in December 2012, is located 120 miles from our Santa Clara facility on a 6.8-acre site. The facility currently consists of approximately 93,000 gross square feet with approximately 81,000 total operating NRSF, including approximately 55,000 raised floor operating NRSF. The Sacramento Municipal Utility District supplies 8 MW of utility power to the facility, which is backed up by diesel generators. The facility is an institutional grade data center with a classic “N+1” design that provides a single extra uninterruptible power supply module for use in the event of a system failure. This facility will provide our regional customer base with business continuity services. We believe the property’s location is a valuable complement to our Santa Clara facility for our customers, as it will allow them to diversify their footprint in the California market with a single provider.

We are not currently redeveloping significant portions the Sacramento facility.

As of December 31, 2019, the facility was approximately 37% occupied by 132 customers. The majority of the customers at this facility are colocation customers which lease small amounts of space. We are the fee simple owner of the Sacramento facility.

Miami

Our Miami, Florida facility currently consists of approximately 30,000 gross square feet with approximately 26,000 total operating NRSF, including 20,000 raised floor operating NRSF. The property sits on a 1.6-acre site located at Dolphin Center with 4 MW of utility power supplied by Florida Power & Light and backed up by diesel generators. With a wind rating of 185 miles-per-hour, the facility is built to withstand a Category 5 hurricane. Miami is a strategic location for us because it is a gateway to the South American financial markets and a transcontinental Internet hub. Other than normally recurring capital expenditures, we have no current plans to further build-out or expand the Miami facility.

As of December 31, 2019, the facility was approximately 71% occupied by 101 customers. We intend to continue to lease-up this property. We are the fee simple owner of the Miami facility.

Jersey City

Our Jersey City, New Jersey facility is a leased facility that consists of approximately 122,000 gross square feet with approximately 88,000 total operating NRSF, including approximately 32,000 raised floor operating NRSF. The Jersey City facility was originally leased by another party in March 2004 and we acquired the lease in October 2006 when we acquired the lessee. The lease expires in September 2026 and is subject to one five-year extension option. The facility was redeveloped in November 2006, and we subsequently leased it to service customers in New Jersey and New York. The facility is comprised of four floors of a 19 story building located on one city block in the metropolitan New York City area, six miles from Manhattan. PSE&G supplies 7 MW of utility power to the facility, which is backed up by diesel generators. The facility also contains a small amount of “Class A” office space. We believe that the location in Jersey City provides us with a crucial presence in the tri-state area, where space is highly coveted given the strong demand from financial services firms.

We are not currently redeveloping significant portions of the Jersey City facility. Longer term, we can further expand the facility by approximately 21,000 NRSF of raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 109,000 total operating NRSF, including approximately 53,000 NRSF of raised floor.

As of December 31, 2019, the facility was approximately 76% occupied by 57 customers.

Princeton

Our Princeton, New Jersey facility, which we acquired on June 30, 2014, is located on approximately 194 acres and consists of approximately 554,000 gross square feet, including approximately 58,000 square feet of raised floor, and 22 MW of available utility power. Concurrently with acquiring this data center we entered into a 10 year lease for the facility's 58,000 square feet of raised floor with Atos, an international information technology services company headquartered in Bezos, France. The lease includes a 15 year renewal at the option of Atos.

We are not currently redeveloping significant portions of the Princeton facility. Longer term, we can expand the facility by approximately 372,000 total operating NRSF, of which approximately 100,000 NRSF would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 544,000 total operating NRSF, including approximately 158,000 NRSF of raised floor.

As of December 31, 2019, the facility was approximately 100% occupied by 1 customer.

Piscataway

Our Piscataway, New Jersey facility, which we acquired on June 6, 2016, currently consists of approximately 360,000 gross square feet with approximately 222,000 total operating NRSF, including approximately 104,000 raised floor operating NRSF. The property is located on a 38-acre campus and includes an on-site 111 MW substation as well as solar panels that produce approximately 2 MW of power.

The Piscataway facility is included in our development pipeline. During the year ended December 31, 2019, we placed approximately 5,000 NRSF of raised floor into service. Our current under construction redevelopment plans call for the addition of up to 9,000 total operating NRSF, including 5,000 NRSF of raised floor. We anticipate that this expansion will cost approximately \$1 million in the aggregate based on current estimates (in addition to costs already incurred as of December 31, 2019). Longer term, we can further expand the facility by approximately 123,000 total operating NRSF, of which approximately 67,000 would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 354,000 total operating NRSF, including approximately 176,000 NRSF of raised floor.

As of December 31, 2019, the facility was approximately 86% occupied by 57 customers.

Fort Worth

Our Fort Worth, Texas facility, which we acquired on December 16, 2016, is located on approximately 53 acres and consists of approximately 262,000 gross square feet, including approximately 38,000 square feet of raised floor and 50 MW of available utility power. The facility is located approximately 20 miles from our Irving, Texas data center.

The Fort Worth facility is included in our development pipeline, as we plan to convert the facility into an operating data center in multiple phases. During the year ended December 31, 2019, we placed approximately 27,000 raised floor NRSF into service. Our current under construction redevelopment plans call for the addition of up to approximately 14,000 total operating NRSF, including approximately 14,000 NRSF of raised floor. We anticipate that this expansion will cost (in addition to costs already incurred as of December 31, 2019) approximately \$2 million in the aggregate based on current estimates. Longer term, we can further expand the facility by approximately 115,000 total operating NRSF, of which approximately 28,000 would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 251,000 total operating NRSF, including approximately 80,000 NRSF of raised floor.

As of December 31, 2019, the facility was approximately 100% occupied by 12 customers.

Ashburn

In August 2017, we completed the acquisition of approximately 24 acres of land in Ashburn, Virginia. We constructed a mega data center facility on the acquired land parcel, with the first phase in-service during the year ended December 31, 2018, and the Company is continuing to develop and expand the property. Ultimately, we believe the 24 acre parcel of land can support approximately 50 megawatts of available utility power, 445,000 gross square feet and 178,000 square feet of raised floor capacity upon completion.

The Ashburn facility is included in our development pipeline, as we plan to expand the mega data center in multiple phases. The first phase was complete in mid-2018 as we placed approximately 14,000 raised floor NRSF into service. Additionally, during the year ended December 31, 2019, we placed approximately 54,000 raised floor NRSF into service. Our current under construction development plans call for up to approximately 151,000 total operating NRSF, including approximately 74,000 NRSF of raised floor. We anticipate that this expansion will cost (in addition to costs already incurred as of December 31, 2019) approximately \$65 million in the aggregate based on current estimates. Longer term, we can further expand the facility by approximately 106,000 total operating NRSF, of which approximately 36,000 would be raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 408,000 gross square feet, including approximately 178,000 NRSF of raised floor.

In addition, in October 2017, we completed the acquisition of approximately 28 acres of land in Ashburn, Virginia, that we believe could also be developed to provide an additional 2 million total operating NRSF, of which approximately 1 million NRSF would be raised floor. These 28 acres of undeveloped land are not included in our current development plans or property table.

As of December 31, 2019, the facility was approximately 95% occupied by 12 customers.

Dulles

Our Vault facility in Dulles, Virginia consists of approximately 88,000 gross square feet, including approximately 31,000 square feet of raised floor NRSF and 13 MW of available utility power. The data center buildings were built from the ground up to stringent Sensitive Compartmented Information Facility standards set by the Department of Defense and National Security Agency. The Dulles campus has two data center buildings and we initiated a plan in the fourth quarter of 2019 to abandon one of the buildings and relocate customers from the smaller and older facility being abandoned to the newer facility in an effort to better optimize our operating cost structure. In addition, the Dulles data center is located a quarter of a mile from our Ashburn data center.

We acquired the Dulles, Virginia campus as part of our acquisition of Carpathia on June 16, 2015. From the Carpathia acquisition date through October 5, 2017, the facility was subject to a lease financing obligation. On October 6, 2017, the Company completed the buyout of the Dulles facility. At the time of the Dulles facility purchase the lease financing obligation was approximately \$17.8 million and the Company purchased the property for approximately \$34.1 million cash, for a net purchase price of \$16.3 million.

The Dulles facility is included in our development pipeline. Longer term, we can further expand the existing facility by approximately 18,000 NRSF of raised floor. Upon completion of the build-out of the facility, we anticipate that the facility would contain approximately 87,000 total operating NRSF, including approximately 48,000 NRSF of raised floor.

As of December 31, 2019, the facility was approximately 68% occupied by 99 customers.

Groningen, Netherlands and Eemshaven, Netherlands

In April 2019 we completed the acquisition of two data centers in the Netherlands for approximately \$44 million in cash consideration, including closing costs. The two facilities, in Groningen and Eemshaven, have approximately 160,000 square feet of raised floor capacity and over 35 megawatts of built out available utility power.

As of December 31, 2019, the Groningen data center was largely stabilized with over 30 colocation tenants and had built-out capacity representing approximately 10 gross megawatts of power and 45,000 square feet of raised floor data center space.

The Eemshaven facility, which was vacant as of December 31, 2019, was originally constructed to support a single hyperscale tenant and has built-out capacity representing approximately 28 gross megawatts of power and 113,000 square feet of raised floor data center space. The facility is strategically located adjacent to multiple hyperscale customer-owned data center deployments, including a 500+ megawatt data center campus operated by one of the largest hyperscale cloud providers in the world. In addition, the facility is located in close proximity to multiple transatlantic fiber cable landings providing access to multiple markets within Europe and North America. QTS anticipates investing incremental capital to recommission the facility in order to position the Eemshaven data center with sellable capacity in future years.

Phoenix

In July 2017, we completed the acquisition of approximately 84 acres of land in Phoenix, Arizona to be used for future development.

Hillsboro

In October 2017, we completed the acquisition of approximately 92 acres of land in Hillsboro, Oregon to be used for future development. Ultimately, we believe the 92 acre parcel of land can support approximately 250 megawatts of available utility power, 1.5 million gross square feet and 1.0 million square feet of raised floor capacity upon completion.

The Hillsboro facility is included in our development pipeline, as we plan to bring online the mega data center in multiple phases. The first phase will consist of 27 megawatts of power capacity, 158,000 gross square feet and 85,000 square feet of raised floor capacity. We anticipate that this first phase of development will cost (in addition to the \$7 million already incurred as of December 31, 2019) approximately \$15 million in the aggregate based on current estimates.

Manassas

In March 2018, we completed the acquisition of approximately 61 acres of land in Manassas, Virginia. The land is currently being used to support the construction of a data center, which the Company completed and delivered Phase 1 in the first quarter of 2019. Additionally, during the three months ended September 30, 2018, the Company completed the acquisition of approximately 57 acres of additional land in Manassas, Virginia to be used for future development which is adjacent to the aforementioned 61 acres of land in Manassas.

On February 22, 2019, we entered into an agreement with Alinda, an infrastructure investment firm, with respect to our Manassas data center. At closing, we contributed the Manassas data center, and Alinda contributed cash, in each case, in exchange for a 50% interest in the unconsolidated entity (which includes a 50% interest in future income). The Company received approximately \$53 million in cash plus a 50% equity interest in the unconsolidated entity at closing in exchange for contributing the data center to the unconsolidated entity. Under the agreement, we serve as the entity's operating member, subject to authority and oversight of a board appointed by us and Alinda, and separately we serve as manager and developer of the facility in exchange for management and development fees. The agreement includes various transfer restrictions and rights of first offer that will allow us to repurchase Alinda's interest should Alinda wish to exit in the future. In addition, we have agreed to provide Alinda an opportunity to invest in future similar agreements based on similar terms and a comparable capitalization rate. This agreement has been reflected as an unconsolidated entity on our reported financial statements beginning in the first quarter of 2019. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Factors That May Influence Future Results of Operations and Cash Flows—Unconsolidated Entity."

Overland Park

The Overland Park, Kansas facility, known as the J. Williams Technology Center, is a leased facility consisting of approximately 33,000 gross square feet, with approximately 8,000 total operating NRSF, including approximately 2,500 raised floor operating NRSF. Kansas City Power & Light supplies approximately 1 MW of utility power, which is backed up by a diesel generator. The J. Williams Technology Center has housed the corporate headquarters of the Quality Group of Companies, LLC. (“QGC”) since September 2003. We lease the facility under a lease with an entity controlled by our Chairman and Chief Executive Officer, which was entered into in January 2009 and expires in December 2023. This building, while containing a small data center, is primarily utilized as our corporate headquarters. Other than normally recurring capital expenditures and expansion of our own office space at our headquarters, we have no current plans to further build-out or expand the raised floor at our Overland Park data center.

As of December 31, 2019, the facility was approximately 55% occupied by 11 customers.

Lenexa

Our Lenexa, Kansas property, which was acquired in 2004, contains approximately 35,000 gross square feet. The Lenexa property does not currently operate as a data center, nor do we intend to operate it as a data center. We have historically used this property primarily as a warehouse, but currently lease approximately 22,000 square feet to a tenant for general office use, and 12,205 square feet to a tenant as general office and warehouse space. Other than minimal normally recurring capital expenditures, we have no current plans to further build out or expand the Lenexa property.

ITEM 3. LEGAL PROCEEDINGS

In the ordinary course of our business, we are subject to claims for negligence and other claims and administrative proceedings, none of which we believe are material or would be expected to have, individually or in the aggregate, a material adverse effect on us. For additional information with respect to current legal proceedings, refer to Item 8 – Note 11 – Commitments and Contingencies in “Financial Statements and Supplementary Data” included in this Annual Report.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

QTS’s common stock is listed on the New York Stock Exchange (“NYSE”) and trade under the symbol “QTS.” As of February 25, 2020, we had 30 holders of record of our common stock. This figure does not reflect the beneficial ownership of shares held in nominee name.

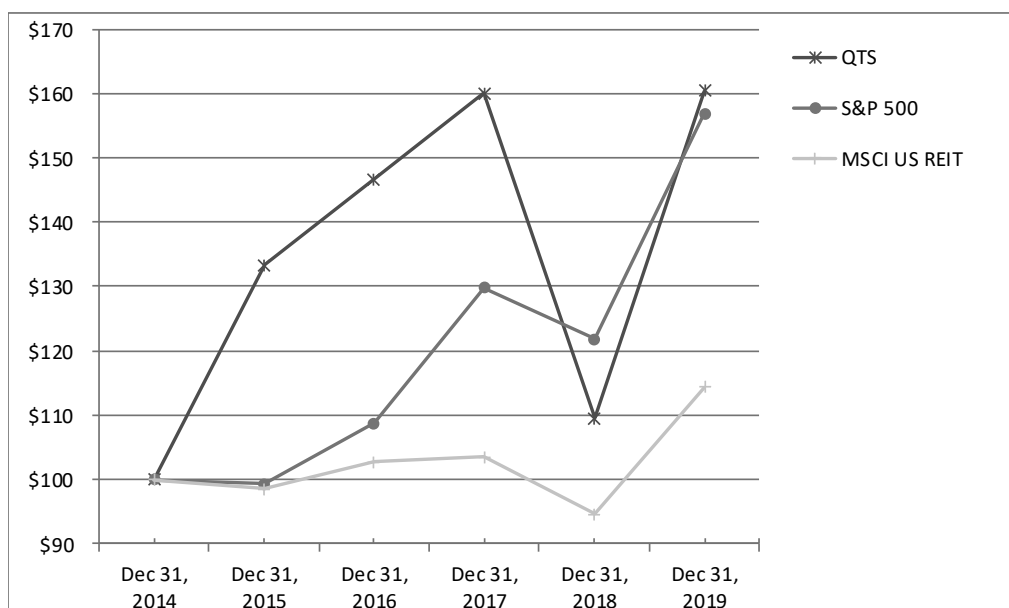
QTS also has 128,408 shares of Class B common stock outstanding, which are not listed on any exchange. The Class B common stock is held by one registered holder, Chad L. Williams, our Chairman and Chief Executive Officer.

There is no established public trading market for the Operating Partnership’s limited partnership units. As of February 25, 2020, the Operating Partnership had 24 holders of record of its Class A units.

Performance Graph

The following line graph sets forth, for the period from December 31, 2014, through December 31, 2019, a comparison of the percentage change in the cumulative total stockholder return on our common stock compared to the cumulative total return of the S&P 500 Market Index and the MSCI US REIT Index (“RMZ”). The graph assumes that \$100 was invested on December 31, 2014, in shares of our common stock and each of the aforementioned indices and that all

dividends were reinvested without the payment of any commissions. There can be no assurance that the performance of our shares will continue in line with the same or similar trends depicted in the graph below.



Pricing Date	QTS	S&P 500	MSCI US REIT
Dec. 31, 2014.	100.00	100.00	100.00
Dec. 31, 2015.	133.30	99.27	98.49
Dec. 31, 2016.	146.72	108.74	102.65
Dec. 31, 2017.	160.05	129.86	103.53
Dec. 31, 2018.	109.49	121.76	94.59
Dec. 31, 2019.	160.37	156.92	114.40

This performance graph shall not be deemed “filed” for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or incorporated by reference into any filing by us under the Securities Act of 1933, as amended, or the Securities Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Unregistered Sales of Equity Securities

QTS did not sell any equity securities during the fiscal year ended December 31, 2019 that were not registered under the Securities Act of 1933, as amended.

QTS from time to time issues shares of Class A common stock pursuant to the QTS Realty Trust, Inc. 2013 Equity Incentive Plan (the “2013 Equity Incentive Plan”) upon exercise of stock options issued and issuance of restricted stock under the 2013 Equity Incentive Plan, upon redemption of Class A units of limited partnership of the Operating Partnership (either through Class A units previously held or those received from conversion of Class O units from the QualityTech, LP 2010 Equity Incentive Plan) and under the “at-the-market” equity offering program. Pursuant to the partnership agreement of the Operating Partnership, each time QTS issues shares of its Class A common stock, the Operating Partnership issues to QTS, its general partner, an equal number of Class A units. The units issued to QTS are not registered under the Securities Act in reliance on Section 4(a)(2) of the Securities Act due to the fact that Class A units were issued only to QTS and therefore, did not involve a public offering. During the year ended December 31, 2019, the Operating Partnership issued approximately 145,000 Class A units to QTS in connection with Class A unit redemptions and stock option exercises and issuances pursuant to the 2013 Equity Incentive Plan, with a value aggregating approximately \$6.6 million based on the respective dates of the redemptions and option exercises, as applicable. In addition, during the year ended December 31, 2019 the Operating Partnership issued 6,832,000 Class A units to QTS, of which 4,000,000 shares related to the underwritten public offering in February of 2019 and 2,832,000 shares related to the settlement of a portion of the shares subject to forward sale agreements, with an aggregate value of approximately \$268.2 million, net of equity issuance costs.

The Operating Partnership also issues Class A units upon the conversion of Class O units of the Operating Partnership. During the year ended December 31, 2019, the Operating Partnership issued less than 0.1 million Class A units to holders of Class O units. These Class A units were not registered under the Securities Act in reliance on Section 4(a)(2) of the Securities Act due to the fact that Class A units were issued only to the respective holders of Class O units at the time of conversion and did not involve a public offering.

Repurchases of Equity Securities

During the year ended December 31, 2019, certain of our employees surrendered Class A common stock owned by them to satisfy their statutory minimum federal and state tax obligations in connection with the vesting of restricted common stock under the 2013 Equity Incentive Plan.

The following table summarizes all of these repurchases during the year ended December 31, 2019.

Period	Total number of shares purchased ⁽¹⁾	Average price paid per share	Total number of shares purchased as part of publicly announced plans or programs	Maximum number of shares that may yet be purchased under the plans or programs
January 1, 2019 through January 31, 2019	639	\$ 37.05	N/A	N/A
February 1, 2019 through February 28, 2019	2,926	42.11	N/A	N/A
March 1, 2019 through March 31, 2019	45,132	42.43	N/A	N/A
April 1, 2019 through April 30, 2019	2,303	45.42	N/A	N/A
May 1, 2019 through May 31, 2019	—	—	N/A	N/A
June 1, 2019 through June 30, 2019	8,415	43.28	N/A	N/A
July 1, 2019 through July 31, 2019	—	—	N/A	N/A
August 1, 2019 through August 31, 2019	980	45.97	N/A	N/A
September 1, 2019 through September 30, 2019 . .	11,042	51.41	N/A	N/A
October 1, 2019 through October 31, 2019	9	51.25	N/A	N/A
November 1, 2019 through November 30, 2019 . .	—	—	N/A	N/A
December 1, 2019 through December 31, 2019 . .	13,798	54.27	N/A	N/A
Total	85,244	\$ 45.67	N/A	N/A

(1) The number of shares purchased represents shares of Class A common stock surrendered by certain of our employees to satisfy federal and state tax obligations associated with the vesting of restricted common stock. With respect to these shares, the price paid per share is based on the closing price of our Class A common stock as of the date of the determination of the statutory minimum federal income tax.

ITEM 6. SELECTED FINANCIAL DATA

The following table sets forth selected financial data on a historical basis for QTS and the Operating Partnership, which is also our historical predecessor. QTS is the sole general partner and majority owner of the Operating Partnership and as of December 31, 2019, QTS owned an approximate 89.7% ownership interest in the Operating Partnership. Substantially all of our assets are held by, and our operations are conducted through, the Operating Partnership.

The financial data as of years ended December 31, 2019, 2018, 2017, 2016 and 2015 and for the period from January 1, 2015 through December 31, 2019 is that of QTS and its majority-owned subsidiaries, which includes the Operating Partnership.

The information set forth below should be read in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the consolidated financial statements and the notes thereto which are included elsewhere in this Form 10-K. The data for QTS and the Operating Partnership are substantially the same with the primary differences being the presentation of stockholders’ equity and partners’ capital, and the allocation of net income (loss), whereby QTS retains its share of the net income (loss) based on its ownership of the Operating Partnership, with the remaining balance being retained by the Operating Partnership. Therefore, the financial and operating data presented in the following tables reflect the results of the Operating Partnership for all periods presented, except where specifically noted.

(\$ in thousands, except share and per share data)	Year Ended December 31,				
	2019	2018	2017	2016	2015
Statement of Operations Data					
Revenues:					
Rental	\$ 465,123	\$ 413,620	\$ 379,787	\$ 333,383	\$ 258,196
Other	15,695	36,904	66,723	68,980	52,887
Total revenues	<u>480,818</u>	<u>450,524</u>	<u>446,510</u>	<u>402,363</u>	<u>311,083</u>
Operating expenses:					
Property operating costs	156,048	148,236	153,209	136,488	104,355
Real estate taxes and insurance	14,503	12,193	11,959	8,840	5,869
Depreciation and amortization	168,305	149,891	140,924	124,786	85,811
General and administrative	80,385	80,857	87,231	83,286	67,783
Transaction, integration and impairment costs	15,190	2,743	11,060	10,906	11,282
Restructuring	—	37,943	—	—	—
Total operating expenses	<u>434,431</u>	<u>431,863</u>	<u>404,383</u>	<u>364,306</u>	<u>275,100</u>
Gain (loss) on sale of real estate, net	<u>14,769</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>(164)</u>
Operating income	61,156	18,661	42,127	38,057	35,819
Other income and expense:					
Interest income	111	150	67	3	2
Interest expense	(26,593)	(28,749)	(30,523)	(23,159)	(21,289)
Debt restructuring costs	(1,523)	(605)	(19,992)	(192)	(468)
Other expense	(50)	—	—	—	—
Equity in net loss of unconsolidated entity	<u>(1,473)</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Income (loss) before taxes	31,628	(10,543)	(8,321)	14,709	14,064
Tax benefit of taxable REIT subsidiaries	<u>37</u>	<u>3,368</u>	<u>9,778</u>	<u>9,976</u>	<u>10,065</u>
Net income (loss)	31,665	(7,175)	1,457	24,685	24,129
Net (income) loss attributable to noncontrolling interests	<u>(374)</u>	<u>2,715</u>	<u>(175)</u>	<u>(3,160)</u>	<u>(3,803)</u>
Net income (loss) attributable to QTS Realty Trust, Inc.	<u>\$ 31,291</u>	<u>\$ (4,460)</u>	<u>\$ 1,282</u>	<u>\$ 21,525</u>	<u>\$ 20,326</u>
Preferred stock dividends	<u>(28,180)</u>	<u>(16,666)</u>	<u>—</u>	<u>—</u>	<u>—</u>
Net income (loss) attributable to common stockholders	<u>\$ 3,111</u>	<u>\$ (21,126)</u>	<u>\$ 1,282</u>	<u>\$ 21,525</u>	<u>\$ 20,326</u>
Net income (loss) per share attributable to common shares:					
Basic	\$ (0.09)	\$ (0.44)	\$ 0.01	\$ 0.47	\$ 0.54
Diluted	(0.09)	(0.44)	0.01	0.46	0.53
Weighted average common shares outstanding:					
Basic	54,836,801	50,432,590	48,380,964	46,205,937	37,568,109
Diluted	54,836,801	50,432,590	55,855,683	53,962,234	45,353,170
Dividends declared per common share	\$ 1.76	\$ 1.64	\$ 1.56	\$ 1.44	\$ 1.28

Other Data (unaudited)	The Company				
	Year Ended December 31,				
	2019	2018	2017	2016	2015
FFO available to common stockholders & OP unit holders ⁽¹⁾	\$ 160,476	\$ 112,278	\$ 125,012	\$ 133,159	\$ 98,517
Operating FFO ⁽¹⁾	165,728	151,161	156,064	140,666	103,916
Recognized MRR in the period	390,267	375,515	375,086	347,331	269,783
MRR at period end ⁽²⁾	34,034	31,141	31,708	30,890	27,489
NOI ⁽³⁾	313,056	290,095	281,342	257,036	200,859
EBITDA _{re} ⁽⁴⁾	228,716	183,783	163,059	162,651	121,162
Adjusted EBITDA ⁽⁴⁾	250,380	224,210	207,974	184,334	140,040

(\$ in thousands)	The Company				
	December 31,				
	2019	2018	2017	2016	2015
Balance Sheet Data					
Real estate at cost *	\$ 3,230,428	\$ 2,812,856	\$ 2,357,322	\$ 1,964,857	\$ 1,583,153
Net investment in real estate **	2,671,868	2,345,212	1,962,499	1,647,023	1,343,217
Total assets	3,223,533	2,861,969	2,415,056	2,086,470	1,747,339
Total debt	1,453,065	1,345,117	1,229,929	965,826	861,569

* Reflects undepreciated cost of real estate assets, and does not include real estate intangible assets acquired in connection with acquisitions.

** Net investment in real estate includes building and improvements (net of accumulated depreciation), land, and construction in progress.

(\$ in thousands)	The Company				
	Year Ended December 31,				
	2019	2018	2017	2016	2015
Cash Flow Data					
Cash flow provided by (used for):					
Operating activities	\$ 199,490	\$ 191,273	\$ 170,323	\$ 153,794	\$ 109,787
Investing activities	(387,260)	(598,553)	(434,352)	(452,972)	(612,095)
Financing activities	191,396	410,796	262,692	299,954	500,324

- (1) We calculate FFO in accordance with the standards established by the National Association of Real Estate Investment Trusts, or NAREIT. FFO represents net income (loss) (computed in accordance with GAAP), adjusted to exclude gains (or losses) from sales of depreciable real estate related to our primary business, impairment write-downs of depreciable real estate related to our primary business, real estate-related depreciation and amortization and similar adjustments for unconsolidated entities. To the extent we incur gains or losses from the sale of assets that are incidental to our primary business, or we incur impairment write-downs associated with assets that are incidental to our primary business, we include such amounts in our calculation of FFO. Our management uses FFO as a supplemental performance measure because, in excluding real estate-related depreciation and amortization and gains and losses from property dispositions, it provides a performance measure that, when compared year over year, captures trends in occupancy rates, rental rates and operating costs. We generally calculate Operating FFO as FFO excluding certain non-routine charges and gains and losses that management believes are not indicative of the results of our operating real estate portfolio. We believe that Operating FFO provides investors with another financial measure that may facilitate comparisons of operating performance between periods and, to the extent other REITs calculate Operating FFO on a comparable basis, between REITs.

A reconciliation of net income (loss) to FFO and Operating FFO is presented below:

(unaudited \$ in thousands)	Year Ended December 31,				
	2019	2018	2017	2016	2015
FFO					
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457	\$ 24,685	\$ 24,129
Equity in net loss of unconsolidated entity	1,473	—	—	—	—
Real estate depreciation and amortization	156,387	136,119	123,555	108,474	74,224
(Gain) loss on sale of real estate, net	(13,408)	—	—	—	164
Impairments of depreciated property	11,461	—	—	—	—
Pro rata share of FFO from unconsolidated entity	1,078	—	—	—	—
FFO *	<u>188,656</u>	<u>128,944</u>	<u>125,012</u>	<u>133,159</u>	<u>98,517</u>
Preferred stock dividends	(28,180)	(16,666)	—	—	—
FFO available to common stockholders & OP unit holders **	<u>160,476</u>	<u>112,278</u>	<u>125,012</u>	<u>133,159</u>	<u>98,517</u>
Debt restructuring costs	1,523	605	19,992	193	468
Restructuring costs	—	37,943	—	—	—
Transaction, integration and impairment costs	3,729	2,743	11,060	10,906	11,282
Tax benefit associated with restructuring, transaction and integration costs	—	(2,408)	—	(3,592)	(3,176)
Non-cash reversal of deferred tax asset valuation allowance	—	—	—	—	(3,175)
Operating FFO available to common stockholders & OP unit holders **	<u>\$ 165,728</u>	<u>\$ 151,161</u>	<u>\$ 156,064</u>	<u>\$ 140,666</u>	<u>\$ 103,916</u>

* Beginning January 1, 2018, pursuant to a NAREIT issued white paper, we disclose the amount of gains or losses from the sale of assets that are incidental to our primary business included in FFO as well as impairment write-downs associated with assets that are incidental to our primary business included in FFO. FFO for the year ended December 31, 2019 includes a \$1.4 million gain on sale of real estate related to certain assets considered incidental to our primary business and were included in the “Gain on sale of real estate, net” line item of the consolidated statements of operations. FFO for the year ended December 31, 2018 includes \$15.8 million of impairment losses related to certain non-real estate product related assets that were considered incidental to our primary business and were included in the “Restructuring” line item of the consolidated statement of operations.

** The Company’s calculations of Operating FFO and Adjusted Operating FFO may not be comparable to Operating FFO and Adjusted Operating FFO as calculated by other REITs that do not use the same definition.

(2) We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR is also calculated to include the Company's pro rata share of monthly contractual revenue under signed leases as of a particular date associated with unconsolidated entities, which includes revenue from the unconsolidated entity's rental and managed services activities, but excludes the unconsolidated entity's customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR reflects the annualized cash rental payments. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. This amount reflects the annualized cash rental payments. It does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements. Management uses MRR and recognized MRR as supplemental performance measures because they provide useful measures of increases in contractual revenue from our customer leases.

A reconciliation of total GAAP revenues to recognized MRR in the period and MRR at period-end is presented below:

(unaudited \$ in thousands)	Year Ended December 31,				
	2019	2018	2017	2016	2015
Recognized MRR in the period					
Total period revenues (GAAP basis)	\$ 480,818	\$ 450,524	\$ 446,510	\$ 402,363	\$ 311,083
Less: Total period variable lease revenue from recoveries.	(55,046)	(45,386)	(37,886)	(29,271)	(22,581)
Total period deferred setup fees	(15,156)	(12,475)	(10,690)	(9,172)	(6,042)
Total period straight line rent and other	(20,349)	(17,148)	(22,848)	(16,589)	(12,677)
Recognized MRR in the period	<u>\$ 390,267</u>	<u>\$ 375,515</u>	<u>\$ 375,086</u>	<u>\$ 347,331</u>	<u>\$ 269,783</u>
MRR at period end*					
Total period revenues (GAAP basis)	\$ 480,818	\$ 450,524	\$ 446,510	\$ 402,363	\$ 311,083
Less: Total revenues excluding last month	(438,810)	(412,041)	(406,345)	(366,385)	(280,020)
Total revenues for last month of period	42,008	38,483	40,165	35,978	31,063
Less: Last month variable lease revenue from recoveries	(4,578)	(3,822)	(3,175)	(3,247)	(1,415)
Last month deferred setup fees	(1,333)	(1,015)	(1,123)	(968)	(716)
Last month straight line rent and other	(2,413)	(2,505)	(4,159)	(873)	(1,443)
Add: Pro rata share of MRR at period end of unconsolidated entity.	350	—	—	—	—
MRR at period end*	<u>\$ 34,034</u>	<u>\$ 31,141</u>	<u>\$ 31,708</u>	<u>\$ 30,890</u>	<u>\$ 27,489</u>

* Does not include our booked-not-billed MRR balance, which was \$7.8 million, \$5.2 million, \$3.9 million, \$3.6 million and \$4.8 million as of years ended December 31, 2019, 2018, 2017, 2016 and 2015, respectively.

(3) We calculate net operating income, or NOI, as net income (loss) (computed in accordance with GAAP), excluding: interest expense, interest income, tax expense (benefit) of taxable REIT subsidiaries, depreciation and amortization, write off of unamortized deferred financing, debt restructuring costs, gain (loss) on extinguishment of debt, transaction, integration and impairment costs, gain (loss) on sale of real estate, restructuring costs, general and administrative expenses and similar adjustments for unconsolidated entities. We allocate a management fee charge of 4% of cash revenues for all facilities (with the exception of the leased facilities acquired in 2015, which were allocated a charge of 10% of cash revenues) as a property operating cost and a corresponding reduction to general and administrative expense to cover the day-to-day administrative costs to operate our data centers. The management fee charge is reflected as a reduction to net operating income. Management uses NOI as a supplemental performance measure because it provides a useful measure of the operating results from our customer leases. In addition, we believe it is useful to investors in evaluating and comparing the operating performance of our properties and to compute the fair value of our properties.

A reconciliation of net income (loss) to NOI is presented below:

(unaudited \$ in thousands)	Year Ended December 31,				
	2019	2018	2017	2016	2015
Net Operating Income (NOI)					
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457	\$ 24,685	\$ 24,129
Equity in net loss of unconsolidated entity	1,473	—	—	—	—
Interest income	(111)	(150)	(67)	(3)	(2)
Interest expense	26,593	28,749	30,523	23,159	21,289
Depreciation and amortization	168,305	149,891	140,924	124,786	85,811
Debt restructuring costs	1,523	605	19,992	193	468
Other expense	50	—	—	—	—
Tax benefit of taxable REIT subsidiaries	(37)	(3,368)	(9,778)	(9,976)	(10,065)
Transaction, integration and impairment costs	15,190	2,743	11,060	10,906	11,282
General and administrative expenses	80,385	80,857	87,231	83,286	67,783
(Gain) loss on sale of real estate, net	(14,769)	—	—	—	164
Restructuring	—	37,943	—	—	—
NOI from consolidated operations *	<u>\$ 310,267</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>	<u>\$ 257,036</u>	<u>\$ 200,859</u>
Pro rata share of NOI from unconsolidated entity	2,789	—	—	—	—
Total NOI	<u>\$ 313,056</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>	<u>\$ 257,036</u>	<u>\$ 200,859</u>
Breakdown of NOI by facility:					
Atlanta (DC - 1) data center **	\$ 96,196	\$ 87,060	\$ 80,648	\$ 81,074	\$ 69,861
Atlanta-Suwanee data center	48,704	48,165	48,365	45,760	41,088
Richmond data center	32,979	33,445	40,919	30,752	20,959
Irving data center	45,484	42,621	32,870	16,608	5,547
Dulles data center	11,730	16,944	21,672	19,384	10,391
Leased data centers ***	8,793	9,695	12,006	24,131	19,154
Santa Clara data center	7,549	8,344	11,378	13,703	14,352
Piscataway data center	13,584	12,266	9,395	5,627	—
Princeton data center	9,977	9,729	9,598	9,544	9,461
Sacramento data center	6,204	7,448	6,804	7,734	7,516
Chicago data center	13,104	8,878	4,652	167	—
Ashburn data center	4,698	1,250	—	—	—
Fort Worth data center	4,021	902	268	3	—
Other facilities ****	7,244	3,348	2,767	2,549	2,530
NOI from consolidated operations *	<u>\$ 310,267</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>	<u>\$ 257,036</u>	<u>\$ 200,859</u>
Pro rata share of NOI from unconsolidated entity	2,789	—	—	—	—
Total NOI	<u>\$ 313,056</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>	<u>\$ 257,036</u>	<u>\$ 200,859</u>

* Includes facility level general and administrative allocation charges of 4% of cash revenue for all facilities (with the exception of the leased facilities acquired in 2015, which were allocated a charge of 10% of cash revenues through 2018). These allocated charges aggregated to \$18.6 million, \$20.8 million, \$21.6 million, \$20.6 million and \$15.2 million for the years ended December 31, 2019, 2018, 2017, 2016 and 2015, respectively.

** This property was formerly known as “Atlanta-Metro data center” but has been renamed “Atlanta (DC-1)” to distinguish between the existing data center and the new property development.

*** At December 31, 2019 includes 7 facilities. All facilities are leased, including those subject to finance leases. During the quarter ended December 31, 2019, the Company exited its Hong Kong and London facilities.

**** Consists of Miami, FL; Lenexa, KS; Overland Park, KS; Duluth, GA; and Groningen, Netherlands facilities.

- (4) We calculate earnings before interest, taxes, depreciation and amortization for real estate (“EBITDA_{re}”) in accordance with the standards established by the National Association of Real Estate Investment Trusts (“NAREIT”). EBITDA_{re} represents net income (loss) (computed in accordance with GAAP) adjusted to exclude gains (or losses) from sales of depreciated property related to our primary business, income tax expense (or benefit), interest expense, depreciation and amortization, impairments of depreciated property related to our primary business, and similar adjustments for unconsolidated entities. Management uses EBITDA_{re} as a supplemental performance measure because it provides a measure that, when compared year over year, captures the performance of our operations by removing the impact of our capital structure (primarily interest expense) and asset base charges (primarily depreciation and amortization) from our operating results.

In addition to EBITDA_{re}, we calculate an adjusted measure of EBITDA, which we refer to as Adjusted EBITDA, as EBITDA_{re} excluding certain non-routine charges, write off of unamortized deferred financing costs, gains (losses) on extinguishment of debt, restructuring costs, and transaction and integration costs, as well as our pro-rata share of each of those respective adjustments associated with the unconsolidated entity aggregated into one line item categorized as “Pro rata share of EBITDA_{re} from the unconsolidated entity”. In addition, we calculate Adjusted EBITDA excluding certain non-cash recurring costs such as equity-based compensation. We believe that Adjusted EBITDA provides investors with another financial measure that may facilitate comparisons of operating performance between periods and, to the extent other REITs calculated Adjusted EBITDA on a comparable basis, between REITs.

We use EBITDA_{re} and Adjusted EBITDA as supplemental performance measures as they provide useful measures of assessing our operating results. Other companies may not calculate EBITDA_{re} or Adjusted EBITDA in the same manner. Accordingly, our EBITDA_{re} and Adjusted EBITDA may not be comparable to others. EBITDA_{re} and Adjusted EBITDA should be considered only as supplements to net income (loss) as measures of our performance and should not be used as substitutes for net income (loss), as measures of our results of operations or liquidity or as an indication of funds available to meet our cash needs, including our ability to make distributions to our stockholders.

