



Proven to perform
anywhere.

2021 ANNUAL REPORT



Who we are.

ATI is a producer of specialty materials, highly differentiated by our materials science expertise and advanced process technologies. We are a leader in aerospace and defense and leverage our expertise to adjacent high-value critical applications in the electronics, specialty energy and medical markets.

Built on the strong foundation of our legacy companies, we are a global market-driven powerhouse: advanced, innovative, highly sophisticated and quality driven.

As a partner with our customers, we are proven to perform in the most extreme conditions.



Primary Markets

AEROSPACE

You can't fly without ATI — our materials are on virtually every commercial aircraft flying today — engines and structures.

DEFENSE

Our materials power and protect the armed services in the air, sea and on the ground.

Critical Applications

ENERGY

Our alloys fuel electrical energy in nuclear reactors, renewables, and land-based turbines. Our oil and gas materials fight heat and corrosion deep in the sea.

MEDICAL

Essential for modern medical equipment, devices and implants, our specialty materials save and improve thousands of lives every day.

ELECTRONICS

We give capability to electronic devices through our alloys' unique electrical, magnetic, cosmetic and corrosion resistance properties and our chemicals for metal precursors.

ATI 2021 FINANCIAL OVERVIEW

In millions, except per share amounts	2019 ^(a)	2020 ^(a)	2021
Sales	\$ 4,122	\$ 2,982	\$ 2,800
Gross profit	\$ 638	\$ 293	\$ 333
Restructuring and goodwill impairment charges (credits)	\$ 5	\$ 1,395	\$ (11)
Operating income (loss)	\$ 366	\$ (1,303)	\$ 118
Results attributable to ATI:			
Net income (loss)	\$ 253	\$ (1,573)	\$ (38)
Per Common Share	\$ 1.81	\$ (12.43)	\$ (0.30)
Adjusted results:			
EBITDA ^(b)	\$ 439	\$ 196	\$ 291
Net income (loss) attributable to ATI, as adjusted ^(b)	\$ 165	\$ (65)	\$ 17
Adjusted results per common share ^(b)	\$ 1.21	\$ (0.52)	\$ 0.13

BUSINESS SEGMENT RESULTS

High Performance Materials & Components (HPMC)	2019 ^(a)	2020 ^(a)	2021
Sales	\$ 1,978	\$ 1,165	\$ 1,155
Segment EBITDA	\$ 356	\$ 130	\$ 160
As percentage of segment sales	18.0%	11.1%	13.8%

2021 HPMC by quarter	Q1	Q2	Q3	Q4
Sales	\$ 241	\$ 301	\$ 300	\$ 313
Segment EBITDA	\$ 25	\$ 37	\$ 37	\$ 61
As percentage of segment sales	10.2%	12.4%	12.5%	19.4%

Advanced Alloys & Solutions (AA&S)	2019 ^(a)	2020 ^(a)	2021
Sales	\$ 2,144	\$ 1,817	\$ 1,645
Segment EBITDA	\$ 173	\$ 115	\$ 192
As percentage of segment sales	8.1%	6.3%	11.7%

2021 AA&S by quarter	Q1	Q2	Q3	Q4
Sales	\$ 451	\$ 316	\$ 426	\$ 452
Segment EBITDA	\$ 50	\$ 36	\$ 57	\$ 49
As percentage of segment sales	11.0%	11.4%	13.3%	10.9%

(a) Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in the Company's Form 10-K. There were no adjustments to 2020 amounts as a result of this change.

(b) Please see pages 9-10 for a reconciliation of adjusted results with the financial results prepared in accordance with accounting principles generally accepted in the U.S.



To our shareholders, customers and employees

ATI's mission is to solve the world's challenges through materials science. It's what we do best. Every day, our people expand what our advanced process technologies can deliver, motivated by challenges and what others see as boundaries.

We strive to be an aerospace and defense leader, guided by our technology position in strategic nickel and titanium applications. Our capabilities and experience earn us our customers' first call, and we are privileged to partner with them in advancing the world through their incredible products. Together, we're going beyond the boundaries to go further and faster — performing in the most extreme conditions. That's a powerful combination that positions us to deliver long-term shareholder value to our investors.

We thrive when the expectations are great, and the barriers are high. That's where ATI's extraordinary capabilities perform the best...and are valued the most. And it's where we see the largest opportunities for growth.

Transforming through deliberate actions

We've taken deliberate action, positioning ourselves for accelerated growth and value generation. We realigned segments around products and promoted new leaders, directing attention to the synergies and opportunities within our business. We also sharpened our focus, divesting non-core assets to double-down on what we do best.

We've invested to secure capacity for share gains, growing our advanced capabilities and further expanding our leadership position in isothermal forging and powder atomization. Having exited standard stainless sheet production in 2021, we're upgrading our specialty rolling, melt, and finishing capabilities to be best-in-class, purpose-built for high-value materials, extending ATI's core strengths. Our deep materials science expertise crisscrosses the periodic table and gives us tremendous advantage.

At the same time, we focused on cash and a disciplined capital allocation strategy. Our 2021 results reflect this success and our focus on increasing our returns, delivering topline growth, expanding margins and generating cash to deliver the results our shareholders expect.

Leveraging our strengths and building on our transformation, we're now gaining velocity—speed in a defined direction. We're poised for significant growth as markets recover and we see the benefits from market share won for the upcoming ramp. We've invested for the future, so we have both the capability and the capacity for growth.

Our path to the future.

Our Mission

Solving the World's Challenges through Materials Science

Our Vision

Deliver performance to create long-term shareholder value by:

- Transforming to be an aerospace and defense leader;
- Securing technology leadership in strategic nickel and titanium applications;
- Earning the first call through strong customer relationships and capabilities.

Our Strategic Priorities

- 1. Grow the core**, establishing the path to grow revenue and expand technology leadership.
- 2. Position ATI for the future**, clearly defining our destination and creating a path for inorganic growth.
- 3. Develop great and engaging leaders** to support their teams in accelerating change and achieving success.
- 4. Leverage Digital Technology** to differentiate and scale.
- 5. Drive inventory efficiency** to world-class benchmarks.

Strong positions in strong markets

ATI is a leading producer of high-performance materials and solutions primarily for the global aerospace and defense markets. These are our core markets as we head to our goal of greater than 65% in aerospace and defense sales. The majority of our revenue is under long-term agreement, another characteristic of these markets.

We also have solid positions in critical adjacent applications within the electronics, specialty energy, and medical markets that leverage our aerospace expertise and capabilities. These markets are growing faster than the global economy, have extremely high barriers to entry and offer aero-like profitability profiles.

“We’re poised for significant growth as markets recover and we see the benefits from market share won for the upcoming ramp. We’ve invested for the future, so we have both the capability and the capacity for growth.”

As we move forward, there are four things I want you to know about ATI:

- 1. Our well-defined strategy guides us** to becoming an aerospace and defense leader, and to leveraging that expertise for critical adjacent applications with aero-like characteristics.
- 2. We have significant opportunities for profitable growth** that we believe will drive results.
- 3. ATI holds a strong competitive advantage** built on proprietary know-how, unique assets, and world-class capabilities. Our long track record of operational excellence is strengthened by recent optimization actions.
- 4. Every day, we’re focused on driving shareholder value** by improving cash generation and accretive capital deployment.

Carefully evaluating the geopolitical risks ahead of us and undaunted by uncertainty, the ATI team is positioned to take on the challenges and make the most of the opportunities ahead.

Thank you for your support as our extraordinary, hard-working team applies our core strengths in materials science and advanced process technologies to solve the world’s toughest challenges.

Because when you need a product to go further, faster, in the most extreme conditions, ATI is proven to perform.

All the best,



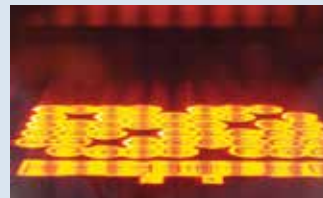
Robert S. Wetherbee
Board Chair, President and Chief Executive Officer

ATI's unique capabilities underpin our success.



Products

We produce a wide range of high-performance materials — titanium, nickel, cobalt, niobium, hafnium, zirconium — in the highest quality, meeting the extraordinary requirements of very demanding customers.



Processes

Our proprietary process technologies give our materials their tremendous strength and heat and corrosion resistance. From melt to forgings, our integrated supply chain yields the greatest results through scale.



People

Our team is the key to our success. They’re the leading minds and makers. They bring tremendous expertise to the development, production, and delivery of our products. They are proven to perform, no matter what the challenge or opportunity.



Partnerships

Other companies talk about customers. We see them as partners. It starts with a deep understanding of the challenges they need to solve, and continues through execution — delivering on time, on spec, at the highest quality. We strive to be the first, last and only call when high-performance materials are needed.

Total ATI Sales

(\$ in millions)

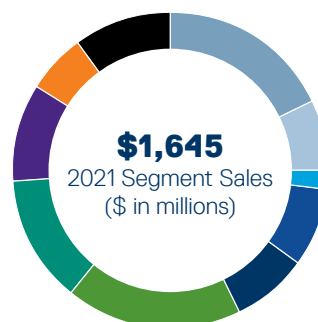
	2019		2020		2021	
Jet Engines- Commercial	\$1,186	29%	\$601	20%	\$517	19%
Airframes- Commercial	639	16%	411	14%	263	9%
Defense	305	7%	348	12%	353	13%
Total Aerospace & Defense	2,130	52%	1,360	46%	1,133	41%
Oil & Gas	511	12%	366	12%	332	12%
Specialty Energy	286	7%	253	9%	260	9%
Total Energy	797	19%	619	21%	592	21%
Automotive	297	7%	263	9%	305	11%
Electronics	163	4%	178	6%	215	8%
Food Equipment & Appliances	206	5%	159	5%	153	5%
Medical	172	4%	119	4%	132	5%
Construction & Mining	195	5%	142	5%	122	4%
Other	162	4%	142	4%	148	5%
Total	\$4,122	100%	\$2,982	100%	\$2,800	100%

High Performance Materials & Components Segment Sales



Jet Engines- Commercial	42%
Airframes- Commercial	11%
Defense	19%
Total Aerospace & Defense	72%
Oil & Gas	3%
Specialty Energy	12%
Total Energy	15%
Medical	5%
Other	8%

Advanced Alloys & Solutions Segment Sales



Oil & Gas	18%
Specialty Energy	7%
Total Energy	25%
Jet Engines- Commercial	2%
Airframes- Commercial	8%
Defense	8%
Total Aerospace & Defense	18%
Automotive	18%
Electronics	13%
Food Equipment & Appliances	10%
Construction & Mining	6%
Other	10%

Bring on Your Toughest Challenges



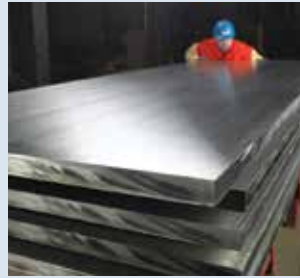
Melting consistently to deliver the highest purity and uniformity. We are recognized by our customers as the leader in materials development and melting. We produce the highest quality materials in the industry.



Exotic alloys that make the future a reality. We crisscross the periodic table to produce materials from zirconium and hafnium to nickel and niobium. We use them to create a wide variety of product forms, from specialty chemicals to unique sheet products.



Forging highly sophisticated components with strength and precision. We isothermally forge rotating disks for the hottest section of next generation jet engines. We lead the industry in producing the most complex parts for jet engines.



Tremendous melt, **rolled with the greatest force, finished with world-class capabilities.** Delivering advantages that enable our customers to win through best-in-class attributes, including thickness, coil size and cycle times.



ATI is a world leader in production and R&D of specialty alloys developed through precise formulas and complex processes to serve the most demanding markets, including aerospace. Our fully integrated additive manufacturing capabilities deliver customer solutions throughout the supply chain, from metal powder to finished part.



Our ability to work high-strength titanium, corrosion-resistant nickel, and other sophisticated alloys into coil, strip, foil and plate for demanding applications is anchored by the most powerful roughing mill in the world, capable of rolling multiple alloy systems with 1,150 pounds of force per inch of width.



We were the first U.S. company to handle all aspects of reactive metal production, and we have been the leader ever since, producing commercial high-purity hafnium, niobium and zirconium and other specialty alloys in all conventional product forms.



Our isothermal forging center of excellence is the best in the world, including one of the largest isothermal presses. We enable larger-diameter, close-tolerance forgings required for today's high-efficiency jet engines and highly sophisticated components with differing mechanical properties.



ATI's materials science expertise improves fuel efficiency by helping jet engines run hotter and more quietly and burn fuel more efficiently.



In superconducting magnets for MRI imaging, our niobium-titanium alloys drive life-changing medical insights.



Our innovative naval propulsion materials help to power nuclear aircraft carriers and submarines.



Our niobium-hafnium-titanium alloys help spacecraft direct high-velocity, high-temperature gases to reach the final frontier.



Our nickel alloys for rigid pipelines have the strength and durability to perform without fail under extreme heat, pressure and corrosion for more than 50 undersea miles.



Our forgings give heavy-lift helicopter rotor hub assemblies incredible strength and durability to hoist combat vehicles in the air and carry them great distances.



Our commitment to integrity

We at ATI are committed to a strong self-governance program. We have long believed that honesty and integrity are vitally important to the success of our Company. The Company's Corporate Governance Guidelines, along with the charters of the Board committees, provide the framework for the corporate governance of ATI. These Guidelines reflect the Board's commitment to monitor the effectiveness of decision-making at the Board and management levels, with a view toward achieving ATI's strategic objectives. This information, and more about our corporate governance, is available on our website, ATImetals.com.



Our Corporate Guidelines for Business Conduct and Ethics apply to all directors, officers, employees, agents, and consultants and set forth clear standards to guide the conduct of our daily affairs. Our commitment is to reflect the highest standards of ethical performance in our dealings with all of our stakeholders and with the public.

Our compliance program incorporates training to address key compliance concerns, including antitrust, ethics, environmental compliance, anti-bribery, export compliance, and securities law compliance, as well as training in cybersecurity matters and various human resources issues, including workplace respect and safety.



We understand that confidence in our Company is in large measure dependent upon the reliability and transparency of our financial statements, including maintaining effective internal control over financial reporting. Accordingly, the commitment to integrity in financial reporting set forth in our Financial Code of Ethics recognizes our responsibility for providing timely information that fairly reflects our financial position and results of operations.

We encourage employees to communicate concerns before they become problems. The ATI Ethics HelpLine, which provides confidential, secure, and anonymous reporting capability, is available to all employees 24 hours a day. In addition, our Chief Compliance Officer and the ethics officers at our operating companies provide confidential resources for employees to surface their concerns without fear of reprisal. Building and maintaining trust, respect, and communication among our employees are essential to the effectiveness of our self-governance program.



Robert S. Wetherbee, Board Chair, President and Chief Executive Officer

Don P. Newman, Executive Vice President, Finance and Chief Financial Officer



Elliot S. Davis, Senior Vice President, Chief Legal and Compliance Officer

ATI BOARD OF DIRECTORS



Robert S. Wetherbee

Board Chair, President and Chief Executive Officer, Allegheny Technologies Incorporated



J. Brett Harvey

Lead Independent Director of ATI. Retired Chairman and Chief Executive Officer of CONSOL Energy, Inc., a leading diversified energy company in the United States.
2 | 3



Leroy M. Ball

President and Chief Executive Officer, Koppers Holdings, Inc., a leading integrated global provider of treated wood products, wood treatment chemicals and carbon compounds
1 | 3 | 4



Herbert J. Carlisle

President and Chief Executive Officer of the National Defense Industrial Association (NDIA), and retired four-star general from the United States Air Force (USAF)
1 | 4



Carolyn Corvi

Retired Vice President, General Manager of Airplane Programs of The Boeing Company
2 | 3 | 4



James C. Diggs

Retired Senior Vice President and General Counsel of PPG Industries, Inc., a producer of coatings, glass and chemicals
1 | 2



David P. Hess

Retired EVP and Chief Customer Officer for Aerospace, United Technologies Corporation, a global leader in aerospace and technology; formerly President, Pratt & Whitney
2 | 3 | 4



Marianne Kah

Retired Chief Economist for ConocoPhillips and current adjunct senior research scholar at Columbia University's Center on Global Energy Policy
1 | 4



David J. Morehouse

Chief Executive Officer and President of Pittsburgh Penguins LLC, which owns and operates the Pittsburgh Penguins National Hockey League team
1 | 4

ATI EXECUTIVE COUNCIL



Robert S. Wetherbee

Board Chair, President and Chief Executive Officer, Allegheny Technologies Incorporated



Elliot S. Davis

Senior Vice President, Chief Legal and Compliance Officer



Kimberly A. Fields

Executive Vice President, Chief Operating Officer



Timothy J. Harris

Senior Vice President, Chief Digital and Information Officer



Kevin B. Kramer

Senior Vice President, Chief Commercial and Marketing Officer



Don P. Newman

Executive Vice President, Finance and Chief Financial Officer



Elizabeth C. Powers

Senior Vice President, Chief Human Resources Officer

Standing committees

- 1 Audit and Risk
- 2 Nominating and Governance
- 3 Personnel and Compensation
- 4 Technology



Proven to perform
anywhere.

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, 2021

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 1-12001

ALLEGHENY TECHNOLOGIES INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

25-1792394
(I.R.S. Employer
Identification Number)

1000 Six PPG Place
Pittsburgh, Pennsylvania
(Address of principal executive offices)

15222-5479
(Zip Code)

Registrant's telephone number, including area code: (412) 394-2800

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common stock, par value \$0.10	ATI	New York Stock Exchange

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

Indicate by check mark whether the Registrant is well known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. 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, and (2) has been subject to such filing requirements for the past 90 days. Yes No

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). Yes No

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

- Large accelerated filer Accelerated filer
- Non-accelerated filer (Do not check if a smaller reporting company) 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

On February 4, 2022, the Registrant had outstanding 127,447,661 shares of its Common Stock.

The aggregate market value of the Registrant's voting stock held by non-affiliates at June 30, 2021 was approximately \$2.7 billion, based on the closing price per share of Common Stock on June 30, 2021 of \$20.85 as reported on the New York Stock Exchange. Shares of Common Stock known by the Registrant to be beneficially owned by directors and officers of the Registrant subject to the reporting and other requirements of Section 16 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), are not included in the computation. The Registrant, however, has made no determination that such persons are "affiliates" within the meaning of Rule 12b-2 under the Exchange Act.

Documents Incorporated By Reference

Selected portions of the Proxy Statement for the Annual Meeting of Stockholders to be held on May 12, 2022 are incorporated by reference into Part III of this Report.

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PART I

Item 1. Business

The Company

Allegheny Technologies Incorporated is a Delaware corporation with its corporate headquarters located at 1000 Six PPG Place, Pittsburgh, Pennsylvania 15222-5479, telephone number (412) 394-2800, Internet website address www.atimetals.com. Our Internet website and the content contained therein or connected thereto are not intended to be incorporated into this Annual Report on Form 10-K. References to “Allegheny Technologies,” “ATI,” the “Company,” the “Registrant,” “we,” “our” and “us” and similar terms mean Allegheny Technologies Incorporated and its subsidiaries, unless the context otherwise requires.

Our Business

ATI’s strategic vision is to be an aligned and integrated specialty materials and components company, solving the world’s challenges through materials science. Our strategies target the products and global growth markets that require and value ATI’s technical and manufacturing capabilities. Our largest markets are aerospace & defense, representing approximately 40% of total sales, led by products for jet engines. Additionally, we have a strong presence in the energy markets, including specialty energy, oil & gas and downstream processing. In aggregate, these markets represent about 60% of our revenue. ATI is a market leader in manufacturing differentiated products that require our materials science capabilities and unique process technologies, including our new product development competence.

We operate in two business segments: High Performance Materials & Components (HPMC) and Advanced Alloys & Solutions (AA&S). The HPMC segment’s primary focus is on maximizing aero-engine materials and components growth, with approximately 75% of its revenue derived from the aerospace & defense markets including over 40% of its revenue from products for commercial jet engines. Commercial aerospace products have been the main source of sales and EBITDA growth for HPMC over the last several years, and are expected to continue to drive HPMC and overall ATI results as demand from these markets recovers from reduced 2020 levels resulting from the COVID-19 pandemic. Other major HPMC end markets include medical and energy. HPMC produces a wide range of high performance materials, components, and advanced metallic powder alloys. These are made from nickel-based alloys and superalloys, titanium and titanium-based alloys, and a variety of other specialty materials. Capabilities range from cast/wrought and powder alloy development to final production of highly engineered finished components, including those used for next-generation jet engine forgings and 3D-printed aerospace products.

The AA&S segment is focused on delivering high-value flat products primarily to the energy, aerospace, and defense end-markets, which comprise approximately 45% of its revenue. Other important end markets for AA&S include automotive and electronics. AA&S produces nickel-based alloys, titanium and titanium-based alloys, and specialty alloys in a variety of forms including plate, sheet, and strip products. On December 2, 2020, we announced a strategic repositioning of our Specialty Rolled Products (SRP) business, which includes exiting lower-margin standard stainless sheet products, streamlining the production footprint of the AA&S segment and making certain capital investments to increase our focus on higher-margin products and our aerospace & defense end markets. We remain on track to complete our transformation of the SRP business and exit sales of lower-margin standard stainless sheet products in the first half of 2022.

Strategic end-use markets for our products include:

Aerospace & Defense. We are a world leader in the production of specialty materials and components for both commercial and military jet engines and airframes supporting customer needs for initial build requirements and for spare parts. Through alloy development, internal growth efforts, and long-term supply agreements on current and next-generation jet engines and airframes, we are well-positioned with a fully qualified asset base to meet the expected return to multi-year demand growth from the commercial aerospace market as business conditions impacted by the global COVID-19 pandemic recover to more normal levels.