A reconciliation of net income (loss) to EBITDA_{re} and Adjusted EBITDA is presented below:

(unaudited \$ in thousands)	Year Ended December 31,				
	2019	2018	2017	2016	2015
EBITDA_{re}					
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457	\$ 24,685	\$ 24,129
Equity in net loss of unconsolidated entity	1,473	—	—	—	—
Interest expense	26,593	28,749	30,523	23,159	21,289
Interest income	(111)	(150)	(67)	(3)	(2)
Tax benefit of taxable REIT subsidiaries	(37)	(3,368)	(9,778)	(9,976)	(10,065)
Depreciation and amortization	168,305	149,891	140,924	124,786	85,811
(Gain) loss on disposition of depreciated property	(13,408)	6,994	—	—	—
Impairments of depreciated property	11,461	8,842	4,219	—	—
Pro rata share of EBITDA _{re} from unconsolidated entity	2,775	—	—	—	—
EBITDA_{re} *	<u>228,716</u>	<u>183,783</u>	<u>167,278</u>	<u>162,651</u>	<u>121,162</u>
Adjusted EBITDA					
Debt restructuring costs	1,523	605	19,992	193	468
Equity-based compensation expense	16,412	14,972	13,863	10,584	6,964
Restructuring costs	—	22,107	—	—	—
Transaction, integration and impairment costs	3,729	2,743	6,841	10,906	11,282
Loss on sale of real estate	—	—	—	—	164
Adjusted EBITDA	<u>\$ 250,380</u>	<u>\$ 224,210</u>	<u>\$ 207,974</u>	<u>\$ 184,334</u>	<u>\$ 140,040</u>

* Beginning January 1, 2018, pursuant to a NAREIT issued white paper, we disclose the amount of gains or losses from the sale of assets that are incidental to our primary business included in EBITDA_{re} as well as impairment write-downs associated with assets that are incidental to our primary business included in EBITDA_{re}. EBITDA_{re} for the year ended December 31, 2019 includes a \$1.4 million gain on sale of real estate related to certain assets considered incidental to our primary business and were included in the “Gain on sale of real estate, net” line item of the consolidated statement of operations. No gains, losses or impairment write-downs associated with assets incidental to our primary business were included in EBITDA_{re} for the year ended December 31, 2018.

For more information on our use of Non-GAAP Financial Measures see “Management’s Discussion and Analysis of Financial Condition and Results of Operations-Non-GAAP Financial Measures.”

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis covers the financial condition and results of operations of QTS Realty Trust, Inc. You should read the following discussion and analysis in conjunction with QTS's and the Operating Partnership's consolidated financial statements and related notes and "Risk Factors" contained elsewhere in this Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Form 10-K, including information with respect to our business and growth strategies, our expectations regarding the future performance of our business and the other non-historical statements contained herein are forward-looking statements. See "Special Note Regarding Forward-Looking Statements." This Form 10-K contains stand-alone audited and unaudited financial statements and other financial data for each of QTS and the Operating Partnership. See "Explanatory Note" for an explanation of the few differences between these financial statements in the context of how QTS and the Operating Partnership operate as a consolidated company.

Since the financial data presented in this Item 7 does not contain any differences between QTS and the Operating Partnership, all periods presented reflect the operating results of the Operating Partnership.

Overview

QTS is a leading provider of data center solutions to the world's largest and most sophisticated hyperscale technology companies, enterprises and government agencies. Through our technology-enabled platform, delivered across mega scale data center infrastructure, we offer a comprehensive portfolio of secure and compliant IT solutions. Our data centers are facilities that power and support our customers' IT infrastructure equipment and provide seamless access and connectivity to a range of communications and IT services providers. Across our broad footprint of strategically-located data centers, we provide flexible scalable, and secure IT solutions including data center space, power and cooling, connectivity and value-add managed services for more than 1,200 customers in the financial services, healthcare, retail, government, and technology industries. We build out our data center facilities to accommodate both multi-tenant environments (hybrid colocation) and for executed leases that require significant amounts of space and power (hyperscale), depending on the needs of each facility at that time. We believe that we own and operate one of the largest portfolios of multi-tenant data centers in the United States, as measured by gross square footage, and have the capacity to nearly double our sellable data center raised floor space without constructing or acquiring any new buildings. In addition, we own more than 730 acres of land that is available at our data center properties that provides us with the opportunity to significantly expand our capacity to further support future demand from current and new potential customers.

We operate a portfolio of 24 data centers located throughout the United States, Canada and Europe. Within the United States, our data centers are concentrated in the markets which we believe offer the highest growth opportunities. Our data centers are highly specialized, mission-critical facilities utilized by our customers to store, power and cool the server, storage, and networking equipment that support their most critical business systems and processes. We believe that our data centers are best-in-class and engineered to adhere to the highest specifications commercially available to customers, providing fully redundant, high-density power and cooling sufficient to meet the needs of the largest companies and organizations in the world. We have demonstrated a strong operating track record of "five-nines" (99.999%) reliability since QTS' inception.

QTS is a Maryland corporation formed on May 17, 2013 and is the sole general partner and majority owner of QualityTech, LP, our operating partnership (the "Operating Partnership"). Substantially all of our assets are held by, and our operations are conducted through, the Operating Partnership. QTS' Class A common stock trades on the New York Stock Exchange under the ticker symbol "QTS."

The Operating Partnership is a Delaware limited partnership formed on August 5, 2009 and was QTS' historical predecessor prior to QTS's initial public offering on October 15, 2013 (the "IPO"), having operated the Company's business until the IPO. As of December 31, 2019, QTS owned an approximate 89.7% ownership interest in the Operating Partnership.

We believe that QTS has operated and has been organized in conformity with the requirements for qualification and taxation as a REIT commencing with its taxable year ended December 31, 2013. Our qualification as a REIT, and maintenance of such qualification, depends upon our ability to meet, on a continuing basis, various complex

requirements under the Internal Revenue Code of 1986, as amended (the “Code”) relating to, among other things, the sources of our gross income, the composition and values of our assets, our distributions to our stockholders and the concentration of ownership of our equity shares.

Our Customer Base

Our data center facilities are designed with the flexibility to support a diverse set of solutions and customers. Our customer base is comprised of more than 1,200 different companies of all sizes representing an array of industries, each with unique and varied business models and needs. We serve Fortune 1000 companies as well as small and medium-sized businesses, or SMBs, including financial institutions, healthcare companies, retail companies, government agencies, communications service providers, software companies and global Internet companies.

We have customers that range from large enterprise and technology companies with significant IT expertise and data center requirements, including financial institutions, “Big Four” accounting firms and the world’s largest global Internet and cloud companies, to major healthcare, telecommunications and software and web-based companies.

As a result of our diverse customer base, customer concentration in our portfolio is limited. As of December 31, 2019, only five of our more than 1,200 customers individually accounted for more than 3% of our monthly recurring revenue (“MRR”) (as defined below), with the largest customer accounting for approximately 10.9% of our MRR and the next largest customer accounting for only 5.8% of our MRR.

Our Portfolio

We operate 24 data centers located throughout the United States, Canada and Europe, containing an aggregate of approximately 7.2 million gross square feet of space, including approximately 3.2 million “basis-of-design” raised floor square feet (approximately 96.0% of which is wholly owned by us including our data center in Santa Clara which is subject to a long-term ground lease), which represents the total sellable data center raised floor potential of our existing data center facilities. This reflects the maximum amount of space in our existing buildings that could be leased following full build-out, depending on the space and power configuration that we deploy. As of December 31, 2019, this space included approximately 1.7 million raised floor operating net rentable square feet, or NRSF, plus approximately 1.6 million square feet of additional raised floor in our development pipeline, of which approximately 167,000 raised floor square feet is expected to become operational by December 31, 2020. Of the total 167,000 raised floor square feet in our development pipeline that is expected to become operational by December 31, 2020, approximately 142,000 square feet was related to customer leases which had been executed as of December 31, 2019 but not yet commenced. Our facilities collectively have access to approximately 894 megawatts (“MW”) of available utility power. Access to power is typically the most limiting and expensive component in developing a data center and, as such, we believe our significant access to power represents an important competitive advantage.

Key Operating Metrics

The following sets forth definitions for our key operating metrics. These metrics may differ from similar definitions used by other companies.

Monthly Recurring Revenue (“MRR”). We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted. MRR does not reflect any accounting associated with any free rent, rent abatements or future scheduled rent increases and also excludes operating expense and power reimbursements.

Annualized Rent. We define annualized rent as MRR multiplied by 12.

Rental Churn. We define rental churn as the MRR lost in the period from a customer intending to fully exit our platform in the near term compared to the total MRR at the beginning of the period.

Leasable Raised Floor. We define leasable raised floor as the amount of raised floor square footage that we have leased plus the available capacity of raised floor square footage that is in a leasable format as of a particular date and according

to a particular product configuration. The amount of our leasable raised floor may change even without completion of new development projects due to changes in our configuration of space.

Percentage (%) Occupied and Billing Raised Floor. We define percentage occupied and billing raised floor as the square footage that is subject to a signed lease for which billing has commenced as of a particular date compared to leasable raised floor based on the current configuration of the properties as of that date, expressed as a percentage.

Booked-not-Billed. We define booked-not-billed as our customer leases that have been signed, but for which lease payments have not yet commenced.

Factors That May Influence Future Results of Operations and Cash Flows

Recent Accounting Pronouncements. We adopted the provisions of Accounting Standards Codification (“ASC”) Topic 606, *Revenue from Contracts with Customers*, effective January 1, 2018. We also adopted ASC Topic 842, *Leases*, effective January 1, 2019. For additional information with respect to the impact of the standards on our financial condition and results of operations, refer to Item 8 – Note 2 – Summary of Significant Accounting Policies in “Financial Statements and Supplementary Data” included in this Annual Report.

Revenue. Our revenue growth will depend on our ability to maintain the historical occupancy rates of leasable raised floor, lease currently available space, lease new capacity that becomes available as a result of our development and redevelopment activities, attract new customers and continue to meet the ongoing technological requirements of our customers. As of December 31, 2019, we had in place customer leases generating revenue for approximately 91% of our leasable raised floor. Our ability to grow revenue also will be affected by our ability to maintain or increase rental and managed services rates at our properties. Future economic downturns, regional downturns or downturns in the technology industry, new technological developments, evolving industry demands and other similar factors described above under “Risk Factors” could impair our ability to attract new customers or renew existing customers’ leases on favorable terms, or at all, and could adversely affect our customers’ ability to meet their obligations to us. Negative trends in one or more of these factors could adversely affect our revenue in future periods, which would impact our results of operations and cash flows. We also at times may elect to reclaim space from customers in a negotiated transaction where we believe that we can redevelop and/or re-lease that space at higher rates, which may cause a decrease in revenue until the space is re-leased.

Leasing Arrangements. As of December 31, 2019, 45% of our MRR came from customers which individually occupied greater than or equal to 6,600 square feet of space (or approximately 1 MW of power), with the remaining 55% attributable to customers utilizing less than 6,600 square feet of space. As of December 31, 2019, approximately 49% of our MRR was attributable to the metered power model, the majority of which is comprised of customers that individually occupy greater than 6,600 square feet of space. Under the metered power model, the customer pays us a fixed monthly rent amount, plus reimbursement of certain other operating costs, including actual costs of sub-metered electricity used to power its data center equipment and an estimate of costs for electricity used to power supporting infrastructure for the data center, expressed as a factor of the customer’s actual electricity usage. Fluctuations in our customers’ utilization of power and the supplier pricing of power do not significantly impact our results of operations or cash flows under the metered power model. These leases generally have a minimum term of five years. As of December 31, 2019, the remaining approximately 51% of our MRR was attributable to the gross lease or managed service model. Under this model, the customer pays us a fixed amount on a monthly basis, and does not separately reimburse us for operating costs, including utilities, maintenance, repair, property taxes and insurance, as reimbursement for these costs is factored into MRR. However, if customers incur more utility costs than their leases permit, we are able to charge these customers for overages. For leases under the gross lease or managed service model, fluctuations in our customers’ utilization of power and the prices our utility providers charge us will impact our results of operations and cash flows. Our gross leases and managed services contracts generally have a term of three years or less.

Scheduled Lease Expirations. Our ability to minimize rental churn and customer downgrades at renewal and renew, lease and re-lease expiring space will impact our results of operations and cash flows. Leases which have commenced billing representing approximately 16% and 19% of our total leased raised floor are scheduled to expire during the years ending December 31, 2020 (including all month-to-month leases) and 2021, respectively. These leases also represented approximately 29% and 19%, respectively, of our annualized rent as of December 31, 2019. Given that our average rent for larger contracts tend to be at or below market rent at expiration, as a general matter, based on current market conditions, we expect that expiring rents will be at or below the then-current market rents.

Acquisitions, Development, and Financing. Our revenue growth also will depend on our ability to acquire and redevelop and/or construct and subsequently lease data center space at favorable rates. We generally fund the cost of data center acquisition, construction and/or redevelopment from our net cash provided by operations, revolving credit facility, other unsecured and secured borrowings, joint ventures or the issuance of additional equity. We believe that we have sufficient access to capital from our current cash and cash equivalents, and borrowings under our credit facilities to fund our development and redevelopment projects.

Unconsolidated Entity. On February 22, 2019, we entered into an agreement with Alinda, an infrastructure investment firm, with respect to our Manassas data center. At closing, we contributed cash and our Manassas data center (a 118,000 square foot hyperscale data center under development in Manassas, Virginia), and Alinda contributed cash, in each case, in exchange for a 50% interest in the unconsolidated entity. The Manassas data center, which is currently leased to a global cloud-based software company pursuant to a 10-year lease agreement, was contributed at an expected stabilized value upon completion of approximately \$240 million. At the closing, we received approximately \$53 million in net proceeds, which was funded from the cash contributed by Alinda and also borrowings under a \$164.5 million secured credit facility entered into by the unconsolidated entity at closing that carries a rate of LIBOR plus 2.25%. We used these distributions to pay down our revolving credit facility and for general corporate purposes. Under the agreement, we will receive additional distributions in the future as and when we complete development of each phase of the Manassas data center and place it into service, which allows us to receive distributions for Alinda's share of the joint venture based on the expected full stabilization of the asset. These distributions will be based on a 6.75% capitalization rate for each phase delivered during the first three years of the agreement. Under the agreement, we serve as the unconsolidated entity's operating member, subject to authority and oversight of a board appointed by us and Alinda, and separately we serve as manager and developer of the facility in exchange for management and development fees. The agreement includes various transfer restrictions and rights of first offer that will allow us to repurchase Alinda's interest should Alinda wish to exit in the future. In addition, we have agreed to provide Alinda an opportunity to invest in future similar entities based on similar terms and a comparable capitalization rate. This agreement has been reflected as an unconsolidated entity on our reported financial statements beginning in the first quarter of 2019.

Operating Expenses. Our operating expenses generally consist of direct personnel costs, utilities, property and ad valorem taxes, insurance and site maintenance costs and rental expenses on our ground and building leases. In particular, our buildings require significant power to support the data center operations conducted in them. Although a significant portion of our long-term leases—leases with a term greater than three years—contain reimbursements for certain operating expenses, we will not in all instances be reimbursed for all of the property operating expenses we incur. We also incur general and administrative expenses, including expenses relating to senior management, our in-house sales and marketing organization, cloud and managed services support personnel and legal, human resources, accounting and other expenses related to professional services. We also will incur additional expenses arising from being a publicly traded company, including employee equity-based compensation. Increases or decreases in our operating expenses will impact our results of operations and cash flows. We expect to incur additional operating expenses as we continue to expand.

General Leasing Activity

Information is provided in the tables below for both our leasing activity as well as booked-not-billed balances.

New/modified leases signed, "Incremental Annualized Rent, Net of Downgrades" reflect net incremental MRR signed during the period for purposes of tracking incremental revenue contribution. The amounts include renewals when there was a change in square footage rented, but exclude renewals where square footage remained consistent before and after renewal. (See "Renewed Leases" table below for such renewals.) Annualized rent per leased square foot is computed using the total MRR associated with all new and modified leases for the respective periods.

In regards to renewed leases signed, consistent with our strategy and business model, the renewal rates below reflect total MRR per square foot including all subscribed services. For comparability, we include only those leases where the square footage remained consistent before and after renewal. All customers with space changes are incorporated into new/modified leasing statistics and rates.

The following leasing and booked-not-billed statistics include results of the consolidated business as well as QTS' 50% pro rata share of revenue from the unconsolidated entity, if any.

	Period	Number of Leases	Annualized rent ⁽²⁾ per leased sq ft	Incremental Annualized Rent ⁽²⁾ , Net of Downgrades	
New/modified leases signed . . .	Three Months Ended December 31, 2019	373	\$ 465	\$	27,742,166
	Year Ended December 31, 2019	1,741	\$ 465	\$	76,056,932

	Period	Number of Renewed Leases	Annualized rent ⁽²⁾ per leased sq ft	Annualized Rent ⁽²⁾	Rent Change
Renewed Leases ⁽¹⁾	Three Months Ended December 31, 2019	90	\$ 777	\$	11,522,508 (2.2)%
	Year Ended December 31, 2019	375	\$ 673	\$	62,778,972 1.0 %

(1) We define renewals as leases where the customer retains the same amount of space before and after renewals, which facilitates rate comparability.

(2) We define annualized rent as MRR as of December 31, 2019, multiplied by 12.

The following table outlines the booked-not-billed balance as of December 31, 2019 and how that will affect revenue in 2020 and subsequent years:

Booked-not-billed ⁽¹⁾	2020	2021	Thereafter	Total
MRR	\$ 3,457,580	\$ 2,712,087	\$ 1,586,883	\$ 7,756,550
Incremental revenue ⁽²⁾	23,969,832	22,511,306	19,042,596	
Annualized revenue ⁽³⁾⁽⁴⁾	\$ 41,490,960	\$ 32,545,044	\$ 19,042,596	\$ 93,078,600

(1) Includes the Company's consolidated booked-not-billed balance in addition to booked-not-billed revenue associated with the unconsolidated entity at QTS's pro rata share of the book-not-billed revenue. Of the \$93.1 million annualized booked-not-billed revenue, approximately \$1.6 million related to QTS's pro rata share of booked-not-billed revenue associated with the unconsolidated entity.

(2) Incremental revenue represents the expected amount of recognized MRR for the business in the period based on when the booked-not-billed leases commence throughout the period.

(3) Annualized revenue represents the booked-not-billed MRR multiplied by 12, demonstrating how much recognized MRR might have been recognized if the booked-not-billed leases commencing in the period were in place for an entire year.

(4) As of December 31, 2019, adjusting booked-not-billed revenue for the effects of revenue which had begun recognition via straight line rent, the Company's annualized booked-not-billed balance was \$60.7 million, of which \$41.6 million was attributable to 2020, \$14.2 million was attributable to 2021, and \$4.9 million was attributable to years thereafter.

The Company estimates the remaining cost to provide the space, power, connectivity and other services to the customer contracts which had not billed as of December 31, 2019 to be approximately \$351 million. This estimate generally includes customers with newly contracted space of more than 3,300 square feet of raised floor space. The space, power, connectivity and other services provided to customers that contract for smaller amounts of space is generally provided by existing space which was previously developed.

Results of Operations

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

Changes in revenues and expenses for the year ended December 31, 2019 compared to the year ended December 31, 2018 are summarized below (in thousands):

	Year Ended December 31,			
	2019	2018	\$ Change	% Change
Revenues:				
Rental.....	\$ 465,123	\$ 413,620	\$ 51,503	12 %
Other	15,695	36,904	(21,209)	(57)%
Total revenues.....	480,818	450,524	30,294	7 %
Operating expenses:				
Property operating costs.....	156,048	148,236	7,812	5 %
Real estate taxes and insurance	14,503	12,193	2,310	19 %
Depreciation and amortization.....	168,305	149,891	18,414	12 %
General and administrative	80,385	80,857	(472)	(1)%
Transaction, integration and impairment costs.....	15,190	2,743	12,447	454 %
Restructuring	—	37,943	(37,943)	(100)%
Total operating expenses	434,431	431,863	2,568	1 %
Gain on sale of real estate, net	14,769	—	14,769	* %
Operating income	61,156	18,661	42,495	228 %
Other income and expense:				
Interest income	111	150	(39)	(26)%
Interest expense.....	(26,593)	(28,749)	2,156	(7)%
Debt restructuring costs	(1,523)	(605)	(918)	152 %
Other expense	(50)	—	(50)	* %
Equity in net loss of unconsolidated entity	(1,473)	—	(1,473)	* %
Income (loss) before taxes	31,628	(10,543)	42,171	400 %
Tax benefit of taxable REIT subsidiaries	37	3,368	(3,331)	(99)%
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 38,840	541 %

Revenues. Total revenues for the year ended December 31, 2019 were \$480.8 million compared to \$450.5 million for the year ended December 31, 2018. The increase of \$30.3 million, or 7%, was largely attributable to growth in our hyperscale and hybrid colocation offerings in the Atlanta (DC-1), Chicago, Ashburn, Irving, Fort Worth and Piscataway data centers as well as revenue from the Groningen data center which was acquired in April 2019. In addition, increased utility usage by our metered power customers increased our revenue from operating cost reimbursement by approximately \$9.7 million compared to the prior year. Offsetting these increases were revenue reductions in various leased facilities associated with our transition from certain cloud and managed services offerings as a part of the strategic growth plan implemented in 2018.

Property Operating Costs. Property operating costs for the year ended December 31, 2019 were \$156.0 million compared to property operating costs of \$148.2 million for the year ended December 31, 2018, an increase of \$7.8 million, or 5%. The breakdown of our property operating costs is summarized in the table below (in thousands):

	Year Ended December 31,			
	2019	2018	\$ Change	% Change
Property operating costs:				
Direct payroll	\$ 23,618	\$ 22,498	\$ 1,120	5 %
Rent	12,882	13,446	(564)	(4)%
Repairs and maintenance	12,125	14,525	(2,400)	(17)%
Utilities	68,292	58,598	9,694	17 %
Management fee allocation	18,571	20,775	(2,204)	(11)%
Other	20,560	18,394	2,166	12 %
Total property operating costs	\$ 156,048	\$ 148,236	\$ 7,812	5 %

Total property operating costs increased due to continued growth in our business primarily attributable to an increase in utilities expense, direct payroll expenses as well as bad debt expense (which is included in “Other”). These increases were partially offset by expense reductions in repairs and maintenance, management fee allocation and rent expense primarily related to our transition from our cloud and managed services offerings associated with our 2018 strategic growth plan.

Real Estate Taxes and Insurance. Real estate taxes and insurance for the year ended December 31, 2019 were \$14.5 million compared to \$12.2 million for the year ended December 31, 2018. The increase of \$2.3 million, or 19%, was primarily attributable to an increase in real estate taxes and personal property taxes at our Irving, Ashburn, Chicago and Fort Worth facilities.

Depreciation and Amortization. Depreciation and amortization for the year ended December 31, 2019 was \$168.3 million compared to \$149.9 million for the year ended December 31, 2018. The increase of \$18.4 million, or 12%, was attributable to additional depreciation expense primarily related to an increase in assets placed in service in our Ashburn, Atlanta (DC-1), Chicago, and Irving facilities.

General and Administrative Expenses. General and administrative expenses were \$80.4 million for the year ended December 31, 2019 compared to general and administrative expenses of \$80.9 million for the year ended December 31, 2018, a decrease of \$0.5 million, or 1%. The decrease was primarily attributable to the implementation of the aforementioned strategic growth plan, resulting in a decrease in net payroll expenses and software licenses, partially offset by an increase in equity-based compensation expense and professional services fees.

Transaction, Integration & Impairment Costs. Transaction, integration and impairment costs were \$15.2 million for the year ended December 31, 2019, compared to \$2.7 million for the year ended December 31, 2018. The increase was primarily attributable to a \$11.5 million impairment recognized in 2019 related to a write-down of certain data center assets and equipment in one of our Dulles, Virginia data centers. The Dulles campus has two data center buildings and we initiated a plan in the fourth quarter of 2019 to abandon one of the buildings and relocate customers from the smaller and older facility being abandoned to the newer facility in an effort to better optimize our operating cost structure. The remaining costs for the year ended December 31, 2019 and December 31, 2018 are primarily attributable to costs related to the examination of actual and potential acquisitions.

Restructuring Costs. Restructuring costs, which are costs associated with our strategic growth plan in the prior year, were \$37.9 million for the year ended December 31, 2018, primarily related to employee severance expenses, professional fees, acceleration of equity-based compensation awards and the sale or write-off of certain product-related assets. No restructuring costs were recognized during the year ended December 31, 2019.

Gain on sale of real estate, net. The gain on sale of real estate net incurred during the year ended December 31, 2019 primarily relates to a \$13.4 million net gain realized upon sale of the Manassas facility to the unconsolidated entity which represents the fair value of cash and noncash consideration received in the sale transaction, net of costs directly related to the sale in excess of the carrying amounts of the assets. In addition, during the year ended December 31, 2019, we recognized a \$1.4 million gain on sale of certain ancillary land improvements near our Atlanta (DC-1) facility.

Interest Expense. Interest expense for the year ended December 31, 2019 was \$26.6 million compared to \$28.7 million for the year ended December 31, 2018. The decrease of \$2.2 million, or 7%, was due primarily to a higher level of capitalized interest due to a larger construction in progress balance associated with continued ongoing capital development projects, partially offset by an increase in interest costs related to an increase in the average total debt balance of \$149.9 million.

Debt Restructuring Costs. Debt restructuring costs for the year ended December 31, 2019 were \$1.5 million compared to debt restructuring costs of \$0.6 million for the year ended December 31, 2018. The increase in debt restructuring costs of \$0.9 million was primarily attributable to an amendment and restatement of our unsecured credit facility during the fourth quarter of 2019 which included a new seven year term loan, increased capacity of the revolving credit facility and extended maturity dates. The debt restructuring costs in 2018 related to similar extension of terms (however, did not incorporate a new term loan), modification of various covenants and reduced pricing associated with the credit facility.

Other Income (Expense). Other income (expense) represents the impact of foreign currency exchange rate fluctuations on the value of investments in foreign subsidiaries whose functional currencies are other than the U.S. Dollar. We

recognized \$0.1 million of foreign currency loss related to our investment in the Netherlands facilities during the year ended December 31, 2019, with no such expenses recognized during the prior year.

Equity in net income (loss) of unconsolidated entity. This represents equity in earnings (loss) of our unconsolidated entity formed during the first quarter of 2019 that owns our Manassas data center. Equity in net loss was \$1.5 million for the year ended December 31, 2019, which was primarily attributable to real estate depreciation expenses, with no such equity in earnings (loss) recognized during the prior year.

Tax Benefit of Taxable REIT Subsidiaries. Tax benefit of taxable REIT subsidiaries for the year ended December 31, 2019 was less than \$0.1 million compared to \$3.4 million for the year ended December 31, 2018. The decrease in tax benefit was primarily attributable to an increase in valuation allowances recorded against current period operating losses relative to the prior period.

Year Ended December 31, 2018 Compared to Year Ended December 31, 2017

For a discussion comparing the Company's financial condition and results of operations for the year ended December 31, 2018 compared to the year ended December 31, 2017 refer to subsection "Results of Operations - Year Ended December 31, 2018 Compared to Year Ended December 31, 2017" of Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference herein. This discussion should be read in conjunction with Item 8. Financial Statements and Supplementary Data.

Non-GAAP Financial Measures

We consider the following non-GAAP financial measures to be useful to investors as key supplemental measures of our performance: (1) FFO; (2) Operating FFO; (3) Adjusted Operating FFO; (4) MRR; (5) NOI; (6) EBITDA_{re}; and (7) Adjusted EBITDA. These non-GAAP financial measures should be considered along with, but not as alternatives to, net income or loss and cash flows from operating activities as a measure of our operating performance. FFO, Operating FFO, Adjusted Operating FFO, MRR, NOI, EBITDA_{re} and Adjusted EBITDA, as calculated by us, may not be comparable to FFO, Operating FFO, Adjusted Operating FFO, MRR, NOI, EBITDA_{re} and Adjusted EBITDA as reported by other companies that do not use the same definition or implementation guidelines or interpret the standards differently from us.

FFO, Operating FFO and Adjusted Operating FFO

We consider funds from operations ("FFO") to be a supplemental measure of our performance which should be considered along with, but not as an alternative to, net income (loss) and cash provided by operating activities as a measure of operating performance. We calculate FFO in accordance with the standards established by the National Association of Real Estate Investment Trusts ("NAREIT"). FFO represents net income (loss) (computed in accordance with GAAP), adjusted to exclude gains (or losses) from sales of depreciable real estate related to our primary business, impairment write-downs of depreciable real estate related to our primary business, real estate-related depreciation and amortization, and similar adjustments for unconsolidated entities. To the extent we incur gains or losses from the sale of assets that are incidental to our primary business, or incur impairment write-downs associated with assets that are incidental to our primary business, we include such amounts in our calculation of FFO. Our management uses FFO as a supplemental performance measure because, in excluding real estate-related depreciation and amortization, impairment and gains and losses from property dispositions related to our primary business, it provides a performance measure that, when compared year over year, captures trends in occupancy rates, rental rates and operating costs.

Due to the volatility and nature of certain significant charges and gains recorded in our operating results that management believes are not reflective of our core operating performance, management computes an adjusted measure of FFO, which we refer to as Operating funds from operations ("Operating FFO"). Operating FFO is a non-GAAP measure that is used as a supplemental operating measure and to provide additional information to users of the financial statements. We generally calculate Operating FFO as FFO excluding certain non-routine charges and gains and losses that management believes are not indicative of the results of our operating real estate portfolio. We believe that Operating FFO provides investors with another financial measure that may facilitate comparisons of operating performance between periods and, to the extent they calculate Operating FFO on a comparable basis, between REITs.

Adjusted Operating Funds From Operations (“Adjusted Operating FFO”) is a non-GAAP measure that is used as a supplemental operating measure and to provide additional information to users of the financial statements. We calculate Adjusted Operating FFO by adding or subtracting from Operating FFO items such as: maintenance capital investment, paid leasing commissions, amortization of deferred financing costs and bond discount, non-real estate depreciation and amortization, straight line rent adjustments, deferred taxes and equity-based compensation.

We offer these measures because we recognize that FFO, Operating FFO and Adjusted Operating FFO will be used by investors as a basis to compare our operating performance with that of other REITs. However, because FFO, Operating FFO and Adjusted Operating FFO exclude real estate depreciation and amortization and capture neither the changes in the value of our properties that result from use or market conditions, nor the level of capital expenditures and capitalized leasing commissions necessary to maintain the operating performance of our properties, all of which have real economic effect and could materially impact our financial condition, cash flows and results of operations, the utility of FFO, Operating FFO and Adjusted Operating FFO as measures of our operating performance is limited. Our calculation of FFO may not be comparable to measures calculated by other companies who do not use the NAREIT definition of FFO or do not calculate FFO in accordance with NAREIT guidance. In addition, our calculations of FFO, Operating FFO and Adjusted Operating FFO are not necessarily comparable to FFO, Operating FFO and Adjusted Operating FFO as calculated by other REITs that do not use the same definition or implementation guidelines or interpret the standards differently from us. FFO, Operating FFO and Adjusted Operating FFO are non-GAAP measures and should not be considered a measure of our results of operations or liquidity or as a substitute for, or an alternative to, net income (loss), cash provided by operating activities or any other performance measure determined in accordance with GAAP, nor is it indicative of funds available to fund our cash needs, including our ability to make distributions to our stockholders.

A reconciliation of net income (loss) to FFO, Operating FFO and Adjusted Operating FFO is presented below:

(unaudited \$ in thousands)	Year Ended December 31,		
	2019	2018	2017
FFO			
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Equity in net loss of unconsolidated entity	1,473	—	—
Real estate depreciation and amortization	156,387	136,119	123,555
Gain on sale of real estate, net	(13,408)	—	—
Impairments of depreciated property	11,461	—	—
Pro rata share of FFO from unconsolidated entity	1,078	—	—
FFO⁽¹⁾	<u>188,656</u>	<u>128,944</u>	<u>125,012</u>
Preferred Stock Dividends	(28,180)	(16,666)	—
FFO available to common stockholders & OP unit holders	<u>160,476</u>	<u>112,278</u>	<u>125,012</u>
Debt restructuring costs	1,523	605	19,992
Restructuring costs	—	37,943	—
Transaction and integration costs	3,729	2,743	11,060
Tax benefit associated with restructuring, transaction and integration costs	—	(2,408)	—
Operating FFO available to common stockholders & OP unit holders⁽²⁾	<u>165,728</u>	<u>151,161</u>	<u>156,064</u>
Maintenance capital expenditures	(4,233)	(6,662)	(5,009)
Leasing commissions paid	(31,102)	(24,246)	(20,115)
Amortization of deferred financing costs and bond discount	3,917	3,856	3,868
Non real estate depreciation and amortization	11,918	13,772	17,369
Straight line rent revenue and expense and other	(7,922)	(6,770)	(4,967)
Tax benefit from operating results	(37)	(960)	(9,778)
Equity-based compensation expense	16,412	14,972	13,863
Adjustments for unconsolidated entity	118	—	—
Adjusted Operating FFO available to common stockholders & OP unit holders⁽²⁾	<u>\$ 154,799</u>	<u>\$ 145,123</u>	<u>\$ 151,295</u>

(1) Beginning January 1, 2018, pursuant to a NAREIT issued white paper, we disclose the amount of gains or losses from the sale of assets that are incidental to our primary business included in FFO as well as impairment write-downs associated with assets that are incidental to our primary business included in FFO. FFO for the year ended December 31, 2019 includes a \$1.4 million gain on sale of real estate related to certain assets considered incidental to our primary business and were included in the “Gain on sale of real estate, net” line item of the consolidated statements of operations. FFO for the year ended December 31, 2018 includes \$15.8 million of impairment losses related to certain non-real estate product related assets that were considered incidental to our primary business and were included in the “Restructuring” line item of the consolidated statement of operations.

(2) The Company’s calculations of Operating FFO and Adjusted Operating FFO may not be comparable to Operating FFO and Adjusted Operating FFO as calculated by other REITs that do not use the same definition.

Monthly Recurring Revenue (MRR) and Recognized MRR

We calculate MRR as monthly contractual revenue under signed leases as of a particular date, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. MRR is also calculated to include the Company's pro rata share of monthly contractual revenue under signed leases as of a particular date associated with unconsolidated entities, which includes revenue from the unconsolidated entity's rental and managed services activities, but excludes the unconsolidated entity's customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues. It does not include the impact from booked-not-billed leases as of a particular date, unless otherwise specifically noted.

Separately, we calculate recognized MRR as the recurring revenue recognized during a given period, which includes revenue from our rental and cloud and managed services activities, but excludes customer recoveries, deferred set-up fees, variable related revenues, non-cash revenues and other one-time revenues.

Management uses MRR and recognized MRR as supplemental performance measures because they provide useful measures of increases in contractual revenue from our customer leases and customer leases attributable to our business. MRR and recognized MRR should not be viewed by investors as alternatives to actual monthly revenue, as determined in accordance with GAAP. Other companies may not calculate MRR or recognized MRR in the same manner. Accordingly, our MRR and recognized MRR may not be comparable to other companies' MRR and recognized MRR. MRR and recognized MRR should be considered only as supplements to total revenues as a measure of our performance. MRR and recognized MRR should not be used as measures of our results of operations or liquidity, nor is it indicative of funds available to meet our cash needs, including our ability to make distributions to our stockholders.

A reconciliation of total GAAP revenues to recognized MRR in the period and MRR at period end is presented below:

(unaudited \$ in thousands)	Year Ended December 31,		
	2019	2018	2017
Recognized MRR in the period			
Total period revenues (GAAP basis)	\$ 480,818	\$ 450,524	\$ 446,510
Less: Total period variable lease revenue from recoveries	(55,046)	(45,386)	(37,886)
Total period deferred setup fees	(15,156)	(12,475)	(10,690)
Total period straight line rent and other	(20,349)	(17,148)	(22,848)
Recognized MRR in the period.	<u>390,267</u>	<u>375,515</u>	<u>375,086</u>
MRR at period end			
Total period revenues (GAAP basis)	\$ 480,818	\$ 450,524	\$ 446,510
Less: Total revenues excluding last month	(438,810)	(412,041)	(406,345)
Total revenues for last month of period.	42,008	38,483	40,165
Less: Last month variable lease revenue from recoveries	(4,578)	(3,822)	(3,175)
Last month deferred setup fees	(1,333)	(1,015)	(1,123)
Last month straight line rent and other	(2,413)	(2,505)	(4,159)
Add: Pro rata share of MRR at period end of unconsolidated entity	350	—	—
MRR at period end *	<u>\$ 34,034</u>	<u>\$ 31,141</u>	<u>\$ 31,708</u>

* Does not include our booked-not-billed MRR balance, which was \$7.8 million, \$5.2 million and \$3.9 million as of December 31, 2019, 2018 and 2017, respectively.

Net Operating Income (NOI)

We calculate net operating income (“NOI”), as net income (loss) (computed in accordance with GAAP), excluding: interest expense, interest income, tax expense (benefit) of taxable REIT subsidiaries, depreciation and amortization, write off of unamortized deferred financing, debt restructuring costs, gain (loss) on extinguishment of debt, transaction and integration costs, gain (loss) on sale of real estate, restructuring costs, general and administrative expenses and similar adjustments for unconsolidated entities. We allocate a management fee charge of 4% of cash revenues for all facilities (with the exception of the leased facilities acquired in 2015, which were allocated a charge of 10% of cash revenues) as a property operating cost and a corresponding reduction to general and administrative expense to cover the day-to-day administrative costs to operate our data centers. The management fee charge is reflected as a reduction to net operating income.

Management uses NOI as a supplemental performance measure because it provides a useful measure of the operating results from our customer leases. In addition, we believe it is useful to investors in evaluating and comparing the operating performance of our properties and to compute the fair value of our properties. Our NOI may not be comparable to other REITs’ NOI as other REITs may not calculate NOI in the same manner. NOI should be considered only as a supplement to net income as a measure of our performance and should not be used as a measure of our results of operations or liquidity or as an indication of funds available to meet our cash needs, including our ability to make distributions to our stockholders. NOI is a measure of the operating performance of our properties and not of our performance as a whole. NOI is therefore not a substitute for net income as computed in accordance with GAAP.

A reconciliation of net income to NOI is presented below:

(unaudited \$ in thousands)	Year Ended December 31,		
	2019	2018	2017
Net Operating Income (NOI)			
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Equity in net loss of unconsolidated entity	1,473	—	—
Interest income	(111)	(150)	(67)
Interest expense	26,593	28,749	30,523
Depreciation and amortization	168,305	149,891	140,924
Debt restructuring costs	1,523	605	19,992
Other expense	50	—	—
Tax benefit of taxable REIT subsidiaries	(37)	(3,368)	(9,778)
Transaction, integration and impairment costs	15,190	2,743	11,060
General and administrative expenses	80,385	80,857	87,231
Gain on sale of real estate, net	(14,769)	—	—
Restructuring	—	37,943	—
NOI from consolidated operations⁽¹⁾	<u>\$ 310,267</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>
Pro rata share of NOI from unconsolidated entity	2,789	—	—
Total NOI	<u>\$ 313,056</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>
Breakdown of NOI by facility:			
Atlanta (DC - 1) data center ⁽²⁾	\$ 96,196	\$ 87,060	\$ 80,648
Atlanta-Suwanee data center	48,704	48,165	48,365
Richmond data center	32,979	33,445	40,919
Irving data center	45,484	42,621	32,870
Dulles data center	11,730	16,944	21,672
Leased data centers ⁽³⁾	8,793	9,695	12,006
Santa Clara data center	7,549	8,344	11,378
Piscataway data center	13,584	12,266	9,395
Princeton data center	9,977	9,729	9,598
Sacramento data center	6,204	7,448	6,804
Chicago data center	13,104	8,878	4,652
Ashburn data center	4,698	1,250	—
Fort Worth data center	4,021	902	268
Other facilities ⁽⁴⁾	7,244	3,348	2,767
NOI from consolidated operations⁽¹⁾	<u>\$ 310,267</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>
Pro rata share of NOI from unconsolidated entity	2,789	—	—
Total NOI	<u>\$ 313,056</u>	<u>\$ 290,095</u>	<u>\$ 281,342</u>

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- (1) Includes facility level general and administrative allocation charges of 4% of cash revenue for all facilities (with the exception of the leased facilities acquired in 2015, which were allocated a charge of 10% of cash revenues through 2018). These allocated charges aggregated to \$18.6 million, \$20.8 million and \$21.6 million for the years ended December 31, 2019, 2018 and 2017, respectively.
 - (2) This property was formerly known as “Atlanta-Metro data center” but has been renamed “Atlanta (DC-1)” to distinguish between the existing data center and the new property development.
 - (3) At December 31, 2019 includes 7 facilities. All facilities are leased, including those subject to finance leases.
 - (4) Consists of Miami, FL; Lenexa, KS; Overland Park, KS; and Groningen, Netherlands facilities. In addition, includes management fees and development fees received from the unconsolidated entity.

Earnings Before Interest, Taxes, Depreciation and Amortization for Real Estate (EBITDAre) and Adjusted EBITDA

We calculate EBITDAre in accordance with the standards established by NAREIT. EBITDAre represents net income (loss) (computed in accordance with GAAP) adjusted to exclude gains (or losses) from sales of depreciated property related to our primary business, income tax expense (or benefit), interest expense, depreciation and amortization, impairments of depreciated property related to our primary business, and similar adjustments for unconsolidated entities. Management uses EBITDAre as a supplemental performance measure because it provides performance measures that, when compared year over year, captures the performance of our operations by removing the impact of our capital structure (primarily interest expense) and asset base charges (primarily depreciation and amortization) from our operating results.

Due to the volatility and nature of certain significant charges and gains recorded in our operating results that management believes are not reflective of operating performance, we compute an adjusted measure of EBITDAre, which we refer to as Adjusted EBITDA. We calculate Adjusted EBITDA as EBITDAre excluding certain non-routine charges, write off of unamortized deferred financing costs, gains (losses) on extinguishment of debt, restructuring costs, and transaction and integration costs, as well as our pro-rata share of each of those respective adjustments associated with the unconsolidated entity aggregated into one line item categorized as “Adjustments for the unconsolidated entity.” In addition, we calculate Adjusted EBITDA excluding certain non-cash recurring costs such as equity-based compensation. We believe that Adjusted EBITDA provides investors with another financial measure that may facilitate comparisons of operating performance between periods and, to the extent other REITs calculate Adjusted EBITDA on a comparable basis, between REITs.

Management uses EBITDAre and Adjusted EBITDA as supplemental performance measures as they provide useful measures of assessing our operating results. Other companies may not calculate EBITDAre or Adjusted EBITDA in the same manner. Accordingly, our EBITDAre and Adjusted EBITDA may not be comparable to others. EBITDAre and Adjusted EBITDA should be considered only as supplements to net income (loss) as measures of our performance and should not be used as substitutes for net income (loss), as measures of our results of operations or liquidity or as indications of funds available to meet our cash needs, including our ability to make distributions to our stockholders.

A reconciliation of net income to EBITDA_{re} and Adjusted EBITDA is presented below:

(unaudited \$ in thousands)	Year Ended December 31,		
	2019	2018	2017
EBITDA_{re} and Adjusted EBITDA			
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Equity in net loss of unconsolidated entity	1,473	—	—
Interest income	(111)	(150)	(67)
Interest expense	26,593	28,749	30,523
Tax benefit of taxable REIT subsidiaries	(37)	(3,368)	(9,778)
Depreciation and amortization	168,305	149,891	140,924
(Gain) loss on disposition of depreciated property	(13,408)	6,994	—
Impairments of depreciated property	11,461	8,842	4,219
Pro rata share of EBITDA _{re} from unconsolidated entity	2,775	—	—
EBITDA_{re} ⁽¹⁾	<u>228,716</u>	<u>183,783</u>	<u>167,278</u>
Debt restructuring costs	1,523	605	19,992
Equity-based compensation expense	16,412	14,972	13,863
Restructuring costs	—	22,107	—
Transaction, integration and impairment costs	3,729	2,743	6,841
Adjusted EBITDA	<u>\$ 250,380</u>	<u>\$ 224,210</u>	<u>\$ 207,974</u>

(1) Beginning January 1, 2018, pursuant to a NAREIT issued white paper, we disclose the amount of gains or losses from the sale of assets that are incidental to our primary business included in EBITDA_{re} as well as impairment write-downs associated with assets that are incidental to our primary business included in EBITDA_{re}. EBITDA_{re} for the year ended December 31, 2019 includes a \$1.4 million gain on sale of real estate related to certain assets considered incidental to our primary business and were included in the “Gain on sale of real estate, net” line item of the consolidated statement of operations. No gains, losses or impairment write-downs associated with assets incidental to our primary business were included in EBITDA_{re} for the year ended December 31, 2018.

Liquidity and Capital Resources

Short-Term Liquidity

Our short-term liquidity needs include funding capital expenditures for the development of data center space (a significant portion of which is discretionary), meeting debt service and debt maturity obligations, funding payments for finance leases, funding distributions to our common and preferred stockholders and unit holders, utility costs, site maintenance costs, real estate and personal property taxes, insurance, rental expenses, general and administrative expenses and certain recurring and non-recurring capital expenditures.

We expect that we will incur approximately \$550 million to \$600 million in additional capital expenditures through December 31, 2020, in connection with the development of our data center facilities, which excludes acquisitions and includes of our 50% proportionate share of capital expenditures at the Manassas facility that was contributed to an unconsolidated entity. We expect to spend approximately \$450 million to \$500 million of capital expenditures with vendors on development, and the remainder on other capital expenditures and capitalized internal project costs (including capitalized interest, commissions, payroll and other similar costs), personal property and other less material capital projects. A significant portion of these expenditures are discretionary in nature and we may ultimately determine not to make these expenditures or the timing of expenditures may vary.

We expect to meet these costs and our other short-term liquidity needs through operating cash flow, cash and cash equivalents, borrowings under our credit facility, proceeds from the forward equity transactions discussed below, additional equity issuances through our ATM program or other capital markets activity. As of February 28, 2020, we have approximately \$220 million of expected proceeds that will be paid upon settlement of pending forward equity transactions.

Our cash paid for capital expenditures for the years ended December 31, 2019, 2018 and 2017 are summarized in the table below (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Development	\$ 256,012	\$ 386,592	\$ 213,632
Acquisitions	76,383	117,029	127,038
Maintenance capital expenditures	4,233	6,662	5,009
Other capital expenditures ⁽¹⁾	105,059	91,049	88,673
Total capital expenditures	\$ 441,687	\$ 601,332	\$ 434,352

(1) Represents capital expenditures for capitalized interest, commissions, personal property, overhead costs and corporate fixed assets. Corporate fixed assets primarily relate to construction of corporate offices, leasehold improvements and product related assets.

Long-Term Liquidity

Our long-term liquidity needs primarily consist of funds for property acquisitions, scheduled debt maturities, payment of principal at maturity of our Senior Notes, funding payments for finance leases, dividend payments on our Series A Preferred Stock and Series B Preferred Stock and recurring and non-recurring capital expenditures. We may also pursue new developments and additional redevelopment of our data centers and future redevelopment of other space in our portfolio. We may also pursue development on land which QTS currently owns that is available at our data center properties in Atlanta (DC-2) (which represents the development of a new data center building at our Atlanta (DC-1) campus), Atlanta-Suwanee, Richmond, Irving, Fort Worth, Princeton, Chicago, Ashburn, Phoenix, Hillsboro and Manassas. The development and/or redevelopment of this space, including timing, is at our discretion and will depend on a number of factors, including availability of capital and our estimate of the demand for data center space in the applicable market. We expect to meet our long-term liquidity needs with net cash provided by operations, incurrence of additional long-term indebtedness, borrowings under our credit facility, distributions from our unconsolidated entity and issuance of additional equity or debt securities, subject to prevailing market conditions, as discussed below.

Equity Capital

On March 15, 2018, we issued 4,280,000 shares of 7.125% Series A Cumulative Redeemable Perpetual Preferred Stock with a liquidation preference of \$25.00 per share, which included 280,000 shares of the underwriters' partial exercise of their option to purchase additional shares. We used the net proceeds of approximately \$103.2 million to repay amounts outstanding under our unsecured revolving credit facility.

On June 25, 2018, we issued 3,162,500 shares of 6.50% Series B Cumulative Convertible Perpetual Preferred Stock with a liquidation preference of \$100.00 per share, which included 412,500 shares the underwriters purchased pursuant to the exercise of their overallotment option in full. We used the net proceeds of approximately \$304 million to repay amounts outstanding under our unsecured revolving credit facility.

In February 2019, we conducted an underwritten offering of 7,762,500 shares of Class A common stock, consisting of 4,000,000 shares issued during the first quarter of 2019 and 3,762,500 shares sold on a forward basis, which included 1,012,500 shares sold upon full exercise of the underwriters' option to purchase additional shares. We received net proceeds of approximately \$159 million from the issuance of 4,000,000 shares during the first quarter of 2019, which were used to repay amounts outstanding under our unsecured revolving credit facility. During the third quarter of 2019, we settled 2,832,000 forward shares for total net proceeds of approximately \$110 million, which was used to repay amounts outstanding under our revolving credit facility. Following this partial settlement, we have approximately \$36 million of proceeds remaining available under this forward sale (subject to further adjustment as described below), which we expect to physically settle prior to March 31, 2020 with the issuance of approximately 0.9 million shares of common stock, although we have the right to elect settlement prior to that time.

In June 2019, we established a new "at-the-market" equity offering program (the "ATM Program") pursuant to which we may issue, from time to time, up to \$400 million of our Class A common stock, which may include shares to be sold on a forward basis. The use of forward sales under the ATM Program generally allows the Company to lock in a price on the sale of shares when sold by the forward sellers, but defer receiving the net proceeds from such sales until the shares are issued at settlement on a later date.

During the year ended December 31, 2019, we utilized the forward provisions under the ATM Program to allow for the sale of up to an aggregate of 2.9 million shares of our common stock. At December 31, 2019, we had not settled any of these forward sales. Through February 28, 2020 (including the sales during the year ended December 31, 2019 described above), we utilized the forward provisions under the ATM Program to allow for the sale of up to an aggregate of 3.6 million shares of our common stock. As of February 28, 2020, we had not settled any of these forward sales.

The following table represents a summary of our equity issuances during the year ended December 31, 2019, as well as through February 28, 2020 (in thousands):

Offering Program	Forward Shares Sold	Shares Settled	Net Proceeds Received	Remaining Expected Proceeds Available	Forward Settlement Maturity Date ⁽¹⁾
February 2019 Offering	N/A	4,000	\$ 159,360	\$ —	N/A
February 2019 Offering	3,763	2,832 ⁽²⁾	109,998	35,799	March 31, 2020
June 2019 \$400 million ATM Program . .	2,864	—	-	142,046	Various through January 17, 2021
Total as of December 31, 2019				\$ 177,844	
June 2019 \$400 million ATM Program . .	764 ⁽³⁾	—	\$ -	41,646	Various through January 30, 2021
Total as of February 28, 2020				\$ 219,490	

- (1) Represents the final date which shares sold under each forward agreement may be settled.
- (2) Represents the number of forward shares we elected to physically settle during the year ended December 31, 2019.
- (3) Represents shares issued on a forward basis subsequent to December 31, 2019 through February 28, 2020.

We expect to physically settle (by delivering shares of common stock) the forward sales under the ATM program and the February 2019 Offering prior to the first anniversary date of each respective transaction. As seen in the table above, when combined with proceeds remaining available under the forward sale in the February 2019 Offering, we currently have access to nearly \$220 million of net proceeds through forward stock sales (subject to further adjustment as described below). We view forward equity sales under our ATM program as an important capital raising tool that we expect to continue to strategically and selectively use, subject to market conditions and overall availability under the ATM program.

At any time during the term of any forward sale, the Company may settle the forward sale by physical delivery of shares of common stock to the forward purchaser or, at the Company’s election, cash settle or net share settle. The initial forward sale price per share under each forward sale equals the product of (x) an amount equal to 100% minus the applicable forward selling commission and (y) the volume weighted average price per share at which the borrowed shares of our common stock were sold pursuant to the equity distribution agreement by the relevant forward seller during the applicable forward hedge selling period for such shares to hedge the relevant forward purchaser’s exposure under such forward sale. Thereafter, the forward sale price is subject to adjustment on a daily basis based on a floating interest rate factor equal to the specified daily rate less a spread, and is decreased based on specified amounts related to dividends on shares of our common stock during the term of the applicable forward sale. If the specified daily rate is less than the spread on any day, the interest rate factor will result in a daily reduction of the applicable forward sale price.

Previously, in March 2017, we established an “at-the-market” equity offering program (the “prior ATM Program”) pursuant to which we could issue, from time to time, up to \$300 million of our Class A common stock. We terminated the prior ATM program in March 2019 in connection with the expiration of our prior universal shelf registration statement. We replaced our expired universal shelf registration statement with a new universal registration in April 2019.

Manassas Unconsolidated Entity.

On February 22, 2019, we entered into an agreement with Alinda Capital Partners (“Alinda”), an infrastructure investment firm, with respect to our Manassas data center, as described above under “Factors That May Influence Future Results of Operations and Cash Flows.” At the closing, we received approximately \$53 million in cash proceeds, which was comprised of the cash contributed by Alinda and also borrowings under a \$164.5 million secured credit facility entered into by the unconsolidated entity at closing that carries a rate of LIBOR plus 2.25%. We used these proceeds to pay down our revolving credit facility and for general corporate purposes. Under the agreement, we will receive additional proceeds in the future as and when we complete development of each phase of the Manassas data center and place it into service, which allows us to receive proceeds for Alinda’s share of the unconsolidated entity based on the expected full stabilization of the asset. These proceeds will be based on a 6.75% capitalization rate for each phase delivered during the first three years of the venture.

Cash

As of December 31, 2019, we had \$15.7 million of unrestricted cash and cash equivalents.

Dividends and Distributions

The following tables present quarterly cash dividends and distributions paid to QTS' common and preferred stockholders and the Operating Partnership's unit holders for the years ended December 31, 2019 and 2018:

Year Ended December 31, 2019			
<u>Record Date</u>	<u>Payment Date</u>	<u>Per Share and Per Unit Rate</u>	<u>Aggregate Dividend/Distribution Amount (in millions)</u>
Common Stock/Units			
September 19, 2019.....	October 4, 2019	\$ 0.44	\$ 27.3
June 25, 2019.....	July 9, 2019	0.44	27.3
March 20, 2019.....	April 4, 2019	0.44	27.3
December 21, 2018.....	January 8, 2019	0.41	23.7
			<u>\$ 105.6</u>
Series A Preferred Stock/Units			
September 30, 2019.....	October 15, 2019	\$ 0.45	\$ 1.9
June 30, 2019.....	July 15, 2019	0.45	1.9
March 31, 2019.....	April 15, 2019	0.45	1.9
December 31, 2018.....	January 15, 2019	0.45	1.9
			<u>\$ 7.6</u>
Series B Preferred Stock/Units			
September 30, 2019.....	October 15, 2019	\$ 1.63	\$ 5.1
June 30, 2019.....	July 15, 2019	1.63	5.1
March 31, 2019.....	April 15, 2019	1.63	5.1
December 31, 2018.....	January 15, 2019	1.63	5.1
			<u>\$ 20.4</u>
Year Ended December 31, 2018			
<u>Record Date</u>	<u>Payment Date</u>	<u>Per Share and Per Unit Rate</u>	<u>Aggregate Dividend/Distribution Amount (in millions)</u>
Common Stock/Units			
September 20, 2018.....	October 4, 2018	\$ 0.41	\$ 23.7
June 20, 2018.....	July 6, 2018	0.41	23.7
March 22, 2018.....	April 5, 2018	0.41	23.7
December 5, 2017.....	January 5, 2018	0.39	22.2
			<u>\$ 93.3</u>
Series A Preferred Stock/Units			
September 28, 2018.....	October 15, 2018	\$ 0.45	\$ 1.9
June 29, 2018.....	July 16, 2018	0.45	1.9
April 5, 2018.....	April 16, 2018	0.15	0.6
			<u>\$ 4.4</u>
Series B Preferred Stock/Units			
September 30, 2018.....	October 15, 2018	\$ 1.99	\$ 6.3
			<u>\$ 6.3</u>

Additionally, subsequent to December 31, 2019, the Company paid the following dividends:

- On January 7, 2020, the Company paid its regular quarterly cash dividend of \$0.44 per common share and per unit in the Operating Partnership to stockholders and unit holders of record as of the close of business on December 20, 2019.
- On January 15, 2020, the Company paid a quarterly cash dividend of approximately \$0.45 per share on its Series A Preferred Stock to holders of Series A Preferred Stock of record as of the close of business on December 31, 2019, and the Operating Partnership paid a quarterly cash distribution of approximately \$0.45 per unit on outstanding Series A Preferred Units held by the Company.
- On January 15, 2020, the Company paid a quarterly cash dividend of approximately \$1.63 per share on its Series B Preferred Stock to holders of Series B Preferred Stock of record as of the close of business on December 31, 2019, and the Operating Partnership paid a quarterly cash distribution of approximately \$1.63 per unit on outstanding Series B Preferred Units held by the Company.

Indebtedness

As of December 31, 2019, we had approximately \$1,463.9 million of indebtedness, including finance lease obligations.

Unsecured Credit Facility. We amended and restated our unsecured credit facility in October 2019 (as so amended and restated, the “unsecured credit facility”), which among other things, increased the total potential borrowings, extended maturity dates, lowered interest rates, and provided for an additional term loan under the agreement. The unsecured credit facility includes a \$225 million term loan which matures on December 17, 2024 (“Term Loan A”), a \$225 million term loan which matures on April 27, 2025 (“Term Loan B”), an additional term loan of \$250 million which matures on October 18, 2026 (“Term Loan C”) and a \$1.0 billion revolving credit facility which matures on December 17, 2023. The revolving portion of the credit facility has a one-year extension option available to the Company. Amounts outstanding under the new unsecured credit facility bear interest at a variable rate equal to, at our election, LIBOR or a base rate, plus a spread that will vary depending upon our leverage ratio. For revolving credit loans, the spread ranges from 1.25% to 1.85% for LIBOR loans and 0.25% to 0.85% for base rate loans. For Term Loan A and Term Loan B, the spread ranges from 1.20% to 1.80% for LIBOR loans and 0.20% to 0.80% for base rate loans. For Term Loan C the spread ranges from 1.50% to 1.85% for LIBOR loans and 0.50% to 0.85% for base rate loans. The new unsecured credit facility also provides for borrowing capacity of up to \$300 million in various foreign currencies.

Under the new unsecured credit facility, the capacity may be increased from the current capacity of \$1.7 billion to \$2.2 billion subject to certain conditions set forth in the credit agreement, including the consent of the administrative agent and obtaining necessary commitments. We are also required to pay a commitment fee to the lenders assessed on the unused portion of the revolving portion of the new unsecured credit facility. At our election, we can prepay amounts outstanding under the new unsecured credit facility, in whole or in part, without penalty or premium.

Our ability to borrow under the new unsecured credit facility is subject to ongoing compliance with a number of customary affirmative and negative covenants, including limitations on liens, mergers, consolidations, investments, distributions, asset sales and affiliate transactions, as well as the following financial covenants: (i) the Operating Partnership's and its subsidiaries' consolidated total unsecured debt plus any capitalized lease obligations with respect to the unencumbered asset pool properties may not exceed 60% of the unencumbered asset pool value (or 65% of the unencumbered asset pool value for up to four consecutive fiscal quarters immediately following a material acquisition for which the Operating Partnership has provided written notice to the Agent, provided the four fiscal quarter period includes the quarter in which the material acquisition was consummated); (ii) the unencumbered asset pool debt yield cannot be less than 10.5%; (iii) QTS must maintain a minimum fixed charge coverage ratio (defined as the ratio of consolidated EBITDA, subject to certain adjustments, to consolidated fixed charges) for the prior two most recently-ended calendar quarters of 1.50 to 1.00; (iv) QTS must maintain a maximum debt to gross asset value (as defined in the amended and restated credit agreement) ratio of 60% (or 65% for the four consecutive fiscal quarters immediately following a material acquisition for which the Operating Partnership has provided written notice to the Agent, provided the four fiscal quarter period includes the quarter in which the material acquisition was consummated); and (v) QTS must maintain tangible net worth (as defined in the amended and restated credit agreement) cannot be less than the sum of \$1,686,000,000 plus 75% of the net proceeds from any equity offerings subsequent to June 30, 2019.

The availability under the new revolving credit facility is the lesser of (i) \$1.0 billion, (ii) 60% of the unencumbered asset pool capitalized value (or 65% of the unencumbered asset pool capitalized value for the four consecutive fiscal quarters immediately following a material acquisition for which the Operating Partnership has provided written notice to the Agent, provided the four fiscal quarter period includes the quarter in which the material acquisition was consummated) and (iii) the amount resulting in an unencumbered asset pool debt yield of 10.5%. In the case of clauses (ii) and (iii) of the preceding sentence, the amount available under the revolving credit facility is adjusted to take into account any other unsecured debt and certain capitalized leases. A material acquisition is an acquisition of properties or assets with a gross purchase price equal to or in excess of 15% of the Operating Partnership's gross asset value (as defined in the amended and restated credit agreement) as of the end of the most recently ended quarter for which financial statements are publicly available. The availability of funds under our new unsecured credit facility depends on compliance with our covenants.

As of December 31, 2019, we had outstanding \$1,017.0 million of indebtedness under the unsecured credit facility, consisting of \$317 million of outstanding borrowings under the unsecured revolving credit facility and \$700 million outstanding under the term loans, exclusive of net debt issuance costs of \$6.4 million. In connection with the unsecured credit facility, as of December 31, 2019, we had additional letters of credit outstanding aggregating to \$4.0 million.

On April 5, 2017, we entered into forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from January 2, 2018 through December 17, 2021 and April 27, 2022, respectively. On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from December 17, 2021 through December 17, 2023 and April 27, 2022 through April 27, 2024, respectively. On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$200 million. The forward swap agreements effectively fix the interest rate on \$100 million of additional term loan borrowings from January 2, 2020 through December 17, 2023 as well as \$100 million of additional term loan borrowings from January 2, 2020 through April 27, 2024.

4.750% Senior Notes due 2025. On November 8, 2017, the Operating Partnership and QTS Finance Corporation, a subsidiary of the Operating Partnership formed solely for the purpose of facilitating the offering of the 5.875% Senior Notes due 2022 (collectively, the "Issuers") issued \$400 million aggregate principal amount of 4.750% Senior Notes due November 15, 2025 (the "Senior Notes") in a private offering. The Senior Notes have an interest rate of 4.750% per annum and were issued at a price equal to 100% of their face value. The net proceeds from the offering were used to fund the redemption of, and satisfy and discharge the indenture pursuant to which the Issuers issued, the 5.875% Senior Notes due 2022 and to repay a portion of the amount outstanding under the Company's unsecured revolving credit facility.

The Senior Notes are unconditionally guaranteed, jointly and severally, on a senior unsecured basis by all of the Operating Partnership's existing subsidiaries (other than foreign subsidiaries and receivables entities) and future subsidiaries that guarantee any indebtedness of QTS, the Issuers or any other subsidiary guarantor. QTS Realty Trust, Inc. does not guarantee the Senior Notes and will not be required to guarantee the Senior Notes except under certain circumstances. The offering was conducted pursuant to Rule 144A of the Securities Act of 1933, as amended, and the Senior Notes were issued pursuant to an indenture, dated as of November 8, 2017, among QTS, the Issuers, the guarantors named therein, and Deutsche Bank Trust Company Americas, as trustee (the "Indenture"). As of December 31, 2019, the outstanding net debt issuance costs associated with the Senior Notes were \$4.5 million.

The Indenture contains affirmative and negative covenants that, among other things, limits or restricts the Operating Partnership's ability and the ability of certain of its subsidiaries (the "Restricted Subsidiaries") to: incur additional indebtedness; pay dividends; make certain investments or other restricted payments; enter into transactions with affiliates; enter into agreements limiting the ability of the Operating Partnership's restricted subsidiaries to pay dividends; engage in sales of assets; and engage in mergers, consolidations or sales of substantially all of their assets.

However, certain of these covenants will be suspended if and for so long as the Senior Notes are rated investment grade by specified debt rating services and there is no default under the Indenture. The Operating Partnership and its Restricted Subsidiaries also are required to maintain total unencumbered assets (as defined in the Indenture) of at least 150% of their unsecured debt on a consolidated basis.

The Senior Notes may be redeemed by the Issuers, in whole or in part, at any time prior to November 15, 2020 at a redemption price equal to (i) 100% of the principal amount, plus (ii) accrued and unpaid interest to the redemption date, and (iii) a make-whole premium. On or after November 15, 2020, the Issuers may redeem the Senior Notes, in whole or in part, at a redemption price equal to (i) 103.563% of the principal amount from November 15, 2020 to November 14, 2021, (ii) 102.375% of the principal amount from November 15, 2021 to November 14, 2022, (iii) 101.188% of the principal amount from November 15, 2022 to November 14, 2023 and (iv) 100.000% of the principal amount of the Senior Notes from November 15, 2023 and thereafter, in each case plus accrued and unpaid interest to, but excluding, the redemption date. In addition, at any time prior to November 15, 2020, the Issuers may, subject to certain conditions, redeem up to 40% of the aggregate principal amount of the Senior Notes at 104.750% of the principal amount thereof, plus accrued and unpaid interest to, but excluding, the redemption date, with the net cash proceeds of certain equity offerings consummated by the Company or the Operating Partnership. Also, upon the occurrence of a change of control of us or the Operating Partnership, holders of the Senior Notes may require the Issuers to repurchase all or a portion of the Senior Notes at a price equal to 101% of the principal amount of the Senior Notes to be repurchased plus accrued and unpaid interest to the repurchase date.

Lenexa Mortgage. On March 8, 2017, we entered into a \$1.9 million mortgage loan secured by our Lenexa facility. This mortgage has a fixed rate of 4.1%, with periodic principal payments due monthly and a balloon payment of \$1.6 million in May 2022. As of December 31, 2019, the outstanding balance under the Lenexa mortgage was \$1.7 million.

Contingencies

We are subject to various routine legal proceedings and other matters in the ordinary course of business. While resolution of these matters cannot be predicted with certainty, management believes, based upon information currently available, that the final outcome of these proceedings will not have a material adverse effect on our financial condition, liquidity or results of operations.

Contractual Obligations

The following table summarizes our contractual obligations as of December 31, 2019, including the future non-cancellable minimum rental payments required under operating leases and the maturities and scheduled principal repayments of indebtedness and other agreements (in thousands):

Obligations ⁽¹⁾	2020	2021	2022	2023	2024	Thereafter	Total
Operating Leases	\$ 9,589	\$ 9,818	\$ 10,266	\$ 10,393	\$ 8,317	\$ 48,908	\$ 97,291
Finance Leases	2,579	2,712	2,958	3,229	3,516	30,146	45,140
Future Principal Payments of Indebtedness ⁽²⁾ . .	64	73	1,599	317,028	225,000	875,000	1,418,764
Total ⁽³⁾	<u>\$ 12,232</u>	<u>\$ 12,603</u>	<u>\$ 14,823</u>	<u>\$ 330,650</u>	<u>\$ 236,833</u>	<u>\$ 954,054</u>	<u>\$ 1,561,195</u>

- (1) Contractual obligations do not include our energy power purchase agreements as QTS has the ability to sell unused capacity back to the utility provider.
- (2) Does not include the related debt issuance costs on the Senior Notes nor the related debt issuance costs on the term loans reflected at December 31, 2019. Also does not include letters of credit outstanding aggregating to \$4.0 million as of December 31, 2019 under our unsecured credit facility.
- (3) Total obligations does not include contractual interest that we are required to pay on our long-term debt obligations. Contractual interest payments on our credit facilities, mortgages, finance leases and other financing arrangements through the scheduled maturity date, assuming no prepayment of debt and inclusive of the effects of interest rate swaps, are shown below. Interest payments were estimated based on the principal amount of debt outstanding and the applicable interest rate as of December 31, 2019 (in thousands):

2020	2021	2022	2023	2024	Thereafter	Total
\$ 55,389	\$ 55,333	\$ 57,235	\$ 56,983	\$ 42,075	\$ 37,930	\$ 304,945

Off-Balance Sheet Arrangements

On February 22, 2019, we entered into an agreement with Alinda Capital Partners (“Alinda”), an infrastructure investment firm, with respect to our Manassas data center, as described above under “Factors That May Influence Future Results of Operations and Cash Flows.” As of December 31, 2019, our pro rata share of mortgage debt of the unconsolidated entity, excluding deferred financing costs, was approximately \$35.1 million, all of which is subject to

forward interest rate swap agreements. See Item 7A, Quantitative and Qualitative Disclosures About Market Risk, for information on the Company's interest rate swaps.

In February 2019, we conducted an underwritten offering of 7,762,500 shares of Class A common stock, consisting of 4,000,000 shares issued during the first quarter of 2019 and 3,762,500 shares sold on a forward basis. During the third quarter of 2019, we settled 2,832,000 forward shares for total net proceeds of approximately \$110 million, which was used to repay amounts outstanding under our revolving credit facility. Following this partial settlement, we have approximately \$36 million of proceeds remaining available under this forward sale (subject to further adjustment as described above under the heading "Equity Capital"), which we expect to physically settle prior to March 31, 2020 with the issuance of approximately 0.9 million shares of common stock, although we have the right to elect settlement prior to that time.

During the year ended December 31, 2019, we utilized the forward provisions under the ATM Program to allow for the sale of up to an aggregate of 2.9 million shares of our common stock, representing available net proceeds upon physical settlement of approximately \$142 million (subject to further adjustment as described above under the heading "Equity Capital"). At December 31, 2019, the Company had not settled any of these forward sales and had approximately \$258 million of Class A common stock remaining available for sale under the ATM program.

Through February 28, 2020 (including the sales during the year ended December 31, 2019 described above), the Company utilized the forward provisions under the ATM Program to allow for the sale of up to an aggregate of 3.6 million shares of its common stock, representing available net proceeds upon physical settlement of approximately \$184 million (subject to further adjustment as described above under the heading "Equity Capital"). As of February 28, 2020, the Company had not settled any of these forward sales and had approximately \$216 million of Class A common stock remaining available for sale under the ATM Program.

The Company expects to physically settle (by delivering shares of common stock) these forward sales prior to the first anniversary date of each respective transaction. When combined with the approximately \$36 million of proceeds remaining available under the forward sale in the first quarter of 2019, the Company currently has access to nearly \$220 million of net proceeds through forward stock sales (subject to further adjustment as described above under the heading "Equity Capital"). The Company views forward equity sales under its ATM Program as an important capital raising tool that it expects to continue to strategically and selectively use, subject to market conditions and overall availability under the ATM Program.

Cash Flows

(in thousands)	Year Ended December 31,		
	2019	2018	2017
Cash flow provided by (used for):			
Operating activities	\$ 199,490	\$ 191,273	\$ 170,323
Investing activities	(387,260)	(598,553)	(434,352)
Financing activities	191,396	410,796	262,692

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

Cash flow provided by operating activities was \$199.5 million for the year ended December 31, 2019, compared to \$191.3 million for the year ended December 31, 2018. The increase in cash flow provided by operating activities of \$8.2 million was primarily due to an increase in cash operating income of \$40.4 million, offset by a decrease in cash flow associated with net changes in working capital of \$32.1 million primarily relating to an increase in rents and other receivables.

Cash flow used for investing activities decreased by \$211.3 million to \$387.3 million for the year ended December 31, 2019, compared to \$598.6 million for the year ended December 31, 2018. The decrease was due primarily to cash proceeds of \$52.7 million received from the Company's contribution of assets to an unconsolidated entity during 2019 as well as a decrease in additions to property and equipment of \$123.1 million. In addition, cash paid for acquisitions decreased \$40.6 million primarily related to increased cash paid for land acquisitions adjacent to Atlanta (DC-1) and Manassas in 2018.

Cash flow provided by financing activities was \$191.4 million for the year ended December 31, 2019, compared to \$410.8 million for the year ended December 31, 2018. The decrease was primarily due to lower net equity issuance proceeds of \$139.2 million, higher payments of cash dividends to common and preferred stockholders of \$29.0 million, and lower net proceeds of \$56.0 million under our unsecured credit facility.

Year Ended December 31, 2018 Compared to Year Ended December 31, 2017

For a discussion comparing the Company's liquidity and capital resources for the year ended December 31, 2018 compared to the year ended December 31, 2017 refer to subsection "Liquidity and Capital Resources - Year Ended December 31, 2018 Compared to Year Ended December 31, 2017" of Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference herein. This discussion should be read in conjunction with Item 8. Financial Statements and Supplementary Data.

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations is based upon our financial statements which have been prepared in accordance with GAAP. The preparation of these financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. Actual results may differ from these estimates. We have provided a summary of our significant accounting policies in Note 2 of our audited financial statements included elsewhere in this Form 10-K. We describe below accounting policies that require material subjective or complex judgments and that have the most significant impact on our financial condition and results of operations.

Acquisitions and Sales of Real Estate. When accounting for business combinations, asset acquisitions and real estate sales, we are required to make subjective assessments which involve significant judgment to allocate the purchase price paid to the acquired tangible assets and intangible assets and liabilities for asset acquisitions and business combinations and to determine the amount of non-monetary consideration received for sales of real estate.

In order to determine fair values associated with assets we acquire or non-monetary consideration received in sales of real estate assets, we utilize estimation models to derive the fair value of identifiable assets and any equity consideration received. These estimation models consist of common real estate valuation models that include Level 3 inputs such as market rents, discount rates, expected occupancy and estimates of additional capital expenditures, and capitalization rates derived from market data.

Unconsolidated Affiliates. We account for our 50% equity investment in our unconsolidated entity arrangement using the equity method of accounting. We determined that while the entity is a variable interest entity ("VIE"), we were not the primary beneficiary, thus the equity method of accounting was appropriate for transactions between QTS and the entity.

We determine whether an entity is a VIE and, if so, whether it should be consolidated by utilizing judgments and estimates that are inherently subjective. The determination of whether an entity in which we hold a direct or indirect variable interest is a VIE is based on several factors, including whether the entity's total equity investment at risk upon inception is sufficient to finance the entity's activities without additional subordinated financial support. We make judgments regarding the sufficiency of the equity at risk based first on a qualitative analysis, and then a quantitative analysis, if necessary.

We analyze any investments in VIEs to determine if we are the primary beneficiary. In evaluating whether we are the primary beneficiary, we evaluate our direct and indirect economic interests in the entity. Determining which reporting entity, if any, is the primary beneficiary of a VIE is primarily a qualitative approach focused on identifying which reporting entity has both (1) the power to direct the activities of a VIE that most significantly impact such entity's economic performance and (2) the obligation to absorb losses or the right to receive benefits from such entity that could potentially be significant to such entity. Performance of that analysis requires the exercise of judgment.

We consider a variety of factors in identifying the entity that holds the power to direct matters that most significantly impact the VIE's economic performance including, but not limited to, the ability to direct financing, leasing,

construction and other operating decisions and activities. In addition, we consider the rights of other investors to participate in those decisions, to replace the manager and to sell or liquidate the entity.

Capitalization of Costs. We capitalize certain development costs, including internal costs, incurred in connection with development of real estate assets. The capitalization of costs during the construction period (including interest and related loan fees, property taxes, internal payroll costs, and other direct and indirect project costs) begins when redevelopment efforts commence and ends when the asset is ready for its intended use.

Impairment of Long-Lived Assets and Goodwill. Whenever events or changes in circumstances indicate that the carrying amount of the asset group(s) may not be recoverable, we assess whether there has been impairment in the value of long-lived assets used in operations or in development and intangible assets. Recoverability of assets to be held and used is generally measured by comparison of the carrying amount of the asset group to the future net cash flows, undiscounted and without interest, expected to be generated by the asset group. If the net carrying value of the asset group exceeds the value of the undiscounted cash flows, the fair value of the asset is assessed and may be considered impaired. An impairment loss is recognized based on the excess of the carrying amount of the impaired asset over its fair value.

The fair value of goodwill is the consideration transferred which is not allocable to identifiable intangible and tangible assets. Goodwill is subject to at least an annual assessment for impairment. In connection with the goodwill impairment evaluation that the Company performed on October 1, 2019, the Company determined qualitatively that it is not more likely than not that the fair value of the Company's one reporting unit was less than the carrying amount, thus it did not perform a quantitative analysis.

Rental Revenue. We, as a lessor, have retained substantially all the risks and benefits of ownership and account for our leases as operating leases. ASC Topic 842 allows lessors to combine nonlease components with the related lease components if both the timing and pattern of transfer are the same for the nonlease component(s) and related lease component, and the lease component would be classified as an operating lease. The single combined component is accounted for under ASC Topic 842 if the lease component is the predominant component and is accounted for under ASC Topic 606 if the nonlease components are the predominant components. We combine our lease and nonlease components that meet the defined criteria and account for the combined lease component under ASC Topic 842. For lease agreements that provide for scheduled rent increases, rental income is recognized on a straight-line basis over the non-cancellable term of the leases, which commences when control of the space has been provided to the customer. Rental revenue also includes amortization of set-up fees which are amortized over the term of the respective lease, as discussed above.

Inflation

A significant portion of our long-term leases—leases with a term greater than three years—contain rent increases and reimbursement for certain operating costs. As a result, we believe that we are largely insulated from the effects of inflation over periods greater than three years. Leases with terms of three years or less will be replaced or renegotiated within three years and should adjust to reflect changed conditions, also mitigating the effects of inflation. Moreover, to the extent that there are material increases in utility costs, we generally reserve the right to renegotiate the rate. However, any increases in the costs of redevelopment of our properties will generally result in a higher cost of the property, which will result in increased cash requirements to redevelop our properties and increased depreciation and amortization expense in future periods, and, in some circumstances, we may not be able to directly pass along the increase in these redevelopment costs to our customers in the form of higher rental rates.

Distribution Policy

To satisfy the requirements to qualify as a REIT, and to avoid paying tax on our income, QTS intends to continue to make regular quarterly distributions of all, or substantially all, of its REIT taxable income (excluding net capital gains) to its stockholders.

All distributions will be made at the discretion of our board of directors and will depend on our historical and projected results of operations, liquidity and financial condition, QTS' REIT qualification, our debt service requirements, operating expenses and capital expenditures, prohibitions and other restrictions under financing arrangements and applicable law and other factors as our board of directors may deem relevant from time to time. We anticipate that our

estimated cash available for distribution will exceed the annual distribution requirements applicable to REITs and the amount necessary to avoid the payment of tax on undistributed income. However, under some circumstances, we may be required to make distributions in excess of cash available for distribution in order to meet these distribution requirements and we may need to borrow funds to make certain distributions. If we borrow to fund distributions, our future interest costs would increase, thereby reducing our earnings and cash available for distribution from what they otherwise would have been.

The Operating Partnership also includes certain partners that are subject to a taxable income allocation, however, not entitled to receive recurring distributions. The partnership agreement does stipulate however, to the extent that taxable income is allocated to these partners that the partnership will make a distribution to these partners equal to the lesser of the actual per unit distributions made to Class A partners or an estimated amount to cover federal, state and local taxes on the allocated taxable income. No such distributions were made during the years ended December 31, 2019, 2018 or 2017.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our future income, cash flows and fair values relevant to financial instruments are dependent upon prevailing market interest rates. Market risk refers to the risk of loss from adverse changes in market prices and interest rates. The primary market risk to which we believe we are exposed is interest rate risk. Many factors, including governmental monetary and tax policies, domestic and international economic and political considerations and other factors that are beyond our control, contribute to interest rate risk.

As of December 31, 2019, after consideration of \$400 million of interest rates swaps in effect, we had outstanding \$617.0 million of consolidated indebtedness that bore interest at variable rates.

We monitor our market risk exposures using a sensitivity analysis. Our sensitivity analysis estimates the exposure to market risk sensitive instruments assuming a hypothetical 1% change in year-end interest rates. A 1% increase in interest rates would increase the interest expense on the \$617.0 million of variable indebtedness outstanding as of December 31, 2019 by approximately \$6.2 million annually. Conversely, a decrease in the LIBOR rate to 0.76% would decrease the interest expense on this \$617.0 million of variable indebtedness outstanding by approximately \$6.2 million annually based on the one month LIBOR rate of approximately 1.763% as of December 31, 2019.