Typical aerospace applications for nickel-based alloys and superalloys and advanced metallic powders include jet engine discs, blades, vanes, rings, casings and shafts. Nickel-based alloys and superalloys remain extremely strong at high temperatures and resist degradation under extreme conditions. The next-generation jet engines use advanced nickel-based superalloys and metallic powder alloys due to increased fuel efficiency requirements that require hotter-burning engines. Our specialty materials are also used in the manufacture of aircraft landing gear and structural components.

We are a global industry leader in iso-thermal and hot-die forging technologies for advanced aerospace components. In 2021, we completed capital investments for our fourth iso-thermal press and heat-treating capacity expansion at our Iso-Thermal Forging Center of Excellence in Cudahy, WI. We produce highly sophisticated components that have differing mechanical properties across a single product unit and are highly-resistant to fatigue and temperature effects. Our precision forgings are

used for jet engine components, structural components for aircraft, helicopters, space propulsion, and other demanding applications. ATI provides a full range of post-production inspection and machining with the certified quality needed to meet demanding application requirements.

Products and components made from titanium and titanium-based alloys, such as jet engine components including discs, blades and vanes, and airframe components such as structural members, landing gears, and hydraulic systems, are critical in aerospace applications. These materials and components possess an extraordinary combination of properties that help to increase jet engine fuel efficiency and product longevity, including superior strength-to-weight ratios, elevated temperature resistance, low coefficient of thermal expansion, and extreme corrosion resistance.

Our specialty materials and components for defense applications include naval nuclear products, military jet engines, fixed wing and rotorcraft products, and armor applications. We expect to increase our sales in government defense applications in future years.

We continuously seek to develop and manufacture innovative new alloys to better serve the needs of the aerospace & defense markets, and several of the alloys we produce have won significant share in the current and next-generation jet engines. ATI's metallic powder technology delivers alloy compositions and refined microstructures that offer increased performance and longer useful lives in high-temperature aerospace environments, as well as improves the efficiency of jet engines. We continue to increase our production capacity for advanced metallic powders for use in next-generation aerospace products, including additive manufacturing applications.

Energy. We also serve energy markets, including specialty energy, oil & gas and downstream processing markets.

Our specialty materials are widely used in the global electrical power generation and distribution industries. We believe clean energy needs, expanding environmental policies and the electrification of developing countries will continue to drive demand for our specialty materials and products for use in these industries over the long term.

For electrical power generation, our specialty materials, including corrosion-resistant alloys (CRAs), are used in nuclear, natural gas and other fuel source applications. Our CRAs are used for pipe, tube, and heat exchanger applications in water systems and in pollution control scrubbers, as well as in water systems, fuel cladding components, and process equipment for nuclear power plants. For nuclear power plants, we are an industry pioneer in producing nuclear reactor fuel cladding and structural components utilizing zirconium and hafnium alloys. We are a technology leader for large diameter components used in natural gas land-based turbines for power generation. Our alloys are also used for alternative energy generation, in solar, fuel cell and geothermal applications.

Both of our business segments produce specialty materials that are critical to the oil & gas industry. The environments in which oil & gas can be found in commercial quantities have become more challenging, involving deep offshore wells, high pressure and high temperature conditions in sour wells and unconventional sources. These challenging offshore environments are located further off the continental shelf, including locations in arctic and tropical waters where drilling is more difficult than previously-sourced locations. Our specialty materials, including nickel-based alloys, duplex alloys and other specialty alloys, have the strength and corrosion-resistant properties necessary to meet these challenging operating conditions. We enable our customers' success in these applications by developing and producing specialty materials for equipment that can operate for up to 30 years in these harsh environments.

Medical. ATI's advanced specialty materials are used in medical device products that enhance the quality of people's lives around the world.

Manufacturers of magnetic resonance imaging (MRI) devices rely on our niobium superconducting wire to help produce electromagnetic fields that allow physicians to safely scan the body's soft tissue. We have a joint technology development agreement with Bruker Energy & Supercon Technologies to advance state-of-the-art niobium-based superconductors, including those used in MRI magnets for the medical industry, and preclinical MRI magnets used in the life-science tools industry.

Our specialty alloys also are used for replacement knees, hips and other prosthetic devices. The use of our alloys in these replacement devices offers the potential for longer product lifespans versus previous implant generations.

Our biocompatible nickel-titanium shape memory alloy is used for stents to support collapsed or clogged blood vessels. Reduced in diameter for insertion, these stents expand post-implant to the original tube-like shape due to the metal's superelasticity. In addition, our ultra fine diameter (0.002 inch/0.051 mm) titanium wire is used for screens to prevent blood clots from entering critical areas of the body.

Electronics. ATI’s materials perform a variety of important roles in the growing consumer electronics market. Nickel alloys and Precision Rolled Strip® (PRS) from SRP and our Asian PRS joint venture support computers and smart phones. The magnetic properties of nickel alloys are used in relay cores, magnets and magnetic shielding, while their thermal expansion is useful in glass-to-metal sealing applications such as monitors. PRS is selected for electronics and communications applications based on corrosion resistance, strength, wear resistance, electrical resistivity or thermal expansion.

In addition, metal precursors – which use chemicals produced by ATI, such as hafnium – have a variety of important applications in consumer and industrial electronics.

Business Segments

Our two business segments accounted for the following percentages of total revenues of \$2.80 billion, \$2.98 billion, and \$4.12 billion for the years ended December 31, 2021, 2020, and 2019, respectively.

	2021	2020	2019
High Performance Materials & Components	41 %	39 %	48 %
Advanced Alloys & Solutions	59 %	61 %	52 %

Information with respect to our business segments is presented below and in Note 18 of the notes to the consolidated financial statements.

High Performance Materials & Components Segment

Our HPMC segment produces a wide range of high performance specialty materials, parts and components for several major end markets, including the aerospace & defense, medical, and energy markets, with 72% of 2021 revenues derived from the aerospace & defense markets. Demand for our products is driven primarily by the commercial aerospace cycle. Large aircraft and jet engines are manufactured by a small number of companies, such as The Boeing Company, Airbus S.A.S. (an Airbus Group company) including the former operations of Bombardier Aerospace, and Embraer (Empresa Brasileira de Aeronáutica S.A.) for airframes. GE Aviation (a division of General Electric Company), Rolls-Royce plc, Pratt & Whitney (a division of Raytheon Technologies Corporation), Snecma (SAFRAN Group), and various joint ventures manufacture jet engines. These companies, and their suppliers, form a substantial part of our customer base in this business segment. We have long-term agreements (LTAs) in place with most major aerospace market OEMs. The loss of one or more of our customers in the aerospace or defense markets could have a material adverse effect on ATI’s results of operations and financial condition (see Item 1A. Risk Factors).

Our products are manufactured from a wide range of advanced materials including metallic powder alloys, made from nickel-based alloys and superalloys, titanium and titanium-based alloys, and a variety of other specialty materials. These materials are made into a variety of product forms that include precision forgings, machined parts and others. We are integrated across these alloy systems in melt, forging, finishing, testing and machining processes. Most of the products in this segment are sold directly to end-use customers, and a substantial portion of our HPMC segment products are sold under multi-year agreements.

Principal competitors in the HPMC segment include: Berkshire Hathaway Inc., for nickel-based alloys and superalloys and specialty steel alloys, titanium and titanium-based alloys, and precision forgings through its ownership of Precision Castparts Corporation and subsidiaries; Howmet Aerospace Inc., for titanium and titanium-based alloys; Carpenter Technology Corporation for legacy nickel-based alloys and superalloys and specialty steel alloys; VSMPO-AVISMA for titanium and titanium-based alloys; and Aubert & Duval for precision forgings.

Advanced Alloys & Solutions Segment

Our AA&S segment produces nickel-based alloys, titanium and titanium-based alloys, and specialty alloys in a variety of forms including plate, sheet, and PRS products. The major end markets for our flat rolled products are energy, aerospace & defense, automotive, and electronics markets. The operations in this segment include our SRP business, our Specialty Alloys & Components business, including the primary titanium operations in Richland, WA, and the Shanghai STAL Precision Stainless Steel Company Limited (STAL) PRS joint venture in China, in which we hold a 60% interest. Segment results also include our 50% interest in the Uniti industrial titanium joint venture and our 50% interest in the A&T Stainless joint venture.

Significant global overcapacity for stainless flat-rolled products has intensified the price competition in the AA&S segment over the last several years, despite various anti-dumping and countervailing duties imposed by the United States government in various forms since 1999. On December 2, 2020, we announced a strategic repositioning of our SRP business, which includes exiting lower-margin standard stainless sheet products, streamlining the production footprint of the AA&S segment and making certain capital investments to increase its focus on higher-margin products and its aerospace & defense end markets. Additionally, in 2020 we indefinitely idled the manufacturing operations of the A&T Stainless joint venture.

Nickel-based alloys, titanium, and stainless sheet products are used in a wide variety of industrial and consumer applications. In 2021, approximately 45% of our stainless sheet products by volume were sold to independent service centers, which have slitting, cutting or other processing facilities, with the remainder sold directly to end-use customers. We expect to increase our portion of sales directly to end-use customers as we exit the standard stainless sheet market.

Nickel-based alloy, titanium, and specialty alloy plate products are primarily used in aerospace & defense, and corrosion and industrial markets. In 2021, approximately 65% of our plate products by volume were sold to independent service centers, with the remainder sold directly to end-use customers.

PRS products, which are under 0.015 inches thick, are used by customers to fabricate a variety of products primarily in the automotive and electronics markets. In 2021, approximately 90% of these products by volume were sold directly to end-use customers or through our own distribution network, with the remainder sold to independent service centers.

Competitors for nickel-based alloys and superalloys and specialty alloys include Haynes International and VDM Metals GmbH, a subsidiary of Acerinox S.A. We are exiting the domestic commodity stainless sheet business, in which we compete with North American Stainless, a subsidiary of Acerinox S.A., Outokumpu Stainless USA, LLC, and Cleveland-Cliffs Inc., as well as imports from numerous foreign producers, including Aperam, based in Europe.

We continue efforts toward improving the capacity utilization of our Hot-Rolling and Processing Facility (HRPF) in Brackenridge, PA for carbon steel hot-rolling third-party conversion services, and in 2021 we entered into LTAs to provide these services.

Raw Materials and Supplies

Substantially all raw materials and supplies required in the manufacture of our products are available from more than one supplier, and the sources and availability of raw materials essential to our businesses are currently adequate. The principal raw materials we use in the production of our specialty materials are scrap (including iron-, nickel-, chromium-, titanium-, and molybdenum-bearing scrap), nickel, titanium sponge, zirconium sand and sponge, ferrochromium, ferrosilicon, molybdenum and molybdenum alloys, manganese and manganese alloys, cobalt, niobium, vanadium and other alloying materials. While we enter into raw materials futures contracts from time to time to hedge exposure to price fluctuations, such as for nickel, we cannot be certain that our hedge position adequately reduces exposure. We believe that we have adequate controls to monitor these contracts, but we may not be able to accurately assess exposure to price volatility in the markets for critical raw materials.

Over the last several years, significant global capacity has been added to produce titanium sponge, which is a key raw material used to produce ATI's titanium products. ATI has entered into long-term cost competitive supply agreements with several producers of premium-grade and standard-grade titanium sponge.

Other raw materials, such as nickel, cobalt, and ferrochromium, are available to us and our specialty materials industry competitors primarily from foreign sources. Some of these foreign sources are located in countries that may be subject to unstable political and economic conditions, which could disrupt supplies or affect the price of these materials.

We purchase our nickel requirements principally from producers in Australia, Canada, Norway, Russia, and the Dominican Republic. We purchase zirconium raw materials primarily domestically and also from producers in China. Cobalt is purchased primarily from producers in Canada. More than 80% of the world's reserves of ferrochromium are located in South Africa, Zimbabwe, Albania, and Kazakhstan. Niobium is purchased principally from producers in Brazil, and our titanium sponge comes from sources in Japan and Kazakhstan.

Certain key supplies used in melting and other processing operations, such as graphite electrodes and industrial gases including helium and argon, are from time-to-time limited in availability and may be subject to significant price inflation. We enter into long-term supply contracts where possible to ensure an adequate supply of these items, however, overall industry shortages may impact our operations and scheduling.

Export Sales and Foreign Operations

International sales represent approximately 45% of our total annual sales, with direct export sales by our U.S.-based operations to customers in foreign countries accounting for approximately 30% of our total sales. Our overseas sales, marketing and distribution efforts are aided by our international marketing and distribution offices, ATI Europe, ATI Europe Distribution, and ATI Asia, or by independent representatives at various locations throughout the world. We believe that at least 50% of ATI's 2021 sales were driven by global markets when we consider exports of our customers.

Our HPMC segment has manufacturing capabilities for melting, remelting, forging and finishing nickel-based alloys and specialty alloys in the United Kingdom, and manufacturing capabilities for precision forging and machining in Poland, primarily serving the aerospace, construction & mining and transportation markets. Within our AA&S segment, our joint venture in the People's Republic of China makes PRS products, which enables us to offer these products more effectively to

markets in China and other Asian countries. Our Uniti LLC joint venture allows us to offer titanium products to global industrial markets more effectively.

Backlog, Seasonality and Cyclicity

Our backlog of confirmed orders was approximately \$2.1 billion at December 31, 2021 and \$1.4 billion at December 31, 2020. We expect that approximately 80% of confirmed orders on hand at December 31, 2021 will be filled during the year ending December 31, 2022. Our HPMC segment's backlog of confirmed orders was approximately \$1.6 billion at December 31, 2021 and \$1.0 billion at December 31, 2020. We expect that approximately 75% of the confirmed orders on hand at December 31, 2021 for this segment will be filled during the year ending December 31, 2022. Our AA&S segment's backlog of confirmed orders was approximately \$0.5 billion at December 31, 2021 and \$0.4 billion at December 31, 2020. We expect that approximately 95% of the confirmed orders on hand at December 31, 2021 for this segment will be filled during the year ending December 31, 2022.

Demand for our products is cyclical over longer periods because specialty materials customers operate in cyclical industries and are subject to changes in general economic conditions and other factors both external and internal to those industries. The HPMC segment typically experiences modest seasonal weakness in the third quarter of each fiscal year due to many European customers, particularly in the aerospace supply chain, taking plant outages during this summer period. ATI also typically performs corresponding annual preventative maintenance outages at several facilities during this same period.

Cybersecurity

The Company recognizes the increasing significance that cybersecurity has to our operations and the need to continually assess cybersecurity risk and evolve our response in the face of a rapidly and ever-changing environment. We have both a Chief Digital and Information Officer and, to enhance an already comprehensive cybersecurity program, a Chief Information Security Officer to lead our efforts to address and mitigate digital technology risks in partnership with ATI's business leaders.

In 2021, the need to ensure cybersecurity while enabling a comprehensive and highly reliable remote working environment for a significant portion of our workforce continued to be a central component of our response to the COVID-19 pandemic. Throughout 2021, special attention was and continues to be given to improving and implementing Cybersecurity Maturity Model Certification controls in support of protecting ATI's technology and customer data.

Additionally, we have a robust Cybersecurity Incident Response Plan in place which provides a documented framework for handling high severity security incidents and facilitates coordination across multiple parts of the Company. We routinely perform simulations and drills at both a technical and management level. We incorporate external expertise and reviews in all aspects of our program, and all personnel receive regular cybersecurity awareness training.

As part of its program of regular oversight, the Company's Audit & Risk Committee is responsible for overseeing ATI's cybersecurity risk. The Audit & Risk Committee receives quarterly reports from the Chief Digital and Information Officer and the Chief Information Security Officer on ATI's cybersecurity risk profile and enterprise cybersecurity program.

Research, Development and Technical Services

We believe that our research and development capabilities give ATI an advantage in developing new products and manufacturing processes that contribute to the long-term profitable growth potential of our businesses. We conduct research and development at our various operating locations both for our own account and, on a limited basis, for customers on a contract basis. Research and development expenditures for the years ended December 31, 2021, 2020, and 2019 included the following:

<i>(In millions)</i>	2021	2020	2019
Company-Funded:			
High Performance Materials & Components	\$ 9.0	\$ 7.7	\$ 8.2
Advanced Alloys & Solutions	6.6	5.3	7.4
Corporate	0.9	1.1	2.2
	16.5	14.1	17.8
Customer-Funded:			
High Performance Materials & Components	3.5	0.7	2.4
Total Research and Development	\$ 20.0	\$ 14.8	\$ 20.2

Our research, development and technical service activities are closely interrelated and are directed toward development of new products, improvement of existing products, cost reduction, process improvement and control, quality assurance and control, development of new manufacturing methods, and improvement of existing manufacturing methods. The increased activity in

2021 and 2019 was largely related to materials and manufacturing methods for products supporting the aerospace & defense markets. The decline in 2020 reflects weakened market conditions due to the COVID-19 pandemic.

We own hundreds of United States patents, many of which are also filed under the patent laws of other nations. Although these patents, as well as our numerous trademarks, technical information, license agreements, and other intellectual property, have been and are expected to be of value, we believe that the loss of any single such item or technically related group of such items would not materially affect the conduct of our business.

Environmental, Health and Safety Matters

We are subject to various domestic and international environmental laws and regulations that govern the discharge of pollutants and disposal of wastes, and which may require that we investigate and remediate the effects of the release or disposal of materials at sites associated with past and present operations. We could incur substantial cleanup costs, fines, civil or criminal sanctions, third party property damage or personal injury claims as a result of violations or liabilities under these laws or non-compliance with environmental permits required at our facilities. We are currently involved in the investigation and remediation of a number of our current and former sites as well as third party sites.

We consider environmental compliance to be an integral part of our operations. We have a comprehensive environmental management and reporting program that focuses on compliance with applicable federal, state, regional and local environmental laws and regulations. Each operating company has an environmental management system that includes mechanisms for regularly evaluating environmental compliance and managing changes in business operations while assessing environmental impact.

Human Capital Resources

We believe that world-class leadership and fostering a culture that enables us to build and grow a talented engaged team through career development and opportunities is foundational to our vision. We recognize that attracting, retaining and developing members of our workforce are keys to the success and sustainability of our business.

We continuously strive to cultivate and support a highly engaged and productive workforce. As a result, management focuses on a number of human capital measures and objectives, which include the following:

Talent Acquisition: We partner closely with a targeted number of colleges and universities specifically known for programs that are relevant to our business in order to identify materials science, STEM expertise and other relevant talent, and have developed similar partnerships with high schools and relevant trade schools. In addition, we engage with external professional recruiting firms to enhance our recruiting efforts for key positions. We utilize pre-employment assessment tools to identify qualified candidates who we believe would adapt well to our culture and be most suited to a particular opportunity. We are also actively engaged with campus and professional diversity groups. We pride ourselves on our ability to attract and retain U.S. military veterans, who comprise approximately 6% of our leadership team and approximately 8% of our total employee population as of the end of 2021.

Professional Development: We offer a number of programs to our employees intended to support development of the skills each employee needs for success in his or her current position and for future career growth. One of these programs is our Global Leadership Development Program, our Company-wide, flagship program designed to build the skills of our employees across each level of leadership. We also have an Early Career Leadership Development Program, a five-year program designed for high-potential and motivated college graduates designed to prepare our future leaders.

Engagement and Performance Management: We actively seek opportunities for regular engagement and communication by our CEO and other senior executive leaders with our broader employee population. Annually, we conduct a confidential company-wide employee engagement survey with feedback from these surveys reviewed with our Board and used to develop and refine other aspects of our overall human capital management and other growth strategies. We also maintain a robust annual performance management process across the organization.

Talent Review: We maintain a formal talent review process and career mapping framework. Talent reviews are designed to work in connection with our performance management processes and ensure a systematic and ongoing dialog regarding career development and succession planning at both the individual employee level and more broadly at an enterprise level.

Retention: An output of our talent assessment process is a retention toolkit. This toolkit is designed to use both quantitative and qualitative inputs along with predictive analytics to inform our retention strategies.

Health & Safety: Safety is one of our core values. We strive for a Zero Injury Culture committed to the safety of our people, our products, and the communities in which we operate. Our 2021 OSHA Total Recordable Incident Rate was 0.85 per 200,000 hours and our Lost Time Case Rate was 0.16 per 200,000 hours, which we believe to be competitive with world-class

performance for our industry. Also, at the end of 2021, 85% of ATI Operations are OSHAS 45001 certified. Our goal was to have every operation certified to OSHAS 45001 standards by the end of 2022. The previously-announced consolidation and restructuring of our business has caused us to re-evaluate this target for completing certification, which is now by the end of 2025.

Pandemic Response: In response to the COVID-19 pandemic, ATI formed a COVID-19 task force to respond to the various government orders, guidance, and issues facing our business and employees. Our operations are critical to ongoing demands and requirements of our customers and as an essential business, we continued to operate while many businesses were ordered to close. By quickly implementing plans and protocols for keeping our employees safe, we have had no widespread workplace infection among our employees in any of our global locations.

Diversity & Inclusion: We recognize the benefits and importance of diversity amongst our board and management. Two of our nine current board members are women, and one member of our Board is an ethnic minority. Additionally, two of our seven Executive Council members are women, including our Chief Operating Officer and our Chief Human Resources Officer. We have adopted recruitment strategies to provide outreach and sourcing of diverse candidates. To support this objective, we have an enterprise-wide target for 80% of all job candidate slates to include a minimum of 30% diverse candidates.

Governance: Our Corporate Guidelines for Business Conduct and Ethics address employment and workplace safety laws, and also describe our commitment to equal opportunity and fair treatment of employees.