On April 5, 2017, the Company entered into forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from January 2, 2018 through December 17, 2021 and April 27, 2022, respectively, at approximately 3.2% assuming the current LIBOR spread of 1.2%.

On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from December 17, 2021 through December 17, 2023 and April 27, 2022 through April 27, 2024, respectively. The weighted average effective fixed interest rate on the \$400 million notional amount of term loan financing following the commencement of these swap agreements will approximate 3.8%, commencing on December 17, 2021 and April 27, 2022, assuming the current LIBOR spread of 1.2%. On December 20, 2018, the Company entered into additional forward interest rate swap agreements with an aggregate notional amount of \$200 million. The forward swap agreements effectively fix the interest rate on \$100 million of additional term loan borrowings from January 2, 2020 through December 17, 2023 as well as \$100 million of additional term loan borrowings from January 2, 2020 through April 27, 2024. The weighted average effective fixed interest rate on the \$200 million notional amount of term loan financing, following the execution of these swap agreements, will approximate 3.8% to 4.1%, commencing on January 2, 2020, assuming the current LIBOR spreads on the Company's term loans of 1.2% to 1.5%.

The above analyses do not consider the effect of any change in overall economic activity that could impact interest rates or expected changes associated with future indebtedness. Further, in the event of a change of that magnitude, we may take actions to further mitigate our exposure to the change. However, due to the uncertainty of the specific actions that would be taken and their possible effects, these analyses assume no changes in our financial structure.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

See Index to the Financial Statements on page F-1.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

QTS Realty Trust, Inc.

Disclosure Controls and Procedures

Based on an evaluation of disclosure controls and procedures for the period ended December 31, 2019, conducted by the Company's management, with the participation of the Chief Executive Officer and Chief Financial Officer, the Chief Executive Officer and Chief Financial Officer concluded that QTS' disclosure controls and procedures are effective to ensure that information required to be disclosed by QTS in reports that it files or submits under the Securities Exchange Act of 1934 is accumulated and communicated to the Company's management (including the Chief Executive Officer and Chief Financial Officer) to allow timely decisions regarding required disclosure, and is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) and 15d-15(f) of the Exchange Act). Our internal control system was designed to provide reasonable assurance to management and our board of directors regarding the preparation and fair presentation of published financial statements in accordance with generally accepted accounting principles.

As of December 31, 2019, management assessed the effectiveness of QTS Realty Trust, Inc.'s internal control over financial reporting based on the criteria for effective internal control over financial reporting established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on this assessment, management has concluded that, as of December 31, 2019, QTS Realty Trust, Inc.'s internal control over financial reporting was effective to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Ernst & Young LLP, an independent registered public accounting firm, has audited QTS Realty Trust, Inc.'s consolidated financial statements included in this Annual Report on Form 10-K and, as part of its audit, has issued its report, included herein on page F-3, on the effectiveness of QTS Realty Trust, Inc.'s internal control over financial reporting.

Changes in Internal Control over Financial Reporting

There were no changes in QTS' internal control over financial reporting during the three-month period ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, QTS' internal control over financial reporting.

QualityTech, LP

Disclosure Controls and Procedures

Based on an evaluation of disclosure controls and procedures for the period ended December 31, 2019, conducted by the Company's management, with the participation of the Chief Executive Officer and Chief Financial Officer, the Chief Executive Officer and Chief Financial Officer concluded that QualityTech, LP's disclosure controls and procedures are effective to ensure that information required to be disclosed by QualityTech, LP in reports that it files or submits under the Securities Exchange Act of 1934 is accumulated and communicated to the Company's management (including the Chief Executive Officer and Chief Financial Officer) to allow timely decisions regarding required disclosure, and is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms.

Management's Report on Internal Control Over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) and 15d-15(f) of the Exchange Act). Our internal control system was designed to provide reasonable assurance to management and our board of directors regarding the preparation and fair presentation of published financial statements in accordance with generally accepted accounting principles.

As of December 31, 2019, management assessed the effectiveness of QualityTech, LP's internal control over financial reporting based on the criteria for effective internal control over financial reporting established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on this assessment, management has concluded that, as of December 31, 2019, QualityTech, LP's internal control over financial reporting was effective to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Changes in Internal Control over Financial Reporting

There were no changes in QualityTech, LP's internal control over financial reporting during the three-month period ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, QualityTech, LP's internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information regarding directors is incorporated herein by reference from the section entitled "Proposal One: Election of Directors—Nominees for Election as Directors" in the Company's definitive Proxy Statement ("2020 Proxy Statement") to be filed pursuant to Regulation 14A of the Securities Exchange Act of 1934, as amended, for the Company's Annual Meeting of Stockholders to be held on May 6, 2020. The 2020 Proxy Statement will be filed within 120 days after the end of the Company's fiscal year ended December 31, 2019.

The information regarding executive officers is incorporated herein by reference from the section entitled "Executive Officers" in the Company's 2020 Proxy Statement.

The information regarding compliance with Section 16(a) of the Securities Exchange Act of 1934, as amended, is incorporated herein by reference from the section entitled “Security Ownership of Certain Beneficial Owners and Management—Section 16(a) Beneficial Ownership Reporting Compliance” in the Company’s 2020 Proxy Statement.

The information regarding the Company’s code of business conduct and ethics is incorporated herein by reference from the sections entitled “Corporate Governance and Board Matters—Code of Business Conduct and Ethics” in the Company’s 2020 Proxy Statement.

The information regarding the Company’s audit committee, its members and the audit committee financial experts is incorporated by reference herein from the section entitled “Corporate Governance and Board Matters—Committees of the Board—Audit Committee” in the Company’s 2020 Proxy Statement.

ITEM 11. EXECUTIVE COMPENSATION

The information included under the following captions in the Company’s 2020 Proxy Statement is incorporated herein by reference: “Compensation Discussion and Analysis,” “Compensation Committee Report,” “Compensation of Executive Officers,” “Corporate Governance and Board Matters—Compensation of Directors” and “Corporate Governance and Board Matters—Compensation Committee Interlocks and Insider Participation.”

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information regarding security ownership of certain beneficial owners and management is incorporated herein by reference from the section entitled “Security Ownership of Certain Beneficial Owners and Management” and “Compensation of Executive Officers—Equity Compensation Plan Information” in the Company’s 2020 Proxy Statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information regarding transactions with related persons and director independence is incorporated herein by reference from the sections entitled “Certain Relationships and Related Party Transactions” and “Corporate Governance and Board Matters—Corporate Governance Profile” in the Company’s 2020 Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information regarding principal auditor fees and services and the audit committee’s pre-approval policies are incorporated herein by reference from the sections entitled “Proposal Three: Ratification of the Appointment of Independent Registered Public Accounting Firm—Principal Accountant Fees and Services” and “Proposal Three: Ratification of the Appointment of Independent Registered Public Accounting Firm—Pre-Approval Policies and Procedures” in the Company’s 2020 Proxy Statement.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

The following is a list of documents filed as a part of this report:

(1) Financial Statements

Included herein at pages F-1 through F-55.

(2) Financial Statement Schedules

The following financial statement schedules are included herein at pages F-56 through F-58:

Schedule II—Valuation and Qualifying Accounts

Schedule III—Real Estate Investments

All other schedules for which provision is made in Regulation S-X are either not required to be included herein under the related instructions, are inapplicable or the related information is included in the footnotes to the applicable financial statement and, therefore, have been omitted.

(3) Exhibits

INDEX TO EXHIBITS

Exhibit Number	Exhibit Description
3.1	Articles of Amendment and Restatement of QTS Realty Trust, Inc., incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K filed with the SEC on October 17, 2013 (Commission File No. 001-36109)
3.2	Second Amended and Restated Bylaws of QTS Realty Trust, Inc., incorporated by reference to Exhibit 3.2 to the Quarterly Report on Form 10-Q filed with the SEC on May 8, 2017 (Commission File No. 001-36109)
3.3	Articles Supplementary designating QTS Realty Trust, Inc.'s 7.125% Series A Cumulative Redeemable Perpetual Preferred Stock, liquidation preference \$25.00 per share, \$0.01 par value per share, incorporated by reference to Exhibit 3.2 to the Company's Form 8-A filed on March 15, 2018 (Commission File No. 001-36109)
3.4	Articles Supplementary designating QTS Realty Trust, Inc.'s 6.50% Series B Cumulative Convertible Perpetual Preferred Stock, liquidation preference \$100.00 per share, \$0.01 par value per share, incorporated by reference to Exhibit 3.3 to the Company's Form 8-A filed on June 25, 2018 (Commission File No. 001-36109)
3.5	Articles Supplementary opting out of the Maryland Unsolicited Takeovers Act, incorporated by reference to Exhibit 3.1 to the Company's Form 8-K filed on September 25, 2018 (Commission File No. 001-36109)
3.6	Articles of Amendment to the Articles of Amendment and Restatement of QTS Realty Trust, Inc., incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K filed with the SEC on May 10, 2019 (Commission File No. 002-36109)
3.7	Amended and Restated Certificate of Limited Partnership of QualityTech, LP
4.1	Form of Specimen Class A Common Stock Certificate, incorporated by reference to Exhibit 4.1 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675)
4.2	Indenture, dated November 8, 2017, by and among QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., certain subsidiaries of QualityTech, LP and Deutsche Bank Trust Company Americas, incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K filed with the SEC on November 8, 2017 (Commission File No. 001-36109)
4.3	Form of 4.750% Senior Notes due 2025 (included as Exhibit A to Exhibit 4.1 hereof)
4.4	Supplemental Indenture, dated as of December 22, 2017, by and among QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., the entities identified therein as Guaranteeing Subsidiaries, the entities identified therein as Subsidiary Guarantors, and Deutsche Bank Trust Company Americas, to the Indenture dated, as of November 8, 2017, by and among QualityTech, LP, and QTS Finance Corporation, as issuers, QTS Realty Trust, Inc., each of the subsidiary guarantors party thereto, and Deutsche Bank Trust Company Americas, as trustee incorporated by reference to Exhibit 4.4 to the Annual Report on Form 10-K filed with the SEC on February 28, 2018 (Commission File No. 001-36109)
4.5	Supplemental Indenture, dated as of June 1, 2018, by and among QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., the entity identified therein as a Guaranteeing Subsidiary, the entities identified therein as Subsidiary Guarantors, and Deutsche Bank Trust Company Americas, to the Indenture dated, as of November 8, 2017, by and among QualityTech, LP and QTS Finance Corporation, as issuers, QTS Realty Trust, Inc., each of the subsidiary guarantors party thereto, and Deutsche Bank Trust Company Americas, as trustee, incorporated by reference to Exhibit 4.5 to the Quarterly Report on Form 10-Q filed with the SEC on August 2, 2019 (Commission File No. 001-36109)

- 4.6 Supplemental Indenture dated as of December 31, 2018 among West Midtown Acquisition Company, LLC, QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., the entities identified therein as Subsidiary Guarantors, and Deutsche Bank Trust Company Americas, to the Indenture dated, as of November 8, 2017, by and among QualityTech, LP and QTS Finance Corporation, as issuers, QTS Realty Trust, Inc., each of the subsidiary guarantors party thereto, and Deutsche Bank Trust Company Americas, as trustee, incorporated by reference to Exhibit 4.7 to the Annual Report on Form 10-K filed with the SEC on February 25, 2019 (Commission File No. 001-36109)
- 4.7 Supplemental Indenture, dated as of March 29, 2019 by and among QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., the entities identified therein as Guaranteeing Subsidiaries, the entities identified therein as Subsidiary Guarantors, and Deutsche Bank Trust Company Americas, to the Indenture dated, as of November 8, 2017, by and among QualityTech, LP and QTS Finance Corporation, as issuers, QTS Realty Trust, Inc., each of the subsidiary guarantors party thereto, and Deutsche Bank Trust Company Americas, as trustee, incorporated by reference to Exhibit 4.7 to the Quarterly Report on Form 10-Q filed with the SEC on November 12, 2019 (Commission File No. 001-36109)
- 4.8 Supplemental Indenture, dated as of June 28, 2019 by and among QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., the entities identified therein as Guaranteeing Subsidiaries, the entities identified therein as Subsidiary Guarantors, and Deutsche Bank Trust Company Americas, to the Indenture dated, as of November 8, 2017, by and among QualityTech, LP and QTS Finance Corporation, as issuers, QTS Realty Trust, Inc., each of the subsidiary guarantors party thereto, and Deutsche Bank Trust Company Americas, as trustee, incorporated by reference to Exhibit 4.8 to the Quarterly Report on Form 10-Q filed with the SEC on November 12, 2019 (Commission File No. 001-36109)
- 4.9 Supplemental Indenture, dated as of November 1, 2019 by and among QualityTech, LP, QTS Finance Corporation, QTS Realty Trust, Inc., the entities identified therein as Guaranteeing Subsidiaries, the entities identified therein as Subsidiary Guarantors, and Deutsche Bank Trust Company Americas, to the Indenture dated, as of November 8, 2017, by and among QualityTech, LP, and QTS Finance Corporation, as issuers, QTS Realty Trust, Inc., each of the subsidiary guarantors party thereto, and Deutsche Bank Trust Company Americas, as trustee, incorporated by reference to Exhibit 4.9 to the Quarterly Report on Form 10-Q filed with the SEC on November 12, 2019 (Commission File No. 001-36109)
- 4.10 Form of stock certificate evidencing the 7.125% Series A Cumulative Redeemable Perpetual Preferred Stock, liquidation preference \$25.00 per share, \$0.01 par value per share, incorporated by reference to Exhibit 4.1 to the Company's Form 8-A filed on March 15, 2018 (Commission File No. 001-36109)
- 4.11 Form of stock certificate evidencing the 6.50% Series B Cumulative Convertible Perpetual Preferred Stock, liquidation preference \$100.00 per share, \$0.01 par value per share, incorporated by reference to Exhibit 4.1 to the Company's Form 8-A filed on June 25, 2018 (Commission File No. 001-36109)
- 4.12 Description of Securities Registered Under Section 12 of the Securities Exchange Act of 1934
- 10.1 Fifth Amended and Restated Agreement of Limited Partnership of QualityTech, LP dated October 15, 2013 incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on October 17, 2013 (Commission File No. 001-36109)
- 10.2 Amendment No. 1 to the Fifth Amended and Restated Agreement of Limited Partnership of QualityTech, LP incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on March 20, 2018 (Commission File No.001-36109)
- 10.3 Amendment No. 2 to Fifth Amended and Restated Agreement of Limited Partnership of QualityTech, LP, dated as of June 25 2018, by QTS Realty Trust, Inc., incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on June 27, 2018 (Commission File No. 001-36109)

- 10.4 Amendment No. 3 to the Fifth Amended and Restated Agreement of Limited Partnership of QualityTech, LP, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on October 16, 2018 (Commission File No.001-36109)
- 10.5 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Chad L. Williams, incorporated by reference to Exhibit 10.13 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 001-36109) †
- 10.6 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Jeffrey H. Berson, incorporated by reference to Exhibit 10.17 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.7 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Shirley E. Goza, incorporated by reference to Exhibit 10.18 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.8 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and John W. Barter, incorporated by reference to Exhibit 10.19 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.9 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and William O. Grabe, incorporated by reference to Exhibit 10.20 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.10 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Catherine R. Kinney, incorporated by reference to Exhibit 10.21 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.11 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Peter A. Marino, incorporated by reference to Exhibit 10.22 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.12 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Scott D. Miller, incorporated by reference to Exhibit 10.23 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.13 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Philip P. Trahanas, incorporated by reference to Exhibit 10.24 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.14 Indemnification Agreement dated as of September 25, 2013 by and between QTS Realty Trust, Inc. and Stephen E. Westhead, incorporated by reference to Exhibit 10.25 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.15 Indemnification Agreement dated as of March 21, 2016 by and between QTS Realty Trust, Inc. and Jon Greaves, incorporated by reference to Exhibit 10.30 to the Form 10-K for the year ended December 31, 2016 filed with the SEC on March 1, 2017 (Commission File No. 001-36109) †
- 10.16 Indemnification Agreement dated as of August 31, 2016 by and between QTS Realty Trust, Inc. and Steven Bloom, incorporated by reference to Exhibit 10.31 to the Form 10-K for the year ended December 31, 2016 filed with the SEC on March 1, 2017 (Commission File No. 001-36109) †
- 10.17 Indemnification Agreement, dated as of February 20, 2018, by and between QTS Realty Trust, Inc. and David Robey, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on February 20, 2018 (Commission File No. 001-36109)†

- 10.18 Indemnification Agreement, dated as of September 24, 2018, by and among QTS Realty Trust, Inc. and Mazen Al-Rawashdeh, incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on September 25, 2018 (Commission File No. 001-36109)†
- 10.19 Indemnification Agreement, dated as of March 13, 2019, by and between QTS Realty Trust, Inc. and Wayne Rehberger, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on March 13, 2019 (Commission File No. 001-36109)†
- 10.20 Registration Rights Agreement dated October 15, 2013 by and among QTS Realty Trust, Inc. and the parties listed on Schedule I thereto, incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed with the SEC on October 17, 2013 (Commission File No. 001-36109)
- 10.21 Amended and Restated Registration Rights Agreement dated October 15, 2013 by and among QTS Realty Trust, Inc., QualityTech GP, LLC, Chad L. Williams and certain entities owned or controlled by Chad L. Williams, incorporated by reference to Exhibit 10.4 to the Current Report on Form 8-K filed with the SEC on October 17, 2013 (Commission File No. 001-36109)
- 10.22 Tax Protection Agreement dated as of October 15, 2013 by and among QTS Realty Trust, Inc., QualityTech, LP and the signatories party thereto, incorporated by reference to Exhibit 10.5 to the Current Report on Form 8-K filed with the SEC on October 17, 2013 (Commission File No. 001-36109)
- 10.23 QualityTech, LP 2010 Equity Incentive Plan, incorporated by reference to Exhibit 10.20 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675) †
- 10.24 Amendment No. 1 to QualityTech, LP 2010 Equity Incentive Plan, incorporated by reference to Exhibit 10.21 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675) †
- 10.25 Form of Class O Unit Award Agreement (Time-Based Vesting) under QualityTech, LP 2010 Equity Incentive Plan, incorporated by reference to Exhibit 10.22 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675) †
- 10.26 Form of Class O Unit Award Agreement (Performance-Based Vesting) under QualityTech, LP 2010 Equity Incentive Plan, incorporated by reference to Exhibit 10.23 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675) †
- 10.27 Form of Class O Unit Award Agreement under QualityTech, LP 2010 Equity Incentive Plan, incorporated by reference to Exhibit 10.24 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675) †
- 10.28 QTS Realty Trust, Inc. 2013 Equity Incentive Plan, incorporated by reference to Exhibit 10.39 to the Registration Statement on Form S-11/A filed with the SEC on September 26, 2013 (Commission File No. 333-190675) †
- 10.29 Amendment No. 1 to QTS Realty Trust, Inc. 2013 Equity Incentive Plan, incorporated by reference to Exhibit 10.40 to the Annual Report on Form 10-K for the year ended December 31, 2014 filed with the SEC on February 23, 2015 (Commission File No. 001-36109) †
- 10.30 Amendment No. 2 to QTS Realty Trust, Inc. 2013 Equity Incentive Plan, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on May 6, 2015 (Commission File No. 001-36109) †
- 10.31 Form of Restricted Shares Agreement under QTS Realty Trust, Inc. 2013 Equity Incentive Plan, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on November 6, 2013 (Commission File No. 001-36109) †

- 10.32 Form of Non-Qualified Option Agreement under QTS Realty Trust, Inc. 2013 Equity Incentive Plan, incorporated by reference to Exhibit 10.29 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675) †
- 10.33 Form of Performance Share Unit Agreement (Performance-Based [Non-Shareholder Return] Units) under QTS Realty Trust, Inc. 2013 Equity Incentive Plan. †
- 10.34 Form of Performance Share Unit Agreement (Performance-Based [Non-Shareholder Return] Units) for Grants to Chief Executive Officer under QTS Realty Trust, Inc. 2013 Equity Incentive Plan. †
- 10.35 Form of Performance Share Unit Agreement (Performance-Based [Shareholder Return] Units) under QTS Realty Trust, Inc. 2013 Equity Incentive Plan.)†
- 10.36 Form of Performance Share Unit Agreement (Performance-Based [Shareholder Return] Units) for Grants to Chief Executive Officer under QTS Realty Trust, Inc. 2013 Equity Incentive Plan. †
- 10.37 Ground Lease, dated October 2, 1997, by and between Mission-West Valley Land Corporation, as landlord, and Nexus Properties, Inc., Kinetic Systems, Inc., Digital Square, Inc., R. Darrell Gary, Michael J. Reidy and Michael J. Reidy as trustee of the Ronald Bonaguidi irrevocable trust, together as tenants, incorporated by reference to Exhibit 10.33 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675)
- 10.38 First Amendment to Ground Lease, dated April 29, 1998, by and between Mission-West Valley Land Corporation, as landlord, and Nexus Properties, Inc., Kinetic Systems, Inc., R. Darrell Gary, Michael J. Reidy and Michael J. Reidy as trustee of the Ronald Bonaguidi irrevocable trust, together as tenants, incorporated by reference to Exhibit 10.34 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675)
- 10.39 Second Amendment to Ground Lease, dated September 24, 2009, by and between Mission-West Valley Land Corporation, as landlord, and Quality Investment Properties Santa Clara, LLC, Chad L. Williams, incorporated by reference to Exhibit 10.35 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675)
- 10.40 Third Amendment to Ground Lease, dated November 17, 2011, by and between Mission-West Valley Land Corporation, as landlord, and Quality Investment Properties Santa Clara, LLC, Chad L. Williams, incorporated by reference to Exhibit 10.36 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675)
- 10.41 Lease Agreement, dated January 1, 2009, by and between Quality Investment Properties-Williams Center, L.L.C. and Quality Technology Services Lenexa, LLC, incorporated by reference to Exhibit 10.38 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675)
- 10.42 First Amendment to Lease, dated March 1, 2013, by and between Quality Investment Properties-Williams Center, L.L.C. and Quality Technology Services Lenexa, LLC, incorporated by reference to Exhibit 10.39 to the Registration Statement on Form S-11/A filed with the SEC on August 16, 2013 (Commission File No. 333-190675)
- 10.43 Second Amendment to Lease, dated December 1, 2013, by and between Quality Investment Properties-Williams Center, L.L.C. and Quality Technology Services Lenexa, LLC, incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q filed with the SEC on May 7, 2014 (Commission File No. 001-36109)
- 10.44 Third Amendment to Lease, dated May 1, 2014, by and between Quality Investment Properties-Williams Center, L.L.C. and Quality Technology Services Lenexa, LLC, incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q filed with the SEC on May 7, 2014 (Commission File No. 001-36109)

- 10.45 2020 Amended and Restated QTS Realty Trust, Inc. Employee Stock Purchase Plan†
- 10.46 Employment Agreement, dated April 11, 2017, by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC and Chad L. Williams, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on April 14, 2017 (Commission File No. 001-36109) †
- 10.47 Employment Agreement, dated April 11, 2017, by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC and Jeffrey H. Berson, incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed with the SEC on April 14, 2017 (Commission File No. 001-36109) †
- 10.48 Employment Agreement, dated April 11, 2017, by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC and Shirley E. Goza, incorporated by reference to Exhibit 10.7 to the Quarterly Report on Form 10-Q filed with the SEC on May 8, 2017 (Commission File No. 001-36109) †
- 10.49 Employment Agreement, dated April 11, 2017, by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC and Jon D. Greaves, incorporated by reference to Exhibit 10.8 to the Quarterly Report on Form 10-Q filed with the SEC on May 8, 2017 (Commission File No. 001-36109) †
- 10.50 Employment Agreement, dated April 11, 2017, by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC and Steven C. Bloom, incorporated by reference to Exhibit 10.9 to the Quarterly Report on Form 10-Q filed with the SEC on May 8, 2017 (Commission File No. 001-36109) †
- 10.51 Amendment to Employment Agreement dated June 23, 2017 by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC, and Chad L. Williams, incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q filed with the SEC on August 3, 2017 (Commission File No. 001-36109) †
- 10.52 Amendment to Employment Agreement dated June 23, 2017 by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC, and Jeffrey H. Berson, incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q filed with the SEC on August 3, 2017 (Commission File No. 001-36109) †
- 10.53 Amendment to Employment Agreement dated June 23, 2017 by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC, and Shirley E. Goza, incorporated by reference to Exhibit 10.6 to the Quarterly Report on Form 10-Q filed with the SEC on August 3, 2017 (Commission File No. 001-36109) †
- 10.54 Amendment to Employment Agreement dated June 23, 2017 by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC, and Steven C. Bloom, incorporated by reference to Exhibit 10.7 to the Quarterly Report on Form 10-Q filed with the SEC on August 3, 2017 (Commission File No. 001-36109) †
- 10.55 Amendment to Employment Agreement dated June 23, 2017 by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services, LLC, and Jon D. Greaves, incorporated by reference to Exhibit 10.8 to the Quarterly Report on Form 10-Q filed with the SEC on August 3, 2017 (Commission File No. 001-36109) †
- 10.56 Employment Agreement, dated March 15, 2018, by and among QTS Realty Trust, Inc., QualityTech, LP, Quality Technology Services Holding, LLC, Quality Technology Services, LLC, and David Robey, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on March 20, 2018 (Commission File No. 001-36109) †
- 10.57 Stock Purchase Agreement dated May 6, 2016 by and among Quality Technology Services Holding, LLC, Carpathia Holdings, LLC and Carpathia Acquisition, Inc., incorporated by reference to Exhibit 2.1 to the Current Report on Form 8-K filed with the SEC on May 12, 2015 (Commission File No. 002-36109)

- 10.58 First Amendment to Stock Purchase Agreement dated May 6, 2016 by and among Quality Technology Services Holding, LLC, Carpathia Holdings, LLC and Carpathia Acquisition, Inc., incorporated by reference to Exhibit 2.1 to the Current Report on Form 8-K filed with the SEC on June 19, 2015 (Commission File No. 001-36109)
- 10.59 Transaction Agreement, dated as of April 24, 2018, by and between QTS Technology Services Holding, LLC, QualityTech, LP, and General Datatech, L.P., incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed on August 6, 2018 (Commission File No. 001-36109)
- 10.60 Channel Agreement, dated as of April 24, 2018, by and between QTS Technology Services Holding, LLC and General Datatech, L.P., incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed on August 6, 2018 (Commission File No. 001-36109)
- 10.61 Seventh Amended and Restated Credit Agreement dated as of October 18, 2019 by and among QualityTech, LP, KeyBank National Association, as agent, the lenders party thereto, KeyBanc Capital Markets, Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Regions Capital Markets and TD Securities (USA) LLC, as joint lead arrangers and joint bookrunners with respect to the Revolving Credit Loans, Term Loans A and Term Loans B, KeyBanc Capital Markets, Inc., Regions Capital Markets, SunTrust Robinson Humphrey, Inc. and TD Securities (USA) LLC as joint lead arrangers and joint bookrunners with respect to the Term Loans C, and Bank of America, N.A., Regions Bank and TD Securities (USA) LLC, as co-syndication agents, incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed with the SEC on October 22, 2019 (Commission File No.001-36109)
- 10.62 Fifth Amended and Restated Unconditional Guaranty of Payment and Performance dated as of October 18, 2019 by QTS Realty Trust, Inc. (to KeyBank National Association), incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed with the SEC on October 22, 2019 (Commission File No.001-36109)
- 10.63 QTS Realty Trust, Inc. Director Deferred Compensation Plan, effective January 1, 2018 , incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q filed with the SEC on May 10, 2018 (Commission File No. 001-36109). †
- 21.1 List of Subsidiaries of QTS Realty Trust, Inc. and QualityTech, LP
- 23.1 Consent of Ernst & Young LLP
- 31.1 Certification of Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (QTS Realty Trust, Inc.)
- 31.2 Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (QTS Realty Trust, Inc.)
- 31.3 Certification of Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (QualityTech, LP)
- 31.4 Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (QualityTech, LP)
- 32.1 Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (QTS Realty Trust, Inc.)
- 32.2 Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (QualityTech, LP)

- 101 The following materials from QTS Realty Trust, Inc.'s and QualityTech, LP's Annual Report on Form 10-K for the year ended December 31, 2019, formatted in iXBRL (inline eXtensible Business Reporting Language): (i) consolidated balance sheets, (ii) consolidated statements of operations and statements of comprehensive income, (iii) consolidated statements of equity and partners' capital, (iv) consolidated statements of cash flows, and (v) the notes to the consolidated financial statements
- 104 Cover Page Interactive Data File (formatted in iXBRL (inline eXtensible Business Reporting Language) and contained in Exhibit 101).

† Denotes a management contract or compensatory plan, contract or arrangement.

ITEM 16. FORM 10-K SUMMARY

The Company has chosen not to include a Form 10-K Summary.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

QTS Realty Trust, Inc.

DATE: February 28, 2020

/s/ Chad L. Williams

Chad L. Williams
Chairman and Chief Executive Officer

DATE: February 28, 2020

/s/ William H. Schafer

William H. Schafer
Executive Vice President – Finance and Accounting
(Principal Accounting Officer)

DATE: February 28, 2020

/s/ Jeffrey H. Berson

Jeffrey H. Berson
Chief Financial Officer
(Principal Financial Officer)

QualityTech, L.P.

DATE: February 28, 2020

/s/ Chad L. Williams

Chad L. Williams
Chairman and Chief Executive Officer

DATE: February 28, 2020

/s/ William H. Schafer

William H. Schafer
Executive Vice President – Finance and Accounting
(Principal Accounting Officer)

DATE: February 28, 2020

/s/ Jeffrey H. Berson

Jeffrey H. Berson
Chief Financial Officer
(Principal Financial Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this report has been signed below by the following persons on behalf of the registrant and in the capacities on the dates indicated.

DATE: February 28, 2020

/s/ Chad L. Williams
Chad L. Williams
Chairman and Chief Executive Officer

DATE: February 28, 2020

/s/ John W. Barter
John W. Barter
Director

DATE: February 28, 2020

/s/ William O. Grabe
William O. Grabe
Director

DATE: February 28, 2020

/s/ Catherine R. Kinney
Catherine R. Kinney
Director

DATE: February 28, 2020

/s/ Peter A. Marino
Peter A. Marino
Director

DATE: February 28, 2020

/s/ Scott D. Miller
Scott D. Miller
Director

DATE: February 28, 2020

/s/ Mazen Rawashdeh
Mazen Rawashdeh
Director

DATE: February 28, 2020

/s/ Philip P. Trahanas
Philip P. Trahanas
Director

DATE: February 28, 2020

/s/ Wayne Rehberger
Wayne Rehberger
Director

DATE: February 28, 2020

/s/ Stephen E. Westhead
Stephen E. Westhead
Director

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO THE CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Financial Statements of QTS Realty Trust, Inc. and QualityTech, LP

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of QTS Realty Trust, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of QTS Realty Trust, Inc. (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedules listed in the Index at Item 15(2) (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 28, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.

Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Capitalization of Internal Development Real Estate Costs

Description of the Matter

During the year ended December 31, 2019, the Company capitalized \$17.8 million of internal development real estate costs and \$33.2 million of capitalized interest. As disclosed in Note 2 to the consolidated financial statements, the Company capitalizes certain internal development real estate costs incurred in connection with development of its properties. The capitalization of these costs during the construction period (including interest and related loan fees, internal payroll costs, property taxes and other direct and indirect project costs) begins when development efforts commence and ends when the asset is ready for its intended use. The capitalization of internal

costs increases construction in progress recognized during development of the related property and the cost of the real estate asset when placed into service and depreciated over its estimated useful life.

Auditing the capitalization of internal development real estate costs was complex due to the volume of development activities and the judgments involved in determining the appropriateness of capitalizing certain costs based on the nature of the costs and status of each project, including determining when development commences for each project and when projects are no longer under active development.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's capitalization of internal development real estate costs process. For example, we tested controls over management's review of the inputs into the computation of internal cost capitalization amounts, including the timing of the commencement of development activities and timeliness of placing assets into service.

To test internal real estate costs capitalized during the construction period, we performed audit procedures that included, among others, examining capitalization records, conducting site visits to locations with significant internal development real estate costs capitalized and performing inquiries of site and operations personnel at those locations to corroborate the status of the projects. We also tested construction in progress additions and assets placed into service during the period and inspected source documentation to evaluate the completeness and accuracy of management's assertions related to the ongoing development status and capitalization of internal development real estate costs related to its capital projects. Additionally, we performed procedures to test the accuracy and completeness of the information included in the Company's calculation of internal development real estate costs, including comparison of inputs such as interest rates and payroll information to underlying records.

Investment in Unconsolidated Entity

Description of the Matter

As disclosed in Notes 7 and 18 to the consolidated financial statements, on February 22, 2019, the Company contributed a hyperscale data center under development in Manassas, Virginia and a previously executed ten-year operating lease agreement to a newly formed entity in exchange for cash and non-cash consideration in the form of a 50% equity interest in the newly formed entity that was measured at fair value. The Company determined that the newly formed entity is a variable interest entity (VIE) for which the Company is not the primary beneficiary but has the ability to exercise significant influence. Therefore, the Company accounted for its investment in the unconsolidated entity using equity method investment accounting.

Auditing management's determination that the newly formed entity is a VIE and the Company is not the primary beneficiary as well as auditing management's measurement of the equity interest received in the transaction at fair value, was complex and required significant judgment. In particular, there was judgment involved in determining whether the Company is the primary beneficiary of the entity based on the contractual arrangements and structure of the transaction. Additionally, the fair value measurement of the equity interest received in the transaction was sensitive to certain significant assumptions, including market rents, discount rates, expected occupancy, estimates of additional capital expenditures, and capitalization rates derived from market data.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process for evaluating the newly formed entity for consolidation and fair value measurement of the non-monetary consideration received in the transaction, including controls over management's review of the significant assumptions described above.

To test the Company's determination that the newly formed entity is a VIE, we performed audit procedures that included, among others, reviewing management's analysis of the entity's total equity investment at risk upon inception and evaluating whether it is sufficient to finance the entity's activities without additional subordinated financial support based on qualitative and quantitative analysis. To test the Company's determination that the Company is not the primary beneficiary of the entity, we performed audit procedures that included, among others, reviewing management's analysis of significant activities of the entity such as capital decisions, financing decisions and operating decisions, and which party, if any, has the power to direct such activities. Our evaluation considered the purpose and design of the entity, the composition of the board of managers and other legal rights of the parties, including the significance of the decision rights of each party in assessing which party has power to direct the activities that most significantly affect the economic performance of the entity. To test the Company's estimate of the fair value of non-monetary consideration received in the transaction, we performed audit procedures that included, among others, assessing the methodologies used by the Company and testing the significant assumptions discussed above and the completeness and accuracy of the underlying data used by the Company in its analysis. We compared the significant assumptions used by management to current industry and economic trends, relevant market information, and other applicable sources. We involved our valuation specialists to assist in evaluating the significant assumptions described above as well as the models utilized to derive the concluded fair value.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2010

Kansas City, Missouri

February 28, 2020

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of QTS Realty Trust, Inc.

Opinion on Internal Control Over Financial Reporting

We have audited QTS Realty Trust, Inc.'s internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, QTS Realty Trust, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedules listed in the Index at Item 15(2) (collectively referred to as the “consolidated financial statements”) and our report dated February 28, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP
Kansas City, Missouri
February 28, 2020

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of QTS Realty Trust, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of QualityTech, LP (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), partners' capital and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedules listed in the Index at Item 15(2) (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2010

Kansas City, Missouri

February 28, 2020

QTS REALTY TRUST, INC.
CONSOLIDATED BALANCE SHEETS
(in thousands except share and per share data)

<u>ASSETS</u>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Real Estate Assets		
Land	\$ 130,605	\$ 105,541
Buildings, improvements and equipment	2,178,901	1,917,251
Less: Accumulated depreciation	(558,560)	(467,644)
	<u>1,750,946</u>	<u>1,555,148</u>
Construction in progress	920,922	790,064
Real Estate Assets, net.	<u>2,671,868</u>	<u>2,345,212</u>
Investments in unconsolidated entity	30,218	—
Operating lease right-of-use assets, net	57,141	—
Cash and cash equivalents	15,653	11,759
Rents and other receivables, net	81,181	55,093
Acquired intangibles, net	81,679	95,451
Deferred costs, net	52,363	45,096
Prepaid expenses	10,586	6,822
Goodwill	173,843	173,843
Assets held for sale	—	71,800
Other assets, net	49,001	56,893
TOTAL ASSETS	<u><u>\$ 3,223,533</u></u>	<u><u>\$ 2,861,969</u></u>
 <u>LIABILITIES</u>		
Unsecured credit facility, net	\$ 1,010,640	\$ 945,657
Senior notes, net of debt issuance costs	395,549	394,786
Finance leases and mortgage notes payable	46,876	4,674
Operating lease liabilities	64,416	—
Accounts payable and accrued liabilities	142,547	99,166
Dividends and distributions payable	34,500	29,633
Advance rents, security deposits and other liabilities	18,027	29,709
Derivative liabilities	26,609	2,970
Liabilities held for sale	—	24,349
Deferred income taxes	749	1,097
Deferred income	39,169	33,241
TOTAL LIABILITIES	<u>1,779,082</u>	<u>1,565,282</u>
 <u>EQUITY</u>		
7.125% Series A cumulative redeemable perpetual preferred stock: \$0.01 par value (liquidation preference \$25.00 per share), 4,600,000 shares authorized, 4,280,000 shares issued and outstanding as of December 31, 2019 and December 31, 2018, respectively	103,212	103,212
6.50% Series B cumulative convertible perpetual preferred stock: \$0.01 par value (liquidation preference \$100.00 per share), 3,162,500 shares authorized, issued and outstanding as of December 31, 2019 and December 31, 2018, respectively	304,223	304,265
Common stock: \$0.01 par value, 450,133,000 shares authorized, 58,227,523 and 51,123,417 shares issued and outstanding as of December 31, 2019 and December 31, 2018, respectively	582	511
Additional paid-in capital	1,330,444	1,062,473
Accumulated other comprehensive income (loss)	(24,642)	2,073
Accumulated dividends in excess of earnings	(376,002)	(278,548)
Total stockholders' equity	<u>1,337,817</u>	<u>1,193,986</u>
Noncontrolling interests	106,634	102,701
TOTAL EQUITY	<u>1,444,451</u>	<u>1,296,687</u>
TOTAL LIABILITIES AND EQUITY	<u><u>\$ 3,223,533</u></u>	<u><u>\$ 2,861,969</u></u>

See accompanying notes to financial statements.

QTS REALTY TRUST, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands except share and per share data)

	Year Ended December 31,		
	2019	2018	2017
Revenues:			
Rental.....	\$ 465,123	\$ 413,620	\$ 379,787
Other	15,695	36,904	66,723
Total revenues.....	480,818	450,524	446,510
Operating Expenses:			
Property operating costs	156,048	148,236	153,209
Real estate taxes and insurance	14,503	12,193	11,959
Depreciation and amortization.....	168,305	149,891	140,924
General and administrative.....	80,385	80,857	87,231
Transaction, integration and impairment costs.....	15,190	2,743	11,060
Restructuring	—	37,943	—
Total operating expenses	434,431	431,863	404,383
Gain on sale of real estate, net	14,769	—	—
Operating income	61,156	18,661	42,127
Other income and expenses:			
Interest income	111	150	67
Interest expense.....	(26,593)	(28,749)	(30,523)
Debt restructuring costs	(1,523)	(605)	(19,992)
Other income (expense)	(50)	—	—
Equity in net loss of unconsolidated entity	(1,473)	—	—
Income (loss) before taxes	31,628	(10,543)	(8,321)
Tax benefit of taxable REIT subsidiaries	37	3,368	9,778
Net income (loss).....	31,665	(7,175)	1,457
Net (income) loss attributable to noncontrolling interests	(374)	2,715	(175)
Net income (loss) attributable to QTS Realty Trust, Inc.....	31,291	(4,460)	1,282
Preferred stock dividends	(28,180)	(16,666)	—
Net income (loss) attributable to common stockholders.....	\$ 3,111	\$ (21,126)	\$ 1,282
Net income per share attributable to Class A common shares:			
Basic	\$ (0.09)	\$ (0.44)	\$ 0.01
Diluted.....	(0.09)	(0.44)	0.01
Weighted average Class A common shares outstanding:			
Basic	54,836,801	50,432,590	48,380,964
Diluted.....	54,836,801	50,432,590	55,855,683

See accompanying notes to financial statements.

QTS REALTY TRUST, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	Year Ended December 31,		
	<u>2019</u>	<u>2018</u>	<u>2017</u>
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Other comprehensive income (loss):			
Foreign currency translation adjustment gain	34	—	—
Increase (decrease) in fair value of derivative contracts	(29,843)	895	1,449
Reclassification of other comprehensive income to utilities expense	749	—	—
Reclassification of other comprehensive income to interest expense	(1,031)	110	—
Comprehensive income (loss)	<u>1,574</u>	<u>(6,170)</u>	<u>2,906</u>
Comprehensive (income) loss attributable to noncontrolling interests	(169)	711	(349)
Comprehensive income (loss) attributable to QTS Realty Trust, Inc.	<u>\$ 1,405</u>	<u>\$ (5,459)</u>	<u>\$ 2,557</u>

See accompanying notes to financial statements.

QTS REALTY TRUST, INC.
CONSOLIDATED STATEMENTS OF EQUITY
(in thousands)

	Preferred Stock Shares	Preferred Stock Amount	Common stock Shares	Common stock Amount	Additional paid-in capital	Accumulated other comprehensive income (loss)	Accumulated dividends in excess of earnings	Total stockholders' equity	Noncontrolling interest	Total
Balance January 1, 2017	—	\$ —	47,831	\$ 478	\$ 931,783	\$ —	—	\$ 834,468	\$ 118,342	\$ 952,810
Net share activity through equity award plan	—	—	582	6	893	—	—	899	123	1,022
Reclassification of noncontrolling interest upon conversion of partnership units to common stock	—	—	—	—	—	—	—	—	—	—
Increase in fair value of interest rate swaps	—	—	253	3	8,352	—	—	8,355	(8,355)	—
Equity-based compensation expense	—	—	—	—	—	1,283	—	1,283	166	1,449
Net proceeds from equity offering	—	—	2,036	20	95,952	—	—	12,196	1,667	13,863
Dividends declared to common stockholders	—	—	—	—	—	—	(77,041)	95,972	11,523	107,495
Dividends declared to noncontrolling interests	—	—	—	—	—	—	—	(77,041)	—	(77,041)
Net income	—	—	—	—	—	—	1,282	1,282	(10,399)	(10,399)
Balance December 31, 2017	—	\$ —	50,702	\$ 507	\$ 1,049,176	\$ 1,283	—	\$ 877,414	\$ 113,242	\$ 990,656
Net share activity through equity award plan	—	—	421	4	(2,717)	—	—	(2,713)	925	(1,788)
Increase in fair value of interest rate swaps	—	—	—	—	—	790	—	790	105	895
Equity-based compensation expense	—	—	—	—	16,014	—	—	16,014	2,086	18,100
Net proceeds from Series A Preferred Stock offering	4,280	103,212	—	—	—	—	—	103,212	—	103,212
Net proceeds from Series B Convertible Preferred Stock offering	3,163	304,265	—	—	—	—	—	304,265	—	304,265
Dividends declared on Series A Preferred Stock	—	—	—	—	—	—	(6,046)	(6,046)	—	(6,046)
Dividends declared on Series B Convertible Preferred Stock	—	—	—	—	—	—	—	—	—	—
Dividends declared to common stockholders	—	—	—	—	—	—	(10,621)	(10,621)	—	(10,621)
Dividends declared to noncontrolling interests	—	—	—	—	—	—	(83,869)	(83,869)	—	(83,869)
Net loss	—	—	—	—	—	—	(4,460)	(4,460)	(10,942)	(10,942)
Balance December 31, 2018	7,443	\$ 407,477	51,123	\$ 511	\$ 1,062,473	\$ 2,073	—	\$ 1,193,986	\$ 102,701	\$ 1,296,687
Net cumulative effect upon ASC Topic 842 adoption	—	—	—	—	—	—	(1,813)	(1,813)	—	(1,813)
Net share activity through equity award plan	—	—	273	3	1,816	—	—	1,819	6	1,825
Decrease in fair value of derivative contracts	—	—	—	—	—	(26,745)	—	(26,745)	(3,098)	(29,843)
Foreign currency translation adjustments	—	—	—	—	—	30	—	30	4	34
Equity-based compensation expense	—	—	—	—	14,651	—	—	14,651	1,762	16,413
Adjustment to expenses net from Series B Convertible Preferred stock offering	—	(42)	—	—	—	—	—	(42)	—	(42)
Proceeds net of fees from common equity offering	—	—	4,000	40	148,650	—	—	148,690	9,973	158,663
Proceeds net of fees from settlement of forward shares	—	—	2,832	28	102,854	—	—	102,882	6,645	109,527
Dividends declared on Series A Preferred Stock	—	—	—	—	—	—	(7,624)	(7,624)	—	(7,624)
Dividends declared on Series B Convertible Preferred Stock	—	—	—	—	—	—	—	—	—	—
Dividends declared to common stockholders	—	—	—	—	—	—	(20,556)	(20,556)	—	(20,556)
Dividends declared to noncontrolling interests	—	—	—	—	—	—	(98,752)	(98,752)	—	(98,752)
Net income	—	—	—	—	—	—	31,291	31,291	(11,733)	(11,733)
Balance December 31, 2019	7,443	\$ 407,435	58,228	\$ 582	\$ 1,330,444	\$ (24,642)	—	\$ 1,337,817	\$ 106,634	\$ 1,444,451

See accompanying notes to financial statements.

QTS REALTY TRUST, INC.
CONSOLIDATED STATEMENTS OF CASH FLOW
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
Cash flow from operating activities:			
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	160,528	143,354	136,585
Amortization of above and below market leases	187	465	865
Amortization of deferred loan costs	3,877	3,856	3,640
Amortization of senior notes discount	—	—	229
Distributions from unconsolidated entity	3,280	—	—
Equity in (earnings) loss of unconsolidated entity	1,473	—	—
Loss on extinguishment of debt	—	—	19,912
Equity-based compensation expense	16,412	14,972	13,863
Bad debt expense (recoveries)	2,406	(2,275)	3,519
Write off of deferred loan costs	1,532	605	80
Deferred tax expense (benefit)	(348)	(2,970)	(10,742)
(Gain) loss on sale of assets, net	(14,769)	6,994	—
Integration, impairment & restructuring costs	11,462	19,575	9,027
Foreign currency remeasurement (gain) loss	50	—	—
Changes in operating assets and liabilities			
Rents and other receivables, net	(27,234)	(6,495)	(12,881)
Prepaid expenses	(3,406)	(3,063)	755
Due to/from affiliates, net	9,284	—	—
Other assets	35	4,518	282
Accounts payable and accrued liabilities	2,973	8,573	(5,071)
Advance rents, security deposits and other liabilities	(5,845)	2,069	5,491
Deferred income	5,928	8,270	3,312
Net cash provided by operating activities	<u>199,490</u>	<u>191,273</u>	<u>170,323</u>
Cash flow from investing activities:			
Proceeds from sale of property	54,427	2,779	—
Acquisitions, net of cash acquired	(76,383)	(117,029)	(127,038)
Investments in unconsolidated entity	(4,144)	—	—
Additions to property and equipment	(361,160)	(484,303)	(307,314)
Net cash used in investing activities	<u>(387,260)</u>	<u>(598,553)</u>	<u>(434,352)</u>
Cash flow from financing activities:			
Credit facility proceeds	399,028	483,000	888,000
Credit facility repayments	(334,000)	(362,000)	(696,000)
Debt Proceeds	—	—	1,920
5.75% Senior Notes Repayment	—	—	(300,000)
4.75% Notes Issuance	—	—	400,000
Payment of debt extinguishment costs	—	—	(13,218)
Payment of deferred financing costs	(5,130)	(3,964)	(10,862)
Payment of preferred stock dividends	(28,180)	(10,728)	—
Payment of common stock dividends	(94,085)	(82,579)	(74,592)
Distribution to noncontrolling interests	(11,533)	(10,759)	(10,289)
Proceeds from exercise of stock options	3,857	246	4,972
Payment of tax withholdings related to equity based awards	(3,900)	(2,205)	(4,725)
Principal payments on finance lease obligations	(2,855)	(7,626)	(12,224)
Dulles, VA Vault Finance Lease Repayment	—	—	(17,785)
Mortgage principal debt repayments	(65)	(66)	(54)
Preferred stock issuance proceeds, net of costs	—	407,477	—
Common stock issuance proceeds, net of costs	268,259	—	107,549
Net cash provided by financing activities	<u>191,396</u>	<u>410,796</u>	<u>262,692</u>
Effect of foreign currency exchange rates on cash and cash equivalents	268	—	—
Net change in cash and cash equivalents	3,894	3,516	(1,337)
Cash and cash equivalents, beginning of period	11,759	8,243	9,580
Cash and cash equivalents, end of period	<u>\$ 15,653</u>	<u>\$ 11,759</u>	<u>\$ 8,243</u>

See accompanying notes to financial statements.

QTS REALTY TRUST, INC.
CONSOLIDATED STATEMENTS OF CASH FLOW (continued)
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION			
Cash paid for interest (excluding deferred financing costs and amounts capitalized)	\$ 56,023	\$ 51,380	\$ 44,357
Noncash investing and financing activities:			
Accrued capital additions	\$ 92,206	\$ 76,890	\$ 75,965
Net increase (decrease) in derivative liabilities related to change in fair value of derivative contracts	\$ (28,952)	\$ 895	\$ —
Equity received in unconsolidated entity in exchange for real estate assets	\$ 25,280	\$ —	\$ —
Accrued preferred stock dividends	\$ 5,938	\$ 5,938	\$ —
Accrued deferred financing costs	\$ —	\$ 76	\$ 458
Accrued equity issuance costs	\$ 30	\$ 115	\$ 25
Acquisitions, net of cash acquired:			
Land	\$ 1,743	\$ —	\$ 9,363
Buildings, improvements and equipment	8,640	445	14,341
Construction in Progress	61,514	114,283	103,334
Rents and other receivables, net	1,239	—	—
Acquired intangibles, net	2,628	2,301	—
Deferred costs	906	—	—
Prepaid expenses	359	—	—
Other assets	128	—	—
Accounts payable and accrued liabilities	(52)	—	—
Advance rents, security deposits and other liabilities	(722)	—	—
Total acquisitions, net of cash acquired	<u>\$ 76,383</u>	<u>\$ 117,029</u>	<u>\$ 127,038</u>

See accompanying notes to financial statements.

QUALITYTECH, LP
CONSOLIDATED BALANCE SHEETS
(in thousands except share and per share data)

<u>ASSETS</u>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Real Estate Assets		
Land	\$ 130,605	\$ 105,541
Buildings, improvements and equipment	2,178,901	1,917,251
Less: Accumulated depreciation	(558,560)	(467,644)
	<hr/>	<hr/>
Construction in progress	1,750,946	1,555,148
	920,922	790,064
	<hr/>	<hr/>
Real Estate Assets, net	2,671,868	2,345,212
Investments in unconsolidated entity	30,218	—
Operating lease right-of-use assets, net	57,141	—
Cash and cash equivalents	15,653	11,759
Rents and other receivables, net	81,181	55,093
Acquired intangibles, net	81,679	95,451
Deferred costs, net	52,363	45,096
Prepaid expenses	10,586	6,822
Goodwill	173,843	173,843
Assets held for sale	—	71,800
Other assets, net	49,001	56,893
	<hr/>	<hr/>
TOTAL ASSETS	\$ 3,223,533	\$ 2,861,969
<u>LIABILITIES</u>		
Unsecured credit facility, net	1,010,640	945,657
Senior notes, net of debt issuance costs	395,549	394,786
Finance leases and mortgage notes payable	46,876	4,674
Operating lease liabilities	64,416	—
Accounts payable and accrued liabilities	142,547	99,166
Dividends and distributions payable	34,500	29,633
Advance rents, security deposits and other liabilities	18,027	29,709
Derivative liabilities	26,609	2,970
Liabilities held for sale	—	24,349
Deferred income taxes	749	1,097
Deferred income	39,169	33,241
	<hr/>	<hr/>
TOTAL LIABILITIES	1,779,082	1,565,282
<u>PARTNERS' CAPITAL</u>		
7.125% Series A cumulative redeemable perpetual preferred units: \$0.01 par value (liquidation preference \$25.00 per unit), 4,600,000 units authorized, 4,280,000 units issued and outstanding as of December 31, 2019 and December 31, 2018, respectively	103,212	103,212
6.50% Series B cumulative convertible perpetual preferred units: \$0.01 par value (liquidation preference \$100.00 per unit), 3,162,500 units authorized, issued and outstanding as of December 31, 2019 and December 31, 2018, respectively ..	304,223	304,265
Common units: \$0.01 par value, 450,133,000 units authorized, 64,901,157 and 57,799,035 units issued and outstanding as of December 31, 2019 and December 31, 2018, respectively	1,064,481	886,866
Accumulated other comprehensive income (loss)	(27,465)	2,344
	<hr/>	<hr/>
TOTAL PARTNERS' CAPITAL	1,444,451	1,296,687
	<hr/>	<hr/>
TOTAL LIABILITIES AND PARTNERS' CAPITAL	\$ 3,223,533	\$ 2,861,969

See accompanying notes to financial statements.

QUALITYTECH, LP
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
Revenues:			
Rental.....	\$ 465,123	\$ 413,620	\$ 379,787
Other	15,695	36,904	66,723
Total revenues.....	<u>480,818</u>	<u>450,524</u>	<u>446,510</u>
Operating Expenses:			
Property operating costs.....	156,048	148,236	153,209
Real estate taxes and insurance.....	14,503	12,193	11,959
Depreciation and amortization.....	168,305	149,891	140,924
General and administrative	80,385	80,857	87,231
Transaction, integration and impairment costs.....	15,190	2,743	11,060
Restructuring	—	37,943	—
Total operating expenses	<u>434,431</u>	<u>431,863</u>	<u>404,383</u>
Gain on sale of real estate, net	14,769	—	—
Operating income	<u>61,156</u>	<u>18,661</u>	<u>42,127</u>
Other income and expenses:			
Interest income	111	150	67
Interest expense.....	(26,593)	(28,749)	(30,523)
Debt restructuring costs	(1,523)	(605)	(19,992)
Other income (expense)	(50)	—	—
Equity in earnings (loss) of unconsolidated entity	<u>(1,473)</u>	<u>—</u>	<u>—</u>
Income (loss) before taxes	31,628	(10,543)	(8,321)
Tax benefit of taxable REIT subsidiaries	37	3,368	9,778
Net income (loss)	<u>\$ 31,665</u>	<u>\$ (7,175)</u>	<u>\$ 1,457</u>
Preferred unit distributions	<u>(28,180)</u>	<u>(16,666)</u>	<u>—</u>
Net income (loss) attributable to common unitholders.....	<u>\$ 3,485</u>	<u>\$ (23,841)</u>	<u>\$ 1,457</u>

See accompanying notes to financial statements.

QUALITYTECH, LP
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Other comprehensive income (loss):			
Foreign currency translation adjustment gain.....	34	—	—
Increase (decrease) in fair value of derivative contracts	(29,843)	895	1,449
Reclassification of other comprehensive income to utilities expense . . .	749	—	—
Reclassification of other comprehensive income to interest expense . . .	(1,031)	110	—
Comprehensive income (loss)	\$ 1,574	\$ (6,170)	\$ 2,906

See accompanying notes to financial statements.

QUALITYTECH, LP
CONSOLIDATED STATEMENTS OF PARTNERS' CAPITAL
(in thousands)

	Limited Partners' Capital		General Partner's Capital		Accumulated other comprehensive income (loss)	
	Preferred Units	Common Units	Units	Amount	Units	Amount
Balance January 1, 2017	—	\$ 54,628	1	\$ 952,810	—	\$ 952,810
Net share activity through equity award plan	—	582	—	1,022	—	1,022
Increase in fair value of interest rate swaps	—	—	—	—	1,449	1,449
Equity-based compensation expense	—	—	—	13,863	—	13,863
Net proceeds from QTS Realty Trust, Inc. equity offerings	—	2,036	—	107,495	—	107,495
Dividends to QTS Realty Trust, Inc.	—	—	—	(77,041)	—	(77,041)
Partnership distributions	—	—	—	(10,399)	—	(10,399)
Net income	—	—	—	1,457	—	1,457
Balance December 31, 2017	—	\$ 57,246	1	\$ 989,207	—	\$ 990,656
Net share activity through equity award plan	—	553	—	(1,788)	—	(1,788)
Increase in fair value of interest rate swaps	—	—	—	—	895	895
Equity-based compensation expense	—	—	—	18,100	—	18,100
Net proceeds from QTS Realty Trust, Inc. Series A Preferred equity offering	4,280	—	—	—	—	103,212
Net proceeds from QTS Realty Trust, Inc. Series B Convertible Preferred equity offering	3,163	—	—	—	—	304,265
Dividends declared on Series A Preferred Units	—	—	—	(6,046)	—	(6,046)
Dividends declared on Series B Convertible Preferred Units	—	—	—	(10,621)	—	(10,621)
Common dividends to QTS Realty Trust, Inc.	—	—	—	(83,869)	—	(83,869)
Partnership distributions	—	—	—	(10,942)	—	(10,942)
Net loss	—	—	—	(7,175)	—	(7,175)
Balance December 31, 2018	7,443	\$ 407,477	1	\$ 886,866	2,344	\$ 1,296,687
Net cumulative effect upon ASC Topic 842 adoption	—	—	—	(1,813)	—	(1,813)
Net share activity through equity award plan	—	270	—	1,825	—	1,825
Decrease in fair value of derivative contracts	—	—	—	—	(29,843)	(29,843)
Foreign currency translation adjustment	—	—	—	16,413	34	34
Equity-based compensation expense	—	—	—	—	—	16,413
Adjustment to expenses net from Series B Convertible Preferred equity offering	—	(42)	—	—	—	(42)
Proceeds net of fees from equity offering	—	4,000	—	158,663	—	158,663
Proceeds net of fees from settlement of forward units	—	2,832	—	109,527	—	109,527
Dividends declared on Series A Preferred Units	—	—	—	(7,624)	—	(7,624)
Dividends declared on Series B Convertible Preferred Units	—	—	—	(20,556)	—	(20,556)
Common dividends to QTS Realty Trust, Inc.	—	—	—	(98,752)	—	(98,752)
Partnership distributions	—	—	—	(11,733)	—	(11,733)
Net income	—	—	—	31,665	—	31,665
Balance December 31, 2019	7,443	\$ 407,435	1	\$ 1,064,481	(27,465)	\$ 1,444,451

See accompanying notes to financial statements.

QUALITYTECH, LP
CONSOLIDATED STATEMENTS OF CASH FLOW
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
Cash flow from operating activities:			
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	160,528	143,354	136,585
Amortization of above and below market leases	187	465	865
Amortization of deferred loan costs	3,877	3,856	3,640
Amortization of senior notes discount	—	—	229
Distributions from unconsolidated entity	3,280	—	—
Equity in (earnings) loss of unconsolidated entity	1,473	—	—
Loss on extinguishment of debt	—	—	19,912
Equity-based compensation expense	16,412	14,972	13,863
Bad debt expense (recoveries)	2,406	(2,275)	3,519
Write off of deferred loan costs	1,532	605	80
Deferred tax benefit	(348)	(2,970)	(10,742)
(Gain) loss on sale of assets, net	(14,769)	6,994	—
Integration, impairment & restructuring costs	11,462	19,575	9,027
Foreign currency remeasurement (gain) loss	50	—	—
Changes in operating assets and liabilities			
Rents and other receivables, net	(27,234)	(6,495)	(12,881)
Prepaid expenses	(3,406)	(3,063)	755
Due to/from affiliates, net	9,284	—	—
Other assets	35	4,518	282
Accounts payable and accrued liabilities	2,973	8,573	(5,071)
Advance rents, security deposits and other liabilities	(5,845)	2,069	5,491
Deferred income	5,928	8,270	3,312
Net cash provided by operating activities	<u>199,490</u>	<u>191,273</u>	<u>170,323</u>
Cash flow from investing activities:			
Proceeds from sale of property	54,427	2,779	—
Acquisitions, net of cash acquired	(76,383)	(117,029)	(127,038)
Investments in unconsolidated entity	(4,144)	—	—
Additions to property and equipment	(361,160)	(484,303)	(307,314)
Net cash used in investing activities	<u>(387,260)</u>	<u>(598,553)</u>	<u>(434,352)</u>
Cash flow from financing activities:			
Credit facility proceeds	399,028	483,000	888,000
Credit facility repayments	(334,000)	(362,000)	(696,000)
Debt Proceeds	—	—	1,920
5.75% Senior Notes Repayment	—	—	(300,000)
4.75% Notes Issuance	—	—	400,000
Payment of debt extinguishment costs	—	—	(13,218)
Payment of deferred financing costs	(5,130)	(3,964)	(10,862)
Payment of preferred stock dividends	(28,180)	(10,728)	—
Payment of cash dividends	(94,085)	(82,579)	(74,592)
Partnership distributions	(11,533)	(10,759)	(10,289)
Proceeds from exercise of stock options	3,857	246	4,972
Payment of tax withholdings related to equity based awards	(3,900)	(2,205)	(4,725)
Principal payments on finance lease obligations	(2,855)	(7,626)	(12,224)
Dulles, VA Vault Finance Lease Repayment	—	—	(17,785)
Mortgage principal debt repayments	(65)	(66)	(54)
Preferred stock issuance proceeds, net of costs	—	407,477	—
Common stock issuance proceeds, net of costs	268,259	—	107,549
Net cash provided by financing activities	<u>191,396</u>	<u>410,796</u>	<u>262,692</u>
Effect of foreign currency exchange rates on cash and cash equivalents	268	—	—
Net change in cash and cash equivalents	3,894	3,516	(1,337)
Cash and cash equivalents, beginning of period	11,759	8,243	9,580
Cash and cash equivalents, end of period	<u>\$ 15,653</u>	<u>\$ 11,759</u>	<u>\$ 8,243</u>

See accompanying notes to financial statements.

QUALITYTECH, LP
CONSOLIDATED STATEMENTS OF CASH FLOW (continued)
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION			
Cash paid for interest (excluding deferred financing costs and amounts capitalized)	\$ 56,023	\$ 51,380	\$ 44,357
Noncash investing and financing activities:			
Accrued capital additions	\$ 92,206	\$ 76,890	\$ 75,965
Net increase (decrease) in derivative liabilities related to change in fair value of derivative contracts . .	\$ (28,952)	\$ 895	\$ —
Equity received in unconsolidated entity in exchange for real estate assets	\$ 25,280	\$ —	\$ —
Accrued preferred stock dividends	\$ 5,938	\$ 5,938	\$ —
Accrued deferred financing costs	\$ —	\$ 76	\$ 458
Accrued equity issuance costs	\$ 30	\$ 115	\$ 25
Acquisitions, net of cash acquired:			
Land	\$ 1,743	\$ —	\$ 9,363
Buildings, improvements and equipment	8,640	445	14,341
Construction in Progress	61,514	114,283	103,334
Rents and other receivables, net	1,239	—	—
Acquired intangibles, net	2,628	2,301	—
Deferred costs	906	—	—
Prepaid expenses	359	—	—
Other assets	128	—	—
Accounts payable and accrued liabilities	(52)	—	—
Advance rents, security deposits and other liabilities	(722)	—	—
Total acquisitions, net of cash acquired	<u>\$ 76,383</u>	<u>\$ 117,029</u>	<u>\$ 127,038</u>

See accompanying notes to financial statements.

QTS REALTY TRUST, INC.
QUALITYTECH, LP
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Description of Business

QTS Realty Trust, Inc. (“QTS”) through its controlling interest in QualityTech, LP (the “Operating Partnership” and collectively with QTS and its subsidiaries, the “Company,” “we,” “us,” or “our”) and the subsidiaries of the Operating Partnership, is engaged in the business of owning, acquiring, constructing, redeveloping and managing multi-tenant data centers. As of December 31, 2019 our portfolio consisted of 24 owned and leased properties, including a property owned by an unconsolidated entity, with data centers located throughout the United States, Canada and Europe.

QTS elected to be taxed as a real estate investment trust (“REIT”) for U.S. federal income tax purposes, commencing with its taxable year ended December 31, 2013. As a REIT, QTS generally is not required to pay federal corporate income taxes on its taxable income to the extent it is currently distributed to its stockholders.

The Operating Partnership is a Delaware limited partnership formed on August 5, 2009 and is QTS’ historical predecessor. As of December 31, 2019, QTS owned approximately 89.7% of the interests in the Operating Partnership. Substantially all of QTS’ assets are held by, and QTS’ operations are conducted through, the Operating Partnership. QTS’ interest in the Operating Partnership entitles QTS to share in cash distributions from, and in the profits and losses of, the Operating Partnership in proportion to QTS’ percentage ownership. As the sole general partner of the Operating Partnership, QTS generally has the exclusive power under the partnership agreement of the Operating Partnership to manage and conduct the Operating Partnership’s business and affairs, subject to certain limited approval and voting rights of the limited partners. QTS’ board of directors manages the Company’s business and affairs.

2. Summary of Significant Accounting Policies

Basis of Presentation – The accompanying financial statements have been prepared by management in accordance with accounting principles generally accepted in the United States (“U.S. GAAP”). In the opinion of management, all adjustments (consisting of normal recurring adjustments) considered necessary for a fair presentation have been included.

The accompanying financial statements are presented for both QTS Realty Trust, Inc. and QualityTech, LP. References to “QTS” mean QTS Realty Trust, Inc. and its controlled subsidiaries and references to the “Operating Partnership” mean QualityTech, LP and its controlled subsidiaries.

The Operating Partnership meets the definition and criteria of a variable interest entity (“VIE”) in accordance with ASC Topic 810 *Consolidation*, and the Company is the primary beneficiary of the VIE. As discussed below, the Company’s only material asset is its ownership interest in the Operating Partnership, and consequently, all of its assets and liabilities represent those assets and liabilities of the Operating Partnership. The Company’s debt is an obligation of the Operating Partnership where the creditors may have recourse, under certain circumstances, against the credit of the Company.

QTS is the sole general partner of the Operating Partnership, and its only material asset consists of its ownership interest in the Operating Partnership. Management operates QTS and the Operating Partnership as one business. The management of QTS consists of the same employees as the management of the Operating Partnership. QTS does not conduct business itself, other than acting as the sole general partner of the Operating Partnership and issuing public equity from time to time. QTS has not issued or guaranteed any indebtedness. Except for net proceeds from public equity issuances by QTS, which are contributed to the Operating Partnership in exchange for units of limited partnership interest of the Operating Partnership, the Operating Partnership generates all remaining capital required by the business through its operations, the direct or indirect incurrence of indebtedness, and the issuance of partnership units. Therefore, as general partner with control of the Operating Partnership, QTS consolidates the Operating Partnership for financial reporting purposes.

The Company believes, therefore, that providing one set of notes for the financial statements of QTS and the Operating Partnership provides the following benefits:

- enhances investors' understanding of QTS and the Operating Partnership by enabling investors to view the business as a whole in the same manner as management views and operates the business;
- eliminates duplicative disclosure and provides a more streamlined and readable presentation since a substantial portion of the disclosure applies to both QTS and the Operating Partnership; and
- creates time and cost efficiencies through the preparation of one set of notes instead of two separate sets of notes.

In addition, in light of these combined notes, the Company believes it is important for investors to understand the few differences between QTS and the Operating Partnership in the context of how QTS and the Operating Partnership operate as a consolidated company. With respect to balance sheets, the presentation of stockholders' equity and partners' capital are the main areas of difference between the consolidated balance sheets of QTS and those of the Operating Partnership. On the Operating Partnership's consolidated balance sheets, partners' capital includes preferred partnership units and common partnership units that are owned by QTS and other partners as well as accumulated other comprehensive income (loss). On QTS' consolidated balance sheets, stockholders' equity includes preferred stock, common stock, additional paid in capital, accumulated other comprehensive income (loss) and accumulated dividends in excess of earnings. The remaining equity reflected on QTS's consolidated balance sheet is the portion of net assets that are retained by partners other than QTS, referred to as noncontrolling interests. With respect to statements of operations, the primary difference in QTS' Statements of Operations and Statements of Comprehensive Income (Loss) is that for net income (loss), QTS retains its proportionate share of the net income (loss) based on its ownership of the Operating Partnership, with the remaining balance being retained by the Operating Partnership. These combined notes refer to actions or holdings as being actions or holdings of "the Company." Although the Operating Partnership is generally the entity that enters into contracts, holds assets and issues debt, management believes that these general references to "the Company" in this context is appropriate because the business is one enterprise operated through the Operating Partnership.

As discussed above, QTS owns no operating assets and has no operations independent of the Operating Partnership and its subsidiaries. Also, the Operating Partnership owns no operating assets and has no operations independent of its subsidiaries. Obligations under the 4.750% Senior Notes due 2025 and the unsecured credit facility, both discussed in Note 8, are fully, unconditionally, and jointly and severally guaranteed by the Operating Partnership's existing subsidiaries (other than certain foreign subsidiaries and receivables entities) and future subsidiaries that guarantee any indebtedness of QTS Realty Trust, Inc., the Operating Partnership, QTS Finance Corporation (the co-issuer of the 4.750% Senior Notes due 2025) or any subsidiary guarantor. The indenture governing the 4.750% Senior Notes due 2025 restricts the ability of the Operating Partnership to make distributions to QTS, subject to certain exceptions, including distributions required in order for QTS to maintain its status as a real estate investment trust under the Internal Revenue Code of 1986, as amended (the "Code").

The consolidated financial statements of QTS Realty Trust, Inc. include the accounts of QTS Realty Trust, Inc. and its majority owned controlled subsidiaries including the Operating Partnership as well as unconsolidated entities accounted for using equity method investment accounting. This includes the operating results of the Operating Partnership for all periods presented.

Use of Estimates – The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant items subject to such estimates and assumptions include the useful lives of fixed assets, allowances for doubtful accounts and deferred tax assets and the valuation of derivatives, real estate assets, acquired intangible assets and certain accruals.

Principles of Consolidation – The consolidated financial statements of QTS Realty Trust, Inc. include the accounts of QTS Realty Trust, Inc. and its controlled subsidiaries. The consolidated financial statements of QualityTech, LP include

the accounts of QualityTech, LP and its subsidiaries. All significant intercompany accounts and transactions have been eliminated in the financial statements.

We evaluate our investments in less than wholly owned entities to determine whether they should be recorded on a consolidated basis. The percentage of ownership interest in the entity, an evaluation of control and whether a VIE exists are all considered in our consolidation assessment. Investments in real estate entities which we have the ability to exercise significant influence, but do not have financial or operating control, are accounted for using the equity method of accounting. Accordingly, our share of the earnings or losses of these entities is included in consolidated net income (loss).

Variable Interest Entities (VIEs) – We determine whether an entity is a VIE and, if so, whether it should be consolidated by utilizing judgments and estimates that are inherently subjective. The determination of whether an entity in which we hold a direct or indirect variable interest is a VIE is based on several factors, including whether the entity’s total equity investment at risk upon inception is sufficient to finance the entity’s activities without additional subordinated financial support. We make judgments regarding the sufficiency of the equity at risk based first on a qualitative analysis, and then a quantitative analysis, if necessary.

We analyze any investments in VIEs to determine if we are the primary beneficiary. In evaluating whether we are the primary beneficiary, we evaluate our direct and indirect economic interests in the entity. Determining which reporting entity, if any, is the primary beneficiary of a VIE is primarily a qualitative approach focused on identifying which reporting entity has both (1) the power to direct the activities of a VIE that most significantly impact such entity’s economic performance and (2) the obligation to absorb losses or the right to receive benefits from such entity that could potentially be significant to such entity. Performance of that analysis requires the exercise of judgment.

We consider a variety of factors in identifying the entity that holds the power to direct matters that most significantly impact the VIE’s economic performance including, but not limited to, the ability to direct financing, leasing, construction and other operating decisions and activities. In addition, we consider the rights of other investors to participate in those decisions, to replace the manager and to sell or liquidate the entity. We determine whether we are the primary beneficiary of a VIE at the time we become involved with a variable interest entity and reconsider that conclusion upon a reconsideration event. As of December 31, 2019, we had one unconsolidated entity that was considered a VIE for which we are not the primary beneficiary. Our maximum exposure to losses associated with this VIE is limited to our aggregate investment, which was approximately \$30.2 million as of December 31, 2019.

Reclassifications – Revenue categories in the statements of operations for the years ended December 31, 2018 and 2017 have been reclassified to conform to 2019 presentation which is presented in accordance with ASC Topic 842 and the reclassified presentation consists of two categories instead of four categories presented historically. The statements of operations for the year ended December 31, 2018 incorporates a reclassification of \$7.4 million of straight line rent from the “Other” line item into the “Rental” line item, a reclassification of \$45.4 million of “Recoveries from Customers” from its own line item into the “Rental” line item, as well as the combination of \$35.7 million of what was previously classified as “Cloud and managed services” revenue and \$1.2 million of remaining “Other” revenue into a single “Other” line item. The statements of operations for the year ended December 31, 2017 incorporates a reclassification of \$6.1 million of straight line rent from the “Other” line item into the “Rental” line item, a reclassification of \$37.9 million of “Recoveries from Customers” from its own line item into the “Rental” line item, as well as the combination of \$65.5 million of what was previously classified as “Cloud and managed services” revenue and \$1.2 million of remaining “Other” revenue into a single “Other” line item.

Real Estate Assets – Real estate assets are reported at cost. All capital improvements for the income-producing properties that extend their useful lives are capitalized to individual property improvements and depreciated over their estimated useful lives. Depreciation for real estate assets is generally provided on a straight-line basis over 40 years from the date the property was placed in service. Property improvements are depreciated on a straight-line basis over the life of the respective improvement ranging from 20 to 40 years from the date the components were placed in service. Leasehold improvements are depreciated over the lesser of 20 years or through the end of the respective life of the lease. Repairs and maintenance costs are expensed as incurred. For the year ended December 31, 2019, depreciation expense related to real estate assets and non-real estate assets was \$118.9 million and \$11.9 million, respectively, for a total of

\$130.8 million. For the year ended December 31, 2018, depreciation expense related to real estate assets and non-real estate assets was \$101.2 million and \$12.3 million, respectively, for a total of \$113.5 million. For the year ended December 31, 2017, depreciation expense related to real estate assets and non-real estate assets was \$90.1 million and \$14.2 million, respectively, for a total of \$104.3 million. We capitalize certain real estate development costs, including internal costs incurred in connection with development. The capitalization of costs during the construction period (including interest and related loan fees, property taxes and other direct and indirect project costs) begins when development efforts commence and ends when the asset is ready for its intended use. The capitalization of internal costs increases construction in progress recognized during development of the related property and the cost of the real estate asset when placed into service and depreciated over its estimated useful life. Capitalization of such costs, excluding interest, aggregated to \$17.8 million, \$17.4 million and \$12.7 million for the years ended December 31, 2019, 2018 and 2017 respectively. Interest is capitalized during the period of development by applying our weighted average effective borrowing rate to the actual development and other capitalized costs paid during the construction period. Interest is capitalized until the property is ready for its intended use. Interest costs capitalized totaled \$33.2 million, \$26.8 million and \$14.3 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Acquisitions and Sales – Acquisitions of real estate and other entities are either accounted for as asset acquisitions or business combinations depending on facts and circumstances. When substantially all of the fair value of gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets, the transaction is accounted for as an asset acquisition. In an asset acquisition, the purchase price paid for assets acquired is allocated between identified tangible and intangible assets acquired based on relative fair value. Transaction costs associated with asset acquisitions are capitalized. When substantially all of the fair value of assets acquired is not concentrated in a group of similar identifiable assets, the set of assets will generally be considered a business. When accounting for business combinations, purchase accounting is applied to the assets and liabilities related to all real estate investments acquired in accordance with the accounting requirements of ASC Topic 805, *Business Combinations*, which requires the recording of net assets of acquired businesses at fair value. The fair value of the consideration transferred is assigned to the acquired tangible assets, consisting primarily of land, construction in progress, building and improvements, and identified intangible assets and liabilities, consisting of the value of above-market and below-market leases, value of in-place leases, value of customer relationships, trade names, software intangibles and finance leases. The excess of the fair value of liabilities assumed, common stock issued and cash paid over the fair value of identifiable assets acquired is allocated to goodwill, which is not amortized. Transaction costs associated with business combinations are expensed as incurred.

In developing estimates of fair value of acquired assets and assumed liabilities, management analyzes a variety of factors including market data, estimated future cash flows of the acquired operations, industry growth rates, current replacement cost for fixed assets and market rate assumptions for contractual obligations. Such a valuation requires management to make significant estimates and assumptions, particularly with respect to the intangible assets.

Acquired in-place leases are amortized as amortization expense on a straight-line basis over the remaining life of the underlying leases.

Acquired customer relationships are amortized as amortization expense on a straight-line basis over the expected life of the customer relationship. These amortization expenses are accounted for as real estate amortization expense.

Other acquired intangible assets, which includes platform, above or below market leases, and trade name intangibles, are amortized on a straight-line basis over their respective expected lives. Above or below market leases are amortized as a reduction to or increase in rental revenue when we are the lessor as well as a reduction to or increase in rent expense over the remaining lease terms when we are the lessee. The expense associated with trade name intangibles is accounted for as real estate amortization expense, whereas the expense associated with the amortization of platform intangibles is accounted for as non-real estate amortization expense.

We account for the sale of assets to non-customers under Financial Accounting Standards Board (“FASB”) Accounting Standards Update (“ASU”) No. 2017-05, *Other Income—Gains and Losses from the Derecognition of Nonfinancial Assets* (Subtopic 610-20), which provides for recognition or derecognition based on transfer of ownership. During the year ended December 31, 2019, we sold our Manassas facility to an unconsolidated entity in exchange for cash

consideration and noncash consideration in the form of an equity interest in the unconsolidated entity. After measuring the consideration received at fair value, we recognized a \$13.4 million gain on sale of real estate, net of approximately \$5.8 million of transaction costs, associated with our contribution of certain assets in our Manassas facility to the unconsolidated entity. Substantially all of the fair value of the assets contributed to the entity was concentrated in a group of similar identifiable assets and the sale of the assets were not to a customer, therefore the transaction was accounted for as an asset sale. The gain on sale of real estate is included within the “Gain on sale of real estate, net” line item of the consolidated statements of operations. In addition, during the year ended December 31, 2019, we recognized a \$1.4 million gain on sale of certain land and improvements near our Atlanta (DC-1) (formerly known as Atlanta-Metro) facility which is included within the “Gain on sale of real estate, net” line item of the consolidated statements of operations. During the year ended December 31, 2018, we recognized a \$7.0 million net loss on sale of equipment associated with our strategic growth plan which was included within the “Restructuring” line item of the consolidated statements of operations.

Impairment of Long-Lived Assets, Intangible Assets and Goodwill – We review our long-lived assets, intangible assets and equity method investments for impairment when events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Recoverability of assets to be held and used is measured by comparison of the carrying amount to the future net cash flows, undiscounted and without interest, expected to be generated by the asset group. If the net carrying value of the asset group exceeds the value of the undiscounted cash flows, the fair value of the asset group is assessed and may be considered impaired. An impairment loss is recognized based on the excess of the carrying amount of the impaired asset over its fair value. For the year ended December 31, 2019, we recognized a \$11.5 million impairment loss related to the write-down of certain data center assets and equipment in one of our Dulles, Virginia data centers. The Dulles campus has two data center buildings and we initiated a plan in the fourth quarter of 2019 to abandon one of the buildings and relocate customers from the smaller and older facility being abandoned to the newer facility in an effort to better optimize our operating cost structure. The impairment loss is included within the “Transaction, integration and impairment costs” line item of the consolidated statements of operations. For the year ended December 31, 2018, we recognized \$8.8 million of impairment losses related to certain product-related assets, which was included in the “Restructuring” line item of the consolidated statements of operations. For the year ended December 31, 2017, we recognized a \$1.6 million impairment loss related to equipment used to support our cloud and managed service platform, which was included in the “Transaction, integration and impairment costs” line item of the consolidated statements of operations.