Labor Relations and Collective Bargaining: We have approximately 6,300 active employees, of which about 20% are located outside the United States. Approximately 40% of our workforce is covered by various collective bargaining agreements (CBAs), predominantly with the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied & Industrial Service Workers International Union, AFL-CIO, CLC (USW). The Company's CBA with the USW involving approximately 1,100 active full-time represented employees located primarily within the AA&S segment operations, as well as a number of inactive employees, expired on February 28, 2021. USW-represented employees continued to work under the terms of the expired CBA until March 30, 2021 when they engaged in a strike. On July 14, 2021, ATI announced that a new four-year labor agreement with the USW was ratified, ending the strike. The Company has CBAs with approximately 800 full-time employees that expire in 2022.

Available Information

Our Internet website address is www.atimetals.com. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as well as proxy and information statements and other information that we file, are available free of charge through our Internet website as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the United States Securities and Exchange Commission ("SEC"). Our Internet website and the content contained therein or connected thereto are not intended to be incorporated into this Annual Report on Form 10-K. The SEC maintains an Internet website at www.sec.gov, which also contains reports, proxy and information statements and other information that we file electronically with the SEC.

Item 1A. Risk Factors

There are inherent risks and uncertainties associated with our business that could adversely affect our operating performance and financial condition. Set forth below are descriptions of those risks and uncertainties that we currently believe to be material, but the risks and uncertainties described are not the only risks and uncertainties that could affect our business. See the discussion under "Forward-Looking Statements" in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, in this Annual Report on Form 10-K.

RISKS RELATED TO CYCLICAL NATURE OF OUR BUSINESS

Cyclical Demand for Products. The cyclical nature of the industries in which our customers operate causes demand for our products to be cyclical, creating potential uncertainty regarding future profitability. Various changes in general economic conditions may affect the industries in which our customers operate. These changes could include decreases in the rate of consumption or use of our customers' products due to economic downturns. Other factors that may cause fluctuation in our customers' positions are changes in market demand, lower overall pricing due to domestic and international overcapacity, currency fluctuations, lower priced imports and increases in use or decreases in prices of substitute materials. As a result of these factors, our profitability has been and may in the future be subject to significant fluctuation.

Risks Associated with the Commercial Aerospace Industry. A significant portion of our sales represent products sold to customers in the commercial aerospace industry. Fulfilling contractual arrangements to provide various products to customers in this industry often involves meeting highly exacting performance requirements and product specifications, and our failure to meet those requirements and specifications on a timely and cost efficient basis could have a material adverse effect on our

results of operations, business and financial condition. The commercial aerospace industry has historically been cyclical due to factors both external and internal to the airline industry. These factors include general economic conditions, airline profitability, consumer demand for air travel, varying fuel and labor costs, changes in projected build rates (including, e.g., the suspension in production of the Boeing 737 MAX aircraft and the decline in projected build rates for Boeing's 737 MAX and 787 Dreamliner and for other commercial aircraft associated with the global COVID-19 pandemic that is expected to impact the industry for several years), price competition, and international and domestic political conditions such as military conflict and the threat of terrorism. The length and degree of cyclical fluctuation are influenced by these factors and therefore are difficult to predict with certainty. Demand for our products, particularly those produced in our HPMC segment, is subject to these cyclical trends. Cyclical and event-driven downturns in the commercial aerospace industry have had, and may in the future have, an adverse effect on the prices at which we are able to sell our products, and our results of operations, business and financial condition could be materially adversely affected.

Risks Associated with the Oil & Gas Industry. The oil & gas industry, which historically has been a significant end market for ATI, is highly cyclical and subject to volatility as a result of worldwide economic activity and associated demand for oil and natural gas, anticipated future prices for oil and natural gas, fluctuation in the level of drilling activity, changes in applicable regulation, global geopolitical conditions and numerous other factors. Demand for our products is likewise subject to these trends. In recent years, our business has been negatively impacted by a general downturn and slow recovery in the oil & gas industry, which most recently has been further impacted by the COVID-19 pandemic's negative effect on global economic activity. We expect that this end market will remain a highly cyclical industry, and future downturns could have an adverse effect on the prices at which we are able to sell our products, and our results of operations, business and financial condition could be materially adversely affected.

Product Pricing. From time-to-time, reduced demand, intense competition and excess manufacturing capacity have resulted in reduced prices, excluding raw material surcharges, for many of our products. These factors have had and may have an adverse impact on our revenues, operating results and financial condition. Although inflationary trends in most of the last few years have been moderate, during most of the same period, certain critical raw material costs, such as nickel, titanium sponge, cobalt, chromium, and molybdenum and scrap containing iron, nickel, titanium, chromium, and molybdenum have been volatile. While we have been able to mitigate some of the adverse impact of volatile raw material costs through raw material surcharges or indices to customers, rapid changes in raw material costs causes volatility in, and may adversely affect, our results of operations.

We change prices on certain of our products from time-to-time. The ability to implement price increases is dependent on market conditions, economic factors, raw material costs and availability, competitive factors, operating costs and other factors, some of which are beyond our control. The benefits of any price increases may be delayed due to long manufacturing lead times and the terms of existing contracts.

RISKS RELATED TO THE RAW MATERIALS AND SUPPLIES THAT WE USE

Dependence on Critical Raw Materials Subject to Price and Availability Fluctuations. We rely to a substantial extent on third parties to supply certain raw materials that are critical to the manufacture of our products. Purchase prices and availability of these critical items are subject to volatility. At any given time, we may be unable to obtain an adequate supply of these critical raw materials on a timely basis, on price and other terms acceptable to us, or at all. If suppliers increase the price of critical raw materials, we may not have alternative sources of supply. In addition, to the extent that we have quoted prices to customers and accepted customer orders for products prior to purchasing necessary raw materials, or have existing contracts, we may be unable to raise the price of products to cover all or part of the increased cost of the raw materials. The prices for many of the raw materials we use have been volatile during the past several years. Due to the long lead times required to manufacture many of our products, volatility in raw material prices exposes us to cash costs that may not be fully recovered through surcharge and index pricing mechanisms.

The manufacture of some of our products is a complex process and requires long lead times. As a result, we may experience delays or shortages in the supply of raw materials. In particular, we acquire certain important raw materials that we use to produce specialty materials, including nickel, zirconium, niobium, chromium, cobalt, vanadium and titanium sponge, from foreign sources. Some of these sources operate in countries that may be subject to unstable political and economic conditions. For example, we source both nickel and chromium from Russian sources that could be impacted by current events involving Russia and the Ukraine and any U.S. or other international economic sanctions or other actions in response. These or similar conditions may disrupt supplies or affect the prices of the materials that are necessary to our operations. If unable to obtain adequate and timely deliveries of required raw materials, we may be unable to timely manufacture sufficient quantities of products. This could cause us to lose sales, incur additional costs, delay new product introductions, or suffer harm to our reputation.

Dependence on Critical Supplies Subject to Price and Availability Fluctuations. We rely on third parties for certain supplies, such as graphite electrodes and industrial gases including helium and argon that are critical to the manufacture of our products. Purchase prices and availability of these critical items are subject to volatility. At any given time, we may be unable to obtain an adequate supply of these critical supplies on a timely basis, on price and other terms acceptable to us, or at all. If suppliers increase the price of these items, we may not have alternative sources of supply. The manufacture of some of our products is a complex process and requires long lead times. As a result, we may experience delays or shortages of critical supplies. If unable to obtain adequate and timely deliveries of required supplies, we may be unable to timely manufacture sufficient quantities of products. This could cause us to lose sales, incur additional costs, delay new product introductions, or suffer harm to our reputation.

Availability of Energy Resources. We rely upon third parties for our supply of energy resources consumed in the manufacture of our products. The prices for and availability of electricity, natural gas, oil and other energy resources are subject to volatile market conditions. These market conditions often are affected by political and economic factors beyond our control. Disruptions in the supply of energy resources could temporarily impair our ability to manufacture products for customers. Further, increases in energy costs, or changes in costs relative to energy costs paid by competitors, has and may continue to adversely affect our profitability. To the extent that these uncertainties cause suppliers and customers to be more cost sensitive, increased energy prices may have an adverse effect on our results of operations and financial condition.

RISKS RELATED TO OUR WORKFORCE

Risks Associated with the Recruitment and Retention of Key Talent and the Sustainability of our Workforce. Our business and manufacturing processes are complex. We require highly skilled personnel with relevant industry and technical experience to effectively operate, and as such, depend on our ability to recruit, retain and motivate our employees. Shortages in skilled labor and other labor market pressures currently are resulting in greater competition for skilled labor and increased labor costs in some instances. If we fail to attract, develop, retain and motivate a sustainable workforce with the skills and in the locations we need to operate and grow our business, our operations could be adversely impacted.

In addition, the loss of key members of management and other personnel could negatively impact our business, and any unplanned turnover, or failure to develop adequate succession plans for key positions could result in loss of technical or other expertise or institutional knowledge, delay or impede the execution of our strategic plans and priorities and, ultimately, negatively impact our business and results.

Labor Matters. We have approximately 6,300 active employees, of which approximately 20% are located outside the United States. Approximately 40% of our workforce is covered by various CBAs, predominantly with the USW. At various times, our CBAs expire and are subject to renegotiation. We currently are involved in negotiations involving CBAs with approximately 800 full-time employees that expire in 2022. Generally, collective bargaining agreements that expire may be terminated after notice by the union. After termination, the union may authorize a strike. A labor dispute, which could lead to a strike, lockout, or other work stoppage by the employees covered by one or more of the collective bargaining agreements, could have a material adverse effect on production at one or more of our facilities and, depending upon the length of such dispute or work stoppage, on our operating results. For example, in 2021, the USW engaged in a 3 ½ month strike primarily affecting our AA&S segment operations, and we incurred approximately \$63 million in strike-related costs and had lower revenues during this period while we continued to operate affected facilities with replacement workers. There can be no assurance that we will succeed in concluding collective bargaining agreements to replace those that expire.

RISKS RELATED TO INFORMATION TECHNOLOGY AND SECURITY

Risks Associated with Information Technology. Information technology infrastructure is critical to supporting business objectives; failure of our information technology infrastructure to operate effectively could adversely affect our business. We depend heavily on information technology infrastructure to achieve our business objectives. If a problem occurs that impairs this infrastructure, the resulting disruption could impede our ability to record or process orders, manufacture and ship in a timely manner, or otherwise carry on business in the normal course. Any such events could cause us to lose customers or revenue and could require us to incur significant expense to remediate. As we integrate, implement and deploy new information technology processes and information infrastructure across our operations, we could experience disruptions in our business that could have an adverse effect on our business, financial condition, results of operations and cash flow.

Cyber Security Threats. Increased global information technology threats, vulnerabilities, and a rise in sophisticated and targeted international computer crime pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data. We believe that ATI faces the threat of such cyber attacks due to the markets we serve, the products we manufacture, the locations of our operations, and global interest in our technology. These risks may be exacerbated by the continuing impact of the COVID-19 pandemic. Due to the evolving nature of cyber security threats, the scope and impact of any incident cannot be predicted. We continually work to strengthen our threat countermeasures,

safeguard our systems and mitigate potential risks. Despite our efforts to fortify our cyber security and protect sensitive information and confidential and personal data, our facilities and systems and those of our third-party service providers may be vulnerable to security breaches. This could lead to disclosure, modification or destruction of proprietary and other key information, production downtimes, operational disruptions, and remediation costs, which in turn could adversely affect our reputation, competitiveness and results of operations.

RISK RELATED TO CLIMATE CHANGE AND OTHER ENVIRONMENTAL MATTERS

Risks Associated with Climate Change.

While the prospect of a lower-carbon economy presents a number of opportunities for our business, the physical impacts of climate change, regulatory efforts to transition to a lower-carbon economy in the regions in which we, our customers and our suppliers operate and the increased focus and evolving views of our various stakeholders on climate change issues could create risks to our business.

Physical Risk. Climate related changes in prevailing weather patterns may impact, among other conditions, changes in sea levels and the propensity for flooding in coastal and other regions, long-term changes in precipitation patterns leading to flooding, drought or deterioration in water quality, and the frequency and severity of significant storms and other weather events and related natural hazards, such as wildfire risk. Although we do not believe that our facilities are currently exposed to significant physical risk as a general matter, our operations have at times been, and could in the future be, impacted by adverse climate-related events, such as, for example, the extreme heat and wide-spread wildfires that negatively impacted the Pacific Northwest region in 2021. Events such as these could cause damage to critical facilities and equipment, result in significant operational disruption and have meaningfully adverse effects on our employees and the communities in which we operate. Additionally, even to the extent that significant weather events or changes in climate conditions do not directly impact our own facilities and/or operations, our business could be negatively impacted by events or more chronic climate conditions that disrupt or force longer-term changes in operations for our significant customers or suppliers, which could negatively impact the timing or overall volume of demand for our products or the cost and availability of critical raw materials, among other factors. Over time, widespread physical climate changes and risks could drive increases in other operational costs for our business, such as insurance costs.

Regulatory and Other Transition Risks. Increased worldwide focus on climate change has led to legislative and regulatory efforts to combat both potential causes and adverse impacts of climate change. New or more stringent laws and regulations related to greenhouse gas emissions, water usage and other climate change related concerns may adversely affect us, our suppliers and our customers. We have publicly disclosed efforts to reduce the energy intensity, freshwater intake intensity and greenhouse gas (GHG) emission of our operations, working consistently to enhance the environmental sustainability of our business by reducing our reliance on fossil fuel-based energy sources, promoting water reuse and other responsible water management practices, reducing waste and promoting recycling (including extensive use of recycled feedstock in our manufacturing processes) and ensuring our compliance with applicable environmental regulations. Notably, our announced exit from the production of standard stainless sheet products is expected to meaningfully reduce our use of some of our most energy-intensive melt operations, potentially driving future reductions in energy intensity and GHG emissions. Nevertheless, new and evolving laws and regulations could mandate different or more restrictive standards, increase operating costs, require (or cause customers to require that we make) capital investments to transition to low carbon technologies or purchase carbon credits, or otherwise adversely impact our ongoing operations. Our suppliers may face similar challenges and incur additional compliance costs that are passed on to us. These direct and indirect costs may adversely impact our results.

Market and Reputational Risks. Technology to support the transition to lower-carbon operations within the timeframe that could be required by future regulation or expected in the future by our customers may not be available at the scale necessary to support our operations, in a timely or cost-effective manner, or at all. It is possible that, over time, due to both regulatory action and/or changing customer and societal norms and expectations regarding the causes and importance of climate change issues, demand for products in one or more of our significant end markets could decline or, if we fail to keep pace with changing demand and technological advancement, shift in favor of products that we do not produce. If we fail to appropriately adapt to the expectations of our customers or other stakeholders, fail to achieve or properly report progress toward our environmental sustainability goals and targets or otherwise are perceived as failing to adequately address climate change concerns, the resulting negative perceptions could adversely affect our business, reputation and access to capital.

Risks Associated with Other Environmental Compliance Matters. We are subject to various domestic and international environmental laws and regulations that govern the discharge of pollutants and disposal of wastes, and which may require that we investigate and remediate the effects of the release or disposal of materials at sites associated with past and present operations. We could incur substantial cleanup costs, fines and civil or criminal sanctions, third party property damage or personal injury claims as a result of violations or liabilities under these laws or non-compliance with environmental permits required at our facilities. We are currently involved in the investigation and remediation of a number of our current and former

sites as well as third party sites. We also could be subject to future laws and regulations that govern greenhouse gas emissions and various matters related to climate change and other air emissions, which could increase our operating costs. With respect to proceedings brought under the federal Superfund laws, or similar state statutes, we have been identified as a potentially responsible party (PRP) at approximately 40 of such sites, excluding those at which we believe we have no future liability. Our involvement is limited or de minimis at approximately 20 of these sites, the potential loss exposure with respect to 15 individual sites is not considered to be material, and the potential loss exposure on the remaining 5 sites could be material. We are a party to various cost-sharing arrangements with other PRPs at many of the sites. The terms of the cost-sharing arrangements are subject to non-disclosure agreements as confidential information. Nevertheless, the cost-sharing arrangements generally require all PRPs to post financial assurance of the performance of the obligations or to pre-pay into an escrow or trust account their share of anticipated site-related costs. In addition, the Federal government, through various agencies, is a party to several such arrangements.

We believe that we operate our businesses in compliance in all material respects with applicable environmental laws and regulations. However, from time-to-time, we are a party to lawsuits and other proceedings involving alleged violations of, or liabilities arising from, environmental laws. When our liability is probable and we can reasonably estimate our costs, we record environmental liabilities in our financial statements. In many cases, we are not able to determine whether we are liable or if liability is probable or to reasonably estimate the loss or range of loss. Estimates of our liability remain subject to additional uncertainties, including the nature and extent of site contamination, available remediation alternatives, the extent of corrective actions that may be required, and the participation number and financial condition of other PRPs, as well as the extent of their responsibility for the remediation. We intend to adjust our accruals to reflect new information as appropriate. Future adjustments could have a material adverse effect on our results of operations in a given period, but we cannot reliably predict the amounts of such future adjustments. At December 31, 2021, our reserves for environmental matters totaled approximately \$13 million. Based on currently available information, we do not believe that there is a reasonable possibility that a loss exceeding the amount already accrued for any of the sites with which we are currently associated (either individually or in the aggregate) will be an amount that would be material to a decision to buy or sell our securities. Future developments, administrative actions or liabilities relating to environmental matters, however, could have a material adverse effect on our financial condition or results of operations.

RISKS RELATED TO THE COVID-19 PANDEMIC

Impacts on the End-Markets that We Serve and Demand for Our Products. The COVID-19 pandemic, including governmental and other actions taken or restrictions imposed to contain its spread and impact, has subjected our operations, financial performance and financial condition to a number of risks including, but not limited to, those discussed below. The significant macroeconomic impact of the ongoing COVID-19 pandemic and the measures designed to contain its spread impacted several of the Company's end markets. Although we are beginning to see improvements in end market demand, we continue to experience lower demand and volume for certain products and services than we generally experienced prior to the onset of the pandemic. Our sales to customers in markets that are affected by COVID-19 have been negatively impacted, and the possibility exists that there could be ongoing impacts to our operations and financial results. For example, a significant portion of our sales represent products sold to customers in the commercial aerospace industry, which in general were significantly impacted by the pandemic and took various measures in response, including efforts to reduce inventory and/or downward adjustments to their stated production rates. As the pandemic subsides and related travel and other restrictions are lifted, we are experiencing improved demand, but demand recovery to pre-pandemic levels may be uneven or generally occur more slowly than anticipated. Similarly, in recent years, our business has at times been negatively impacted by the downturn and slow recovery in the oil & gas industry, including as a result of the pandemic, and the ultimate strength and pace of recovery in the energy industry is uncertain. The ultimate breadth and duration of these trends and their impact on our business is difficult to predict.

Impacts to Our Supply Chain. To date, we have not experienced significant disruption to our supply chain as a result of the pandemic. However, it remains possible at some point that due to the ongoing impact of the pandemic, one or more of our suppliers may not have the materials, capacity, or capability to supply products that we require according to our schedule and specifications. In that case, we may need to seek alternate suppliers, which may be more expensive, may not be available or may result in delays in shipments to us and subsequently to our customers, each of which would affect our business, results of operations, financial condition and/or cash flows.

Risk of Operational Disruption. In general throughout the pandemic, our facilities continued to operate with federal and state government approvals due to the qualification of our facilities as essential and critical. However, we have experienced and may again in the future experience the temporary shut down of facilities in response to employees being impacted by COVID-19 or changes in government policy.

Impacts on Financial and Credit Markets. Any continued pandemic-related financial market volatility could pose heightened risks to our liquidity, access to capital markets and cost of funds, which could adversely affect our business, financial position, results of operations and/or cash flows.

OTHER OPERATIONAL AND STRATEGIC RISKS

Export Sales and International Trade Matters. We believe that export sales will continue to account for a significant percentage of our future revenues. We also import certain raw materials that are important to our business, including nickel, zirconium, niobium, chromium, cobalt, vanadium and titanium sponge, among others. Risks associated with such international trade include, among others: political and economic instability, including weak conditions in the world's economies; accounts receivable collection; export controls; trade sanctions; changes in legal and regulatory requirements; policy changes affecting the markets for our products; changes in tax laws; and exchange rate fluctuations (which may affect sales to international customers and the value of profits earned on export sales when converted into dollars). Any of these factors could materially adversely affect our results for the period in which they occur.

Additionally, changes in international trade duties and other aspects of international trade policy, both in the U.S. and abroad, could materially impact our business. Moreover, tariffs, or other changes in U.S. trade policy, have resulted in and may continue to trigger, retaliatory actions by affected countries. Certain foreign governments have instituted or considered imposing trade sanctions on certain U.S. goods, or taking action to deny U.S. companies access to critical raw materials, in response to U.S. trade actions. A "trade war" of this nature or other governmental action related to tariffs or international trade agreements or policies has the potential to adversely impact demand for our products, our costs, customers, suppliers and/or the U.S. economy or certain sectors thereof and, thus, to adversely impact our businesses.

Political and Social Turmoil. The war on terrorism as well as political and social turmoil could put pressure on economic conditions in the United States and worldwide. These political, social and economic conditions could make it difficult for us, our suppliers, and our customers to forecast accurately and plan future business activities, and could adversely affect the financial condition of our suppliers and customers and affect customer decisions as to the amount and timing of purchases from us. As a result, our business, financial condition and results of operations could be materially adversely affected.