The fair value of goodwill is the consideration transferred in a business combination which is not allocable to identifiable intangible and tangible assets. Goodwill is subject to at least an annual assessment for impairment. In connection with the goodwill impairment evaluation that we performed as of October 1, 2019, we determined qualitatively that it is not more likely than not that the fair value of our one reporting unit was less than the carrying amount, thus we did not perform a quantitative analysis. As we continue to operate and assess our goodwill at the consolidated level for our single reporting unit and our market capitalization significantly exceeds our net asset value, further analysis was not deemed necessary as of December 31, 2019.

Assets Held for Sale – We completed the sale of the Manassas facility to an unconsolidated entity on February 22, 2019. As of December 31, 2018, prior to our sale of the assets to the entity, the completion of the sale was probable and we accordingly reclassified certain assets, as well as liabilities associated with those assets, as held for sale. As of December 31, 2018, the asset value of \$71.8 million associated with the held for sale assets was included within the “Assets held for sale” line item of the consolidated statements of financial position and primarily consisted of construction in progress. The liability value of \$24.3 million associated with the held for sale liabilities was included within the “Liabilities held for sale” line item of the consolidated statements of financial position and primarily consisted of accounts payable and accrued liabilities associated with construction in progress assets. See Note 7 – ‘Investments in Unconsolidated Entity’ for further discussion of the unconsolidated entity.

Cash and Cash Equivalents – We consider all demand deposits and money market accounts purchased with a maturity date of three months or less at the date of purchase to be cash equivalents. Our account balances at one or more institutions periodically exceed the Federal Deposit Insurance Corporation (“FDIC”) insurance coverage and, as a result, there is concentration of credit risk related to amounts on deposit in excess of FDIC coverage. We mitigate this risk by

depositing a majority of our funds with several major financial institutions. We also have not experienced any losses and do not believe that the risk is significant.

Deferred Costs – Deferred costs, net, on our balance sheets include both financing costs and leasing costs.

Deferred financing costs represent fees and other costs incurred in connection with obtaining debt and are amortized over the term of the loan and are included in interest expense. Debt issuance costs related to revolving debt arrangements are deferred and presented as assets on the balance sheet; however, all other debt issuance costs are recorded as a direct offset to the associated liability. Amortization of debt issuance costs, including those costs presented as offsets to the associated liability in the consolidated balance sheets, were \$3.9 million, \$3.9 million and \$3.6 million for the years ended December 31, 2019, 2018 and 2017, respectively. During the year ended December 31, 2019, we wrote off unamortized financing costs of \$1.5 million in connection with the modification of our unsecured credit facility in October 2019 whereby we added a seven year additional term loan, increased capacity of the revolving facility, extended maturity dates as well as decreased the interest rates. During the year ended December 31, 2018, we wrote off unamortized financing costs of \$0.6 million in connection with the modification of our unsecured credit facility in November 2018 whereby we decreased the interest rates, modified and/or eliminated certain covenants and extended the term for an additional year. During the year ended December 31, 2017, we wrote off unamortized financing costs of \$5.2 million primarily in connection with the replacement of our \$300 million 5.875% senior notes with the \$400 million of 4.750% notes.

Deferred financing costs presented as assets on the balance sheets related to revolving debt arrangements, net of accumulated amortization are as follows:

<u>(dollars in thousands)</u>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Deferred financing costs	\$ 13,776	\$ 11,530
Accumulated amortization	<u>(5,743)</u>	<u>(3,859)</u>
Deferred financing costs, net	<u>\$ 8,033</u>	<u>\$ 7,671</u>

Deferred financing costs presented as offsets to the associated liabilities on the balance sheets related to fixed debt arrangements, net of accumulated amortization, are as follows:

<u>(dollars in thousands)</u>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Deferred financing costs	\$ 15,777	\$ 14,501
Accumulated amortization	<u>(4,937)</u>	<u>(2,944)</u>
Deferred financing costs, net	<u>\$ 10,840</u>	<u>\$ 11,557</u>

Initial direct costs, or deferred leasing costs, include commissions paid to third parties, including brokers, leasing and referral agents, and internal sales commissions paid to employees for successful execution of lease agreements and are accounted for pursuant to ASC Topic 842, *Leases*. These costs are incurred when we execute lease agreements and represent only incremental costs that would not have been incurred if the lease agreement had not been executed. To a lesser extent, we incur the same incremental costs to obtain managed services and cloud contracts with customers that are accounted for pursuant to ASC Topic 606, *Revenue from Contracts with Customers*. Because the framework of accounting for these costs and the underlying nature of the costs are the same for our revenue and lease contracts, the costs are presented on a combined basis within our financial statements and within the below table. Both revenue and leasing commissions are capitalized and generally amortized over the term of the related leases or the expected term of the contract using the straight-line method. If a customer lease terminates prior to the expiration of its initial term, any unamortized initial direct costs related to the lease are written off to amortization expense. Amortization of deferred

leasing costs totaled \$24.2 million, \$21.3 million and \$18.5 million for the years ended December 31, 2019, 2018 and 2017, respectively. Deferred leasing costs, net of accumulated amortization are as follows:

<u>(dollars in thousands)</u>	<u>December 31,</u> <u>2019</u>	<u>December 31,</u> <u>2018</u>
Deferred leasing costs	\$ 77,178	\$ 63,018
Accumulated amortization	<u>(32,848)</u>	<u>(25,593)</u>
Deferred leasing costs, net	<u>\$ 44,330</u>	<u>\$ 37,425</u>

Revenue Recognition – We derive our revenues from leases with customers for data center space which include lease components and nonlease revenue components, such as power, tenant recoveries, cloud and managed services. We adopted ASC Topic 842, *Leases*, the new accounting standard for leases, effective January 1, 2019 using the modified retrospective approach. In addition, we adopted ASC Topic 606, *Revenue from Contracts with Customers*, the new accounting standard for revenue from contracts with customers, effective January 1, 2018 using the modified retrospective approach. We have elected the available practical expedient to combine our nonlease revenue components that have the same pattern of transfer as the related operating lease component into a single combined lease component under ASC Topic 842. See the ‘Recently Adopted Accounting Standards’ section below for further details.

A description of each of our disaggregated revenue streams is as follows:

Rental Revenue

Our leases with customers are classified as operating leases and rental revenue is recognized on a straight-line basis over the customer lease term. Occasionally, customer leases include options to extend or terminate the lease agreements. We do not include any of these extension or termination options in a customer’s lease term for lease classification purposes or recognizing rental revenue unless it is reasonably certain the customer will exercise these extension or termination options.

Rental revenue also includes revenue from power delivery on fixed power arrangements, whereby customers are billed and pay a fixed monthly fee per committed available amount of connected power. These fixed power arrangements require us to provide a series of distinct services and to stand ready to deliver the power over the contracted term which is co-terminus with the lease. Customer fixed power arrangements have the same pattern of transfer over the lease term as the lease component and are therefore combined with the lease component to form a single lease component that is recognized over the term of the lease on a straight line basis.

In addition, rental revenue includes straight line rent. Straight line rent represents the difference in rents recognized during the period versus amounts contractually due pursuant to the underlying leases and is recorded as deferred rent receivable/payable in the consolidated balance sheets. For lease agreements that provide for scheduled rent increases, rental income is recognized on a straight-line basis over the non-cancellable term of the leases, which commences when control of the space has been provided to the customer. The amount of the straight-line rent receivable on the balance sheets included in rents and other receivables, net was \$38.7 million and \$29.7 million as of December 31, 2019 and December 31, 2018, respectively.

Rental revenue also includes amortization of set-up fees which are amortized over the term of the respective lease as discussed below.

Variable Lease Revenue from Recoveries

Certain customer leases contain provisions under which customers reimburse us for power and cooling-related charges as well as a portion of the property’s real estate taxes, insurance and other operating expenses. Recoveries of power and cooling-related expenses relate specifically to our variable power arrangements, whereby customers pay variable monthly fees for the specific amount of power utilized at the current utility rates. Our performance obligation is to stand ready to deliver power over the life of the customer contract up to a contracted power capacity. Customers have the

flexibility to increase or decrease the amount of power consumed, and therefore sub-metered power revenue is constrained at contract inception. The reimbursements are included in revenue as recoveries from customers and are recognized each month as the uncertainty related to the consideration is resolved (i.e. we provide power to our customers) and customers utilize the power. Reimbursement of real estate taxes, insurance, common area maintenance, or other operating expenses are accounted for as variable payments under lease guidance pursuant to the practical expedient and are recognized as revenue in the period that the expenses are recognized. Variable lease revenue from recoveries discussed above, including power, common area maintenance or other operating costs, have the same pattern of transfer over the lease term as the lease component and are therefore combined with the lease component to form a single lease component. Variable lease revenue from recoveries is included within the “rental” line item of the statements of operations.

Other Revenue

Other revenue primarily consists of revenue from our cloud and managed service offerings as well as revenue earned from partner channel, management and development fees. We, through our TRS, may provide both our cloud product and use of our managed services to our customers on an individual or combined basis. In both our cloud and managed services offerings the TRS’s performance obligation is to provide services (e.g. cloud hosting, data backup, data storage or data center personnel labor hours) to facilitate a fully integrated information technology (“IT”) outsourcing environment over a contracted term. Although underlying services may vary, over the contracted term monthly service offerings are substantially the same and we account for the services as a series of distinct services in accordance with ASC Topic 606. Service fee revenue is recognized as the revenue is earned, which generally coincides with the services being provided. As we have the right to consideration from customers in an amount that corresponds directly with the value to the customer of the TRS’s performance of providing continuous services, we recognize monthly revenue for the amount invoiced.

With respect to the transaction price allocated to remaining performance obligations within our cloud and managed service contracts, we have elected to use the optional exemption provided by ASC Topic 606 whereby we are not required to estimate the total transaction price allocated to remaining performance obligations as we apply the “right-to-invoice” practical expedient. As described above, the nature of our performance obligation in these contracts is to provide monthly services that are substantially the same and accounted for as a series of distinct services. These contracts generally have a remaining term ranging from month-to-month to three years.

Management fees and other revenues are generally received from our unconsolidated affiliate properties as well as third parties. Management fee revenue is earned based on a contractual percentage of unconsolidated affiliate property revenue. Development fee revenue is earned on a contractual percentage of hard costs to develop a property. We recognize revenue for these services provided when earned based on the performance criteria in ASC Topic 606, with such revenue recorded in “Other” revenue on the consolidated statements of operations.

Allowance for Uncollectible Accounts Receivable – We record a provision for uncollectible accounts if a receivable balance relating to lease components is considered by management to be not probable of collection, and this provision is recorded as a reduction to leasing revenues. We also record a general provision of estimated uncollectible tenant receivables that is based on management’s historical experience and a review of the current status of our receivables deemed probable of collection. This provision is recorded as bad debt expense and recorded within the “Property Operating Costs” line item of the consolidated statements of operations. The aggregate allowance for doubtful accounts on the consolidated balance sheets was \$2.3 million and \$3.8 million as of December 31, 2019 and December 31, 2018, respectively.

Advance Rents and Security Deposits – Advance rents, typically prepayment of the following month’s rent, consist of payments received from customers prior to the time they are earned and are recognized as revenue in subsequent periods when earned. Security deposits are collected from customers at the lease origination and are generally refunded to customers upon lease expiration.

Deferred Income – Deferred income generally results from non-refundable charges paid by the customer at lease inception to prepare their space for occupancy. We record this initial payment, commonly referred to as set-up fees, as a

deferred income liability which amortizes into rental revenue over the term of the related lease on a straight-line basis. Deferred income was \$39.2 million, \$33.2 million and \$25.3 million as of December 31, 2019, 2018 and 2017, respectively. Additionally, \$15.2 million, \$12.5 million and \$10.7 million of deferred income was amortized into revenue for the years ended December 31, 2019, 2018 and 2017, respectively.

Foreign Currency - The financial position of foreign subsidiaries is translated at the exchange rates in effect at the end of the period, while revenues and expenses are translated at average exchange rates during the period. Gains or losses from translation of foreign operations where the local currency is the functional currency are included as components of other comprehensive income (loss). Gains or losses from foreign currency transactions are included in determining net income (loss).

Equity-based Compensation – Equity-based compensation costs are measured based upon their estimated fair value on the date of grant or modification and amortized ratably over their respective service periods. We have elected to account for forfeitures as they occur. Equity-based compensation expense was \$16.4 million, \$15.0 million and \$13.9 million for the years ended December 31, 2019, 2018 and 2017, respectively. Equity-based compensation expense classified within General and Administrative Expense for the year ended December 31, 2018 does not include \$3.1 million of equity-based compensation associated with the acceleration of equity awards related to certain employees impacted by the Company’s strategic growth plan. The aforementioned equity-based compensation expense was included in the “Restructuring” expense line item on the consolidated statements of operations.

Segment Information – We manage our business as one operating segment and thus one reportable segment consisting of a portfolio of investments in multiple data centers.

Customer Concentrations – During the year ended December 31, 2019, one of our customers exceeded 10% of total revenues, representing 14% of total revenues for the year ended December 31, 2019.

As of December 31, 2019, five of our customers exceeded 5% of trade accounts receivable. In aggregate, these five customers accounted for 30% of trade accounts receivable. None of these customers individually exceeded 10% of total accounts receivable.

Distribution Policy

To satisfy the requirements to qualify for taxation as a REIT, and to avoid paying tax on our income, we intend to continue to make regular quarterly distributions of all, or substantially all, of our REIT taxable income (excluding net capital gains) to our stockholders.

All distributions will be made at the discretion of our board of directors and will depend on our historical and projected results of operations, liquidity and financial condition, our REIT qualification, our debt service requirements, operating expenses and capital expenditures, prohibitions and other restrictions under financing arrangements and applicable law and other factors as our board of directors may deem relevant from time to time. We anticipate that our estimated cash available for distribution will exceed the annual distribution requirements applicable to REITs and the amount necessary to avoid the payment of tax on undistributed income. However, under some circumstances, we may be required to make distributions in excess of cash available for distribution in order to meet these distribution requirements and we may need to borrow funds to make certain distributions. If we borrow to fund distributions, our future interest costs would increase, thereby reducing our earnings and cash available for distribution from what they otherwise would have been.

The partnership agreement of the Operating Partnership requires the Operating Partnership to distribute at least quarterly 100% of our “available cash” (as defined in the partnership agreement) to the partners of the Operating Partnership, in accordance with the terms established for the class of partnership interests held by such partner. Furthermore, because QTS intends to continue to qualify as a REIT for tax purposes, QTS is required to make reasonable efforts to distribute available cash (a) to limited partners of the Operating Partnership so as to preclude any such distribution or portion thereof from being treated as part of a sale of property to the Operating Partnership by a limited partner under Section 707 of the Code or the regulations thereunder; provided, however, that neither of QTS nor the Operating Partnership shall have liability to a limited partner under any circumstances as a result of any distribution to a limited partner being

so treated, and (b) to QTS, as general partner, in an amount sufficient to enable QTS to make distributions to its stockholders that will enable QTS to (1) satisfy the requirements for qualification as a REIT under the Code and the regulations thereunder, and (2) avoid any federal income or excise tax liability. Consistent with the partnership agreement, we intend to continue to distribute quarterly an amount of our available cash sufficient to enable QTS to pay quarterly dividends to its stockholders in an amount necessary to satisfy the requirements applicable to REITs under the Code and to eliminate federal income and excise tax liability.

Fair Value Measurements – ASC Topic 820, *Fair Value Measurement*, emphasizes that fair-value is a market-based measurement, not an entity-specific measurement. Therefore, a fair-value measurement should be determined based on the assumptions that market participants would use in pricing the asset or liability. As a basis for considering market participant assumptions in fair-value measurements, a fair-value hierarchy is established that distinguishes between market participant assumptions based on market data obtained from sources independent of the reporting entity (observable inputs that are classified within Levels 1 and 2 of the hierarchy) and the reporting entity’s own assumptions about market participant assumptions (unobservable inputs classified within Level 3 of the hierarchy).

Level 1 inputs utilize quoted prices (unadjusted) in active markets for identical assets or liabilities that we have the ability to access. Level 2 inputs are inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. Level 2 inputs may include quoted prices for similar assets and liabilities in active markets, as well as inputs that are observable for the asset or liability (other than quoted prices), such as interest rates, foreign exchange rates, and yield curves that are observable at commonly quoted intervals. Level 3 inputs are unobservable inputs for the asset or liability, which are typically based on an entity’s own assumptions, as there is little, if any, related market activity. In instances where the determination of the fair-value measurement is based on inputs from different levels of the fair-value hierarchy, the level in the fair-value hierarchy within which the entire fair-value measurement falls is based on the lowest level input that is significant to the fair-value measurement in its entirety. Our assessment of the significance of a particular input to the fair-value measurement in its entirety requires judgment, and considers factors specific to the asset or liability.

As of December 31, 2019, we valued our derivative instruments primarily utilizing Level 2 inputs. See Note 18 – ‘Fair Value of Financial Instruments’ for additional details.

Recently Adopted Accounting Standards

Revenue from Contracts with Customers

In May 2014, the FASB issued guidance codified in ASC Topic 606, *Revenue from Contracts with Customers*, which supersedes the former revenue recognition requirements in ASC Topic 605, *Revenue Recognition*. Under this new guidance, entities should recognize revenues to depict the transfer of promised goods or services to customers in an amount that reflects the consideration the entity expects to receive in exchange for those goods or services. The standard establishes a five-step model framework which recognizes revenue as an entity transfers control of goods or services to the customer and requires enhanced disclosures. We adopted ASC Topic 606 effective January 1, 2018, and elected the modified retrospective transition approach, which applied the provisions of the new guidance at the effective date without adjusting comparative periods presented. The adoption did not result in a cumulative catch-up adjustment to opening equity and does not change the recognition pattern of our operating revenues accounted for under ASC Topic 606.

Leases

In February 2016, and further amended in 2018, the FASB issued ASC Topic 842, *Leases*, which supersedes the former lease guidance in ASC Topic 840, *Leases*. The new standard increases transparency and comparability most significantly by requiring the recognition by lessees of right-of-use (“ROU”) assets and lease liabilities on the balance sheets for those leases classified as operating leases. Under the standard, disclosures are required to meet the objective of enabling users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases.

We adopted ASC Topic 842 effective January 1, 2019 using the modified retrospective approach, which applied the provisions of the new guidance at the effective date without adjusting comparative periods presented. We elected a package of practical expedients permitted under the transition guidance within the new standard which allowed us to not reassess (i) whether expired or existing contracts contain a lease under the new standard, (ii) the lease classification for existing leases or (iii) whether previously-capitalized initial direct costs would qualify for capitalization under the new standard. We did not elect the hindsight practical expedient which permits entities to use hindsight in determining the lease term and assessing impairment.

The adoption of ASC Topic 842 impacted our consolidated balance sheets with the recognition of existing operating leases as lessee resulting in \$62.9 million of ROU assets and \$70.7 million of lease liabilities recorded as of January 1, 2019. We also recognized a \$1.8 million cumulative effect adjustment to retained earnings. The adjustment to retained earnings was due to an impairment of certain ROU assets associated with vacant office space for which we are a lessee and assumed in a prior acquisition. See the table below for the impact of adoption of the lease standard on our consolidated balance sheets as of January 1, 2019 (in thousands):

	<u>As Previously Reported</u>		<u>New Lease Standard Adjustment</u>		<u>As Adjusted</u>
Operating lease right-of-use assets . . .	\$ —	\$	62,922	\$	62,922
Operating lease liabilities	—		70,657		70,657
Deferred rent payable	5,922		(5,922)		—

As lessor, accounting for our leases remained largely unchanged from ASC Topic 840. The new lease standard more narrowly defines initial direct costs as only costs that are incremental to origination of a lease (i.e. costs that would not have been incurred had the lease not been obtained). We did not historically capitalize non-incremental costs, therefore this change did not have an impact on the accounting for initial direct costs in the consolidated financial statements.

Additionally, from a lessor perspective, we elected a practical expedient which allows lessors to combine nonlease components with the related lease components if both the timing and pattern of transfer are the same for the nonlease component(s) and related lease component, and the lease component would be classified as an operating lease. The single combined component is accounted for under ASC Topic 842 if the lease component is the predominant component and is accounted for under ASC Topic 606 if the nonlease components are the predominant components. Lessors are permitted to apply the practical expedient to all existing leases on a retrospective or prospective basis. We elected the practical expedient to combine our lease and nonlease components that meet the defined criteria and account for the combined lease component under ASC Topic 842.

New Accounting Pronouncements

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement* (Topic 820): Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement. The amendments in ASU 2018-13 eliminate the requirements to disclose the amount and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy, valuation processes for Level 3 fair value measurements, and policy for timing of transfers between levels. ASU 2018-13 also provides clarification in the measurement uncertainty disclosure by explaining that the disclosure is to communicate information about the uncertainty in measurement as of the reporting date. In addition, ASU 2018-13 added the following requirements: changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements held at the end of the reporting period; and range and weighted average of significant unobservable inputs used in Level 3 fair value measurements. Finally, ASU 2018-13 updated language to further encourage entities to apply materiality when considering de minimus determination for disclosure requirements. The guidance will be applied retrospectively for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years, with the exception of amendments to changes in unrealized gains and losses, the range and weighted average of significant unobservable inputs used for Level 3 fair value measurements, and the narrative description of measurement uncertainty which will be applied prospectively. Early adoption is permitted. We do not expect provisions of the standard will have a material impact on our consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, *Intangibles – Goodwill and Other – Internal-Use Software* (Subtopic 350-40): Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract. The amendments in ASU 2018-15 clarifies that implementation costs incurred by customers in cloud computing arrangements are deferred if they would be capitalized by customers in the software licensing arrangements under the internal-use software guidance. ASU 2018-15 also clarifies that any capitalized costs should not be recorded to “Depreciation and amortization” in the Consolidated Statements of Operations for costs after adoption. ASU 2018-15 is effective for the Company beginning January 1, 2020 and provides for the alternative to adopt the ASU (a) prospectively only for new costs incurred after the adoption date or (b) by adjusting existing costs to comply with this standard, including the requirement to present the amortization of costs outside “Depreciation and amortization”. We plan to adopt this ASU prospectively to all new implementation costs incurred after adoption. We do not expect this standard will have a material impact on our net income. However, this standard will likely result in certain expenses currently recognized as non-real estate depreciation being recognized as general and administrative or operating expense in future periods.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, and subsequent amendments to the guidance: ASU 2018-19 in November 2018, ASU 2019-04 in April 2019, ASU 2019-05 in May 2019, and ASUs 2019-10 & 2019-11 in November 2019. The standard, as amended, requires entities to use a new impairment model based on current expected credit losses (“CECL”) rather than incurred losses. The CECL model is designed to capture expected credit losses through the establishment of an allowance account, which will be presented as an offset to the amortized cost basis of the related financial asset. The guidance is effective for interim and annual periods beginning after December 15, 2019. Early adoption is permitted. As the majority of our revenue is generated from operating leases which are governed under ASC Topic 842, we do not currently expect the provisions of the standard will have a material impact on our consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. The amendments in this ASU simplify the accounting for income taxes by removing certain exceptions and adding some requirements regarding franchise (or similar) tax, step-ups in a business combination, treatment of entities not subject to tax and when to apply enacted changes in tax laws. This ASU is effective for fiscal years beginning after December 15, 2020 and interim periods within those fiscal years. The amendments related to changes in ownership of foreign equity method investments or foreign subsidiaries should be applied on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the beginning of the fiscal year of adoption. The amendments related to franchise taxes that are partially based on income should be applied on either a retrospective basis for all periods presented or a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the beginning of the fiscal year of adoption. All other amendments should be applied on a prospective basis. Early adoption is permitted. We are currently assessing the impact of this standard on our consolidated financial statements.

We determined all other recently issued accounting pronouncements will not have a material impact on our consolidated financial statements or do not materially apply to our operations.

3. Acquisitions and Sales

(All references to square footage, acres and megawatts are unaudited)

Netherlands Acquisition

On April 23, 2019, we completed the acquisition of two data centers in the Netherlands (the “Netherlands facilities”) for approximately \$44.5 million in cash consideration, including closing costs. The two facilities, in Groningen and Eemshaven, have approximately 160,000 square feet of raised floor capacity and 30 megawatts of combined gross power available. This acquisition was funded with a draw on our unsecured revolving credit facility.

The acquisition was accounted for as an asset acquisition. The purchase price allocation of the Netherlands facilities is a fair value estimate that utilized Level 2 and Level 3 inputs, including discounted future cash flows and observable market data on replacement costs, leasing rates, and discount rates that were used to measure the acquired assets and liabilities on a non-recurring basis.

The following table summarizes the consideration for the Netherlands facilities and the allocation of the fair value of assets acquired and liabilities assumed at the acquisition date (in thousands):

	<u>Purchase Price Allocation</u>	<u>Weighted Avg Remaining Useful Life (in years)</u>
Land	\$ 1,743	N/A
Buildings and improvements	8,640	24
Construction in progress	29,902	N/A
Acquired intangibles (In-place lease & above market lease)	2,911	3
Deferred costs	906	3
Other assets	128	3
Net Working Capital	554	N/A
Total identifiable assets acquired.	<u>44,784</u>	
Acquired below market lease	<u>284</u>	3
Total liabilities assumed.	<u>284</u>	
Net identifiable assets acquired	<u>\$ 44,500</u>	

Land Acquisitions

In April 2019, we completed the acquisition of approximately 4 acres of land for our Atlanta (DC-2) facility for approximately \$2.2 million. In July 2019, we completed the acquisition of approximately 28 acres of land in Ashburn, Virginia for approximately \$22.4 million. In November 2019, we completed the acquisition of approximately 75 acres of land in Richmond, Virginia for approximately \$7.0 million. These acquisitions were accounted for as asset acquisitions and are included within the “Construction in Progress” line item of the consolidated balance sheets.

During 2018, we completed multiple acquisitions of land in Manassas, Virginia totaling 118 acres for approximately \$37.0 million. A portion of the land was used to support the construction of the Manassas data center that we contributed to an unconsolidated entity subsequent to December 31, 2018. These acquisitions were accounted for as asset acquisitions. The land acquired in the Manassas purchases, as well as subsequent costs for construction in progress, were included within the “Construction in Progress” line item of the consolidated balance sheets.

In October 2018, we completed the acquisition of approximately 55 acres of land in Atlanta, Georgia adjacent to our existing Atlanta (DC-1) (formerly known as Atlanta-Metro) mega data center for approximately \$80.1 million. The acquisition was accounted for as an asset acquisition, with the majority of the purchase price included within the “Construction in Progress” line item of the consolidated balance sheets at the time of acquisition.

Atlanta Land Improvement Sale

In November 2019, we sold to a third party certain land improvements which we had previously acquired as part of a larger acquisition of land to expand our Atlanta, Georgia campus. This sale of incidental real estate resulted in a gain of \$1.4 million. Additionally, we entered into a ground lease with the Company as lessor and the acquirer of the building as lessee which has an initial term of 20 years.

4. Acquired Intangible Assets and Liabilities

Summarized below are the carrying values for the major classes of intangible assets and liabilities (in thousands):

	Useful Lives	December 31, 2019			December 31, 2018		
		Gross Carrying Value	Accumulated Amortization	Net Carrying Value	Gross Carrying Value	Accumulated Amortization	Net Carrying Value
Customer Relationships	12 years	\$ 95,705	\$ (36,411)	\$ 59,294	\$ 95,705	\$ (28,461)	\$ 67,244
In-Place Leases	0.5 to 10 years	34,588	(22,522)	12,066	32,066	(17,670)	14,396
Solar Power Agreement ⁽¹⁾	17 years	13,747	(4,448)	9,299	13,747	(3,639)	10,108
Acquired Favorable Leases							
Acquired below market leases - as Lessee	46 years	—	—	—	2,301	—	2,301
Acquired above market leases - as Lessor	0.5 to 8 years	5,035	(4,015)	1,020	4,649	(3,247)	1,402
Total Intangible Assets		<u>\$ 149,075</u>	<u>\$ (67,396)</u>	<u>\$ 81,679</u>	<u>\$ 148,468</u>	<u>\$ (53,017)</u>	<u>\$ 95,451</u>
Solar Power Agreement ⁽¹⁾	17 years	13,747	(4,448)	9,299	13,747	(3,639)	10,108
Acquired Unfavorable Leases							
Acquired below market leases - as Lessor	3 to 4 years	1,092	(967)	125	809	(611)	198
Acquired above market leases - as Lessee	11 to 12 years	2,453	(983)	1,470	2,453	(767)	1,686
Total Intangible Liabilities ⁽²⁾		<u>\$ 17,292</u>	<u>\$ (6,398)</u>	<u>\$ 10,894</u>	<u>\$ 17,009</u>	<u>\$ (5,017)</u>	<u>\$ 11,992</u>

- (1) Amortization related to the Solar Power Agreement asset and liability is recorded at the same rate and therefore has no net impact on the statements of operations.
- (2) Intangible liabilities are included within the “Advance rents, security deposits and other liabilities” line item of the consolidated balance sheets.

Above or below market leases are amortized as a reduction to or increase in rental revenue in the case of the Company as lessor as well as a reduction to or increase in rent expense in the case of the Company as lessee over the remaining lease terms. The net effect of amortization of acquired above-market and below-market leases resulted in a net decrease in rental revenue of \$0.2 million, \$0.5 million, and \$0.9 million for the years ended December 31, 2019, 2018 and 2017, respectively. The estimated amortization of acquired favorable and unfavorable leases for each of the five succeeding fiscal years ending December 31 is as follows (in thousands):

	Net Rental Revenue Decrease	Net Rental Expense Decrease
2020	\$ 659	\$ (216)
2021	154	(216)
2022	52	(216)
2023	24	(216)
2024	6	(216)
Thereafter	—	(390)
Total	<u>\$ 895</u>	<u>\$ (1,470)</u>

Net amortization of all other identified intangible assets and liabilities was \$13.2 million, \$15.0 million and \$18.2 million for the years ended December 31, 2019, 2018 and 2017, respectively. The estimated net amortization of all other identified intangible assets and liabilities for each of the five succeeding fiscal years ending December 31 is as follows (in thousands):

2020	\$ 12,100
2021	10,593
2022	10,073
2023	10,070
2024	8,953
Thereafter	19,571
Total	<u>\$ 71,360</u>

5. Real Estate Assets and Construction in Progress

The following is a summary of our cost of owned or leased properties as of December 31, 2019 and 2018 (in thousands):

As of December 31, 2019:

Property Location	Land	Buildings and Improvements	Construction in Progress	Total Cost
Atlanta, Georgia Campus ⁽¹⁾	\$ 44,588	\$ 525,300	\$ 128,930	\$ 698,818
Irving, Texas	8,606	369,727	98,170	476,503
Ashburn, Virginia ⁽²⁾	16,476	156,396	189,375	362,247
Richmond, Virginia	2,180	195,684	139,948	337,812
Chicago, Illinois	9,400	205,026	86,878	301,304
Suwanee, Georgia (Atlanta-Suwanee)	3,521	174,124	5,559	183,204
Piscataway, New Jersey	7,466	103,553	36,056	147,075
Santa Clara, California ⁽³⁾	—	114,499	1,238	115,737
Fort Worth, Texas	9,079	55,018	35,722	99,819
Leased facilities ⁽⁴⁾	—	82,813	666	83,479
Sacramento, California	1,481	65,258	163	66,902
Hillsboro, Oregon ⁽²⁾	—	—	63,573	63,573
Manassas, Virginia ⁽²⁾	—	—	57,662	57,662
Princeton, New Jersey	20,700	35,192	39	55,931
Dulles, Virginia	3,154	48,651	4,688	56,493
Eemshaven, Netherlands	—	—	37,267	37,267
Phoenix, Arizona ⁽²⁾	—	2,412	31,840	34,252
Groningen, Netherlands	1,741	9,085	3,028	13,854
Other ⁽⁵⁾	2,213	36,163	120	38,496
	\$ 130,605	\$ 2,178,901	\$ 920,922	\$ 3,230,428

- (1) The “Atlanta, Georgia Campus” includes both the existing data center Atlanta (DC-1) as well as new property development associated with construction of a second megascale data center Atlanta (DC-2) on land adjacent to the existing Atlanta DC-1 facility.
- (2) Represent land purchases. Land acquisition costs, as well as subsequent development costs, are included within construction in progress until development on the land has ended and the asset is ready for its intended use.
- (3) Owned facility subject to long-term ground sublease.
- (4) Includes 7 facilities. All facilities are leased, including those subject to finance leases.
- (5) Consists of Miami, FL; Lenexa, KS; and Overland Park, KS facilities.

As of December 31, 2018:

<u>Property Location</u>	<u>Land</u>	<u>Buildings and Improvements</u>	<u>Construction in Progress</u>	<u>Total Cost</u>
Atlanta, Georgia Campus ⁽¹⁾	\$ 20,416	\$ 493,446	\$ 88,253	\$ 602,115
Irving, Texas	8,606	345,615	99,445	453,666
Richmond, Virginia	2,180	253,098	67,932	323,210
Chicago, Illinois	9,400	130,150	133,095	272,645
Ashburn, Virginia ⁽²⁾	17,325	63,245	184,951	265,521
Suwanee, Georgia (Atlanta-Suwanee)	3,521	166,298	3,188	173,007
Piscataway, New Jersey	7,466	97,806	33,472	138,744
Manassas, Virginia ⁽²⁾⁽⁶⁾	—	—	45,194	45,194
Santa Clara, California ⁽³⁾	—	98,548	7,600	106,148
Dulles, Virginia	3,154	72,435	3,852	79,441
Fort Worth, Texas	9,079	18,623	43,715	71,417
Sacramento, California	1,481	64,874	92	66,447
Princeton, New Jersey	20,700	34,046	431	55,177
Leased facilities ⁽⁴⁾	—	43,347	9,334	52,681
Hillsboro, Oregon ⁽²⁾	—	—	39,835	39,835
Phoenix, Arizona ⁽²⁾	—	—	29,562	29,562
Other ⁽⁵⁾	2,213	35,720	113	38,046
	<u>\$ 105,541</u>	<u>1,917,251</u>	<u>790,064</u>	<u>\$ 2,812,856</u>

- (1) The “Atlanta, Georgia Campus” includes both the existing data center Atlanta (DC-1) as well as new property development associated with construction of a second megascale data center Atlanta (DC-2) on land adjacent to the existing Atlanta DC-1 facility.
- (2) Represent land purchases. Land acquisition costs, as well as subsequent development costs, are included within construction in progress until development on the land has ended and the asset is ready for its intended use.
- (3) Owned facility subject to long-term ground sublease.
- (4) Includes 10 facilities. All facilities are leased, including those subject to finance leases.
- (5) Consists of Miami, FL; Lenexa, KS; Overland Park, KS; and Duluth, GA facilities.
- (6) Excludes \$71.0 million of construction in progress included within the “Assets held for sale” line item of the consolidated balance sheets.

6. Leases

Leases as Lessee

We determine if an arrangement is a lease at inception. If the contract is considered a lease, we evaluate leased property to determine whether the lease should be classified as a finance or operating lease in accordance with U.S. GAAP. We periodically enter into finance leases for certain data center facilities, equipment, and fiber optic transmission cabling. In addition, we lease certain real estate (primarily land or real estate space) under operating lease agreements with such assets included within the “Operating lease right of use assets, net” line item of the consolidated balance sheets and the associated lease liabilities included within the “Operating lease liabilities” line item on the consolidated balance sheets pursuant to the adoption of ASC Topic 842 effective January 1, 2019. See ‘Note 2’ for further details on recently adopted accounting standards.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. Variable lease payments consist of nonlease services related to the lease. Variable lease payments are excluded from the ROU assets and lease liabilities and are recognized in the period in which the obligation for those payments is incurred. As our leases as lessee typically do not provide an implicit rate, we use our incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments. We assess multiple variables when determining the incremental borrowing rate, such as lease term, payment terms, collateral, economic conditions, and creditworthiness. ROU assets also include any lease payments made and exclude lease incentives. Many of our lease agreements include options to extend the lease, which we do not include in our expected lease terms unless they are reasonably certain to be exercised. Rental expense for lease payments related to operating leases is recognized on a straight-line basis over the lease term.

We use leasing as a source of financing for certain data center facilities and related equipment. We currently operate one data center facility, along with various equipment and fiber optic transmission cabling, that are subject to finance leases. The remaining terms of our finance leases range from one to eighteen years. Our finance lease associated with the data center includes multiple extension option periods, some of which were included in the lease term as we are reasonably certain to exercise those extension options. Our other finance leases typically do not have options to extend the initial lease term. Finance lease assets are included within the “Buildings, improvements and equipment” line item of the consolidated balance sheets and finance lease liabilities are included within “Finance leases and mortgage notes payable” line item of the consolidated balance sheets.

We currently lease six other facilities under operating lease agreements for various data centers, our corporate headquarters and additional office space. Our leases have remaining lease terms ranging from four to seven years. We have options to extend the initial lease term on nearly all of these leases. Additionally, we have one ground lease for our Santa Clara property that is considered an operating lease which is scheduled to expire in 2052.

Components of lease expense were as follows (in thousands):

	<u>Year Ended</u> <u>December 31, 2019</u>
Finance lease cost:	
Amortization of assets	\$ 3,535
Interest on lease liabilities	1,693
Operating lease expense:	
Operating lease cost	9,102
Variable lease cost	1,109
Sublease income	(187)
Total lease costs.	<u>\$ 15,252</u>

Supplemental balance sheet information related to leases was as follows (in thousands, except lease term and discount rate):

	<u>December 31,</u> <u>2019</u>
Operating leases:	
Operating lease right-of-use assets	\$ 57,141
Operating lease liabilities	64,416
Finance leases:	
Property and equipment, at cost.	50,437
Accumulated amortization	(4,830)
Property and equipment, net	<u>\$ 45,607</u>
Finance lease liabilities.	<u>\$ 45,141</u>

Weighted average remaining lease term (in years):

Operating leases	13.7
Finance leases	11.4

Weighted average discount rate:

Operating leases	5.1%
Finance leases	4.3%

Supplemental cash flow and other information related to leases was as follows (in thousands):

	<u>Year Ended</u> <u>December 31, 2019</u>	
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows for operating leases	\$	9,834
Operating cash flows for finance leases	\$	1,704
Financing cash flows for finance leases	\$	2,855

Maturities of lease liabilities, which exclude variable rent payments, are as follows (in thousands):

	<u>December 31, 2019</u>	
	<u>Operating Leases</u>	<u>Finance Leases</u>
2020	\$ 9,589	\$ 4,493
2021	9,818	4,514
2022	10,266	4,639
2023	10,393	4,776
2024	8,317	4,918
Thereafter	48,908	34,990
Total Lease Payments	<u>\$ 97,291</u>	<u>\$ 58,330</u>
Less: Imputed Interest	32,875	13,189
Total Lease Obligations	<u>\$ 64,416</u>	<u>\$ 45,141</u>

Leases as lessor

Our lease revenue contains both minimum lease payments as well as variable lease payments. See Note 2 - ‘Summary of Significant Accounting Policies’ for further details of our revenue streams and associated accounting treatment. The components of our lease revenue were as follows (in thousands):

	<u>Year Ended</u> <u>December 31,</u>	
	<u>2019</u>	<u>2018</u>
Lease revenue:		
Minimum lease revenue	\$ 409,157	\$ 367,388
Variable lease revenue (primarily recoveries from customers)	55,966	46,232
Total lease revenue	<u>\$ 465,123</u>	<u>\$ 413,620</u>

7. Investments in Unconsolidated Entity

During the three months ended March 31, 2019, QTS formed an unconsolidated entity with Alinda Capital Partners (“Alinda”), an infrastructure investment firm. QTS contributed a hyperscale data center under development in Manassas, Virginia to the entity. The facility, and the previously executed 10-year operating lease agreement with a global cloud-based software company, was contributed to the unconsolidated entity in exchange for cash and noncash consideration in the form of equity interest in the entity that was measured at fair value pursuant to Topic 820. The equity interest received and any amounts due from the unconsolidated entity are recorded within our consolidated balance sheets and totaled \$30.2 million as of December 31, 2019. QTS and Alinda each own a 50% interest in the entity. As we are not the primary beneficiary of the arrangement but have the ability to exercise significant influence, we concluded that the investment should be accounted for as an unconsolidated entity using equity method investment accounting. As of December 31, 2019 the total assets of the entity were \$127.8 million and the total debt outstanding, net of deferred financing costs, was \$68.2 million.

Under the equity method, our cost of investment is adjusted for additional contributions to and distributions from the unconsolidated entity, as well as our share of equity in the earnings and losses of the unconsolidated entity. Generally,

distributions of cash flows from operations and capital events are made to members of the unconsolidated entity in accordance with each member's ownership percentages and the terms of the agreement, but also provides us with rights to preferential cash distributions as certain phases are completed and leased to the underlying tenant. Our policy is to account for distributions from the unconsolidated entity on the basis of the nature of the activities that generated the distribution. Distributions from the operations of the unconsolidated entity are a return on our investment and we classify these distributions as operating cash flows. Any differences between the cost of our investment in an unconsolidated affiliate and its underlying equity as reflected in the unconsolidated affiliate's financial statements generally result from costs of our investment that are not reflected on the unconsolidated affiliate's financial statements.

Under the unconsolidated entity agreement, we serve as the entity's operating member, subject to authority and oversight of a board appointed by us and Alinda, and separately we serve as manager and developer of the facility in exchange for management and development fees. The entity agreement includes various transfer restrictions and rights of first offer that will allow us to repurchase Alinda's interest should Alinda wish to exit in the future.

8. Debt

Below is a listing of our outstanding debt, including finance leases, as of December 31, 2019 and 2018 (in thousands):

	Weighted Average Coupon Interest Rate at December 31, 2019 ⁽¹⁾	Maturities as of December 31, 2019	December 31, 2019	December 31, 2018
Unsecured Credit Facility				
Revolving Credit Facility	2.71%	December 17, 2023	\$ 317,028	\$ 252,000
Term Loan I	3.16%	December 17, 2024	225,000	350,000
Term Loan II	3.19%	April 27, 2025	225,000	350,000
Term Loan III	3.19%	October 18, 2026	250,000	—
Senior Notes	4.75%	November 15, 2025	400,000	400,000
Lenexa Mortgage	4.10%	May 1, 2022	1,736	1,801
Finance Leases	4.35%	2021 - 2038	45,140	2,873
	<u>3.54%</u>		<u>1,463,904</u>	<u>1,356,674</u>
Less net debt issuance costs			(10,839)	(11,557)
Total outstanding debt, net			<u>\$ 1,453,065</u>	<u>\$ 1,345,117</u>

(1) The coupon interest rates associated with Term Loans I - II incorporate the effects of our interest rate swaps in effect as of December 31, 2019.

Credit Facilities, Senior Notes and Mortgage Notes Payable

(a) Unsecured Credit Facility – In October 2019, the Company amended and restated its unsecured credit facility (the “unsecured credit facility”), which among other things increased the total potential borrowings, extended maturity dates, lowered interest rates, and provided for an additional term loan under the agreement. The unsecured credit facility includes a \$225 million term loan which matures on December 17, 2024 (the “Term Loan A”), a \$225 million term loan which matures on April 27, 2025 (the “Term Loan B”), an additional term loan of \$250 million, maturing on October 18, 2026 (the “Term Loan C”), and a \$1.0 billion revolving credit facility which matures on December 17, 2023. The revolving portion of the unsecured facility has a one-year extension option. Amounts outstanding under the unsecured credit facility bear interest at a variable rate equal to, at our election, LIBOR or a base rate, plus a spread that will vary depending upon our leverage ratio. For revolving credit loans, the spread ranges from 1.25% to 1.85% for LIBOR loans and 0.25% to 0.85% for base rate loans. For Term Loan A and Term Loan B, the spread ranges from 1.20% to 1.80% for LIBOR loans and 0.20% to 0.80% for base rate loans. For Term Loan C, the spread ranges from 1.50% to 1.85% for LIBOR loans and 0.50% to 0.85% for base rate loans. The unsecured credit facility also provides for borrowing capacity of up to \$300 million in various foreign currencies.

Under the unsecured credit facility, the capacity may be increased from the current capacity of \$1.7 billion to \$2.2 billion subject to certain conditions set forth in the credit agreement, including the consent of the administrative agent and obtaining necessary commitments. We are also required to pay a commitment fee to the lenders assessed on the unused

portion of the unsecured revolving credit facility. At our election, we can prepay amounts outstanding under the unsecured credit facility, in whole or in part, without penalty or premium.

The Company’s ability to borrow under the unsecured credit facility is subject to ongoing compliance with a number of customary affirmative and negative covenants. As of December 31, 2019, the Company was in compliance with all of its covenants.

As of December 31, 2019, the Company had outstanding \$1,017 million of indebtedness under the unsecured credit facility, consisting of \$317 million of outstanding borrowings under the unsecured revolving credit facility and \$700 million outstanding under the term loans, exclusive of net debt issuance costs of \$6.4 million. In connection with the unsecured credit facility, as of December 31, 2019, the Company had letters of credit outstanding aggregating to \$4.0 million. As of December 31, 2019, the weighted average interest rate for amounts outstanding under the unsecured credit facility, including the effects of interest rate swaps, was 3.03%.

The Company has also entered into certain interest rate swap agreements. See Note 10 – ‘Derivative Instruments’ for additional details.

(b) Senior Notes – On November 8, 2017, the Operating Partnership and QTS Finance Corporation, a subsidiary of the Operating Partnership formed solely for the purpose of facilitating the offering of the 5.875% Senior Notes due 2022 (collectively, the “Issuers”), issued \$400 million aggregate principal amount of 4.750% Senior Notes due November 15, 2025 (the “Senior Notes”) in a private offering. The Senior Notes have an interest rate of 4.750% per annum and were issued at a price equal to 100% of their face value. The net proceeds from the offering were used to fund the redemption of, and satisfy and discharge the indenture pursuant to which the Issuers issued, all of their outstanding 5.875% Senior Notes and to repay a portion of the amount outstanding under our unsecured revolving credit facility. As of December 31, 2019, the outstanding net debt issuance costs associated with the Senior Notes were \$4.5 million.

The Senior Notes are unconditionally guaranteed, jointly and severally, on a senior unsecured basis by all of the Operating Partnership’s existing subsidiaries (other than foreign subsidiaries and receivables entities) and future subsidiaries that guarantee any indebtedness of QTS Realty Trust, Inc., the Issuers or any other subsidiary guarantor, other than QTS Finance Corporation, the co-issuer of the Senior Notes. QTS Realty Trust, Inc. does not guarantee the Senior Notes and will not be required to guarantee the Senior Notes except under certain circumstances. The offering was conducted pursuant to Rule 144A of the Securities Act of 1933, as amended, and the Senior Notes were issued pursuant to an indenture, dated as of November 8, 2017, among QTS, the Issuers, the guarantors named therein, and Deutsche Bank Trust Company Americas, as trustee.

The annual remaining principal payment requirements as of December 31, 2019 per the contractual maturities, excluding extension options and excluding operating and finance leases, are as follows (in thousands):

2020	\$	64
2021		73
2022		1,599
2023		317,028
2024		225,000
Thereafter		875,000
Total		<u>\$ 1,418,764</u>

As of December 31, 2019, we were in compliance with all of our covenants.

9. Income Taxes

The Company has elected for two of its existing subsidiaries to be taxed as taxable REIT subsidiaries pursuant to the REIT rules of the U.S. Internal Revenue Code. Pursuant to the transaction described in Note 3 – Acquisitions, we also have subsidiaries subject to tax in non-US jurisdictions.

For the taxable REIT subsidiaries, income taxes are accounted for under the asset and liability method in accordance with ASC Topic 740. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. We consider whether it is more likely than not that some portion or all of the deferred tax assets will be realized. It is possible that some or all of our deferred tax assets could ultimately expire unused. The Company establishes valuation allowances against deferred tax assets when the ability to fully utilize these benefits is determined to be uncertain.

The components of income tax provision from continuing operations are:

	For the Year Ended December 31,		
	2019	2018	2017
Current:			
U.S. federal	\$ —	\$ (50)	\$ 42
U.S. State	298	395	297
Outside United States	13	78	44
Total Current	<u>311</u>	<u>423</u>	<u>383</u>
Deferred:			
U.S. federal	(276)	(3,727)	(9,734)
U.S. State	(71)	(64)	(427)
Outside United States	(1)	—	—
Total Deferred	<u>(348)</u>	<u>(3,791)</u>	<u>(10,161)</u>
Total	<u>\$ (37)</u>	<u>\$ (3,368)</u>	<u>\$ (9,778)</u>

Temporary differences and carry forwards which give rise to the deferred tax assets and liabilities are as follows:

	For the Year Ended December 31,		
	2019	2018	2017
Deferred tax assets			
Net operating loss carryforwards	\$ 20,218	\$ 17,610	\$ 8,888
Deferred revenue and setup charges	1,299	3,171	3,435
Operating lease liabilities	2,266	—	—
Property and equipment	512	—	—
Leases	—	1	453
Credits	300	287	543
Bad debt reserve	18	409	2,250
Intangibles	804	—	—
Interest expense carryforward IRC Sec. 163(j)	2,782	2,253	—
Other	1,376	1,534	1,607
Gross deferred tax assets	<u>29,575</u>	<u>25,265</u>	<u>17,176</u>
Deferred tax liabilities			
Property and equipment	—	(3,089)	(4,940)
Goodwill	(2,494)	(1,953)	(1,396)
Intangibles	(591)	(11,910)	(13,606)
Operating lease right-of-use assets	(1,261)	—	—
Other	(1,231)	(1,049)	(1,132)
Gross deferred tax liabilities	<u>(5,577)</u>	<u>(18,001)</u>	<u>(21,074)</u>
Net deferred tax asset/(liability)	23,998	7,264	(3,898)
Valuation allowance	(24,747)	(8,361)	(713)
Net deferred tax liability	<u>\$ (749)</u>	<u>\$ (1,097)</u>	<u>\$ (4,611)</u>

The taxable REIT subsidiaries currently have net operating loss carryforwards related to federal income taxes of \$33.4 million that expire in 10-17 years and \$39.9 million which have no expiration. The taxable REIT subsidiaries also have \$78.4 million of net operating loss carryforwards relating to state income taxes that expire in 1-20 years. The Company's interest expense carryforward of \$10.9 million has no expiration.

The effective tax rate is subject to change in the future due to various factors such as the operating performance of the taxable REIT subsidiaries, tax law changes and future business acquisitions. The differences between total income tax expense or benefit and the amount computed by applying the statutory income tax rate to income before provision for income taxes with respect to the TRS activity were as follows:

	For the Year Ended December 31,		
	2019	2018	2017
TRS			
Statutory rate applied to pre-tax loss	\$ (12,991)	\$ (9,656)	\$ (5,109)
Permanent differences, net	16	97	(284)
State income tax, net of federal benefit	(2,868)	(1,430)	(388)
Foreign income tax	13	78	44
Federal and State rate change	(20)	(146)	(3,251)
Contribution of Assets to TRS	—	—	(866)
Other	(110)	41	(244)
Valuation allowance increase (decrease)	15,923	7,648	320
Total tax benefit	<u>\$ (37)</u>	<u>\$ (3,368)</u>	<u>\$ (9,778)</u>
Effective tax rate	0.1%	7.3%	65.1%

On December 22, 2017, the Tax Cuts and Jobs Act ("The Act"), was signed into law by President Trump. The tax legislation contains several provisions, including the lowering of the U.S. corporate tax rate from 35 percent to 21 percent, effective January 1, 2018.

The Company had significant deferred tax liabilities, primarily related to fixed assets and intangibles, on its balance sheets as of December 31, 2017. The value of the net deferred tax liabilities decreased significantly as a result of the reduction in the U.S. corporate income tax rate. Consequently, operating results for the reporting period ended December 31, 2017 reflected a one-time non-cash income tax benefit of \$3.3 million for the re-measurement of deferred tax assets (liabilities).

The Act also repealed corporate alternative minimum tax ("AMT") for tax years beginning January 1, 2018, and provides that existing AMT credit carryforwards are refundable beginning in 2018. The Company has approximately \$0.3 million of AMT credit carryovers that are expected to be fully refunded by 2022. The repeal of AMT did not result in any one-time income tax expense (benefit) to operating results.

The Company followed the guidance in SEC Staff Accounting Bulletin 118 ("SAB 118"), which provided additional clarification regarding the application of ASC Topic 740 in situations where the Company may not have had the necessary information available, prepared, or analyzed in reasonable detail to complete the accounting for certain income tax effects of the Act for the reporting period ended December 31, 2017 in which the Act was enacted. SAB 118 provided for a measurement period beginning in the reporting period that includes the Act's enactment date and ending when the Company has obtained, prepared, and analyzed the information needed in order to complete the accounting requirements. In no circumstances was the measurement period to extend beyond one year from the enactment date.

The Company completed its accounting for income tax effects of the Act in the reporting period ended December 31, 2018 and included the impacts in its income tax provision from continuing operations in accordance with the measurement period guidance provided in SAB 118. The impacts of completing its accounting were not material to the income tax provision of the Company's effective tax rate.

As of December 31, 2019, 2018 and 2017, the Company had no uncertain tax positions. If the Company accrues any interest or penalties on tax liabilities from significant uncertain tax positions, those items will be classified as interest expense and general and administrative expense, respectively, in the Statements of Operations and Statements of

Comprehensive Income. For the years ended December 31, 2019, 2018, and 2017, the Company had accrued no such interest or penalties.

The Company is currently not under examination by the Internal Revenue Service or any state or foreign jurisdictions. Tax years ending after December 31, 2015 remain subject to examination and assessment, state limitation periods included. Tax years ending December 31, 2009 through December 31, 2015 remain open solely for purposes of examination of our loss and credit carryforwards.

The Company provides a valuation allowance against deferred tax assets if, based on management's assessment of operating results and other available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. The evidence contemplated by management at December 31, 2019, 2018, and 2017 consists of current and prior operating results, available tax planning strategies, and the scheduled reversal of existing taxable temporary differences. Evidence from the scheduled reversal of taxable temporary differences relies on management judgements based on the accumulation of available evidence. Those judgements may be subject to change in the future as evidence available to management changes. Management's assessment of the Company's valuation allowance may further change based on our generation or ability to project of future operating income, and changes in tax policy or tax planning strategies.

As of December 31, 2019, 2018, and 2017 valuation allowances of \$24.7 million, \$8.4 million and \$0.7 million, respectively, were recognized against certain net federal and state deferred tax assets since it is more likely than not that the deferred tax assets will not be realized. The \$16.3 million year-over-year change is primarily caused by the federal and state valuation allowances recorded due to ongoing operating losses of the taxable REIT subsidiaries. Additionally, some portion of the change to the valuation allowances relates to changes in the scheduled reversal of taxable temporary differences; and some portion of the change to the state valuation allowance is attributable to state net operating losses generated where the Company has discontinued its operations or reduced its presence in certain state jurisdictions.

10. Derivative Instruments

From time to time, we enter into derivative financial instruments to manage certain cash flow risks.

Derivatives designated and qualifying as a hedge of the exposure to variability in the cash flows of a specific asset or liability that is attributable to a particular risk, such as interest rate risk, are considered cash flow hedges.

Interest Rate Swaps

Our objectives in using interest rate swaps are to reduce variability in interest expense and to manage exposure to adverse interest rate movements. To accomplish this objective, we primarily use interest rate swaps as part of our interest rate risk management strategy. Interest rate swaps designated as cash flow hedges involve the receipt of variable amounts from a counterparty in exchange for us making fixed-rate payments over the life of the agreements without exchange of the underlying notional amount.

On April 5, 2017, we entered into forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from January 2, 2018 through December 17, 2021 and April 27, 2022, respectively.

On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$400 million. The forward swap agreements effectively fix the interest rate on \$400 million of term loan borrowings, \$200 million of swaps allocated to Term Loan A and \$200 million allocated to Term Loan B, from December 17, 2021 through December 17, 2023 and April 27, 2022 through April 27, 2024, respectively. On December 20, 2018, we entered into additional forward interest rate swap agreements with an aggregate notional amount of \$200 million. The forward swap agreements effectively fix the interest rate on \$100 million of additional term loan borrowings from January 2, 2020 through December 17, 2023 as well as \$100 million of additional term loan borrowings from January 2, 2020 through April 27, 2024.

We reflect our interest rate swap agreements, which are designated as cash flow hedges, at fair value as either assets or liabilities on the consolidated balance sheets within the “Other assets, net” or “Derivative liabilities” line items, as applicable. As of December 31, 2019, the fair value of interest rates swaps represented an aggregate \$19.9 million liability. As of December 31, 2018, the fair value of interest rate swaps included an asset of \$5.3 million as well as a liability of \$3.0 million.

The forward interest rate swap agreements are derivatives that currently qualify for hedge accounting whereby we record the effective portion of changes in fair value of the interest rate swaps in accumulated other comprehensive income or loss on the consolidated balance sheets and statements of comprehensive income which is subsequently reclassified into earnings in the period that the hedged forecasted transaction affects earnings. Any ineffective portion of a derivative's change in fair value is immediately recognized within net income. The amount reclassified from other comprehensive income to interest expense on the consolidated statements of operations was a reduction to interest expense of \$1.0 million and an increase to interest expense of \$0.1 million for the years ended December 31, 2019 and 2018, respectively. No amounts were reclassified from other comprehensive income to interest expense on the consolidated statements of operations for the year ended December 31, 2017. There was no ineffectiveness recognized for the years ended December 31, 2019, 2018 and 2017. During the subsequent twelve months, beginning January 1, 2020, we estimate that \$3.6 million will be reclassified from other comprehensive income as an increase to interest expense.

Interest rate derivatives and their fair values as of December 31, 2019 and December 31, 2018 were as follows (in thousands):

Notional Amount		Fixed One Month LIBOR rate per annum	Effective Date	Expiration Date	Fair Value ⁽¹⁾	
December 31, 2019	December 31, 2018				December 31, 2019	December 31, 2018
\$ 25,000	\$ 25,000	1.989%	January 2, 2018	December 17, 2021	\$ (209)	\$ 331
100,000	100,000	1.989%	January 2, 2018	December 17, 2021	(837)	1,318
75,000	75,000	1.989%	January 2, 2018	December 17, 2021	(627)	990
50,000	50,000	2.033%	January 2, 2018	April 27, 2022	(545)	667
100,000	100,000	2.029%	January 2, 2018	April 27, 2022	(1,081)	1,341
50,000	50,000	2.033%	January 2, 2018	April 27, 2022	(545)	666
100,000	100,000	2.617%	January 2, 2020	December 17, 2023	(4,007)	(782)
100,000	100,000	2.621%	January 2, 2020	April 27, 2024	(4,324)	(818)
200,000	200,000	2.636%	December 17, 2021	December 17, 2023	(3,939)	(722)
200,000	200,000	2.642%	April 27, 2022	April 27, 2024	(3,802)	(648)
					<u>\$ (19,916)</u>	<u>\$ 2,343</u>

Power Purchase Agreements

In March 2019, we entered into two 10 year agreements to purchase renewable energy equal to the expected electricity needs of our datacenters in Chicago, Illinois and Piscataway, New Jersey. These arrangements currently qualify for hedge accounting whereby we record the changes in fair value of the instruments in “Accumulated other comprehensive income” or loss on the consolidated balance sheets and statements of comprehensive income which is subsequently reclassified into earnings in the period that the hedged forecasted transaction affects earnings. The amount reclassified from other comprehensive income to utility expense on the consolidated statements of operations was an increase to utilities expense of \$0.7 million for the year ended December 31, 2019. There was no amount reclassified from other comprehensive income to utilities expense for the years ended December 31, 2018 or 2017. We currently reflect these agreements, which are designated as cash flow hedges, at fair value as liabilities on the consolidated balance sheets within the “Derivative liabilities” line item.

Power purchase agreement derivatives and their fair values as of December 31, 2019 and December 31, 2018 were as follows (in thousands):

Counterparty	Facility	Effective Date	Expiration Date	Fair Value	
				December 31, 2019	December 31, 2018
Calpine Energy Solutions, LLC	Piscataway	3/8/2019	2/28/2029	\$ (2,919)	\$ —
Calpine Energy Solutions, LLC	Chicago	3/8/2019	2/28/2029	(3,774)	—
				<u>\$ (6,693)</u>	<u>\$ —</u>

11. Commitments and Contingencies

The Company is subject to various routine legal proceedings and other matters in the ordinary course of business. The Company currently does not have any litigation that would have a material adverse impact on the Company’s financial statements.

12. Partners’ Capital, Equity and Incentive Compensation Plans

QualityTech, LP

QTS has the full power and authority to do all the things necessary to conduct the business of the Operating Partnership.

As of December 31, 2019, the Operating Partnership had four classes of limited partnership units outstanding: Series A Preferred Units, Series B Convertible Preferred Units, Class A units of limited partnership interest (“Class A units”) and Class O LTIP units of limited partnership units (“Class O units”). The Class A units currently outstanding are now redeemable on a one-for-one exchange rate at any time for cash or shares of Class A common stock of QTS. The Company may in its sole discretion elect to assume and satisfy the redemption amount with cash or its shares. Class O units were issued upon grants made under the QualityTech, LP 2010 Equity Incentive Plan (the “2010 Equity Incentive Plan”). Class O units are pari passu with Class A units. Each Class O unit is convertible into Class A units by the Operating Partnership at any time or by the holder at any time based on formulas contained in the partnership agreement.

QTS Realty Trust, Inc.

In connection with its IPO, QTS issued Class A common stock and Class B common stock. Class B common stock entitles the holder to 50 votes per share and was issued to enable our Chief Executive Officer to exchange 2% of his Operating Partnership units so he may have a vote proportionate to his economic interest in the Company. Also in connection with its IPO, QTS adopted the QTS Realty Trust, Inc. 2013 Equity Incentive Plan (the “2013 Equity Incentive Plan”), which authorized 1.75 million shares of Class A common stock to be issued under the 2013 Equity Incentive Plan, including options to purchase Class A common stock if exercised. On May 4, 2015, following approval by our stockholders at our 2015 Annual Meeting of Stockholders, the total number of shares available for issuance under the 2013 Equity Incentive Plan was increased by an additional 3,000,000. On May 9, 2019, following approval by our stockholders at our 2019 Annual Meeting of Stockholders, the total number of shares available for issuance under the 2013 Equity Incentive Plan was increased by an additional 1,110,000 to 5,860,000.

In March 2019, the Compensation Committee completed a redesign of the long-term incentive program for executive officers to include the following types of awards:

- a. Performance-Based FFO Unit Awards — performance-based restricted share unit awards, which may be earned based on Operating Funds From Operations (“OFFO”) per diluted share measured over a two-year performance period ending December 31, 2020 (performance-based FFO units or “FFO Units”), with two-thirds of the earned shares of Class A common stock vesting at the end of the performance period when results have been certified and the remaining one-third of the shares vesting at the end of three years from the award grant date. The number of shares of Class A common stock subject to the awards that can be earned ranges from 0% to 200% of the target award based on actual performance over the performance period, with the number of shares

to be determined based on a linear interpolation basis between threshold and target and target and maximum performance.

- b. Performance-Based Relative TSR Unit Awards — performance-based restricted share unit awards, which may be earned based on total stockholder return (“TSR”) as compared to the MSCI U.S. REIT Index (the “Index”) over a three-year performance period ending December 31, 2021 (the performance-based relative TSR units or “TSR Units”). The number of shares of Class A common stock subject to the awards that can be earned ranges from 0% to 200% of the target award based on our TSR compared to the Index. In addition, award payouts will be determined on a linear interpolation basis between threshold and target and target and maximum performance; and will be capped at the target performance level if our TSR is negative.
- c. Restricted Stock Awards — the restricted stock awards vest as to one-third of the shares subject to awards on the first anniversary of the date of grant and as to 8.375% of the shares subject to the awards each quarter-end thereafter, subject to the named executive officer’s continued service as an employee as of each vesting date.

The following is a summary of award activity under the 2010 Equity Incentive Plan and 2013 Equity Incentive Plan and related information for the years ended December 31, 2019, 2018 and 2017:

	2010 Equity Incentive Plan				2013 Equity Incentive Plan							
	Number of Class O units	Weighted average exercise price	Weighted Average fair value	Options	Weighted average exercise price	Weighted average fair value	Restricted Stock / Deferred Stock	Weighted average grant price	TSR Units	Weighted average grant price	FFO Units	Weighted average grant price
Outstanding at January 1, 2017	1,134,811	\$ 24.06	\$ 3.62	1,058,297	\$ 31.72	\$ 6.51	414,691	\$ 40.67	—	\$ —	—	\$ —
Granted	—	—	—	468,875	50.66	10.32	228,576	49.86	—	—	—	—
Exercised/Vested ⁽¹⁾	(566,771)	24.60	2.24	(155,902)	31.89	6.60	(163,048)	40.63	—	—	—	—
Cancelled/Expired ⁽²⁾	—	—	—	(2,000)	37.69	8.77	(98,355)	39.97	—	—	—	—
Outstanding at December 31, 2017	568,040	\$ 23.52	\$ 5.00	1,369,270	\$ 38.18	\$ 7.80	381,864	\$ 46.37	—	—	—	—
Granted	—	—	—	674,081	34.05	5.63	348,152	35.27	—	—	—	—
Exercised/Vested ⁽¹⁾	(465,761)	23.40	4.76	(6,188)	21.50	3.68	(224,660)	46.23	—	—	—	—
Cancelled/Expired ⁽²⁾	—	—	—	—	—	—	(85,047)	43.50	—	—	—	—
Outstanding at December 31, 2018	102,279	\$ 24.05	\$ 5.67	2,037,163	\$ 36.86	\$ 7.10	420,309	\$ 37.83	—	—	—	—
Granted	—	—	—	135,594	42.27	7.62	274,564	42.25	86,089	54.64	86,089	42.01
Exercised/Vested ⁽¹⁾	(19,969)	20.25	4.42	(125,213)	30.80	6.21	(279,429)	39.20	—	—	—	—
Cancelled/Expired ⁽²⁾	—	—	—	(112,706)	45.86	9.43	(25,694)	42.17	(1,739)	54.64	(1,739)	42.01
Outstanding at December 31, 2019	82,310	\$ 24.97	\$ 5.97	1,934,838	\$ 37.11	\$ 7.05	389,750	\$ 39.67	84,350	\$ 54.64	84,350	\$ 42.01

- (1) This represents (i) Class O units which were converted to Class A units, (ii) options to purchase Class A common stock which were exercised, and (iii) the Class A common stock that has been released from restriction and which was not surrendered by the holder to satisfy their statutory minimum federal and state tax obligations associated with the vesting of restricted common stock, with respect to the applicable column.
- (2) Includes restricted Class A common stock surrendered by certain employees to satisfy their statutory minimum federal and state tax obligations associated with the vesting of restricted common stock.

The assumptions and fair values for restricted stock and options to purchase shares of Class A common stock granted for the years ended December 31, 2019, 2018 and 2017 are included in the following table on a per unit basis. Options to purchase shares of Class A common stock were valued using the Black-Scholes model and TSR Units were valued using a Monte-Carlo simulation that leveraged similar assumptions to those used to value the Class A common stock and FFO Units.

	2019	2018	2017
Fair value of FFO units and restricted stock granted	\$42.01 - \$51.25	\$34.03 - \$54.01	\$48.63 - \$51.88
Fair value of TSR units granted	\$54.64	N/A	N/A
Fair value of options granted	\$7.56 - \$8.28	\$5.55 - \$5.64	\$10.11 - \$10.36
Expected term (years)	5.5	5.5 - 6.0	5.5 - 5.9
Expected volatility	28%	28%	28%
Expected dividend yield	3.89% - 4.19%	4.82%	3.08%
Expected risk-free interest rates	2.33% - 2.56%	2.69% - 2.73%	2.12% - 2.18%

The following tables summarize information about awards outstanding as of December 31, 2019.

	Operating Partnership Awards Outstanding		
	Exercise prices	Awards outstanding	Weighted average remaining vesting period (years)
Class O Units	\$20.00 - 25.00	82,310	—
Total Operating Partnership awards outstanding		<u>82,310</u>	

	QTS Realty Trust, Inc. Awards Outstanding		
	Exercise prices	Awards outstanding	Weighted average remaining vesting period (years)
Restricted stock	\$ —	389,750	1.7
TSR units	—	84,350	2.0
FFO units	—	84,350	1.4
Options to purchase Class A common stock	\$21.00 - 50.66	<u>1,934,838</u>	0.3
Total QTS Realty Trust, Inc. awards outstanding		<u>2,493,288</u>	

Any remaining nonvested awards are valued as of the grant date and generally vest ratably over a defined service period. As of December 31, 2019 all restricted Class A common stock, TSR units, and FFO units outstanding were unvested and approximately 0.6 million options to purchase Class A common stock were outstanding and unvested. As of December 31, 2019 we had \$17.0 million of unrecognized equity-based compensation expense which will be recognized over a remaining weighted-average vesting period of 1.1 years. The total intrinsic value of Class O units and options to purchase Class A common stock outstanding at December 31, 2019 was \$35.4 million.

Dividends and Distributions

The following tables present quarterly cash dividends and distributions paid to QTS' common and preferred stockholders and the Operating Partnership's unit holders for the years ended December 31, 2019 and 2018:

Year Ended December 31, 2019				
Record Date	Payment Date		Per Share and Per Unit Rate	Aggregate Dividend/Distribution Amount (in millions)
Common Stock/Units				
September 19, 2019	October 4, 2019	\$	0.44	\$ 27.3
June 25, 2019	July 9, 2019		0.44	27.3
March 20, 2019	April 4, 2019		0.44	27.3
December 21, 2018	January 8, 2019		0.41	23.7
				<u>\$ 105.6</u>
Series A Preferred Stock/Units				
September 30, 2019	October 15, 2019	\$	0.45	\$ 1.9
June 30, 2019	July 15, 2019		0.45	1.9
March 31, 2019	April 15, 2019		0.45	1.9
December 31, 2018	January 15, 2019		0.45	1.9
				<u>\$ 7.6</u>
Series B Preferred Stock/Units				
September 30, 2019	October 15, 2019	\$	1.63	\$ 5.1
June 30, 2019	July 15, 2019		1.63	5.1
March 31, 2019	April 15, 2019		1.63	5.1
December 31, 2018	January 15, 2019		1.63	5.1
				<u>\$ 20.4</u>
Year Ended December 31, 2018				
Record Date	Payment Date		Per Share and Per Unit Rate	Aggregate Dividend/Distribution Amount (in millions)
Common Stock/Units				
September 20, 2018	October 4, 2018	\$	0.41	\$ 23.7
June 20, 2018	July 6, 2018		0.41	23.7
March 22, 2018	April 5, 2018		0.41	23.7
December 5, 2017	January 5, 2018		0.39	22.2
				<u>\$ 93.3</u>
Series A Preferred Stock/Units				
September 28, 2018	October 15, 2018	\$	0.45	\$ 1.9
June 29, 2018	July 16, 2018		0.45	1.9
April 5, 2018	April 16, 2018		0.15	0.6
				<u>\$ 4.4</u>
Series B Preferred Stock/Units				
September 30, 2018	October 15, 2018	\$	1.99	\$ 6.3
				<u>\$ 6.3</u>

Additionally, subsequent to December 31, 2019, the Company paid the following dividends:

- On January 7, 2020, the Company paid its regular quarterly cash dividend of \$0.44 per common share and per unit in the Operating Partnership to stockholders and unit holders of record as of the close of business on December 20, 2019.
- On January 15, 2020, the Company paid a quarterly cash dividend of approximately \$0.45 per share on its Series A Preferred Stock to holders of Series A Preferred Stock of record as of the close of business on December 31, 2019, and the Operating Partnership paid a quarterly cash distribution of approximately \$0.45 per unit on outstanding Series A Preferred Units held by the Company.
- On January 15, 2020, the Company paid a quarterly cash dividend of approximately \$1.63 per share on its Series B Preferred Stock to holders of Series B Preferred Stock of record as of the close of business on December 31, 2019, and the Operating Partnership paid a quarterly cash distribution of approximately \$1.63 per unit on outstanding Series B Preferred Units held by the Company.

Equity Issuances

Class A Common Stock

In February 2019, QTS conducted an underwritten offering of 7,762,500 shares of its Class A common stock, \$0.01 par value per share (the “Class A common stock”) consisting of 4,000,000 shares issued by the Company during the first quarter of 2019 and 3,762,500 shares which will be issued on a forward basis. During the year ended December 31, 2019, we settled a portion of the shares subject to the forward sale agreements. See the table below for additional quantitative information related to the stock offerings. We have concluded that the forward sale agreements meet the derivative scope exception for certain contracts involving an entity’s own equity. The initial forward sale price is subject to daily adjustment based on a floating interest rate factor equal to the specified daily rate less a spread, and will decrease by other fixed amounts specified in the forward sale agreement. Until settlement of all of the forward sale agreements, our earnings per share dilution resulting from the agreements, if any, is determined using the two-class method.

In June 2019, we established a new “at-the-market” equity offering program (the “ATM Program”) pursuant to which we may issue, from time to time, up to \$400 million of our Class A common stock, which may include shares to be sold on a forward basis. The use of forward sales under the ATM Program generally allows the Company to lock in a price on the sale of shares of our Class A common stock when sold by the forward sellers, but defer receiving the net proceeds from such sales until the shares of our Class A common stock are issued at settlement on a later date. We have concluded that the forward sale agreements meet the derivative scope exception for certain contracts involving an entity’s own equity. The initial forward sale price is subject to daily adjustment based on a floating interest rate factor equal to the specified daily rate less a spread, and will decrease by other fixed amounts specified in the forward sale agreement. Until settlement of all of the forward sale agreements, our earnings per share dilution resulting from the agreements, if any, is determined using the two-class method.

At any time during the term of any forward sale under the ATM Program, we may settle the forward sale by physical delivery of shares of Class A common stock to the forward purchasers or, at our election, cash settle or net share settle. The initial forward sale price per share under each forward sale equals the product of (x) an amount equal to 100% minus the applicable forward selling commission and (y) the volume weighted average price per share at which the borrowed shares of our common stock were sold pursuant to the equity distribution agreement by the relevant forward seller during the applicable forward hedge selling period for such shares to hedge the relevant forward purchaser’s exposure under such forward sale. Thereafter, the forward sale price is subject to adjustment on a daily basis based on a floating interest rate factor equal to the specified daily rate less a spread, and is decreased based on specified amounts related to dividends on shares of our common stock during the term of the applicable forward sale. If the specified daily rate is less than the spread on any day, the interest rate factor will result in a daily reduction of the applicable forward sale price. The Company expects to physically settle (by delivering shares of Class A common stock) these forward sales prior to the first anniversary date of each respective transaction.

The following table represents a summary of our equity issuances of our Class A common stock during the year ended December 31, 2019 (in thousands):

Offering Program	Forward Shares Sold	Shares Settled	Net Proceeds Received	Remaining Expected Proceeds Available	Forward Settlement Maturity Date ⁽¹⁾
February 2019 Offering	N/A	4,000	\$ 159,360	\$ —	N/A
February 2019 Offering	3,763	2,832 ⁽²⁾	109,998	35,799	March 31, 2020
June 2019 \$400 million ATM Program . .	2,864	—	—	142,046	Various through January 17, 2021
Total as of December 31, 2019				\$ 177,844	

(1) Represents the final date which shares sold under each forward agreement may be settled.

(2) Represents the number of forward shares we elected to physically settle during the year ended December 31, 2019.

Preferred Stock

On March 15, 2018, QTS issued 4,280,000 shares of 7.125% Series A Cumulative Redeemable Perpetual Preferred Stock (“Series A Preferred Stock”) with a liquidation preference of \$25.00 per share, which included 280,000 shares of the underwriters’ partial exercise of their option to purchase additional shares. The Company used the net proceeds of approximately \$103.2 million to repay amounts outstanding under its unsecured revolving credit facility. In connection with the issuance of the Series A Preferred Stock, on March 15, 2018 the Operating Partnership issued to the Company 4,280,000 Series A Preferred Units, which have economic terms that are substantially similar to the Company’s Series A Preferred Stock. The Series A Preferred Units were issued in exchange for the Company’s contribution of the net offering proceeds of the offering of the Series A Preferred Stock to the Operating Partnership.

Dividends on the Series A Preferred Stock are payable quarterly in arrears on or about the 15th day of each January, April, July and October. The first dividend on the Series A Preferred Stock was paid on April 16, 2018, in the amount of \$0.14844 per share for the period March 15, 2018 through April 14, 2018. The Series A Preferred Stock does not have a stated maturity date and is not subject to any sinking fund or mandatory redemption provisions. Upon liquidation, dissolution or winding up, the Series A Preferred Stock will rank senior to common stock and pari passu with the Series B Preferred Stock with respect to the payment of distributions and other amounts. Except in instances relating to preservation of QTS’s qualification as a REIT or pursuant to the Company’s special optional redemption right, the Series A Preferred Stock is not redeemable prior to March 15, 2023. On and after March 15, 2023, the Company may, at its option, redeem the Series A Preferred Stock, in whole, at any time, or in part, from time to time, for cash at a redemption price of \$25.00 per share, plus any accrued and unpaid dividends (whether or not declared) to, but not including, the date of redemption.

Upon the occurrence of a change of control, the Company has a special optional redemption right that enables it to redeem the Series A Preferred Stock, in whole, at any time, or in part, from time to time, within 120 days after the first date on which a change of control has occurred resulting in neither QTS nor the surviving entity having a class of common shares listed on the NYSE, NYSE Amex, or NASDAQ or the acquisition of beneficial ownership of its stock entitling a person to exercise more than 50% of the total voting power of all our stock entitled to vote generally in election of directors. The special optional redemption price is \$25.00 per share, plus any accrued and unpaid dividends (whether or not declared) to, but not including, the date of redemption.

Upon the occurrence of a change of control, holders will have the right (unless the Company has elected to exercise its special optional redemption right to redeem their Series A Preferred Stock) to convert some or all of such holder’s Series A Preferred Stock into a number of shares of Class A common stock, par value \$0.01 per share, equal to the lesser of:

- the quotient obtained by dividing (i) the sum of the \$25.00 liquidation preference plus the amount of any accrued and unpaid dividends (whether or not declared) to, but not including, the change of control conversion date (unless the change of control conversion date is after a record date for a Series A Preferred Stock dividend payment and prior to the corresponding Series A Preferred Stock dividend payment date, in which case no additional amount for such accrued and unpaid dividend will be included in this sum) by (ii) the Common Stock Price; and
- 1.46929 (i.e., the Share Cap);

subject, in each case, to certain adjustments and provisions for the receipt of alternative consideration of equivalent value as described in the prospectus supplement for the Series A Preferred Stock.

On June 25, 2018, QTS issued 3,162,500 shares of 6.50% Series B Cumulative Convertible Perpetual Preferred Stock (“Series B Preferred Stock”) with a liquidation preference of \$100.00 per share, which included 412,500 shares the underwriters purchased pursuant to the exercise of their overallotment option in full. The Company used the net proceeds of approximately \$304 million to repay amounts outstanding under its unsecured revolving credit facility. In connection with the issuance of the Series B Preferred Stock, on June 25, 2018 the Operating Partnership issued to the Company 3,162,500 Series B Preferred Units, which have economic terms that are substantially similar to the Company’s Series B Preferred Stock. The Series B Preferred Units were issued in exchange for the Company’s contribution of the net offering proceeds of the offering of the Series B Preferred Stock to the Operating Partnership.