Risks Associated with Strategic Capital Projects and Maintenance Activities. From time-to-time, we undertake strategic capital projects in order to enhance, expand and/or upgrade our facilities and operational capabilities. Our ability to achieve the anticipated increased revenues or otherwise realize acceptable returns on these investments or other strategic capital projects that we may undertake is subject to a number of risks, many of which are beyond our control, including a variety of market, operational, permitting, and labor-related factors. In addition, the cost to implement any given strategic capital project ultimately may prove to be greater than originally anticipated. If we are not able to achieve the anticipated results from the implementation of any of our strategic capital projects, or if we incur unanticipated implementation costs or delays, our results of operations and financial position may be materially adversely affected. Additionally, we periodically undertake maintenance activities, routine or otherwise, involving facilities and pieces of equipment that are key to our operations, and it is possible that unanticipated maintenance needs, or unanticipated circumstances arising in connection with planned maintenance activities could result in equipment outages that are longer, or costs that exceed, those originally anticipated. Significant repair delays or unanticipated costs associated with these activities could have a negative impact on our results of operations and financial condition.

Risks Associated with Current or Future Litigation and Claims. A number of lawsuits, claims and proceedings have been or may be asserted against us relating to the conduct of our currently and formerly owned businesses, including those pertaining to product liability, patent infringement, commercial disputes, government contracting, employment matters, employee and retiree benefits, taxes, environmental matters, health and safety and occupational disease, and stockholder and corporate governance matters. Due to the uncertainties of litigation, we can give no assurance that we will prevail on all claims made against us in the lawsuits that we currently face or that additional claims will not be made against us in the future. While the outcome of litigation cannot be predicted with certainty, and some of these lawsuits, claims or proceedings may be determined adversely to us, we do not believe that the disposition of any such pending matters is likely to have a material adverse effect on our financial condition or liquidity, although the resolution in any reporting period of one or more of these matters could have a material adverse effect on our results of operations for that period. Also, we can give no assurance that any other claims brought in the future will not have a material effect on our financial condition, liquidity or results of operations.

Risks Associated with Insurance Coverage. We have maintained various forms of insurance, including insurance covering claims related to our properties and risks associated with our operations. Our existing property and liability insurance coverages contain exclusions and limitations on coverage. From time-to-time, in connection with renewals of insurance, we have experienced additional exclusions and limitations on coverage, larger self-insured retentions and deductibles, and significantly higher premiums. As a result, in the future our insurance coverage may not cover claims to the extent that it has in

the past and the costs that we incur to procure insurance may increase significantly, either of which could have an adverse effect on our results of operations.

Risks Associated with Acquisition and Disposition Strategies. We intend to continue to strategically position our businesses in order to improve our ability to compete. Strategies we employ to accomplish this may include seeking new or expanding existing specialty market niches for our products, expanding our global presence, acquiring businesses complementary to existing strengths, and continually evaluating the performance and strategic fit of our existing business units. From time-to-time, management holds discussions with management of other companies to explore acquisitions, joint ventures, and other business combination opportunities as well as possible business unit dispositions. As a result, the relative makeup of the businesses comprising our Company is subject to change. Acquisitions, joint ventures, and other business combinations involve various inherent risks, such as: assessing accurately the value, strengths, weaknesses, contingent and other liabilities and potential profitability of acquisition or other transaction candidates; the potential loss of key personnel of an acquired business; our ability to achieve identified financial and operating synergies, growth or other benefits anticipated to result from an acquisition or other transaction; and unanticipated changes in business and economic conditions affecting an acquisition or other transaction. International acquisitions and other transactions could be affected by export controls, exchange rate fluctuations, domestic and foreign political conditions, changes in tax laws and a deterioration in domestic and foreign economic conditions.

Risks Associated with Government Contracts. Some of our operating units perform contractual work directly or indirectly for the U.S. Government, which requires compliance with laws and regulations relating to the performance of Government contracts. Various claims (whether based on U.S. Government or Company audits and investigations or otherwise) could be asserted against us related to our U.S. Government contract work. Depending on the circumstances and the outcome, such proceedings could result in fines, penalties, compensatory and treble damages or the cancellation or suspension of payments under one or more U.S. Government contracts. Under government regulations, a company, or one or more of its operating divisions or units, can also be suspended or debarred from government contracts based on the results of investigations.

RISKS ASSOCIATED WITH OUR INDEBTEDNESS; OTHER FINANCIAL AND FINANCIAL ACCOUNTING RISKS

Risks Associated with Indebtedness. Our substantial indebtedness could adversely affect our business, financial condition or results of operations and prevent us from fulfilling our obligations under our outstanding indebtedness. As of December 31, 2021, our total consolidated indebtedness was approximately \$1.8 billion. This substantial level of indebtedness increases the risk that we may be unable to generate enough cash to pay amounts due in respect of our indebtedness. Our substantial indebtedness could have important consequences to our stockholders and significant effects on our business. For example, it could:

- make it more difficult for us to satisfy our obligations with respect to our outstanding indebtedness;
- increase our vulnerability to general adverse economic and industry conditions;
- require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow to fund working capital, capital expenditures, our strategic growth initiatives and development efforts and other general corporate purposes;
- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate;
- restrict us from taking advantage of business opportunities;
- place us at a competitive disadvantage compared to our competitors that have less indebtedness; and
- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions, debt service requirements, execution of our business strategy or other general corporate purposes.

In addition, the agreements that govern our current indebtedness contain, and the agreements that may govern any future indebtedness that we may incur may contain, financial and other restrictive covenants that could limit our ability to engage in activities that may be in our long-term best interests. Our failure to comply with those covenants could result in an event of default that, if not cured or waived, could result in the acceleration of all of our debt.

In addition, our variable rate indebtedness, including loans outstanding from time to time under our Asset Based Lending (ABL) Credit Facility, may use London Interbank Offering Rate (“LIBOR”) as a benchmark for establishing the rate. In 2017, the United Kingdom’s Financial Conduct Authority announced that it intends to stop persuading or compelling banks to submit LIBOR rates after 2021. In March 2021, relevant regulators confirmed that the publication of the one-week and two-month U.S. dollar LIBOR would cease after December 31, 2021, and all remaining U.S. dollar LIBOR tenors would cease after June 30, 2023. Our ABL credit facility includes provisions intended to provide for such transitions, but the potential consequences of these changes cannot be fully predicted and could impact the cost of our variable rate indebtedness or the cost or value of

other financial obligations or extensions of credit held by or due to us from time to time, which could adversely affect our financial condition.

Risks Associated with Retirement Benefits. At December 31, 2021, our defined benefit pension plans were approximately 84% funded as calculated in accordance with U.S. generally accepted accounting principles. As a result of the American Rescue Plan Act (ARPA) enacted in March 2021, the rules governing pension funding calculations changed. Based on current actuarial assumptions, we are not required to make any contributions to our U.S. qualified defined benefit pension plans during fiscal year 2022, and our prior contributions have generated a credit balance that may be utilized to offset future minimum required contributions. We currently expect to make voluntary cash contributions of approximately \$50 million to these plans in 2022. Using our long-term weighted average expected rate of return on pension plan assets and other actuarial assumptions, we do not expect to have any minimum cash funding requirements to these pension plans for the next few years after 2022. However, these estimates are subject to significant uncertainty, including the performance of our pension trust assets. Depending on the timing and amount, a requirement that we fund the U.S. qualified defined benefit pension plans could have a material adverse effect on our results of operations and financial condition.

Goodwill or Long-Lived Asset Impairments. We have various long-lived assets that are subject to impairment testing. We review the recoverability of goodwill annually, or more frequently whenever significant events or changes in circumstances indicate that the recorded goodwill of a reporting unit may be below that reporting unit's fair value. Our businesses operate in highly cyclical industries, such as commercial aerospace and oil & gas, and as such, our estimates of future cash flows, market demand, the cost of capital, and forecasted growth rates and other factors may fluctuate, which may lead to changes in estimated fair value and, therefore, impairment charges in future periods. For the 2021 annual goodwill impairment evaluation, both of our reporting units with goodwill had fair values that were in excess of carrying value. Additionally, we have a significant amount of property, plant and equipment and acquired intangible assets that may be subject to impairment testing, depending on factors such as market conditions, the demand for our products, and facility utilization levels. Any determination requiring the impairment of a significant portion of goodwill or other long-lived assets has had, and may in the future have, a negative impact on our financial condition and results of operations.

In connection with our December 2020 announcements regarding our plans to cease production of certain lower-margin standard stainless sheet products, our 2020 results included \$1,041.5 million of long-lived asset non-cash impairment charges, primarily related to our HRPF and certain stainless steel melting and finishing operations that are part of the AA&S segment's Brackenridge, Pennsylvania operations. We also recognized an interim goodwill impairment charge of \$287.0 million in the second quarter of 2020 for the partial impairment of goodwill at our Forged Products reporting unit in the HPMC segment based on changes in the timing and amount of expected cash flows resulting from lower projected revenues, including recent disruptions to the global commercial aerospace market resulting from the COVID-19 pandemic, and the increasing uncertainty of near-term demand requirements of aero-engine and airframe markets based on government responses to the pandemic and ongoing interactions with customers.

Internal Controls Over Financial Reporting. 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.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our principal domestic facilities for our HPMC segment include melting operations and production facilities that perform processing and finishing operations. Domestic melting operations are located in Monroe and Bakers, NC, and Lockport, NY (vacuum induction melting, vacuum arc re-melt, electro-slag re-melt, plasma melting). Production of high performance materials, most of which are in long product form, takes place at our domestic facilities in Monroe and Bakers, NC, Lockport, NY, Richburg, SC, and Oakdale, PA. Our production of highly engineered forgings and machined components takes place at facilities in Cudahy, Appleton and Coon Valley, WI, East Hartford, CT, and Irvine, CA. Metal alloy-based additive manufacturing for the aerospace & defense industries takes place in New Britain, CT.

Within the AA&S segment, our production of zirconium and related specialty alloys takes place at facilities located in Millersburg, OR and Huntsville, AL. Titanium melting operations are located in Richland, WA (electron beam melting), and Albany, OR (vacuum arc re-melt). Our principal AA&S locations for melting stainless steel and other flat-rolled specialty materials are located in Brackenridge and Latrobe, PA. Hot-rolling is performed at our domestic facilities in Brackenridge and Washington, PA. Finishing of our flat-rolled products takes place at our domestic facilities located in Vandergrift, Washington,

Rochester, Monaca, and Zelienople, PA, and in New Bedford, MA, Louisville, OH, and Bridgeview, IL. Substantially all of our properties are owned.

We also own or lease facilities in a number of foreign countries, including France, Germany, the United Kingdom, Poland, and the People's Republic of China. We own and/or lease and operate facilities for melting and re-melting, machining and bar mill operations, and have laboratories and offices in Sheffield, England. We own highly engineered forging and machining operations in Stalowa Wola, Poland. Through our STAL joint venture, we operate facilities for finishing PRS products in the Xin-Zhuang Industrial Zone, Shanghai, China.

Our corporate headquarters in Pittsburgh, PA and our executive office in Dallas, TX are leased.

Although our facilities vary in terms of age and condition, we believe that they have been well maintained and are in sufficient condition for us to carry on our activities. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" for further discussion of these impacts.

Item 3. Legal Proceedings

From time-to-time, we become involved in various lawsuits, claims and proceedings relating to the conduct of our current and formerly owned businesses, including those pertaining to product liability, environmental, health and safety matters and occupational disease (including as each relates to alleged asbestos exposure), as well as patent infringement, commercial, government contracting, construction, employment, employee and retiree benefits, taxes, environmental, and stockholder and corporate governance matters. While we cannot predict the outcome of any lawsuit, claim or proceeding, our management believes that the disposition of any pending matters is not likely to have a material adverse effect on our financial condition or liquidity. The resolution in any reporting period of one or more of these matters, including those described above, however, could have a material adverse effect on our results of operations for that period.

Information relating to legal proceedings is included in Note 21. Commitments and Contingencies of the Notes to Consolidated Financial Statements and incorporated herein by reference.

ATI Titanium LLC (ATI Titanium), a subsidiary of Allegheny Technologies Incorporated, is party to a lawsuit captioned US Magnesium, LLC v. ATI Titanium LLC (Case No. 2:17-cv-00923-DB) and filed in federal district court in Salt Lake City, UT, pertaining to a Supply and Operating Agreement between US Magnesium LLC (USM) and ATI Titanium entered into in 2006 (the Supply Agreement). In 2016, ATI Titanium notified USM that it would suspend performance under the Supply Agreement in reliance on certain terms and conditions included in the Supply Agreement. USM subsequently filed a claim challenging ATI Titanium's right to suspend performance under the Supply Agreement, claiming that such suspension was a material breach of the Supply Agreement and seeking monetary damages, and ATI Titanium filed a counterclaim for breach of contract against USM. In 2018, USM obtained leave of the court to add Allegheny Technologies Incorporated as a separate party defendant, and ATI Titanium filed a motion to dismiss the claim against Allegheny Technologies Incorporated, which the court denied on April 19, 2019. After the conclusion of discovery, Allegheny Technologies Incorporated filed a motion for summary judgment. On August 17, 2021, the court granted the motion, and entered summary judgment in favor of Allegheny Technologies Incorporated finding that it is not the alter ego of ATI Titanium and that it did not breach any obligations allegedly owed to USM. A trial date has been set for October 11, 2022. While ATI Titanium intends to vigorously defend against and pursue these claims, it cannot predict their outcomes at this time.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

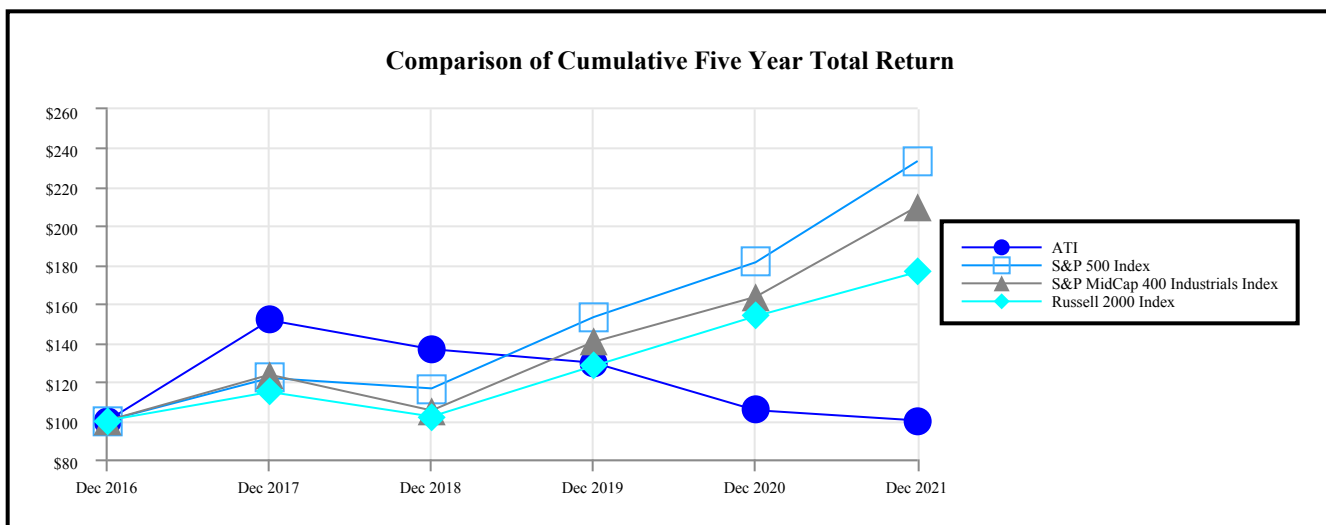
Item 5. Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Common Stock Prices

Our common stock is traded on the New York Stock Exchange (symbol ATI). At February 4, 2022, there were 2,280 record holders of Allegheny Technologies Incorporated common stock. We do not currently pay a quarterly dividend. The payment of dividends and the amount of such dividends depends upon matters deemed relevant by our Board of Directors, such as our results of operations, financial condition, cash requirements, future prospects, any limitations imposed by law, credit agreements or senior securities, and other factors deemed relevant and appropriate. Our Asset Based Lending (ABL) Credit Facility restricts our ability to pay dividends in certain circumstances. For more information on the restrictions under our ABL facility, see Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations - Financial Condition and Liquidity - Dividends."

Cumulative Total Stockholder Return

The graph set forth below shows the cumulative total stockholder return (i.e., price change plus reinvestment of dividends) on our common stock from December 31, 2016 through December 31, 2021, as compared to the S&P 500 Index, the S&P MidCap 400 Industrials Index and the Russell 2000 Index. The graph assumes that \$100 was invested on December 31, 2016. The stock performance information included in this graph is based on historical results and is not necessarily indicative of future stock price performance.



Company / Index	Dec 2016	Dec 2017	Dec 2018	Dec 2019	Dec 2020	Dec 2021
ATI	100.00	151.54	136.66	129.69	105.27	100.00
S&P 500 Index	100.00	121.83	116.49	153.17	181.35	233.41
S&P MidCap 400 Industrials Index	100.00	123.54	105.15	140.43	163.58	210.11
Russell 2000 Index	100.00	114.65	102.02	128.06	153.62	176.39

Source: Standard & Poor's

Item 6. Selected Financial Data

Not Applicable.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Certain statements contained in this Management's Discussion and Analysis of Financial Condition and Results of Operations are forward-looking statements. Actual results or performance could differ materially from those encompassed within such forward-looking statements as a result of various factors, including those described below. Net income and net income per share amounts referenced below are attributable to Allegheny Technologies Incorporated and Subsidiaries.

ATI Overview

ATI is a global manufacturer of technically advanced specialty materials and complex components. Our largest markets are aerospace & defense, representing approximately 40% of total sales, led by products for jet engines. Additionally, we have a strong presence in the energy markets, including specialty energy, oil & gas and downstream processing. In aggregate, these markets represent about 60% of our revenue. ATI is a market leader in manufacturing differentiated products that require our materials science capabilities and unique process technologies, including our new product development competence.

We operate in two business segments: High Performance Materials & Components (HPMC) and Advanced Alloys & Solutions (AA&S). The HPMC segment's primary focus is on maximizing aero-engine materials and components growth, with approximately 75% of its revenue derived from the aerospace & defense markets including over 40% of its revenue from products for commercial jet engines. Commercial aerospace products have been the main source of sales and EBITDA growth for HPMC over the last several years, and are expected to continue to drive HPMC and overall ATI results as demand from these markets recovers from reduced 2020 levels resulting from the COVID-19 pandemic. Other major HPMC end markets include medical and energy. HPMC produces a wide range of high performance materials, components, and advanced metallic powder alloys. These are made from nickel-based alloys and superalloys, titanium and titanium-based alloys, and a variety of other specialty materials. Capabilities range from cast/wrought and powder alloy development to final production of highly

engineered finished components, including those used for next-generation jet engine forgings and 3D-printed aerospace products.

The AA&S segment is focused on delivering high-value flat products primarily to the energy, aerospace, and defense end-markets, which comprise approximately 45% of its revenue. Other important end markets for AA&S include automotive and electronics. AA&S produces nickel-based alloys, titanium and titanium-based alloys, and specialty alloys in a variety of forms including plate, sheet, and strip products. On December 2, 2020, we announced a strategic repositioning of our SRP business, which includes exiting lower-margin standard stainless sheet products, streamlining the production footprint of the AA&S segment and making certain capital investments to increase our focus on higher-margin products and our aerospace & defense end markets. We remain on track to complete our transformation of the SRP business and exit sales of lower-margin standard stainless sheet products in the first half of 2022.

Overview of 2021 Financial Performance

Sales in 2021 decreased 6%, to \$2.80 billion, while gross profit increased 14%, to \$333 million, compared to 2020, as our end-markets begin to show signs of sustained recovery and we continue to recognize the benefits of 2020 cost cutting actions. Results for 2021 included \$40 million of net pre-tax charges as further described in the Results of Operations section. Results for 2020 included \$1.1 billion of restructuring and other charges, \$287 million of goodwill impairment charges, and \$22 million in debt extinguishment charges. Results in 2020 also reflect a \$78 million income tax provision primarily for valuation allowances on U.S. federal and state net deferred tax assets. The Company's net loss in 2021 was \$38.2 million, or (\$0.30) per share. Adjusted EBITDA for 2021 was \$290.9 million, or 10.4% of sales, compared to \$196.3 million, or 6.6% of sales, for 2020. See the Financial Condition and Liquidity section of Management's Discussion and Analysis for non-GAAP definitions and calculations.

Revenues in our largest end markets, aerospace & defense, decreased \$227 million, or 17%, compared to 2020, and represented 41% of our 2021 sales. International sales, including both U.S. exports and foreign sales from our foreign manufacturing operations, were \$1.26 billion in 2021 and represented 45% of total sales.

A summary of our results is as follows.