Dividends on the Series B Preferred Stock are payable quarterly in arrears on or about the 15th day of each January, April, July and October. The first dividend on the Series B Preferred Stock was paid on October 15, 2018, in the amount of \$1.9861111 per share for the period June 25, 2018 through October 14, 2018. The Series B Preferred Stock is convertible by holders into shares of Class A common stock at any time at the then-prevailing conversion rate. The conversion rate as of December 31, 2019 is 2.1318 shares of the Company’s Class A common stock per share of Series B Preferred Stock. The Series B Preferred Stock does not have a stated maturity date. Upon liquidation, dissolution or winding up, the Series B Preferred Stock will rank senior to common stock and pari passu with the Series A Preferred Stock with respect to the payment of distributions and other amounts. The Series B Preferred Stock is not redeemable by the Company. At any time on or after July 20, 2023, the Company may at its option cause all (but not less than all) outstanding shares of the Series B Preferred Stock to be automatically converted into the Company’s Class A common stock at the then-prevailing conversion rate if the closing sale price of the Company’s Class A common stock is equal to or exceeds 150% of the then-prevailing conversion price for at least 20 trading days in a period of 30 consecutive trading days, including the last trading day of such 30-day period, ending on the trading day prior to the issuance of a press release announcing the mandatory conversion.

If a holder converts its shares of Series B Preferred Stock at any time beginning at the opening of business on the trading day immediately following the effective date of a fundamental change (as described in the prospectus supplement) and ending at the close of business on the 30th trading day immediately following such effective date, the holder will automatically receive a number of shares of the Company’s Class A common stock equal to the greater of:

- the sum of (i) a number of shares of the Company’s Class A common stock, as may be adjusted, as described in the Articles Supplementary for the 6.50% Series B Cumulative Convertible Perpetual Preferred Stock filed with the State Department of Assessments and Taxation of Maryland on June 22, 2018 (the “Articles Supplementary”) and (ii) the make-whole premium described in the Articles Supplementary; and
- a number of shares of the Company’s Class A common stock equal to the lesser of (i) the liquidation preference divided by the average of the daily volume weighted average prices of the Company’s Class A common stock for ten days preceding the effective date of a fundamental change and (ii) 5.1020 (subject to adjustment).

QTS Realty Trust, Inc. Employee Stock Purchase Plan

In June 2015, we established the QTS Realty Trust, Inc. Employee Stock Purchase Plan (the “2015 Plan”) to give eligible employees the opportunity to purchase, through payroll deductions, shares of our Class A common stock in the open market by an independent broker with the Company paying brokerage commissions and fees associated with such share purchases. The 2015 Plan became effective July 1, 2015. We reserved 250,000 shares of our Class A common stock for purchase under the 2015 Plan, which were registered pursuant to a registration statement on Form S-8 filed on June 17, 2015.

On May 4, 2017, our stockholders approved the 2017 Amended and Restated QTS Realty Trust, Inc. Employee Stock Purchase Plan (the “2017 Plan”). The 2017 Plan became effective July 1, 2017 and is administered by the compensation committee (the “Compensation Committee”) of the board of directors (or by a committee of one or more persons appointed by it or the board of directors). The 2017 Plan permits participants to purchase our Class A common stock at a

discount of up to 10% (as determined by the Compensation Committee). Employees of our Company and our majority-owned subsidiaries who have been employed for at least thirty days and who perform at least thirty hours of service per week for our Company are eligible to participate in the 2017 Plan, excluding any employee who, at any time during which the payroll deductions are made on behalf of the participating employees to purchase stock, owns shares representing five percent or more of the total combined voting power or value of all classes of shares of our Company, or who is a Section 16 officer. Under the 2017 Plan, there are four purchase periods per year, and participants may deduct a minimum of \$20 per paycheck and a maximum of \$1,000 per paycheck towards the purchase of shares. Shares purchased under the 2017 Plan are subject to a one-year holding period following the purchase date, during which they may not be sold or transferred. We reserved 239,989 shares of our Class A common stock, subject to certain adjustments, for purchase under the 2017 Plan, which were registered pursuant to a registration statement on Form S-8 originally filed on June 17, 2015 and amended on June 30, 2017.

Effective February 1, 2020, the 2017 Plan was further amended and restated to, among other things, provide that employees of our Company and our majority-owned subsidiaries who have been employed for at least thirty days and who are regular full-time employees are eligible to participate in the 2017 Plan, excluding temporary or part-time employees and interns, any employee who, at any time during which the payroll deductions are made on behalf of the participating employees to purchase stock, owns shares representing five percent or more of the total combined voting power or value of all classes of shares of our Company, or any employee who is a Section 16 officer. In addition, such amendment and restatement provides that the \$1,000 per paycheck limit on each participant's purchase of shares assumes 24 pay periods per year and will be adjusted to the extent a participant is paid on a more frequent or infrequent basis.

13. Related Party Transactions

As described further in Note 7 *Investments in Unconsolidated Entity*, during the three months ended March 31, 2019, QTS formed an unconsolidated entity with Alinda, an infrastructure investment firm. QTS contributed a hyperscale data center under development in Manassas, Virginia to the entity. The facility, and the previously executed operating lease to a global cloud-based software company pursuant to a 10-year lease agreement, was contributed in exchange for cash and noncash consideration in the form of equity interest in the entity that was measured at fair value pursuant to Topic 820. QTS and Alinda each own a 50% interest in the entity.

Under the unconsolidated entity agreement, we serve as the entity's operating member, subject to authority and oversight of a board appointed by us and Alinda, and separately we serve as manager and developer of the facility in exchange for management and development fees. During the year ended December 31, 2019, QTS received \$0.6 million in development fees from the unconsolidated entity as well as \$0.6 million in management fees from the unconsolidated entity.

In addition, we periodically execute transactions with entities affiliated with our Chairman and Chief Executive Officer. Such transactions include automobile, furniture and equipment purchases as well as building operating lease payments and receipts, and reimbursement for the use of a private aircraft service by our officers and directors.

The transactions which occurred during the years ended December 31, 2019, 2018 and 2017 are outlined below (in thousands):

<u>(dollars in thousands)</u>	<u>December 31,</u>		
	<u>2019</u>	<u>2018</u>	<u>2017</u>
Tax, utility, insurance and other reimbursement	\$ 967	\$ 724	\$ 796
Rent expense	1,014	1,014	1,014
Capital assets acquired	704	464	561
Total	<u>\$ 2,685</u>	<u>\$ 2,202</u>	<u>\$ 2,371</u>

14. Employee Benefit Plan

The Company sponsors a defined contribution 401(k) retirement plan covering all eligible employees.

Qualified employees may elect to contribute to the 401(k) Plan on a pre-tax or post-tax basis. The maximum amount of employee contribution is subject only to statutory limitations. Starting on January 1, 2015, the Company matched 50% of the first 6% of contributions made by employees. Since January 1, 2016, the Company has matched 100% of the first 1% of contributions and 50% of the next 5% of contributions made by employees. The Company contributed \$2.5 million, \$2.5 million and \$2.6 million to the 401(k) Plan for the years ended December 31, 2019, 2018 and 2017, respectively.

15. Noncontrolling Interest

Concurrently with the completion of the IPO, QTS consummated a series of transactions pursuant to which QTS became the sole general partner and majority owner of QualityTech, LP, which then became its operating partnership. The previous owners of QualityTech, LP retained 21.2% ownership of the Operating Partnership as of the date of the IPO.

Commencing at any time beginning November 1, 2014, at the election of the holders of the noncontrolling interest, the currently outstanding Class A units of the Operating Partnership are redeemable for cash or, at the election of the Company, Class A common stock of the Company on a one-for-one basis. As of December 31, 2019, the noncontrolling ownership interest percentage of QualityTech, LP was 10.3%.

16. Earnings per share of QTS Realty Trust, Inc.

Basic income per share is calculated by dividing the net income attributable to common shares by the weighted average number of common shares outstanding during the period. Diluted income per share adjusts basic income per share for the effects of potentially dilutive common shares. Unvested restricted stock awards and our forward sale contracts described in Note 12 contain non-forfeitable rights to dividends and thus are participating securities and are included in the computation of basic earnings per share pursuant to the two-class method for all periods presented. The two-class method is an earnings allocation formula that treats a participating security as having rights to undistributed earnings that would otherwise have been available to common stockholders. Accordingly, service-based restricted stock awards and the forward sale contracts were included in the calculation of basic earnings per share using the two-class method for all periods presented to the extent outstanding during the period.

The computation of basic and diluted net income per share is as follows (in thousands, except per share data):

	Year Ended December 31,		
	2019	2018	2017
Numerator:			
Net income (loss)	\$ 31,665	\$ (7,175)	\$ 1,457
Loss (income) attributable to noncontrolling interests	(374)	2,715	(175)
Preferred stock dividends	(28,180)	(16,666)	—
Earnings attributable to participating securities	(7,828)	(947)	(593)
Net income (loss) available to common stockholders after allocation of participating securities	<u>\$ (4,717)</u>	<u>\$ (22,073)</u>	<u>\$ 689</u>
Denominator:			
Weighted average shares outstanding - basic	54,837	50,433	48,381
Effect of Class A partnership units	—	—	6,696
Effect of Class O units, TSR units and options to purchase Class A common stock on an "as if" converted basis	—	—	779
Weighted average shares outstanding - diluted	<u>54,837</u>	<u>50,433</u>	<u>55,856</u>
Basic net income (loss) per share	\$ (0.09)	\$ (0.44)	\$ 0.01
Diluted net income (loss) per share	\$ (0.09)	\$ (0.44)	\$ 0.01

* Note: The calculations of basic and diluted net income (loss) per share above do not include the following number of Class A partnership units, Class O units, TSR units and options to purchase common stock on an "as if" converted basis, and the effects of Series B Convertible preferred stock on an "as if" converted basis as their respective inclusions would have been antidilutive:

	Year Ended December 31,		
	2019	2018	2017
Class A Partnership units	6,671	6,653	—
Class O units, TSR units and options to purchase common stock on an "as if" converted basis	518	350	—
Series B Convertible preferred stock on an "as if" converted basis	6,729	3,484	—

17. Contracts with Customers

Future minimum payments to be received under non-cancelable customer contracts including both lease rental revenue components and non-lease revenue components that are accounted for as a combined lease component in accordance with the practical expedient provided by ASC Topic 842 which is discussed in Note 2, above (inclusive of payments for contracts which have not yet commenced, and exclusive of variable lease revenue such as recoveries of operating costs from customers) are as follows for the years ending December 31 (in thousands):

<u>Year Ending December 31,</u>	
2020	\$ 374,588
2021	323,926
2022	237,556
2023	147,941
2024	103,663
Thereafter	<u>186,871</u>
Total	<u>\$ 1,374,545</u>

18. Fair Value of Financial Instruments

ASC Topic 825, *Financial Instruments*, requires disclosure of fair value information about financial instruments, whether or not recognized in the consolidated balance sheets, for which it is practicable to estimate that value. In cases where quoted market prices are not available, fair values are based upon the application of discount rates to estimated future cash flows based upon market yields or by using other valuation methodologies. Considerable judgment is necessary to interpret market data and develop estimated fair value. Accordingly, fair values are not necessarily indicative of the amounts we could realize on disposition of the financial instruments. The use of different market assumptions and/or estimation methodologies may have a material effect on estimated fair value amounts.

Short-term instruments: The carrying amounts of cash and cash equivalents and restricted cash approximate fair value.

Derivative Contracts:

Interest rate swaps

Currently, we use interest rate swaps to manage our interest rate risk. The valuation of these instruments is determined using widely accepted valuation techniques including discounted cash flow analysis on the expected cash flows of each derivative. This analysis reflects the contractual terms of the derivatives, including the period to maturity, and uses observable market-based inputs, including interest rate curves. The fair values of interest rate swaps are determined using the market standard methodology of netting the discounted future fixed cash receipts (or payments) and the discounted expected variable cash payments (or receipts). The variable cash payments (or receipts) are based on an expectation of future interest rates (forward curves) derived from observable market interest rate curves. To comply with the provisions of fair value accounting guidance, we incorporate credit valuation adjustments to appropriately reflect both our own nonperformance risk and the respective counterparty's nonperformance risk in the fair value measurements. In adjusting the fair value of our derivative contracts for the effect of nonperformance risk, we have considered the impact of netting and any applicable credit enhancements, such as collateral postings, thresholds, mutual puts, and guarantees.

Although we have determined that the majority of the inputs used to value our derivatives fall within Level 2 of the fair value hierarchy, the credit valuation adjustments associated with our derivatives utilize Level 3 inputs, such as estimates of current credit spreads to evaluate the likelihood of default by us and our counterparties. However, as of December 31, 2019, we assessed the significance of the impact of the credit valuation adjustments on the overall valuation of our derivative positions and determined that the credit valuation adjustments are not significant to the overall valuation of our derivatives. As a result, we have determined that our derivative valuations in their entirety are classified in Level 2 of the fair value hierarchy. We do not have any fair value measurements on a recurring basis using significant unobservable inputs (Level 3) as of December 31, 2019 or December 31, 2018.

Power Purchase Agreements

In March 2019, we began using energy hedges to manage risk related to energy prices. The inputs used to value the derivatives primarily fall within Level 2 of the fair value hierarchy, and valuation of these instruments is determined using widely accepted valuation techniques including discounted cash flow analysis on the expected cash flows of each contract. This analysis reflects the contractual terms of the derivatives, including the period to maturity, and uses observable market-based inputs, including futures curves. The fair values of the energy hedges are determined using the market standard methodology of netting the discounted future fixed cash receipts (or payments) and the discounted expected variable cash payments (or receipts). The variable cash payments (or receipts) are based on an expectation of future energy rates (forward curves) derived from observable market futures curves. To comply with the provisions of fair value accounting guidance, we incorporate credit valuation adjustments to appropriately reflect both our own nonperformance risk and the respective counterparty's nonperformance risk in the fair value measurements. In adjusting the fair value of our derivative contracts for the effect of nonperformance risk, we have considered the impact of netting and any applicable credit enhancements, such as collateral postings, thresholds, mutual puts, and guarantees.

Sale of assets: During the year ended December 31, 2019, we recognized a gain on the sale of real estate assets that is discussed in detail in Note 7. In order to determine fair value of the noncash equity consideration received for the sale of the assets, we utilized estimation models to derive the fair value of the equity interest received in the transaction. These

estimation models consisted of generally acceptable real estate valuation models as well as discounted cash flow analysis that included Level 3 inputs including market rents, discount rates, expected occupancy and estimates of additional capital expenditures, and capitalization rates derived from market data.

Credit facility and Senior Notes: Our unsecured credit facility did not have interest rates which were materially different than current market conditions and therefore, the fair value approximated the carrying value. The fair value of our Senior Notes was estimated using Level 2 “significant other observable inputs,” primarily based on quoted market prices for the same or similar issuances. At December 31, 2019, the fair value of the Senior Notes was approximately \$414.5 million.

Other debt instruments: The fair value of our other debt instruments (including finance leases and mortgage notes payable) were estimated in the same manner as the unsecured credit facility above. Similarly, each of these instruments did not have interest rates which were materially different than current market conditions and therefore, the fair value of each instrument approximated the respective carrying values.

19. Quarterly Financial Information (unaudited)

The tables below reflect the selected quarterly information for the years ended December 31, 2019 and 2018 for QTS (in thousands except share data):

	Three Months Ended			
	December 31,	September 30,	June 30,	March 31,
<u>2019</u>				
Revenues	\$ 123,707	\$ 125,255	\$ 119,167	\$ 112,689
Operating income (loss)	4,218	13,606	14,598	28,734
Net income (loss).	(3,606)	6,588	7,535	21,148
Net income (loss) attributable to QTS Realty Trust, Inc.	(2,511)	6,637	7,483	19,558
Net income (loss) attributable to common stockholders	(9,556)	(408)	438	12,513
Net income (loss) per share attributable to common shares - basic	(0.20)	(0.05)	(0.03)	0.20
Net income (loss) per share attributable to common shares - diluted.	(0.20)	(0.05)	(0.03)	0.20
<u>2018</u>				
Revenues	\$ 112,337	\$ 112,213	\$ 112,277	\$ 113,697
Operating income (loss)	12,876	(1,552)	1,882	5,455
Net income (loss).	6,402	(6,892)	(6,433)	(252)
Net income (loss) attributable to QTS Realty Trust, Inc.	6,476	(5,282)	(5,431)	(223)
Net income (loss) attributable to common stockholders	(569)	(12,327)	(7,679)	(551)
Net income (loss) per share attributable to common shares - basic	(0.02)	(0.25)	(0.16)	(0.02)
Net income (loss) per share attributable to common shares - diluted.	(0.02)	(0.25)	(0.16)	(0.02)

The table below reflects the selected quarterly information for the years ended December 31, 2019 and 2018 for the Operating Partnership (in thousands):

	Three Months Ended			
	December 31,	September 30,	June 30,	March 31,
<u>2019</u>				
Revenues	\$ 123,707	\$ 125,255	\$ 119,167	\$ 112,689
Operating income (loss)	4,218	13,606	14,598	28,734
Net income (loss)	(3,606)	6,588	7,535	21,148
Net income (loss) attributable to common unitholders.....	(10,651)	(457)	490	14,103
<u>2018</u>				
Revenues	\$ 112,337	\$ 112,213	\$ 112,277	\$ 113,697
Operating income (loss)	12,876	(1,552)	1,882	5,455
Net income (loss)	6,402	(6,892)	(6,433)	(252)
Net income (loss) attributable to common unitholders.....	(643)	(13,937)	(8,681)	(580)

20. Subsequent Events

In January 2020, we paid our regular quarterly cash dividends on our common stock, Series A Preferred Stock and Series B Preferred Stock. See the ‘Dividends and Distributions’ section of Note 12 for additional details.

Subsequent to December 31, 2019, the Company authorized the following dividends:

- On February 18, 2020, the Company announced that its board of directors authorized payment of a regular quarterly cash dividend of \$0.47 per common share and per unit in the Operating Partnership, payable on April 7, 2020, to stockholders and unit holders of record as of the close of business on March 20, 2020.
- On February 18, 2020, the Company announced that its board of directors authorized payment of a regular quarterly cash dividend of approximately \$0.45 per share on its Series A Preferred Stock, payable on April 15, 2020, to holders of Series A Preferred Stock of record as of the close of business on March 31, 2020.
- On February 18, 2020, the Company announced that its board of directors authorized payment of a regular quarterly cash dividend of approximately \$1.63 per share on its Series B Preferred Stock, payable on April 15, 2020, to holders of Series B Preferred Stock of record as of the close of business on March 31, 2020.

Subsequent to December 31, 2019 through February 28, 2020, we utilized the forward provisions under the ATM Program to allow for the sale of up to an aggregate of 0.8 million shares of our common stock, representing available net proceeds upon physical settlement of approximately \$41.6 million. Through February 28, 2020, we had not settled any of these forward sales.

QTS REALTY TRUST, INC.
QUALITYTECH, LP
SCHEDULE II – VALUATION AND QUALIFYING ACCOUNTS
December 31, 2019

<u>Year Ended December 31,</u> <u>(dollars in thousands)</u>	<u>Balance at</u> <u>beginning of</u> <u>period</u>	<u>Charge to</u> <u>expenses</u>	<u>Additions/</u> <u>(Deductions)</u>	<u>Balance at</u> <u>end of</u> <u>period</u>
Allowance for uncollectible receivables				
2019	\$ 3,764	\$ 2,859	\$ (4,344)	\$ 2,279
2018	11,453	(2,275)	(5,414)	3,764
2017	4,217	7,375	(139)	11,453
Valuation allowance for deferred tax assets				
2019	\$ 8,361	\$ 16,386	\$ —	\$ 24,747
2018	713	7,648	—	8,361
2017	393	320	—	713

QTS REALTY TRUST, INC.
QUALITYTECH, LP
SCHEDULE III – REAL ESTATE INVESTMENTS
December 31, 2019

As of December 31, 2019 (dollars in thousands)	Initial Costs			Costs Capitalized Subsequent to Acquisition			Gross Carrying Amount			Accumulated Depreciation and Amortization ⁽¹⁾	Date of Acquisition
	Land	Buildings and Improvements	Construction in Progress	Land	Buildings and Improvements	Construction in Progress	Land	Buildings and Improvements	Construction in Progress		
Owned Properties											
Atlanta, Georgia Campus ⁽²⁾	\$ 12,647	\$ 35,473	\$ 2,209	\$ 31,941	\$ 489,827	\$ 126,721	\$ 44,588	\$ 525,300	\$ 128,930	\$ (190,566)	10/3/2006
Irving, Texas	—	5,808	—	8,606	363,919	98,170	8,606	369,727	98,170	(59,719)	2/8/2013
Richmond, Virginia	2,000	11,200	7,029	180	184,484	132,919	2,180	195,684	139,948	(74,056)	3/20/2010 & 11/15/2019
Chicago, Illinois	—	—	17,764	9,400	205,026	69,114	9,400	205,026	86,878	(19,760)	7/8/2014
Suwanee, Georgia (Atlanta-Suwanee)	1,395	29,802	—	2,126	144,322	5,559	3,521	174,124	5,559	(78,510)	9/1/2005
Piscataway, New Jersey	7,466	80,366	13,900	—	23,187	22,156	7,466	103,553	36,056	(10,634)	6/6/2016
Santa Clara, California	—	15,858	—	—	98,661	1,238	—	114,499	1,238	(46,536)	11/1/2007
Sacramento, California	1,481	52,753	—	—	12,505	163	1,481	65,258	163	(13,905)	12/21/2012
Fort Worth, Texas	136	610	48,984	8,943	54,408	(13,262)	9,079	55,018	35,722	(3,240)	12/16/2016
Princeton, New Jersey	20,700	32,126	—	—	3,066	39	20,700	35,192	39	(5,107)	6/30/2014
Dulles, Virginia	3,154	29,583	—	—	19,068 ⁽³⁾	4,688	3,154	48,651	4,688	(11,831) ⁽³⁾	10/6/2017
Ashburn, Virginia ⁽⁴⁾	—	—	75,371	16,476	156,396	114,004	16,476	156,396	189,375	(7,363)	8/9/2017 & 10/23/2017 & 7/22/2019
Eemshaven, Netherlands	—	—	29,915	—	2,412	7,172	—	2,412	31,840	(1,489)	4/23/2019
Phoenix, Arizona ⁽⁴⁾	—	—	24,668	—	445	3,028	1,741	9,085	3,028	(451)	8/11/2017
Groningen, Netherlands	1,743	8,640	—	(2)	—	37,916	—	—	63,573	—	4/23/2019
Hillsboro, Oregon ⁽⁴⁾	—	—	25,657	—	—	—	—	—	—	—	10/3/2017
Miami, Florida	1,777	6,955	—	—	24,486	119	1,777	31,441	119	(12,419)	3/6/2008
Lenexa, Kansas	400	3,100	—	36	734	—	436	3,834	—	(580)	6/3/2011
Manassas, Virginia	—	—	24,626	—	—	33,036	—	—	57,662	(1)	—
	\$ 52,899	\$ 312,254	\$ 270,123	\$ 77,706	\$ 1,782,946	\$ 650,132	\$ 130,605	\$ 2,095,200	\$ 920,255	\$ (536,167)	
Leased Properties											
Leased Facilities acquired in 2015	—	59,087	—	—	(6,684)	109	—	52,403	109	(7,797)	6/16/2015
Jersey City, New Jersey	—	1,985	—	—	28,425	557	—	30,410	557	(13,938)	11/1/2006
Overland Park, Kansas	—	—	—	—	888	1	—	888	1	(658)	—
	\$ —	\$ 61,072	\$ —	\$ —	\$ 22,629	\$ 667	\$ —	\$ 83,700	\$ 667	\$ (22,393)	
	\$ 52,899	\$ 373,326	\$ 270,123	\$ 77,706	\$ 1,805,575	\$ 650,799	\$ 130,605	\$ 2,178,901	\$ 920,922	\$ (558,560)	

(1) See Note 2 - 'Summary of Significant Accounting Policies' for information regarding asset lives on which depreciation and amortization are calculated.

(2) The "Atlanta, Georgia Campus" includes both the existing data center Atlanta (DC-1) as well as new property development associated with construction of a second megascale data center Atlanta (DC-2) on land adjacent to the existing Atlanta DC-1 facility.

(3) Includes the effects of an impairment recognized during the year ended December 31, 2019 of certain data center assets and equipment in one of our Dulles, Virginia data centers. The impairment resulted in a reduction of costs capitalized of \$24.9 million as well as a reduction of accumulated depreciation of \$13.5 million during the year ended December 31, 2019. See the *Impairment of Long-Lived Assets, Intangible Assets and Goodwill* section of Note 2 'Summary of Significant Accounting Policies' for additional information.

(4) Represent land purchases. Land acquisition costs, as well as subsequent development costs, are included within construction in progress until development on the land has ended and the asset is ready for its intended use.

The aggregate gross cost of the Company's properties for federal income tax purposes was \$3.41 billion (unaudited) as of December 31, 2019.

The following table reconciles the historical cost and accumulated depreciation for the years ended December 31, 2019, 2018 and 2017 (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Property			
Balance, beginning of period	\$ 2,812,856	\$ 2,357,322	\$ 1,964,857
Disposals	(41,363)	(43,616)	(18,198)
Additions (acquisitions and improvements)	458,935	499,150	410,663
Balance, end of period	<u>\$ 3,230,428</u>	<u>\$ 2,812,856</u>	<u>\$ 2,357,322</u>
Accumulated depreciation			
Balance, beginning of period	\$ (467,644)	\$ (394,823)	\$ (317,834)
Disposals	28,172	30,139	13,970
Additions (depreciation and amortization expense)	(119,088)	(102,960)	(90,959)
Balance, end of period	<u>\$ (558,560)</u>	<u>\$ (467,644)</u>	<u>\$ (394,823)</u>

List of Subsidiaries of QTS Realty Trust, Inc.

<u>Subsidiary Name</u>	<u>State of Incorporation or Formation</u>
2470 Satellite Boulevard, LLC	Delaware
Ashburn Acquisition Co, LLC	Delaware
Bondurant Acquisition Co., LLC	Delaware
Carpathia Acquisition, LLC	Delaware
Carpathia Hosting, LLC	Delaware
ENH Investments, LLC	Delaware
Los Lunas Acquisition Co., LLC	Delaware
Manassas Acquisition Co., LLC	Delaware
National Acquisition Company, LLC	Delaware
New Albany Acquisition Co., LLC	Delaware
Papillion Acquisition Co., LLC	Delaware
QAE Acquisition Company, LLC	Georgia
QTS Critical Facilities Management, LLC	Delaware
QTS Federal, LLC	Delaware
QTS Finance Corporation	Delaware
QTS Investment Properties Ashburn, LLC	Delaware
QTS Investment Properties Ashburn II, LLC	Delaware
QTS Investment Properties Carpathia, LLC	Delaware
QTS Investment Properties Chicago, LLC	Delaware
QTS Investment Properties Fort Worth, LLC	Delaware
QTS Investment Properties Hillsboro, LLC	Delaware
QTS Investment Properties Manassas II, LLC	Delaware
QTS Investment Properties Manassas, LLC	Delaware
QTS Investment Properties Phoenix, LLC	Delaware
QTS Investment Properties Piscataway, LLC	Delaware
QTS Investment Properties Princeton, LLC	Delaware
QTS JV I Holding II, LLC	Delaware
QTS JV I Holding, LLC	Delaware
QTS JV I TRS, LLC	Delaware
QTS JV I, LLC	Delaware
Quality Investment Properties Gateway, LLC	Delaware
Quality Investment Properties Irving II, LLC	Delaware
Quality Investment Properties Irving, LLC	Delaware
Quality Investment Properties Lenexa, LLC	Delaware
Quality Investment Properties Metro, LLC	Delaware
Quality Investment Properties Miami, LLC	Delaware
Quality Investment Properties Richmond, LLC	Delaware
Quality Investment Properties Sacramento, LLC	Delaware
Quality Investment Properties Santa Clara, LLC	Delaware
Quality Investment Properties, Suwanee, LLC	Delaware
Quality Technology Services - Manassas Facilities Management, LLC	Delaware
Quality Technology Services Ashburn II, LLC	Delaware
Quality Technology Services B.V.	Netherlands

<u>Subsidiary Name</u>	<u>State of Incorporation or Formation</u>
Quality Technology Services Chicago II, LLC	Delaware
Quality Technology Services Federal Holding, LLC	Delaware
Quality Technology Services Fort Worth II, LLC	Delaware
Quality Technology Services Holding, LLC	Delaware
Quality Technology Services Irving II, LLC	Delaware
Quality Technology Services Jersey City, LLC	Delaware
Quality Technology Services Lenexa II, LLC	Delaware
Quality Technology Services Lenexa, LLC	Delaware
Quality Technology Services Metro II, LLC	Delaware
Quality Technology Services Miami II, LLC	Delaware
Quality Technology Services Northeast, LLC	Delaware
Quality Technology Services Phoenix II, LLC	Delaware
Quality Technology Services Piscataway II, LLC	Delaware
Quality Technology Services Princeton II, LLC	Delaware
Quality Technology Services Richmond II, LLC	Delaware
Quality Technology Services Sacramento II, LLC	Delaware
Quality Technology Services Santa Clara II, LLC	Delaware
Quality Technology Services, LLC	Delaware
Quality Technology Services, N.J. II, LLC	Delaware
Quality Technology Services, N.J., LLC	Delaware
Quality Technology Services, Suwanee II, LLC	Delaware
QualityTech, LP	Delaware
ServerVault, LLC	Delaware
SWO Logistics, LLC	Delaware
West Midtown Acquisition Company, LLC	Delaware
Whale Ventures, LLC	Delaware

List of Subsidiaries of QualityTech, LP

<u>Subsidiary Name</u>	<u>State of Incorporation or Formation</u>
2470 Satellite Boulevard, LLC	Delaware
Ashburn Acquisition Co, LLC	Delaware
Bondurant Acquisition Co., LLC	Delaware
Carpathia Acquisition, LLC	Delaware
Carpathia Hosting, LLC	Delaware
ENH Investments, LLC	Delaware
Los Lunas Acquisition Co., LLC	Delaware
Manassas Acquisition Co., LLC	Delaware
National Acquisition Company, LLC	Delaware
New Albany Acquisition Co., LLC	Delaware
Papillion Acquisition Co., LLC	Delaware
QAE Acquisition Company, LLC	Georgia
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QTS Investment Properties Hillsboro, LLC	Delaware
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QTS Investment Properties Manassas, LLC	Delaware
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QTS Investment Properties Piscataway, LLC	Delaware
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Quality Investment Properties Miami, LLC	Delaware
Quality Investment Properties Richmond, LLC	Delaware
Quality Investment Properties Sacramento, LLC	Delaware
Quality Investment Properties Santa Clara, LLC	Delaware
Quality Investment Properties, Suwanee, LLC	Delaware
Quality Technology Services - Manassas Facilities Management, LLC	Delaware
Quality Technology Services Ashburn II, LLC	Delaware
Quality Technology Services B.V.	Netherlands
Quality Technology Services Chicago II, LLC	Delaware
Quality Technology Services Federal Hosting, LLC	Delaware

<u>Subsidiary Name</u>	<u>State of Incorporation or Formation</u>
Quality Technology Services Fort Worth II, LLC	Delaware
Quality Technology Services Holding, LLC	Delaware
Quality Technology Services Irving II, LLC	Delaware
Quality Technology Services Jersey City, LLC	Delaware
Quality Technology Services Lenexa II, LLC	Delaware
Quality Technology Services Lenexa, LLC	Delaware
Quality Technology Services Metro II, LLC	Delaware
Quality Technology Services Miami II, LLC	Delaware
Quality Technology Services Northeast, LLC	Delaware
Quality Technology Services Phoenix II, LLC	Delaware
Quality Technology Services Piscataway II, LLC	Delaware
Quality Technology Services Princeton II, LLC	Delaware
Quality Technology Services Richmond II, LLC	Delaware
Quality Technology Services Sacramento II, LLC	Delaware
Quality Technology Services Santa Clara II, LLC	Delaware
Quality Technology Services, LLC	Delaware
Quality Technology Services, N.J. II, LLC	Delaware
Quality Technology Services, N.J., LLC	Delaware
Quality Technology Services, Suwanee II, LLC	Delaware
ServerVault, LLC	Delaware
SWO Logistics, LLC	Delaware
West Midtown Acquisition Company, LLC	Delaware
Whale Ventures, LLC	Delaware

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement (Form S-8 No. 333-191674) pertaining to the QTS Realty Trust, Inc. 2013 Equity Incentive Plan
- (2) Registration Statement (Form S-3 No. 333-199844) of QTS Realty Trust, Inc.
- (3) Registration Statement (Form S-8 No. 333-204020) pertaining to the QTS Realty Trust, Inc. 2013 Equity Incentive Plan
- (4) Registration Statement (Form S-8 No. 333-205040) pertaining to the 2017 Amended and Restated QTS Realty Trust, Inc. Employee Stock Purchase Plan
- (5) Registration Statement (Form S-3 No. 333-230923) of QTS Realty Trust, Inc.
- (6) Registration Statement (Form S-8 No. 333-231424) pertaining to the QTS Realty Trust, Inc. 2013 Equity Incentive Plan

of our reports dated February 28, 2020, with respect to the consolidated financial statements and schedules of QTS Realty Trust, Inc. and the effectiveness of internal control over financial reporting of QTS Realty Trust, Inc. included in this Annual Report (Form 10-K) of QTS Realty Trust, Inc. for the year ended December 31, 2019.

/s/ Ernst & Young LLP
Kansas City, Missouri
February 28, 2020

Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Chad L. Williams, certify that:

1. I have reviewed this Annual Report on Form 10-K of QTS Realty Trust, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ Chad L. Williams

Chad L. Williams

Chairman and Chief Executive Officer

Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Jeffrey H. Berson, certify that:

1. I have reviewed this Annual Report on Form 10-K of QTS Realty Trust, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ Jeffrey H. Berson
Jeffrey H. Berson
Chief Financial Officer

Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Chad L. Williams, certify that:

1. I have reviewed this Annual Report on Form 10-K of QualityTech, LP;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ Chad L. Williams

Chad L. Williams

Chairman and Chief Executive Officer

Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Jeffrey H. Berson, certify that:

1. I have reviewed this Annual Report on Form 10-K of QualityTech, LP;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ Jeffrey H. Berson
Jeffrey H. Berson
Chief Financial Officer

**Certification Pursuant To
18 U.S.C. Section 1350,
as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002**

In connection with the Annual Report of QTS Realty Trust, Inc. (the “Company”) on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Chad L. Williams, Chairman and Chief Executive Officer of the Company, and I, Jeffrey H. Berson, Chief Financial Officer of the Company, certify, to our knowledge, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2020

/s/ Chad L. Williams

Chad L. Williams
Chairman and Chief Executive Officer

/s/ Jeffrey H. Berson

Jeffrey H. Berson
Chief Financial Officer

**Certification Pursuant To
18 U.S.C. Section 1350,
as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002**

In connection with the Annual Report of QualityTech, LP (the “Company”) on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Chad L. Williams, Chairman and Chief Executive Officer of the Company, and I, Jeffrey H. Berson, Chief Financial Officer of the Company, certify, to our knowledge, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2020

/s/ Chad L. Williams

Chad L. Williams

Chairman and Chief Executive Officer

/s/ Jeffrey H. Berson

Jeffrey H. Berson

Chief Financial Officer

Executive Leaders

Chad L. Williams
Chairman, President & CEO

Jeff Berson
Chief Financial Officer

Steve Bloom
Chief People Officer

Shirley Goza
General Counsel, VP & Secretary

Tag Greason
Chief Hyperscale Officer

Jon Greaves
Chief Technology Officer

Clint Heiden
Chief Revenue Officer

David Robey
Chief Operating Officer



QTS Executive Team

Board of Directors

Chad L. Williams
Chairman & CEO

Philip P. Trahanas
Lead Director
Independent Investor

John W. Barter
Retired EVP Allied Signal
(now Honeywell)

William O. Grabe
Advisory Director, General Atlantic LLC

Catherine R. Kinney
Formerly with NYSE

Peter A. Marino
Private Consultant, Government &
Industry on Defense and Intelligence

Scott D. Miller
CEO SSA & Company and G100
Managing General Partner of MSP, LLC

Mazen Rawashdeh
Chief Infrastructure & Architecture
Officer eBay

Wayne M. Rehberger
Formerly with Engility Holdings, Inc.,
SVP & Chief Financial Officer

Stephen E. Westhead
CEO and Lead Investor U.S. Trailer

Independent Auditors

Ernst & Young LLP
Kansas City, MO

QTS Investor Relations

12851 Foster St.
Overland Park, KS 66213
ir@qtsdatacenters.com

Annual Meeting of Stockholders

May 6, 2020 at 8:00 am ET
QTS Ashburn Office
22271 Broderick Drive
Sterling, Virginia 20166

Stock Listing

QTS Realty Trust, Inc. is traded on the New York Stock Exchange under the symbol "QTS."

Data Center Locations

ARIZONA

Phoenix, AZ
Phoenix-Van Buren, AZ*

CALIFORNIA

Sacramento, CA
San Jose, CA*
Santa Clara, CA

CANADA

Toronto*

FLORIDA

Miami, FL

GEORGIA

Atlanta, GA (DC-1)*
Atlanta, GA (DC-2)*
Suwanee, GA*

ILLINOIS

Chicago, IL*

KANSAS

Overland Park, KS

NETHERLANDS

Amsterdam*
Eemshaven
Groningen

NEW JERSEY

Jersey City, NJ
Piscataway, NJ*
Princeton, NJ*

OREGON

Hillsboro, OR*

TEXAS

Fort Worth, TX*
Irving, TX*

VIRGINIA

Ashburn-Beaumeade, VA*
Ashburn-Broderick, VA*
Ashburn-Devin Shafron, VA*
Ashburn-Filigree, VA*
Ashburn-Lockridge, VA
Ashburn-Moran, VA
Ashburn-Shellhorn, VA
Manassas, VA*
Richmond, VA*

Corporate Offices

Corporate Headquarters

J Williams Technology Centre
12851 Foster Street
Overland Park, KS 66213
913.814.9988

Operations Headquarters

QTS Suwanee
300 Satellite Blvd NW
Suwanee, GA 30024

Leadership Training Facility

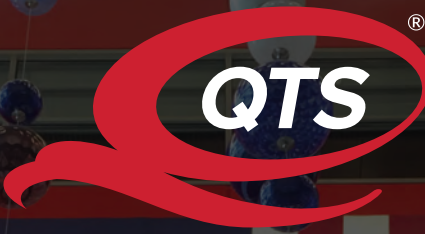
QTS Duluth Office
2470 Satellite Blvd NW
Duluth, GA 30096

Product Solutions / Federal Headquarters

QTS Ashburn Office
22271 Broderick Drive
Sterling, VA 20166

*Mega Data Center

*Leased Data Center



Powered by People

INTEGRITY, CHARACTER, TRUST

ACTION, INNOVATION, ACCOUNTABILITY

TEAM ORIENTED

RESPECT OUR CUSTOMERS

SUPPORT OF FAMILY, FAITH & COMMUNITY

VOLUNTEERISM

FREEDOM WALL

DEDICATED TO THE BRAVE MEN AND WOMEN OF THE UNITED STATES ARMED FORCES, LAW ENFORCEMENT AGENCIES, AND FIRE AND EMERGENCY SERVICES PERSONNEL FOR THEIR DEVOTION, SERVICE AND SACRIFICE THAT ENABLES OUR FREEDOMS AND SAFETY. WE PRAY THAT GOD CONTINUES TO BLESS THIS COUNTRY AND PROTECT THE BRAVE MEN AND WOMEN WHO CHOOSE TO SERVE AND DEFEND IT.

GOD BLESS AMERICA

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