<i>(Dollars in millions, except per share amounts)</i>	2021	2020*	2019*
Sales	\$ 2,799.8	\$ 2,982.1	\$ 4,122.5
Gross profit	\$ 333.2	\$ 292.8	\$ 638.0
Gross profit % of sales	11.9 %	9.8 %	15.5 %
Operating income (loss)	\$ 117.6	\$ (1,302.7)	\$ 366.3
Income (loss) before income taxes	\$ 10.6	\$ (1,481.9)	\$ 236.5
Net income (loss)	\$ (38.2)	\$ (1,572.6)	\$ 252.5
Diluted net income (loss) per common share	\$ (0.30)	\$ (12.43)	\$ 1.81

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

Our major accomplishments during 2021 include the following:

- A return to profitability after a loss in 2020, with operating income of \$118 million. Results for the fourth quarter 2021 were our highest quarterly revenues and margins of the year as demand improved in key end markets, led by commercial jet engine products. For the full year 2021, Adjusted EBITDA margins were 10.4%, only 30 basis points below full year 2019, despite 32% lower revenues. We achieved our expected annual cost savings in 2021 from our 2020 restructuring actions and expect continued benefits, primarily to cost of sales and gross margin, from these structural changes in future periods.
- We completed a few significant capital projects that position us for the growth in aero engine demand, including the full qualification of our fourth iso-thermal press at our Iso-Thermal Forging Center of Excellence in Cudahy, WI. We also expanded heat-treating and machining capabilities in this business. We continue to make capital investments in support of our strategic growth initiatives, pacing our investments to have the installed asset base in service and qualified when needed for additional production capacity associated with long-term agreements, principally involving aerospace and defense markets customers.
- We continue to transform our SRP business and are on track to complete the footprint consolidation and exit standard stainless sheet product sales by mid-year 2022. In 2021, 93% of AA&S's sales were high-value products, a significant increase from 86% in 2020, reflecting an improved product mix and margin benefits from this effort. Fourth quarter 2021 AA&S sales were 96% high-value products, and we are no longer producing any new standard

stainless sheet products. Our AA&S sales would have been approximately \$250 million lower in 2020, and approximately \$110 million lower in 2021 without sales of standard stainless sheet products.

- We generated positive cash from operating activities in 2021, despite an \$81 million increase in managed working capital and \$67 million in contributions to ATI's U.S. defined benefit pension trust. As a result of our constant focus on our financial condition in another year of significant economic uncertainty, we ended the year with \$688 million of cash on hand and over \$1 billion of liquidity including our asset-based lending facility.
- In September 2021, ATI issued \$675 million of new unsecured senior notes, including \$325 million of 4.875% Senior Notes due 2029 (the 2029 Notes) and \$350 million of 5.125% Senior Notes due 2031 (the 2031 Notes). In October 2021, we used \$571 million of the proceeds from these debt issuances to retire \$500 million of higher cost debt due in 2023, along with accrued interest and required make-whole premium, and recognized an approximately \$66 million debt extinguishment charge. With these actions, we lowered annual interest expense and extended our debt maturity profile, with no significant debt maturities before 2024.
- We made further progress on our risk management strategy for retirement benefit obligations by completing a \$70 million pension risk transfer through the purchase of an annuity contract with a nationally recognized insurance company. This annuity buyout removed 7% of plan participants, bringing the total pension participant reduction to more than 60% over the past nine years. In addition, we continued to reduce our net pension liability, which was \$396 million, or 84% funded on a financial reporting basis as of December 31, 2021, a substantial improvement over the \$674 million, or 75% funded position at the end of 2020 due to strong pension asset performance, cash contributions to the pension trust, and benefits from higher discount rates at year-end 2021. We also recognized a \$65 million pretax gain on postretirement medical benefits and reduced our postretirement benefits liability by \$43 million as a result of a plan settlement.
- We voluntarily changed accounting methods for our business units that previously used the Last-in, First-Out (LIFO) costing method to a current costing method, which is how we manage these businesses and internally evaluate financial performance. This change had no impact on our 2021 or 2020 results, and aligns our inventory costing methods with the majority of our industry peers. Our 2019 results have been restated to reflect this change which had a \$5.1 million, or \$0.04 per share, unfavorable impact to our 2019 results. We expect lower earnings volatility in future periods as a result of this accounting method change.

Results of Operations

2021 Compared to 2020

Results for 2021 were sales of \$2.80 billion and income before tax of \$10.6 million, compared to sales of \$2.98 billion and a loss before tax of \$1,481.9 million in 2020. Our gross profit was \$333.2 million, or 11.9% of sales, a \$40.4 million increase compared to 2020, as our end-markets begin to show signs of sustained recovery and we continue to recognize the benefits of 2020 cost cutting actions. Results for 2021 included \$39.5 million of net pre-tax charges which consisted of the following:

- \$65.5 million debt extinguishment charge related to the redemption of our \$500 million of 5.875% Senior Notes due 2023 (2023 notes);
- \$63.2 million of strike-related costs arising from the 3 ½ month work stoppage by the USW, following expiration of a CBA, which began in March 2021, and predominantly impacted AA&S segment operations. A new CBA was ratified in July 2021. Strike-related costs primarily consisted of overhead costs recognized in the period due to below normal operating rates, higher costs for outside conversion activities, and signing bonuses for represented employees following CBA ratification;
- \$64.9 million retirement benefit settlement gain for a plan termination that eliminated certain postretirement medical benefit liabilities as a result of the new USW CBA;
- \$13.8 million gain on the sale of our Flowform Products business, which was sold for \$55 million in cash in August 2021. This business is reported as part of the HPMC segment through the date of sale. Flowform Products' sales were \$26 million in fiscal year 2020;
- \$10.5 million of net credits for restructuring and other charges, consisting of \$11.3 million of restructuring credits primarily for a reduction in severance-related reserves based on changes in planned operating rates and revised workforce reduction estimates, partially offset by \$0.8 million for inventory valuation reserves classified in cost of sales on the consolidated statement of operations.

The 2020 results included \$1,443.0 million of pretax charges which consisted of the following:

- \$1,132.1 million of restructuring and other charges;
- \$287.0 million for impairment of a portion of goodwill at our Forged Products operations;
- \$21.5 million for debt extinguishment on \$203.2 million, or 71%, of the principal balance of the outstanding 2022 Convertible Notes; and
- \$2.4 million of severance charges at our A&T Stainless joint venture.

The 2020 restructuring and other charges of \$1,132.1 million predominantly related to the Company's December 2020 announcement that it would cease production of standard stainless sheet products, significantly reducing the operating levels of the Brackenridge, PA operations, including the HRPF, and close various downstream finishing operations that were part of the standard stainless flow path. These restructuring and other charges consisted of the following:

- \$1,107.5 million of restructuring charges recorded on the consolidated statement of operations. These restructuring charges consist of \$1,041.5 million of non-cash long-lived asset impairment charges, primarily for the Brackenridge operations, \$60.5 million of employee benefit costs for hourly and salary employees, and \$5.5 million of other costs related to facility idlings.
- \$17.4 million of termination benefits for pension and postretirement medical obligations related to facility closures from the standard stainless exit. These costs are classified within nonoperating retirement benefit expense in the consolidated statements of operations.
- \$7.2 million of other charges for inventory valuation reserves, classified in cost of sales on the consolidated statement of operations, primarily related to the Albany, OR idled facility.

All of these items discussed above are excluded from segment EBITDA. The strike related costs, goodwill impairment, restructuring charges/credits and charges for inventory valuation reserves above are included in operating income (loss) on the consolidated statements of operations, which was operating income of \$117.6 million for 2021, compared to an operating loss of \$1,302.7 million for 2020.

Nonoperating items included \$37.2 million in nonoperating retirement benefit income in 2021, compared to expense of \$62.1 million in the prior year, reflecting the \$64.9 million retirement benefit settlement gain in 2021 and the \$17.4 million in termination benefits in 2020 related to facility closures discussed above. Other (nonoperating) income/expense in 2021 includes the \$13.8 million gain on the sale of the Flowform Products business discussed above. Other (nonoperating) income/expense for 2020 includes \$7.0 million of net losses from operating results of joint ventures accounted for under the equity method and \$2.4 million of severance charges at our A&T Stainless joint venture.

Results for 2021 included \$26.8 million of income tax expense, primarily for \$15.5 million in discrete tax effects related to the retirement benefit settlement gain. ATI continues to maintain a valuation allowance on its U.S. deferred tax assets. Results for 2020 include a \$77.7 million income tax charge primarily for deferred tax asset valuation allowances on our U.S. federal and state tax attributes, due to re-entering a three-year cumulative loss position for our U.S. results during the year. Net loss attributable to ATI was \$38.2 million, or (\$0.30) per share, in 2021, compared to a net loss attributable to ATI of \$1,572.6 million, or (\$12.43) per share, for 2020. Adjusted EBITDA was \$290.9 million, or 10.4% of sales, for 2021, and \$196.3 million, or 6.6% of sales, for 2020.

ATI proactively implemented workforce reduction initiatives in the fourth quarter 2019, and throughout 2020 in response to changed market conditions resulting from the COVID-19 pandemic, to better match our cost structure to expected demand. In 2020, we reduced company-wide employment levels by approximately 1,400 people, or about 17% of our total workforce. To help further mitigate the financial impact from reduced aerospace and consumer demand levels stemming from the COVID-19 pandemic, we implemented 2020 cost reduction efforts including the temporary idling of operations to reduce costs and inventory, salary reductions for a substantial portion of our staff, reductions in 401(k) benefits for nearly all employees, furlough of non-essential positions, and significant reductions in capital expenditures and corporate expenses. Our 2021 results reflect the favorable impacts of these 2020 workforce reduction initiatives and the ongoing recovery across many of our key end markets, most notably jet engine materials and components, compared to the prior year. Additionally, we continued our strategic transformation efforts in 2021 within the AA&S segment to eliminate production of lower-margin standard stainless sheet products in the SRP business.

2020 Compared to 2019

Results for 2020 were sales of \$2.98 billion and loss before tax of \$1,481.9 million, compared to sales of \$4.12 billion and income before tax of \$236.5 million in 2019. Results in 2019 included \$95 million of sales and minimal segment operating profit related to the divested titanium investment castings and industrial forgings businesses. Our gross profit was \$292.8 million, or 9.8% of sales, in 2020, a \$345.2 million decline compared to 2019, reflecting COVID-19 impacts.

The 2020 results included \$1,443.0 million of pretax charges discussed above, all of which are excluded from segment EBITDA and consisted primarily of restructuring and other charges, goodwill impairment, and debt extinguishment charges. The 2019 results included the following pretax charges, all of which are excluded from segment EBITDA:

- \$4.5 million restructuring charge for severance obligations to streamline ATI's salaried workforce, primarily to improve the cost competitiveness of the U.S.-based SRP business;
- \$21.6 million for debt extinguishment on the \$500 million 5.95% Senior Notes due 2021 (2021 Notes); and
- \$11.4 million impairment charge for our A&T Stainless joint venture.

The goodwill impairment, restructuring charges and charges for inventory valuation reserves above are included in operating income (loss) on the consolidated statements of operations, which was an operating loss of \$1,302.7 million for 2020, compared to operating income of \$366.3 million for 2019. Nonoperating items included a reduction in nonoperating retirement benefit expense of \$11.5 million in 2020, compared to the prior year period, despite the \$17.4 million in termination benefits related to facility closures discussed above. Other (nonoperating) income/expense for 2020 included \$7.0 million of net losses from operating results of joint ventures accounted for under the equity method and \$2.4 million of severance charges at our A&T Stainless joint venture. Other (nonoperating) income/expense for 2019 included \$84.6 million in net gains from non-core asset sales, consisting of a \$91.7 million gain to monetize oil and gas rights and a \$6.2 million gain on the sale of the Company's Cast Products business, partially offset by an \$13.3 million loss on the sale of two non-core forging facilities, located in Portland, IN and Lebanon, KY. Results for 2019 also include an \$11.4 million A&T Stainless joint venture impairment charge and \$10.7 million of net losses from operating results of joint ventures accounted for under the equity method. Equity method joint venture operating results are included in the results of the AA&S segment.

Results for 2020 include a \$77.7 million income tax charge primarily related to deferred tax asset valuation allowances on our U.S. federal and state tax attributes, due to re-entering a three-year cumulative loss position for our U.S. results during the year. Results in 2019 included a \$28.5 million income tax benefit, as we determined as of December 31, 2019 that we were no longer in a three year cumulative loss position and a substantial portion of our income tax valuation allowances were no longer required, resulting in a \$45.1 million discrete tax benefit. Net loss attributable to ATI was \$1,572.6 million, or (\$12.43) per share, in 2020, compared to net income attributable to ATI of \$252.5 million, or \$1.81 per share, for 2019. Adjusted EBITDA was \$196.3 million, or 6.6% of sales, for 2020, and \$439.5 million, or 10.7% of sales, for 2019.

Results by Business Segment

We operated in two business segments during 2021, HPMC and AA&S, and management evaluates financial results on this basis. HPMC sales in 2021 were consistent with 2020, as 68% and 26% increases in the energy and medical markets, respectively, were offset by a 12% decrease in sales to the aerospace & defense markets, which comprise 72% of the sales in this segment, due to declines in the commercial aerospace market demand resulting from the COVID-19 pandemic. While full year HPMC 2021 sales were in line with 2020, the prior year included results before the effects of the COVID-19 pandemic. Fourth quarter 2021 HPMC sales were 41% higher than the fourth quarter 2020, as commercial aerospace end market demand recovers. Sales decreased 10% in 2021 in the AA&S segment, reflecting the exit of standard stainless sheet products and lower sales across all major markets with the exception of the automotive and electronics markets, particularly a 28% decline in sales to the aerospace & defense markets and a 19% decrease in energy market sales. HPMC sales decreased in 2020 compared to 2019 by 41%, driven by a 42% decrease in sales to the aerospace & defense markets, which comprised 81% of the sales in this segment, due to declines in demand for products to the commercial aerospace market resulting from the COVID-19 pandemic. Sales decreased 15% in 2020 compared to 2019 in the AA&S segment, reflecting lower sales across most markets, particularly an 18% decline in sales to the aerospace & defense markets and a 20% decrease in energy market sales.

Total segment EBITDA was \$351.6 million, or 12.6% of sales, in 2021, compared to total segment EBITDA of \$244.6 million, or 8.2% of sales, in 2020 and \$528.8 million, or 12.8% of sales, in 2019. Our measure of segment EBITDA, which we use to analyze the performance and results of our business segments, excludes all effects of income taxes, depreciation and amortization, corporate expenses, net interest expense, closed operations and other expenses, charges for goodwill and asset impairments, restructuring and other charges, debt extinguishment charges and non-operating gains or losses. Results on our management basis of reporting were as follows (in millions):

	Fiscal Year Ended		
	December 31, 2021	December 31, 2020*	December 31, 2019*
Sales:			
High Performance Materials & Components	\$ 1,155.1	\$ 1,164.6	\$ 1,978.5
Advanced Alloys & Solutions	1,644.7	1,817.5	2,144.0
Total external sales	\$ 2,799.8	\$ 2,982.1	\$ 4,122.5
EBITDA:			
High Performance Materials & Components	\$ 159.9	\$ 129.6	\$ 356.2
% of Sales	13.8 %	11.1 %	18.0 %
Advanced Alloys & Solutions	191.7	115.0	172.6
% of Sales	11.7 %	6.3 %	8.1 %
Total segment EBITDA	351.6	244.6	528.8
% of Sales	12.6 %	8.2 %	12.8 %
Corporate expenses	(55.9)	(40.9)	(65.3)
Closed operations and other expenses	(4.8)	(7.4)	(24.0)
Total ATI Adjusted EBITDA	290.9	196.3	439.5
Depreciation & amortization	(143.9)	(143.3)	(151.1)
Interest expense, net	(96.9)	(94.4)	(99.0)
Restructuring and other credits (charges)	10.5	(1,132.1)	(4.5)
Strike related costs	(63.2)	—	—
Retirement benefit settlement gain	64.9	—	—
Impairment of goodwill	—	(287.0)	—
Joint venture restructuring and impairment charges	—	(2.4)	(11.4)
Debt extinguishment charge	(65.5)	(21.5)	(21.6)
Gains on asset sales and sale of business, net	13.8	2.5	84.6
Income (loss) before income taxes	\$ 10.6	\$ (1,481.9)	\$ 236.5

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

Comparative information for our overall revenues (in millions) by end market, including divested businesses prior to sale, and their respective percentages of total revenues is as follows:

Market	2021		2020		2019	
Aerospace & Defense:						
Jet Engines- Commercial	\$ 517.2	19 %	\$ 600.9	20 %	\$ 1,186.4	29 %
Airframes- Commercial	262.7	9 %	410.8	14 %	639.2	16 %
Defense	352.8	13 %	348.3	12 %	304.8	7 %
Total Aerospace & Defense	1,132.7	41 %	1,360.0	46 %	2,130.4	52 %
Energy:						
Oil & Gas	332.3	12 %	365.7	12 %	510.7	12 %
Specialty Energy	259.6	9 %	253.2	9 %	286.2	7 %
Total Energy	591.9	21 %	618.9	21 %	796.9	19 %
Automotive	305.1	11 %	263.2	9 %	296.6	7 %
Electronics	215.1	8 %	177.7	6 %	163.2	4 %
Food Equipment & Appliances	153.1	5 %	159.2	5 %	205.8	5 %
Medical	131.5	5 %	119.1	4 %	172.4	4 %
Construction/Mining	122.2	4 %	142.0	5 %	195.0	5 %
Other	148.2	5 %	142.0	4 %	162.2	4 %
Total	\$ 2,799.8	100 %	\$ 2,982.1	100 %	\$ 4,122.5	100 %

Comparative information for our major high-value and standard products, including divested businesses prior to sale, based on their percentages of revenues is as follows. In conjunction with its announced ongoing exit from production and sale of standard stainless sheet products, ATI reclassified certain items in the AA&S segment as High-Value Products. Prior period information reflects these reclassifications. HRPF conversion service sales in the AA&S segment are excluded from this presentation. We expect to cease production of lower-margin standard stainless sheet products in the first half of 2022.

For the Years Ended December 31,	2021	2020	2019
High-Value Products			
Nickel-based alloys and specialty alloys	39 %	36 %	39 %
PRS products	19 %	15 %	12 %
Precision forgings, castings and components	16 %	14 %	18 %
Titanium and titanium-based alloys	12 %	17 %	18 %
Zirconium and related alloys	10 %	9 %	6 %
Total High-Value Products	96 %	91 %	93 %
Standard Products			
Total Standard Products	4 %	9 %	7 %
Grand Total	100 %	100 %	100 %

Sales by geographic area (in millions), including divested businesses prior to sale, and as a percentage of total sales, were as follows:

For the Years Ended December 31,	2021		2020		2019	
United States	\$ 1,534.9	55 %	\$ 1,809.1	61 %	\$2,454.6	58 %
Asia	593.8	21 %	516.6	17 %	638.1	15 %
Europe	475.1	17 %	479.3	16 %	800.0	22 %
Canada	75.9	3 %	68.9	2 %	106.3	2 %
Other	120.1	4 %	108.2	4 %	123.5	3 %
Total sales	\$ 2,799.8	100 %	\$ 2,982.1	100 %	\$4,122.5	100 %

Information with respect to our business segments follows.

High Performance Materials & Components

<i>(In millions)</i>	2021	% Change	2020	% Change	2019
Sales to external customers	\$ 1,155.1	(1)%	\$ 1,164.6	(41)%	\$ 1,978.5
Segment EBITDA	\$ 159.9	23 %	\$ 129.6	(64)%	\$ 356.2
Segment EBITDA as a percentage of sales	13.8 %		11.1 %		18.0 %
International sales as a percentage of sales	50.5 %		45.0 %		47.3 %

Our HPMC segment produces a wide range of high performance materials, including titanium and titanium-based alloys, nickel- and cobalt-based alloys and superalloys, advanced powder alloys and other specialty materials, in long product forms such as ingot, billet, bar, rod, wire, shapes and rectangles, and seamless tubes, plus precision forgings, components, and machined parts.

2021 Compared to 2020

Sales for the HPMC segment in 2021 were consistent with 2020 at \$1.16 billion. Sales to the aerospace & defense markets, which were 72% of 2021 HPMC sales, were 12% lower, reflecting a 20% decrease in sales to the commercial aerospace market resulting from the global COVID-19 pandemic, partially offset by a 20% increase in defense sales. Sales of next generation jet engine products represented 43% of total 2021 HPMC jet engine product sales and were consistent with 2020 levels. Sales in the energy market were 68% higher, driven by demand for materials for specialty energy applications. Sales in the medical market also increased by 26% compared to 2020. In August 2021, we sold our small Flowform Products business, which produces thin-walled components primarily for defense market applications. This business is reported as part of the HPMC segment through the date of sale. Flowform Products' sales were \$26 million in 2020. The divestiture is not expected to have a material impact on future HPMC results.

Comparative information for our HPMC segment revenues (in millions) by market, the respective percentages of overall segment revenues for the years ended 2021 and 2020, and the percentage change in revenues by market for 2021 is as follows:

Market	2021		2020		Change	
Aerospace & Defense:						
Jet Engines- Commercial	\$ 480.9	42 %	\$ 542.7	46 %	\$ (61.8)	(11)%
Airframes- Commercial	132.8	11 %	219.8	19 %	(87.0)	(40)%
Defense	221.8	19 %	184.4	16 %	37.4	20 %
Total Aerospace & Defense	835.5	72 %	946.9	81 %	(111.4)	(12)%
Energy:						
Oil & Gas	42.2	3 %	37.3	3 %	4.9	13 %
Specialty Energy	136.1	12 %	68.9	6 %	67.2	98 %
Total Energy	178.3	15 %	106.2	9 %	72.1	68 %
Medical	60.3	5 %	47.7	4 %	12.6	26 %
Construction/Mining	24.0	2 %	18.6	2 %	5.4	29 %
Other	57.0	6 %	45.2	4 %	11.8	26 %
Total	\$ 1,155.1	100 %	\$ 1,164.6	100 %	\$ (9.5)	(1)%

We utilize LTAs with certain of our customers for our specialty materials, including powders, parts and components, to reduce their supply uncertainty, including several LTAs with aerospace market OEMs. These LTAs are expected to continue to drive HPMC's growth trajectory for the next several years. These cover sales of ATI's specialty materials, parts and components that are required for both next-generation and legacy aircraft platforms, including jet engines. Our LTAs include a titanium products supply agreement for aircraft airframes and structural components with The Boeing Company (Boeing), which was extended in 2021. This LTA covers value-added titanium products and provides opportunity for greater use of ATI's next generation and advanced titanium alloys in both long product and flat-rolled product forms, including highly engineered titanium forged products. The agreement includes both long-product forms that are manufactured within the HPMC segment, and a significant amount of plate products that are manufactured utilizing assets of both the HPMC and AA&S segments. Revenues and profits associated with these titanium products covered by the Boeing LTA are included primarily in the results for the HPMC segment.

We have LTAs with GE Aviation and Snecma (Safran) to supply premium titanium alloys, nickel-based alloys, and vacuum-melted specialty alloys products for commercial and military jet engine applications. In addition, we have LTAs with Rolls-Royce plc for the supply of disc-quality products and precision forgings for commercial jet engine applications. We also supply products to other important parts of the aviation market such as helicopters and rotary engine fixed wing aircraft.

New airframe designs contain a larger percentage of titanium alloys, and the jet engines that power them use newer nickel-based alloys and titanium-based alloys, in both cases for improved performance and more economical operating costs, compared to legacy airframe and engine designs. Even with the production delays and order cancellations that have occurred since the onset of the COVID-19 pandemic, Boeing and Airbus continue to have multi-year backlogs of orders for both legacy models and next-generation aircraft, and there continues to be over 25,000 jet engines with firm orders (Aero Engine News, February 2022). Due to manufacturing cycle times, demand for our specialty materials leads the deliveries of new aircrafts by approximately 6 to 12 months.

Use of these newer materials, particularly for jet engine applications, is expected to continue to increase for several years, with strong growth expected in powder metal alloys, including increased usage of iso-thermal forging and additive manufacturing production processes.

In addition, as our specialty materials are used in rotating components of jet engines, demand for our products for spare parts is impacted by aircraft flight activity and engine refurbishment requirements of U.S. and foreign aviation regulatory authorities. As the number of aircraft in service increases, the need for our materials associated with engine refurbishment is expected to increase.

Comparative information for HPMC's major product categories based on their percentages of the segment's overall revenue is as follows:

<i>For the Years Ended December 31,</i>	2021	2020
High-Value Products		
Nickel-based alloys and specialty alloys	43 %	38 %
Precision forgings, castings and components	38 %	34 %
Titanium and titanium-based alloys	19 %	28 %
Total High-Value Products	100 %	100 %

HPMC segment EBITDA for 2021 increased 23% to \$159.9 million, or 13.8% of sales, compared to \$129.6 million, or 11.1% of sales, in 2020, reflecting an improved product mix and benefits from increased operating levels. Stronger operating margins from higher production volumes were aided by share gains and the ongoing benefits of 2020 cost cutting actions compared to the prior year, which included pre-pandemic levels for a portion of 2020. Strike-related costs of \$3.5 million were excluded from HPMC 2021 results.

Current year results reflect growing momentum in our business. The aerospace market continues to recover, and we are seeing an ongoing improvement in demand in many of our key end markets, most notably jet engine materials and components and specialty energy applications, as well as the continued benefits from our aggressive 2020 cost cutting actions and recent share gains. Worldwide economic recovery is increasing the demand for travel and efficient energy, which benefits ATI, and we believe we are well positioned to capture this growth in the future. Steady improvement in quarterly EBITDA margins in 2021 demonstrates a focus on lean cost structures and improving our product mix and pricing. Commercial aerospace continues to expand unevenly across our product portfolio. Jet engine forgings demand remains strong, bolstered by our 2021 share gains. Demand for our jet engine specialty materials was mixed, varying by customer and product, largely due to uneven supply chain inventory levels and customer order patterns. Looking ahead to 2022, we anticipate strong year-over-year revenue and earnings growth primarily driven by the ongoing commercial aerospace recovery.

We anticipate industry demand growth for advanced powder materials to satisfy aerospace & defense market production requirements, and for emerging additive manufacturing of parts and components. Recently, we added new metal-alloy production capacity for nickel, superalloy, and titanium alloy powders, and we acquired assets in 2018 to accelerate the development of our capabilities in metal alloy-based additive manufacturing to provide comprehensive customer solutions ranging from the design of parts for additive manufacturing to the production of ready-to-install components. Strategic capital projects in HPMC to support future growth include the iso-thermal press and heat-treating capacity expansion at our Iso-Thermal Forging Center of Excellence in Cudahy, WI, which was placed into service in 2021.

Despite near-term uncertainty posed by the ongoing COVID-19 pandemic impacts globally, we expect that the long-term fundamentals driving demand growth in commercial aerospace remain largely intact across a range of next-generation aircraft and engines. We believe that our HPMC segment is well-positioned for profitable growth through the expected recovery in

commercial aerospace demand, especially in the next-generation jet engine platforms where LTAs provide significant growth and share gains for ATI on next-generation airplanes and the jet engines that power them.

2020 Compared to 2019

Sales for the HPMC segment in 2020 decreased 41%, to \$1.16 billion, with declines across most major markets. Sales to the aerospace & defense markets, which were 81% of 2020 HPMC sales, were 42% lower, reflecting a 48% decrease in sales to the commercial aerospace market, partially offset by a 24% increase in government defense sales. Sales of next generation jet engine products represented 41% of total 2020 HPMC jet engine product sales, a reduction in this sales mix by 13% compared to 2019 levels. Sales in the medical and energy markets were 44% and 31% lower, respectively. Results in 2019 included \$95 million of sales related to the divested titanium investment castings and industrial forgings businesses, resulting in a 3% unfavorable impact from divestitures.

Comparative information for our HPMC segment revenues (in millions) by market, including divested businesses prior to sale, the respective percentages of overall segment revenues for the years ended 2020 and 2019, and the percentage change in revenues by market for 2020 is as follows:

Market	2020		2019		Change	
Aerospace & Defense:						
Jet Engines- Commercial	\$ 542.7	46 %	\$ 1,085.7	55 %	\$ (543.0)	(50)%
Airframes- Commercial	219.8	19 %	389.7	20 %	(169.9)	(44)%
Defense	184.4	16 %	148.7	7 %	35.7	24 %
Total Aerospace & Defense	946.9	81 %	1,624.1	82 %	(677.2)	(42)%
Energy:						
Oil & Gas	37.3	3 %	46.2	2 %	(8.9)	(19)%
Specialty Energy	68.9	6 %	107.4	6 %	(38.5)	(36)%
Total Energy	106.2	9 %	153.6	8 %	(47.4)	(31)%
Medical	47.7	4 %	85.4	4 %	(37.7)	(44)%
Construction/Mining	18.6	2 %	42.5	2 %	(23.9)	(56)%
Other	45.2	4 %	72.9	4 %	(27.7)	(38)%
Total	\$ 1,164.6	100 %	\$ 1,978.5	100 %	\$ (813.9)	(41)%

Comparative information for HPMC's major product categories, including divested businesses prior to sale, based on their percentages of the segment's overall revenue is as follows:

For the Years Ended December 31,	2020	2019
High-Value Products		
Nickel-based alloys and specialty alloys	38 %	38 %
Precision forgings, castings and components	34 %	36 %
Titanium and titanium-based alloys	28 %	26 %
Total High-Value Products	100 %	100 %

HPMC segment EBITDA for 2020 decreased 64% to \$129.6 million, or 11.1% of sales, compared to \$356.2 million, or 18.0% of sales, in 2019. Lower overall demand, including lower sales of higher-margin next-generation jet engine products, and reduced asset utilization rates negatively impacted operating margins. Cost cutting measures helped to offset these negative impacts.

Advanced Alloys & Solutions

<i>(In millions)</i>	2021	% Change	2020	% Change	2019
Sales to external customers	\$ 1,644.7	(10)%	\$ 1,817.5	(15)%	\$ 2,144.0
Segment EBITDA	\$ 191.7	67 %	\$ 115.0	(33)%	\$ 172.6
Segment EBITDA as a percentage of sales	11.7 %		6.3 %		8.1 %
International sales as a percentage of sales	41.4 %		35.7 %		34.1 %

2021 Compared to 2020

Sales for the AA&S segment in 2021 decreased 10% compared to 2020, to \$1.64 billion. Declines were noted in almost all end markets, including a 19% decline in energy market sales and a 28% decline in aerospace & defense market sales, due primarily to impacts from the USW strike, as well as the ongoing exit from the lower-margin standard stainless sheet production and sales. These declines were partially offset by a 21% increase in electronics sales and a 15% increase in automotive market sales. Sales of high-value products were consistent with the prior year, as a 46% decline in titanium and titanium-based alloys and a 6% decline in nickel-based alloys and specialty alloys were offset by a 21% increase in sales of precision rolled strip products, primarily from our Asian PRS joint venture.

Comparative information for our AA&S segment revenues (in millions) by market, the respective percentages of overall segment revenues, for the years ended 2021 and 2020, and the percentage change in revenues by market for 2021 is as follows:

Market	2021		2020		Change	
Energy:						
Oil & Gas	\$ 290.1	18 %	\$ 328.5	18 %	\$ (38.4)	(12)%
Specialty Energy	123.5	7 %	184.2	10 %	(60.7)	(33)%
Total Energy	413.6	25 %	512.7	28 %	(99.1)	(19)%
Aerospace & Defense:						
Jet Engines- Commercial	36.3	2 %	58.2	3 %	(21.9)	(38)%
Airframes- Commercial	129.9	8 %	191.0	11 %	(61.1)	(32)%
Defense	131.0	8 %	163.9	9 %	(32.9)	(20)%
Total Aerospace & Defense	297.2	18 %	413.1	23 %	(115.9)	(28)%
Automotive	296.4	18 %	257.7	14 %	38.7	15 %
Electronics	213.9	13 %	176.8	10 %	37.1	21 %
Food Equipment & Appliances	153.0	10 %	159.2	9 %	(6.2)	(4)%
Construction/Mining	98.2	6 %	123.4	7 %	(25.2)	(20)%
Medical	71.2	4 %	71.4	4 %	(0.2)	— %
Other	101.2	6 %	103.2	5 %	(2.0)	(2)%
Total	\$ 1,644.7	100 %	\$ 1,817.5	100 %	\$ (172.8)	(10)%

Our AA&S segment produces zirconium and related alloys including hafnium and niobium, nickel-based alloys, titanium and titanium-based alloys, and specialty alloys in a variety of forms including plate, sheet, and PRS products. AA&S also provides hot-rolling conversion services at its HRPF, including carbon steel products under several LTAs, and titanium products of the Uniti joint venture.

Comparative information for the AA&S segment's major product categories, based on their percentages of revenue are presented in the following table. In conjunction with its announced ongoing exit from production and sale of standard stainless sheet products, ATI reclassified certain items as High-Value Products. Prior period information reflects these reclassifications. HRPF conversion service sales are excluded from this presentation.

<i>For the Years Ended December 31,</i>	2021	2020
High-Value Products		
Nickel-based alloys and specialty alloys	37 %	35 %
PRS products	33 %	25 %
Zirconium and related alloys	17 %	15 %
Titanium and titanium-based alloys	6 %	11 %
Total High-Value Products	93 %	86 %
Standard Products		
Total Standard Products	7 %	14 %
Grand Total	100 %	100 %

Segment EBITDA was \$191.7 million, or 11.7% of sales, a 68% increase from segment EBITDA of \$115.0 million, or 6.3% of sales, in 2020. Strike related costs of \$59.7 million, primarily related to lower productivity and utilization levels, were excluded from AA&S segment 2021 results. Improved EBITDA margins reflect a richer product mix away from lower-margin standard stainless sheet products, higher HRPF conversion services and benefits from actions taken in 2020 to structurally reduce costs, which more than offset prior year-to-date results that included pre-pandemic demand levels for a portion of 2020. Current year results also include benefits from rising raw material prices, particularly nickel, at our SRP business, and lower retirement benefit expense of approximately \$10 million, compared to 2020.

On December 2, 2020, we announced a strategic repositioning of our SRP business, which includes exiting standard stainless sheet products, streamlining the production footprint of the AA&S segment and making certain capital investments to increase our focus on higher-margin products and our aerospace & defense end markets with reduced exposure to underlying raw material volatility.

Although ATI's 2021 results include negative impacts on our SRP business from the 3 ½ month labor strike by represented employees, this business recovered its production rates by the end of the third quarter of 2021 to pre-strike levels to take advantage of strong demand and favorable pricing in most end-markets, especially for energy and industrial applications. However, AA&S segment EBITDA for 2021 was also impacted by lower sales resulting from the strike. We remain on track to complete our transformation of the SRP business and exit sales of lower-margin standard stainless sheet products in the first half of 2022.

2020 Compared to 2019

Sales for the AA&S segment in 2020 decreased 15% compared to 2019, to \$1.82 billion. Sales to specialty energy markets were 3% higher compared to the prior year, while total sales to all energy markets, which also include oil & gas, downstream processing, and specialty energy, were 20% lower. Declines of 29% and 10% were also noted in the commercial aerospace and automotive markets, respectively, partially offset by higher sales in the defense market and higher HRPF conversion services billings. Sales in 2019 reflect project-based demand for marine scrubber products within the specialty energy markets. Sales of high-value products were 15% lower, largely due to a 26% decline in nickel-based alloys and specialty alloys and a 22% decline in titanium and titanium alloys.

Comparative information for our AA&S segment revenues (in millions) by market, the respective percentages of overall segment revenues, for the years ended 2020 and 2019, and the percentage change in revenues by market for 2020 is as follows:

Market	2020		2019		Change	
Energy:						
Oil & Gas	\$ 328.5	18 %	\$ 464.5	22 %	\$ (136.0)	(29)%
Specialty Energy	184.2	10 %	178.8	8 %	5.4	3 %
Total Energy	512.7	28 %	643.3	30 %	(130.6)	(20)%
Aerospace & Defense:						
Jet Engines- Commercial	58.2	3 %	100.8	5 %	(42.6)	(42)%
Airframes- Commercial	191.0	11 %	249.6	12 %	(58.6)	(23)%
Defense	163.9	9 %	155.9	7 %	8.0	5 %
Total Aerospace & Defense	413.1	23 %	506.3	24 %	(93.2)	(18)%
Automotive	257.7	14 %	286.1	13 %	(28.4)	(10)%
Electronics	176.8	10 %	162.7	8 %	14.1	9 %
Food Equipment & Appliances	159.2	9 %	205.5	9 %	(46.3)	(23)%
Construction/Mining	123.4	7 %	152.5	7 %	(29.1)	(19)%
Medical	71.4	4 %	87.0	4 %	(15.6)	(18)%
Other	103.2	5 %	100.6	5 %	2.6	3 %
Total	\$ 1,817.5	100 %	\$ 2,144.0	100 %	\$ (326.5)	(15)%

Comparative information for the AA&S segment's major product categories, based on their percentages of revenue are presented in the following table. In conjunction with its announced ongoing exit of standard stainless sheet products, ATI reclassified certain items as High-Value Products. Prior period information reflects these reclassifications. HRPF conversion service sales are excluded from this presentation.

For the Years Ended December 31,	2020	2019
High-Value Products		
Nickel-based alloys and specialty alloys	35 %	41 %
PRS products	25 %	23 %
Zirconium and related alloys	15 %	11 %
Titanium and titanium-based alloys	11 %	11 %
Total High-Value Products	86 %	86 %
Standard Products		
Total Standard Products	14 %	14 %
Grand Total	100 %	100 %

Segment EBITDA in 2020 was \$115.0 million, or 6.3% of sales, a 33% decline from segment EBITDA of \$172.6 million, or 8.1% of sales, in 2019, as weakened market conditions were partially offset by cost cutting measures. AA&S segment results for 2020 compared to 2019 reflect lower retirement benefit expense of approximately \$20 million. Results at our Specialty Alloys & Components business improved year-over-year primarily due to defense sales. Results in 2020 and 2019 also include \$8.2 million and \$12.2 million, respectively, in losses from the A&T Stainless joint venture operations. We indefinitely idled the manufacturing operations of the A&T Stainless joint venture in 2020 due to repeated denials by the U.S. Department of Commerce for exemptions from Section 232 tariffs, which impose a 25% tariff on imported semi-finished stainless slab products from Indonesia. A \$2.4 million charge for ATI's portion of severance obligations recorded by the A&T Stainless joint venture was excluded from 2020 segment results.

Corporate Expenses

Corporate expenses, which are included in selling and administrative expenses in the statement of operations, were \$55.9 million in 2021 compared to \$40.9 million in 2020. This increase in 2021 reflects higher incentive compensation costs compared to the prior year periods based on both current year performance and below-normal 2020 expense resulting from reversals of previously-recognized compensation costs due to changes in expected performance attainment related to

COVID-19 pandemic impacts, as well as from lower structural costs following business transformation initiatives. Corporate expenses were \$65.3 million in 2019.

Closed Operations and Other Expenses

Closed operations and other expenses are presented primarily in selling and administrative expenses in the consolidated statements of operations, and include legal, environmental, retirement benefit and insurance obligations associated with closed operations. Closed operations and other expenses were \$4.8 million in 2021, compared to \$7.4 million in 2020 and \$24.0 million in 2019. This decline from prior periods reflects lower costs at closed facilities, including retirement benefit expense, insurance costs, and real estate and other facility costs, and changes in foreign currency remeasurement impacts primarily related to ATI's European Treasury operation.

Depreciation and Amortization

The following is depreciation & amortization by business segment:

<i>(In millions)</i>	2021	2020	2019
Depreciation and amortization:			
High Performance Materials & Components	\$ 75.0	\$ 78.1	\$ 84.6
Advanced Alloys & Solutions	64.5	62.1	63.5
Other	4.4	3.1	3.0
	<u>\$ 143.9</u>	<u>\$ 143.3</u>	<u>\$ 151.1</u>

Interest Expense, Net

Interest expense, net of interest income and interest capitalization, was \$96.9 million in 2021, compared to \$94.4 million in 2020 and \$99.0 million in 2019. Interest expense is presented net of interest income of \$0.7 million in 2021, \$1.7 million in 2020, and \$5.9 million in 2019. The increase in interest expense in 2021 is primarily due to lower capitalized interest compared to 2020. Interest expense in 2021, 2020, and 2019 was reduced by \$4.3 million, \$7.7 million, and \$4.7 million, respectively, related to interest capitalization on major strategic capital projects. Although total debt increased by approximately \$235 million at December 31, 2021 compared to year-end 2020, interest costs were largely unchanged as our recent debt issuances carry lower interest costs than the debt extinguished through the 2021 and 2020 capital markets transactions.

Restructuring and Other Charges/Credits

For the year ended December 31, 2021, restructuring and other charges were a net credit of \$10.5 million, which is excluded from segment results. This \$10.5 million net credit consisted primarily of \$11.3 million of restructuring credits on the consolidated statement of operations, reflecting a \$12.0 million reduction in severance-related reserves for approximately 350 employees based on changes in planned operating rates and revised workforce reduction estimates, partially offset by \$0.7 million of other costs related to facility idlings. This was partially offset by a \$0.8 million charge for inventory valuation reserves, classified in cost of sales on the consolidated statement of operations, primarily related to excess raw material and work in process inventory at the idled Albany, OR primary titanium facility.

Restructuring charges recorded on the consolidated statement of operations for the year ended December 31, 2020 were \$1,107.5 million, comprised of \$1,041.5 million of non-cash asset impairment charges, \$60.5 million of employee benefit-related costs, and \$5.5 million of other costs related to facility idlings. The long-lived asset impairment charges relate to a \$1,032.6 million charge related to the Brackenridge, PA operations, including the HRPF, as well as \$8.9 million other long-lived asset impairment charges recognized for various AA&S segment operations identified for closure as part of the standard stainless sheet exit decision.

Restructuring charges also include \$60.5 million of employee benefit costs, representing severance, supplemental unemployment and medical benefits for the elimination of approximately 1,400 positions related to the standard stainless sheet exit, as well as for employees impacted by the idling of the Albany, OR primary titanium operations in the fourth quarter of 2020, and workforce right-sizing actions, including both involuntary reductions and voluntary retirement incentive programs implemented throughout 2020 to better match our cost structure to expected demand, primarily as a result of economic challenges created by the COVID-19 pandemic. We achieved our expected annual cost savings in 2021 from our 2020 charges and expect continued benefits in the future until fully implemented in 2023. Cash payments associated with these cost reduction programs are expected to be approximately \$10 million in 2022. Other costs of \$5.5 million included in 2020 restructuring charges primarily relate to asset retirement and environmental obligations associated with facility idlings.

Other charges for the year ended December 31, 2020 include:

- \$17.4 million of termination benefits for pension and postretirement medical obligations related to facility closures from the standard stainless sheet exit. These costs are classified within nonoperating retirement benefit expense in the consolidated statements of operations.
- \$7.2 million of other charges for inventory valuation reserves, classified in cost of sales on the consolidated statement of operations, primarily related to excess raw material and work in process inventory at the idled Albany, OR primary titanium facility.

In addition, the A&T Stainless JV recorded a \$4.8 million charge in 2020 for contractual termination benefits, and ATI recognized a \$2.4 million charge in 2020 for its equity method share of these termination benefits. These charges are excluded from segment operating results.

A \$4.5 million restructuring charge was recorded on the consolidated statement of operations for the year ended December 31, 2019 for severance obligations for the reduction of approximately 70 positions in order to streamline our salaried workforce, primarily to improve the cost competitiveness of the U.S.-based SRP business. This restructuring charge is excluded from business segment results. The \$4.5 million was substantially paid in 2020 upon completion of these reductions.

Strike Related Costs

Strike related costs were \$63.2 million in 2021, of which \$59.7 million were excluded from AA&S segment EBITDA and \$3.5 million were excluded from HPMC segment EBITDA. These items primarily consisted of overhead costs recognized in the period due to below-normal operating rates, higher costs for outside conversion activities, and signing bonuses for represented employees.

Retirement Benefit Settlement Gain

Fiscal year 2021 results include a \$64.9 million retirement benefit settlement gain related to a plan termination that eliminated certain postretirement medical benefit liabilities. This was effective upon the July 2021 ratification of the new USW CBA. This gain, which is recorded in nonoperating retirement benefit income/expense on the consolidated statement of operations and is excluded from segment EBITDA, was comprised of \$43.0 million of long-term postretirement benefit liabilities as of July 2021 and \$21.9 million of amounts recorded in accumulated other comprehensive income at that date.

Goodwill Impairment Charge

In the second quarter 2020, due to demand disruptions to the global commercial aerospace market resulting from the COVID-19 pandemic and changes in near-term demand requirements of aero-engine and airframe markets, ATI conducted an interim test for goodwill impairment at our Forged Products operations, and recognized a \$287.0 million charge for the partial impairment of goodwill, while retaining \$173.4 million of goodwill for this profitable business with good long-term growth prospects. This goodwill impairment charge is excluded from HPMC segment results.

Joint Venture Restructuring and Impairment Charges

The A&T Stainless JV recorded a \$4.8 million charge in 2020 for contractual termination benefits, and ATI recognized a \$2.4 million charge in 2020 for its equity method share of these termination benefits. These charges are excluded from AA&S segment results.

We recorded an \$11.4 million impairment charge in 2019 for the A&T Stainless JV, including ATI's share of a long-lived asset impairment charge recognized by the JV on the carrying value of its production facility in Midland, PA. ATI recognized a \$7.1 million equity loss for its 50% share of a \$14.2 million long-lived asset impairment recognized by A&T Stainless. In addition, as of December 31, 2019, ATI had net receivables for working capital advances and administrative services from A&T Stainless of \$36.8 million that were also evaluated for collectability, and a \$4.3 million reserve was recorded in December 2019 based on ATI's share of the estimated fair value of the JV's net assets. This charge is excluded from AA&S segment results.

Debt Extinguishment Charge

In 2021, ATI recognized a \$65.5 million debt extinguishment charge on the redemption of the 2023 Notes, which included a \$64.5 million cash make-whole payment related to the early extinguishment of the 2023 Notes as required by the applicable indenture, and a \$1.0 million charge for deferred debt issue costs.

In 2020, ATI issued \$291.4 million aggregate principal amount of unsecured 3.5% Convertible Senior Notes due 2025 (2025 Convertible Notes), and used the majority of the proceeds to repurchase approximately \$203.2 million aggregate principal amount of the outstanding principal balance of our 4.75% Convertible Senior Notes due 2022 (2022 Convertible Notes). As a

result, we recognized a \$21.5 million debt extinguishment charge, which included a \$19.1 million cash payment as a make-whole provision on the early extinguishment of debt, and a \$2.4 million charge for previously-unrecognized debt issue costs.

In the fourth quarter of 2019, we issued \$350 million of unsecured 5.875% Senior Notes due 2027 (the 2027 Notes). Proceeds from the issuance of the 2027 Notes and cash on hand were used to redeem the \$500 million of 5.95% Senior Notes due 2021 (the 2021 Notes), which had a January 15, 2021 maturity date. As a result, we recognized a \$21.6 million debt extinguishment charge, which included a \$20.9 million cash payment as a make-whole provision on the early extinguishment of debt, and a \$0.7 million charge for previously-unrecognized debt issue costs.

Gains on Asset Sales and Sale of Business, Net

In 2021, we completed the sale of our Flowform Products business within the HPMC segment for \$55.0 million, and recognized a \$13.8 million gain. This gain is recorded in nonoperating income/expense on the consolidated statement of operations and is excluded from segment EBITDA. During 2020, we recognized a \$2.5 million cash gain for the sale of certain oil and gas rights. This non-core asset sale gain is reported in other income/expense, net, on the consolidated statement of operations and is excluded from business segment results. During the third quarter of 2019, we completed the sale of our Cast Products business and recognized a \$6.2 million gain. During the second quarter of 2019, we completed the sale of two non-core forging facilities, located in Portland, IN and Lebanon, KY, and recognized an \$13.3 million pre-tax loss. Also during 2019, we recognized \$91.7 million on sales of certain oil and gas rights. The 2019 results include \$84.6 million, respectively, in net pretax gains from these non-core asset sales which are reported in other income/expense, net, on the consolidated statement of income and are excluded from business segment results.

Income Taxes

Results in 2021, 2020, and 2019 include impacts from income taxes that differ from applicable standard tax rates, primarily related to income tax valuation allowances. The provision for income taxes for fiscal year 2021 was \$26.8 million, which was mainly attributable to the \$15.5 million in discrete tax effects related to the postretirement medical benefits gain discussed above, in accordance with ATI's accounting policy for recognizing deferred tax amounts stranded in accumulated other comprehensive income. While our U.S. operations remain in a three-year cumulative loss position, we expect our reported tax expense to primarily relate to our profitable PRS joint venture in China. We will continue to have minimal cash tax requirements in the U.S. due to the ongoing benefits of net operating loss tax carryforwards for the next several years.

In 2020, ATI's U.S. operations returned to a three-year cumulative loss position, limiting our ability to utilize future projections as sources of income when analyzing the need for a valuation allowance. The consolidated income tax provision of \$77.7 million for fiscal year 2020 is primarily due to increases in deferred tax asset valuation allowances based on an analysis of the expected realization of deferred tax assets and liabilities within applicable expiration periods.

At December 31, 2019, our U.S. results had switched from a three-year cumulative loss position to a three-year cumulative income position, allowing us to utilize forecasts of future profits as a source of income when evaluating the overall need for a valuation allowance. We determined that valuation allowances on net deferred tax asset balances for federal and certain state jurisdictions are no longer required. Certain individual tax attributes still require a valuation allowance based on expected utilization. The change in the overall valuation allowance for 2019 includes amounts utilized during the year as part of the reported effective tax rate, as well as a \$45.1 million reduction at December 31, 2019 based on a change in judgment on the realizability of deferred tax assets. The 2019 income tax benefit was \$28.5 million, which included the \$45.1 million discrete tax benefit related to the release of U.S. federal and state valuation allowances, along with the current year benefit related to the release of valuation allowances due to positive income in 2019. Total discrete tax items including this valuation allowance change were a \$41.9 million tax benefit in 2019, and our effective tax rate excluding these items was 5.5% of pre-tax income in 2019.

Financial Condition and Liquidity

We have an Asset Based Lending (ABL) Credit Facility, which is collateralized by the accounts receivable and inventory of the our domestic operations. The ABL facility, which matures in September 2024, includes a \$500 million revolving credit facility, a letter of credit sub-facility of up to \$200 million, and a \$200 million term loan (Term Loan). The Term Loan has an interest rate of 2.0% plus a LIBOR spread and can be prepaid in increments of \$25 million if certain minimum liquidity conditions are satisfied. In addition, we have the right to request an increase of up to \$200 million in the maximum amount available under the revolving credit portion of the ABL for the duration of the ABL. We have a \$50 million floating-for-fixed interest rate swap that converts a portion of the Term Loan to a 4.21% fixed interest rate. The swap matures in June 2024.

The applicable interest rate for revolving credit borrowings under the ABL facility includes interest rate spreads based on available borrowing capacity that range between 1.25% and 1.75% for LIBOR-based borrowings and between 0.25% and 0.75% for base rate borrowings. The ABL facility contains a financial covenant whereby we must maintain a fixed charge

coverage ratio of not less than 1.00:1.00 after an event of default has occurred and is continuing or if the undrawn availability under the ABL revolving credit portion of the facility is less than the greater of (i) \$87.5 million, calculated as 12.5% of the then applicable maximum advance amount under the revolving credit portion of the ABL and the outstanding Term Loan balance, or (ii) \$62.5 million. We did not meet this required fixed charge coverage ratio at December 31, 2021. As a result, we are unable to access this remaining 12.5%, or \$87.5 million, of the ABL facility until we meet the required ratio. Additionally, we must demonstrate minimum liquidity, as calculated in accordance with the terms of the ABL facility, during the 90 day period immediately preceding the stated maturity date of the 2022 Convertible Notes. The ABL also contains customary affirmative and negative covenants for credit facilities of this type, including limitations on our ability to incur additional indebtedness or liens or to enter into investments, mergers and acquisitions, dispositions of assets and transactions with affiliates, some of which are more restrictive at any time during the term of the ABL when our fixed charge coverage ratio is less than 1.00:1.00 and our undrawn availability under the revolving portion of the ABL is less than the greater of (a) \$150 million or (b) 30% of the sum of the maximum advance amount under the revolving credit portion of the ABL and the outstanding Term Loan balance.

As of December 31, 2021, there were no outstanding borrowings under the revolving credit portion of the ABL, and \$48.3 million was utilized to support the issuance of letters of credit. There were no revolving credit borrowings under the ABL during 2021. Average borrowings under the revolving portion of the ABL for the fiscal year ended December 31, 2020 were \$28 million, bearing an average annual interest rate of 2.2%.

On September 14, 2021, ATI issued \$325 million aggregate principal amount of 4.875% Senior Notes due 2029 (2029 Notes) and \$350 million aggregate principal amount of 5.125% Senior Notes due 2031 (2031 Notes). Underwriting fees and other third-party expenses for the issuance of the 2029 and 2031 Notes were each \$4.7 million, and are being amortized to interest expense over the 8-year and 10-year terms of the 2029 and 2031 Notes, respectively. Total combined net proceeds of \$665.7 million from both of these issuances were primarily used to fund the full redemption of the \$500 million aggregate principal amount outstanding of the 2023 Notes on October 14, 2021, including a make-whole payment and accrued interest, following a 30 day notice of redemption as required by the 2023 Notes indenture. As such, in the fourth quarter 2021, the Company recognized a \$65.5 million debt extinguishment charge, which includes a \$64.5 million cash make-whole payment related to the early extinguishment of the 2023 Notes and a \$1.0 million charge for the remaining unrecognized portion of the 2023 Notes deferred debt issue costs. As a result of these transactions, we significantly extended our debt maturity profile and, with the elimination of \$500 million of debt currently bearing interest at 7.875% due to changes in our credit ratings, reduced annual interest expense by approximately \$6 million.

In 2020, ATI issued and sold \$291.4 million aggregate principal amount of 2025 Convertible Notes. We used a portion of the net proceeds from the offering of the 2025 Convertible Notes to repurchase \$203.2 million aggregate principal amount of our outstanding 2022 Convertible Notes. We also used \$19.4 million of the net proceeds of the offering of the 2025 Convertible Notes to pay the cost of capped call transactions, which effectively increase the initial conversion price of the 2025 Convertible Notes into ATI stock from \$15.49 per share to \$19.76 per share. The remainder of the net proceeds from the offering were used for general corporate purposes.

On November 22, 2019, we issued \$350 million aggregate principal amount of 2027 Notes. Underwriting fees and other third-party expenses for the issuance of the 2027 notes were \$5.5 million, and are being amortized to interest expense over the eight-year term of the 2027 Notes. Net proceeds of \$344.5 million from this issuance, as well as cash on hand, were used to retire all \$500 million aggregate principal amount of the 2021 Notes in December 2019, resulting in a \$21.6 million pre-tax debt extinguishment charge, which included a \$20.9 million cash payment as a make-whole provision on the early extinguishment of debt, and a \$0.7 million charge for deferred debt issue costs.

At December 31, 2021, we had \$688 million of cash and cash equivalents, and available additional liquidity under the ABL facility of approximately \$360 million, for total liquidity of more than \$1 billion. We do not expect to pay any significant U.S. federal or state income taxes in the next several years due to net operating loss carryforwards.

During the third quarter of 2021, we received approximately \$53 million in cash, net of transaction costs and net working capital adjustments, for the sale of the Flowform Products business. During the second and third quarters of 2019, we received approximately \$250 million in cash from non-core asset sales, net of closing adjustments and transaction costs, consisting of \$33 million for the sale of two non-core forging facilities, \$125 million for the sale of the Cast Products business, and \$92 million for the sale of certain oil and gas rights in Eddy County, NM.

In 2021, the Company made \$67 million in cash contributions to its U.S. qualified defined benefit pension plans, including \$50 million of voluntary contributions to improve the plans' funded position. As a result of the American Rescue Plan Act (ARPA) enacted in March 2021, the rules governing pension funding calculations changed. Based on current actuarial assumptions, we are not required to make any contributions to these pension plans during fiscal year 2022, and our prior contributions have generated a credit balance that may be utilized to offset future minimum required contributions. We currently expect to make voluntary cash contributions of approximately \$50 million to these plans in 2022. Using our long-term weighted average expected rate of return on pension plan assets and other actuarial assumptions, we do not to have any minimum cash funding

requirements to these pension plans for the next few years after 2022. However, these funding estimates are subject to significant uncertainty including the actual pension trust assets' fair value, and the discount rates used to measure pension liabilities. We may elect to contribute additional amounts to these pension plans to improve their funded position, or we may elect to use a portion of our credit balance in lieu of cash contributions based on other capital allocation priorities.

On February 2, 2022, we announced that our Board of Directors authorized the repurchase of up to \$150 million of ATI stock. Repurchases under the program may be made in the open market or in privately negotiated transactions, with the amount and timing of repurchases depending on market conditions and corporate needs. Open market repurchases will be structured to occur within the pricing and volume requirements of SEC Rule 10b-18. The stock repurchase program does not obligate the Company to repurchase any specific number of shares and it may be modified, suspended, or terminated at any time by the Board of Directors without prior notice.

We believe that internally generated funds, current cash on hand and available borrowings under the ABL facility will be adequate to meet our liquidity needs. If we needed to obtain additional financing using the credit markets, the cost and the terms and conditions of such borrowings may be influenced by our credit rating. In addition, we regularly review our capital structure, various financing alternatives and conditions in the debt and equity markets in order to opportunistically enhance our capital structure. In connection therewith, we may seek to refinance or retire existing indebtedness, incur new or additional indebtedness or issue equity or equity-linked securities, in each case, depending on market and other conditions.

We have no off-balance sheet arrangements as defined in Item 303(a)(4) of SEC Regulation S-K.

Cash Flow and Working Capital

Cash provided by operations for 2021 was \$16.1 million, despite an \$81.2 million use of cash from increased managed working capital balances related to higher operating levels in most operations. Other significant 2021 operating cash flow items included \$67.5 million in contributions to the U.S. defined benefit pension plans and payment of 2020 annual incentive compensation, partially offset by receipt of advance payments from customers as part of long-term supply agreements in 2021. Cash provided by operations was \$166.9 million in 2020, which included a \$156.6 million reduction in managed working capital balances. The generation of cash from managed working capital in 2020 reflects alignment with demand levels. Other significant 2020 operating cash flow items included \$130.2 million in contributions to the U.S. defined benefit pension plans and payment of 2019 annual incentive compensation.

As part of managing the liquidity of our business, we focus on controlling managed working capital, which is defined as gross accounts receivable, short-term contract assets and gross inventories, less accounts payable and short-term contract liabilities. In measuring performance in controlling this managed working capital, we exclude the effects of inventory valuation reserves, and reserves for uncollectible accounts receivable which, due to their nature, are managed separately. We measure managed working capital as a percentage of the prior three months annualized sales to evaluate our performance based on recent levels of business volume. In 2021, managed working capital decreased to 37.5% of annualized total ATI sales compared to 40.5% of annualized sales at December 31, 2020, reflecting the Company's ongoing efforts to improve managed working capital efficiency as well as a higher level of sales. The \$81.2 million increase in managed working capital in 2021 is detailed in the table below. Days sales outstanding, which measures actual collection timing for accounts receivable, improved by approximately 7% at year-end 2021 compared to 2020. Gross inventory turns improved by 10% in 2021 compared to 2020, and improving the pace of inventory flow across our operations is an area of management focus in 2022.

The components of managed working capital were as follows:

<i>(In millions)</i>	December 31, 2021	December 31, 2020*
Accounts receivable	\$ 470.0	\$ 345.8
Short-term contract assets	53.9	38.9
Inventory	1,046.3	997.1
Accounts payable	(375.5)	(290.6)
Short-term contract liabilities	(116.2)	(111.8)
Subtotal	1,078.5	979.4
Allowance for doubtful accounts	3.8	4.3
Inventory reserves	65.4	82.8
Managed working capital	\$ 1,147.7	\$ 1,066.5
Annualized prior 3 months sales	\$ 3,061.5	\$ 2,633.2
Managed working capital as a % of annualized sales	37.5 %	40.5 %
December 31, 2021 change in managed working capital	\$ 81.2	

*December 31, 2020 reflects the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

Cash used in investing activities was \$77.3 million in 2021, reflecting \$152.6 million in capital expenditures primarily related to AA&S transformation projects, and HPMC growth projects including the new iso-thermal press and heat-treating expansion in Cudahy, WI. These investing activity cash outflows were partially offset by \$53.1 million of proceeds from the sale of the Flowform Products business and \$20.8 million of proceeds from property, plant and equipment sales, which includes \$16.2 million from the sale of ongoing construction in progress projects that were converted to leases. We expect to fund our capital expenditures with cash on hand and cash flow generated from our operations and, if needed, by using a portion of the ABL facility. Cash used in investing activities was \$128.7 million in 2020, reflecting \$136.5 million in capital expenditures partially offset by \$5.9 million of proceeds from property, plant and equipment sales, which includes the sale of certain oil and gas rights. Capital expenditures for 2020 were primarily related to HMPC growth projects including the iso-thermal press and heat-treating expansion in Cudahy, WI.

Cash provided by financing activities in 2021 was \$103.0 million, and consisted primarily of \$675.7 million of net proceeds from the issuance of the 2029 and 2031 Notes and \$21.7 million of borrowings under foreign credit facilities. These were offset by the full redemption of the \$500 million aggregate principal amount outstanding of the 2023 Notes, a \$64.5 million cash make-whole payment related to the early extinguishment of these 2023 Notes as required by the applicable indenture, and \$9.5 million for debt issuance costs associated with the newly-issued 2029 and 2031 Notes. Cash provided by financing activities in 2020 was \$116.9 million, and consisted primarily of \$291.4 million of borrowings for the 2025 Convertible Notes issued in 2020 and \$100.0 million of additional Term Loan borrowings under the ABL. These were offset by a \$203.2 million repayment for a portion of the 2022 Convertible Notes and \$19.1 million cash make-whole payment related to the early extinguishment of these 2022 Convertible Notes as required by the applicable indenture, as well as \$19.4 million to pay the cost of capped call transactions and \$9.1 million for debt issuance costs, both associated with the newly issued 2025 Convertible Notes. Cash provided by financing activities in 2020 also reflects a \$7.2 million dividend payment to the 40% noncontrolling interest in our PRS joint venture in China.

At December 31, 2021, cash and cash equivalents on hand totaled \$687.7 million, a \$41.8 million increase from year-end 2020. Cash and cash equivalents held by our foreign subsidiaries was \$138.2 million at December 31, 2021, of which \$100.2 million was held by our PRS joint venture in China.

Debt

Total debt outstanding of \$1,863.7 million at December 31, 2021, increased \$234.6 million compared to December 31, 2020, as the issuance in September 2021 of \$325 million aggregate principal amount of 2029 Notes and \$350 million aggregate principal amount of 2031 Notes were partially offset by the full redemption of the \$500.0 million aggregate principal amount outstanding of the 2023 Notes. Total debt outstanding as described above excludes debt issuance costs, and the December 31, 2020 amount includes \$46.8 million for the unamortized balance of the portion of the 2025 Convertible Notes recorded in stockholders' equity due to the flexible settlement feature of the notes. ATI adopted new accounting guidance in 2021 that reclassified this portion of the 2025 Convertible Notes recorded in stockholders' equity to long-term debt (see below for further discussion).

In managing our overall capital structure, some of the measures on which we focus are (1) debt to EBITDA, which measures our ability to repay our incurred debt, (2) net debt to total capitalization, which is the percentage of our debt, net of cash that may be available to reduce borrowings, to our total invested and borrowed capital, and (3) total debt to total capitalization, which excludes cash balances. We define EBITDA as income from continuing operations before interest and income taxes, plus depreciation and amortization, goodwill impairment charges and debt extinguishment charges for the latest twelve month period. We define Adjusted EBITDA as EBITDA excluding significant non-recurring charges or credits, restructuring charges/credits, strike related costs, long-lived asset impairments and other postretirement/pension curtailment and settlement gains and losses. We believe that EBITDA and Adjusted EBITDA are useful to investors because these measures are commonly used to analyze companies on the basis of operating performance, leverage and liquidity. Furthermore, analogous measures are used by industry analysts to evaluate operating performance. EBITDA and Adjusted EBITDA are not intended to be measures of free cash flow for management's discretionary use, as they do not consider certain cash requirements such as interest payments, tax payments and capital expenditures. EBITDA and Adjusted EBITDA are not intended to represent, and should not be considered more meaningful than, or as alternatives to, a measure of operating performance as determined in accordance with U.S. generally accepted accounting principles.

All of these leverage ratios improved in 2021, primarily as a result of higher earnings. At year-end 2021, our debt to Adjusted EBITDA ratio was 6.41, compared to 8.30 at December 31, 2020, and net debt to Adjusted EBITDA ratio was 4.04, compared to 5.01 at December 31, 2020.

	December 31, 2021	December 31, 2020*
Income (loss) before income taxes	\$ 10.6	\$ (1,481.9)
Interest expense	96.9	94.4
Depreciation and amortization	143.9	143.3
Strike related costs	63.2	—
Impairment of goodwill	—	287.0
Retirement benefit settlement gain	(64.9)	—
Restructuring and other charges (credits)	(10.5)	1,132.1
Joint venture impairment charge	—	2.4
Debt extinguishment charge	65.5	21.5
Gain on asset sales and sale of business	(13.8)	\$ (2.5)
Adjusted EBITDA	\$ 290.9	\$ 196.3
Total debt (a)	\$ 1,863.7	\$ 1,629.1
Less: Cash	(687.7)	(645.9)
Net debt	\$ 1,176.0	\$ 983.2
Debt to Adjusted EBITDA	<u>6.41</u>	<u>8.30</u>
Net Debt to Adjusted EBITDA	<u>4.04</u>	<u>5.01</u>

*Year ended December 31, 2020 reflects the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

At year-end 2021, our net debt to total capitalization was 63.2%, compared to 67.6% at December 31, 2020.

(In millions)	December 31, 2021	December 31, 2020
Total debt (a)	\$ 1,863.7	\$ 1,629.1
Less: Cash	(687.7)	(645.9)
Net debt	\$ 1,176.0	\$ 983.2
Total ATI stockholders' equity (b)	685.6	471.3
Net ATI capital	\$ 1,861.6	\$ 1,454.5
Net debt to ATI capital	<u>63.2 %</u>	<u>67.6 %</u>

Total debt to total capitalization was 73.1% at December 31, 2021 compared to 77.6% at December 31, 2020.

(In millions)	December 31, 2021	December 31, 2020
Total debt (a)	\$ 1,863.7	\$ 1,629.1
Total ATI stockholders' equity (b)	685.6	471.3
Total ATI capital	\$ 2,549.3	\$ 2,100.4
Total debt to ATI capital	<u>73.1 %</u>	<u>77.6 %</u>

(a) Excludes debt issuance costs for both periods. The December 31, 2020 debt balance includes \$46.8 million for the unamortized portion of the 2025 Convertible Notes recorded in stockholders' equity due to the flexible settlement feature of the notes. New accounting guidance adopted by ATI on January 1, 2021 eliminated this requirement of separately accounting for this component of the 2025 Convertible Notes in stockholders' equity. See below for further discussion.

(b) The December 31, 2020 balance excludes \$49.8 million recorded in stockholders' equity for a portion of the 2025 Convertible Notes, net of debt issuance costs.

In 2021, we issued \$325 million aggregate principal amount of the 2029 Notes and \$350 million aggregate principal amount of the 2031 Notes. Interest on the 2029 Notes at a rate of 4.875% is payable semi-annually in arrears on each April 1 and October 1, commencing on April 1, 2022 and the 2029 Notes will mature on October 1, 2029. Interest on the 2031 Notes at a rate of

5.125% is payable semi-annually in arrears on each April 1 and October 1, commencing on April 1, 2022 and the 2031 Notes will mature on October 1, 2031. Total combined net proceeds of \$665.7 million from both of these issuances were primarily used to fund the full redemption of the \$500 million aggregate principal amount outstanding of the 2023 Notes on October 14, 2021, including a make-whole payment and accrued interest, following a 30 day notice of redemption as required by the 2023 Notes indenture. As such, in the fourth quarter 2021, a \$65.5 million debt extinguishment charge was recognized, which included a \$64.5 million cash make-whole payment related to the early extinguishment of the 2023 Notes and a \$1.0 million charge for the remaining unrecognized portion of the 2023 Notes deferred debt issue costs.

In 2020, we issued and sold \$291.4 million aggregate principal amount of the 2025 Convertible Notes. Interest on the 2025 Convertible Notes at the 3.5% cash coupon rate is payable semi-annually in arrears on each June 15 and December 15, commencing December 15, 2020. We used a portion of the net proceeds from the offering of the 2025 Convertible Notes to repurchase \$203.2 million aggregate principal amount of our outstanding 2022 Convertible Notes, resulting in a \$21.5 million debt extinguishment charge, which included a \$19.1 million cash make-whole payment related to the early extinguishment of the 2022 Convertible Notes as required by the applicable indenture, and a \$2.4 million charge for deferred debt issue costs. We also used \$19.4 million of the net proceeds of the offering of the 2025 Convertible Notes to pay the cost of capped call transactions, described below, which was recorded as a reduction to additional paid-in-capital in stockholders' equity on the consolidated balance sheet. The remainder of the net proceeds from the offering were used for general corporate purposes.

In connection with the pricing of the 2025 Convertible Notes, we entered into privately negotiated capped call transactions with certain of the initial purchasers or their respective affiliates (collectively, the Counterparties). The capped call transactions are expected generally to reduce potential dilution to our common stock upon any conversion of the 2025 Convertible Notes and/or offset any cash payments we are required to make in excess of the principal amount of converted 2025 Convertible Notes, as the case may be, with such reduction and/or offset subject to a cap based on the cap price. The cap price of the capped call transactions initially is approximately \$19.76 per share, and is subject to adjustments under the terms of the capped call transactions.

The 2025 Convertible Notes are convertible into our common stock at an initial conversion price of \$15.49 per share and may be settled in cash, shares of our common stock or a combination thereof, at our election. As a result of this flexible settlement feature of the 2025 Convertible Notes, the embedded conversion option valued at \$50.3 million was required to be separately accounted for as a component of stockholders' equity in 2020. The value of the embedded conversion option was determined to be \$51.4 million based on the estimated fair value of comparable senior unsecured debt without the conversion feature, using an income approach of expected present value. During the 2020 fiscal year, the equity component was amortized as additional non-cash interest expense, commonly referred to as phantom yield, over the term of the 2025 Convertible Notes using the effective interest method. As a result, as of December 31, 2020, \$49.8 million of the 2025 Convertible Notes was recorded in additional paid-in-capital in stockholders' equity (\$51.4 million of the gross \$291.4 million, net of \$1.6 million of allocated offering costs). Due to the non-cash phantom yield and including debt issue cost amortization, the 2025 Convertible Notes had reported interest expense in 2020 at an 8.4% rate, higher than the 3.5% cash coupon rate. Effective January 1, 2021, ATI early adopted new accounting guidance as discussed in Note 1 of the Notes to Consolidated Financial Statements that eliminated the equity component classification of the embedded conversion option, as well as the phantom yield portion of interest expense on a prospective basis. Upon adoption on January 1, 2021, long-term debt increased by \$45.4 million, representing the \$46.8 million equity component of convertible debt as of December 31, 2020, net of reclassified debt issue costs.

On November 22, 2019, we issued \$350 million aggregate principal amount of the 2027 Notes. Net proceeds of \$344.5 million from this issuance were used, together with cash on hand, to redeem all \$500 million aggregate principal amount outstanding of the 5.95% 2021 Notes in December 2019.

The 5.875% stated interest rate payable on our 2023 Notes was subject to adjustment in the event of changes in the credit ratings on the 2023 Notes by either Moody's or Standard & Poor's (S&P). Each notch of credit rating downgrade from the credit ratings in effect when the 2023 Notes were issued in July 2013 increases interest expense by 0.25% on the 2023 Notes, up to a maximum of four notches by each of the two rating agencies, or a total 2.0% potential interest rate change up to 7.875%. The annual interest rate on the 2023 Notes has been at the maximum 7.875% since February 2016 until their redemption in October 2021 as discussed above.

A summary of required payments under financial instruments (excluding accrued interest) and other commitments are presented below.

<i>(In millions)</i>	Total	Less than 1 year	1-3 years	4-5 years	After 5 years
Contractual Cash Obligations					
Total Debt including Finance Leases	\$ 1,863.7	\$ 131.6	\$ 236.7	\$ 462.2	\$ 1,033.2
Interest on Debt (A)	525.0	84.3	158.7	124.2	157.8
Operating Lease Obligations (B)	66.0	17.2	22.9	13.5	12.4
Other Long-term Liabilities	151.0	—	90.8	21.6	38.6
Pension and OPEB Obligations (C)	284.1	39.2	74.1	65.5	105.3
Unconditional Purchase Obligations					
Raw Materials (D)	1,116.5	349.6	520.9	164.0	82.0
Capital expenditures	40.2	29.6	10.6	—	—
Other (E)	25.3	13.6	10.2	1.5	—
Total	\$ 4,071.8	\$ 665.1	\$ 1,124.9	\$ 852.5	\$ 1,429.3
Other Financial Commitments					
Lines of Credit (F)	\$ 565.4	\$ 65.4	\$ 500.0	\$ —	\$ —
Guarantees	<u>\$ 24.5</u>				

- (A) Amounts include contractual interest payments using the interest rates in effect as of December 31, 2021 applicable to the Company's 2022 Convertible Notes, the Term Loan due 2024, the 2025 Convertible Notes, the Allegheny Ludlum 6.95% Debentures due 2025, the 2027 Notes, the 2029 Notes and the 2031 Notes.
- (B) Amounts include operating lease obligations at their undiscounted value. These obligations are presented in other current liabilities and other long-term liabilities on the consolidated balance sheets at their discounted value, using applicable interest rates. See Note 11, Leases for further information.
- (C) Based on current actuarial studies, amounts include payments for the next 10 years to defined benefit pension plans, assuming the expected long-term returns on pension assets are achieved. Projections of minimum required payments to the U.S. qualified defined benefit pension plans are subject to significant uncertainty based on a number of factors including actual pension plan asset returns, changes in estimates of participant longevity, and changes in interest rates. Amounts also include actuarial projections of payments under other postemployment benefit plans for the next 10 years. In most retiree healthcare plans, our contributions are capped based on the cost as of a certain date. See Note 14, Retirement Benefits for further information.
- (D) We have contracted for physical delivery for certain of our raw materials to meet a portion of our needs. These contracts are based upon fixed or variable price provisions. We used current market prices as of December 31, 2021, for raw material obligations with variable pricing.
- (E) We have various contractual obligations that extend through 2026 for services involving production facilities and administrative operations. Our purchase obligation as disclosed represents the estimated termination fees payable if we were to exit these contracts.
- (F) At December 31, 2021, there was \$27.4 million drawn under foreign credit agreements. Drawn amounts on the U.S. facility were \$48.3 million utilized for standby letters of credit under the \$500 million ABL facility, which renew annually. These standby letters of credit are used to support: \$27.4 million in workers' compensation and general insurance arrangements, \$5.4 million related to environmental matters and \$15.5 million for performance assurances.

Commitments and Contingencies

At December 31, 2021, our reserves for environmental remediation obligations totaled approximately \$13 million, of which \$5 million was included in other current liabilities. These reserves included estimated probable future costs of: \$3 million for federal Superfund and comparable state-managed sites; \$8 million for formerly owned or operated sites for remediation or indemnification obligations; and \$2 million for owned or controlled sites at which our operations have been or plan to be discontinued. We continue to evaluate whether we may be able to recover a portion of future costs for environmental liabilities from third parties and to pursue such recoveries where appropriate. The timing of expenditures depends on a number of factors that vary by site. ATI expects that it will expend present accruals over many years and that remediation of all sites with which it has been identified will be completed within thirty years.

At December 31, 2021, we had recognized asset retirement obligations (AROs) of \$19 million related to landfill closures, decommissioning costs, facility leases and conditional AROs associated with manufacturing activities using what may be characterized as potentially hazardous materials.

Based on currently available information, it is reasonably possible that the costs for active matters may exceed our recorded reserves by as much as \$15 million. However, future investigation or remediation activities may result in the discovery of additional hazardous materials, potentially higher levels of contamination than discovered during prior investigation, and may impact costs of the success or lack thereof in remedial solutions. Therefore, future developments, administrative actions or liabilities relating to environmental matters could have a material adverse effect on the ATI's consolidated financial condition or results of operations.

Labor Matters

Our prior CBA with the USW involving approximately 1,100 active full-time represented employees located primarily within the AA&S segment operations, as well as a number of inactive employees, expired on February 28, 2021. USW-represented employees continued to work under the terms of the expired CBA until March 30, 2021 when they engaged in a strike. On July 14, 2021, we announced that a new four-year labor agreement with the USW was ratified, ending the strike. As part of an orderly return to work process, employees began returning to active employment during the week of July 19, 2021. The new CBA, which covers the term from March 1, 2021 to February 28, 2025, delivers a competitive wage and benefit package to these represented employees, while securing ATI's ability to reduce its exposure to health care cost inflation, which is critical for the long-term viability of ATI's SRP business. We have CBAs with approximately 800 full-time employees that expire in 2022.

Retirement Benefits

All of ATI's defined benefit pension plans are now closed to new entrants, and at most ATI operations with pension participants, the plans are frozen for all future benefit accruals, with less than 10% of participants in ATI's U.S. qualified defined benefit plans still earning additional pension service. Additionally, all of the remaining collectively-bargained defined benefit retiree health care plans at ATI's operations are now closed to new entrants, with cost caps in place for these obligations. As a result of these actions, ATI's retirement savings and other postretirement benefit programs have largely transitioned to a defined contribution structure. Since 2013, five annuity buyouts of retired participants and two voluntary cash out programs of deferred participants during this period have helped to reduce the total participants in ATI's U.S. qualified defined benefit pension plans by more than 60%.

At December 31, 2021, our defined benefit pension plans were approximately 84% funded in accordance with generally accepted accounting principles, and were remeasured at that date using a 2.95% discount rate to measure the projected benefit obligation. For ERISA funding purposes, discount rates used to measure pension liabilities for U.S. qualified defined benefit plans are calculated on a different basis using an IRS-determined segmented yield curve, which currently results in a higher discount rate than the discount rate methodology required by accounting standards. Funding requirements are also affected by IRS-determined mortality assumptions, which may differ from those used under accounting standards. As a result of the ARPA enacted in March 2021, the rules governing pension funding calculations changed. Based on current actuarial assumptions, we are not required to make any contributions to these pension plans during fiscal year 2022, and our prior contributions have generated a credit balance that may be utilized to offset future minimum required contributions. However, these estimates are subject to significant uncertainty, including the performance of our pension trust assets and the discount rates used to measure pension liabilities. Pension trust asset performance for both our accounting and ERISA funding calculations is determined using the market value of plan assets at the end of each year.

We have certain CBAs that include participation in a multiemployer pension plan. Under current law, an employer that withdraws or partially withdraws from a multiemployer pension plan may incur a withdrawal liability to the plan, which represents the portion of the plan's underfunding that is allocable to the withdrawing employer under very complex actuarial and allocation rules. A subsidiary of the Company participates in the Steelworkers Western Independent Shops Pension Plan (WISPP) for union-represented employees of our primary titanium operations in Albany, OR, which is funded on an hours-worked basis. As of December 31, 2020, manufacturing operations at this facility were indefinitely idled, and a limited number of employees that participate in the WISPP remain active in maintenance and other functions. It is reasonably possible that a significant reduction or the elimination of hours-worked contributions due to changes in operating rates at this facility could result in a withdrawal liability assessment in a future period. A complete withdrawal liability is estimated to be approximately \$35 million on an undiscounted basis. If this complete withdrawal liability was incurred, ATI estimates that payments of the obligation would be required on a straight-line basis over a 20-year period.

Critical Accounting Policies

The accompanying consolidated financial statements have been prepared in conformity with United States generally accepted accounting principles. When more than one accounting principle, or the method of its application, is generally accepted, management selects the principle or method that is appropriate in our specific circumstances. Application of these accounting principles requires our management to make estimates about the future resolution of existing uncertainties; as a result, actual results could differ from these estimates. In preparing these consolidated financial statements, management has made its best estimates and judgments of the amounts and disclosures included in the financial statements giving due regard to materiality.

Asset Impairment

We monitor the recoverability of the carrying value of our long-lived assets. An impairment charge is recognized when the expected net undiscounted future cash flows from an asset's use (including any proceeds from disposition) are less than the asset's carrying value, and the asset's carrying value exceeds its fair value. Changes in the expected use of a long-lived asset group, and the financial performance of the long-lived asset group and its operating segment, are evaluated as indicators of possible impairment. Future cash flow value may include appraisals for property, plant and equipment, land and improvements, future cash flow estimates from operating the long-lived assets, and other operating considerations. In the fourth quarter of each year in conjunction with the annual business planning cycle, or more frequently if new material information is available, we evaluate the recoverability of idled facilities.

On December 2, 2020, we announced a strategic repositioning of our SRP business within the AA&S segment, with a focus of increasing emphasis on the specialty rolled products portion of its product portfolio, which comprise titanium-based alloys including aerospace-grade titanium plate products, nickel-based alloys, and stainless products with more differentiated characteristics for specialty applications, including thin-gauge PRS. The December 2, 2020 decision to exit production of standard stainless products represented a significant indicator of impairment in the carrying value of certain long-lived assets. Based on projected cash flows of the Brackenridge, PA operations, including the HRPF, we completed a fair value analysis as of the beginning of the fourth quarter of 2020 and recognized a \$1,032.6 million impairment charge for this facility based on an estimated fair value of \$354 million. This long-lived asset impairment charge was determined using a held in use framework and an income approach, which represents Level 3 unobservable information in the fair value hierarchy. This impairment assessment and valuation method require us to make estimates and assumptions regarding future operating results, cash flows, changes in working capital and capital expenditures, selling prices, profitability, and the cost of capital. Many of these assumptions are determined by reference to market participants we have identified. For example, the weighted average cost of capital (WACC) used in our discounted cash flow assessment was 9.3% and the long-term growth rate was 2%. Although we believe that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions.

Goodwill is reviewed annually in the fourth quarter of each year for impairment or more frequently if impairment indicators arise. Other events and changes in circumstances may also require goodwill to be tested for impairment between annual measurement dates. At December 31, 2021, the Company had \$227.9 million of goodwill on its consolidated balance sheet, all of which relates to the HPMC segment. Goodwill decreased \$12.8 million in 2021 due to the allocation of \$12.2 million to the sale of the Flowform Products business and a \$0.6 million decrease from the impact of foreign currency translation on goodwill denominated in functional currencies other than the U.S. dollar.

For our annual goodwill impairment evaluation performed in the fourth quarter of 2021, quantitative goodwill assessments were performed for the two HPMC reporting units with goodwill. Fair values were determined by using a quantitative assessment that may include discounted cash flow and multiples of cash earnings valuation techniques, plus valuation comparisons to recent public sale transactions of similar businesses, if any, which represents Level 3 unobservable information in the fair value hierarchy. These impairment assessments and valuation methods require us to make estimates and assumptions regarding revenue growth, changes in working capital and capital expenditures, selling prices and profitability that drive cash flows, and the WACC. Many of these assumptions are determined by reference to market participants we have identified. For example, our WACC used in our discounted cash flow assessments was 11.3% and long-term growth rates ranged from 3% to 3.5%. The estimated effect of changing the WACC by 0.50% would decrease the fair value of the Forged Products reporting unit in the case of an increase in the WACC, or increase the fair value of the Forged Products reporting unit in the case of a decrease in the WACC, by approximately \$70 million. Although we believe that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions.

The \$227.9 million of goodwill remaining as of December 31, 2021 on our consolidated balance sheet is comprised of \$161.2 million at the Forged Products reporting unit and \$66.7 million at the Specialty Materials reporting unit. For our annual goodwill impairment evaluation performed in the fourth quarter of 2021, the Specialty Materials reporting unit had a fair value that was significantly in excess of carrying value. The Forged Products reporting unit had a fair value that exceeded carrying value by more than 40%, representing an increase in fair value subsequent to the interim goodwill impairment charge recorded for this reporting unit in the second quarter of 2020 as discussed below, and the annual evaluation as of December 31, 2020.

As a result, no impairments were determined to exist from the annual goodwill impairment evaluation for the years ended December 31, 2021, 2020 and 2019. In order to validate the reasonableness of the estimated fair values of the reporting units as of the valuation date, a reconciliation of the aggregate fair values of all reporting units to market capitalization was performed using a reasonable control premium. In addition, no indicators of impairment were observed in 2021 or 2020 associated with any of our long-lived assets in the HPMC segment.

During the second quarter of 2020, we performed an interim goodwill impairment analysis on the Forged Products reporting unit and its \$460.4 million goodwill balance based on assessed potential indicators of impairment, including recent disruptions to the global commercial aerospace market resulting from the COVID-19 pandemic, and the increasing uncertainty of near-term demand requirements of aero-engine and airframe markets based on government responses to the pandemic and ongoing interactions with customers. In the previous 2019 annual goodwill impairment evaluation, this reporting unit had a fair value that exceeded carrying value by approximately 30%. As a result of the second quarter 2020 interim goodwill impairment evaluation, we determined that the fair value of the Forged Products reporting unit was below carrying value, including goodwill, by \$287.0 million. This was primarily due to changes in the timing and amount of expected cash flows resulting from lower projected revenues, profitability and cash flows due to near-term reductions in commercial aerospace market demand. Consequently, during the second quarter of 2020, we recorded a \$287.0 million impairment charge for the partial impairment of Forged Products reporting unit goodwill, most of which was assigned from the Company's 2011 Ladish acquisition that was not deductible for income tax purposes.

For the 2020 interim impairment analysis, fair value was determined by a quantitative assessment that used a discounted cash flow technique, which represents Level 3 unobservable information in the fair value hierarchy. The impairment assessment and valuation method require us to make estimates and assumptions regarding future operating results, cash flows, changes in working capital and capital expenditures, selling prices, profitability, and the cost of capital. Many of these assumptions are determined by reference to market participants we have identified. For example, our weighted average cost of capital used in our discounted cash flow assessment was 11.6%, and long-term growth rate was 3.5%. Although we believe that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions.

Income Taxes

The provision for, or benefit from, income taxes includes deferred taxes resulting from temporary differences in income for financial and tax purposes using the liability method. Such temporary differences result primarily from differences in the carrying value of assets and liabilities. Future realization of deferred income tax assets requires sufficient taxable income within the carryback and/or carryforward period available under tax law. On a quarterly basis, we evaluate the realizability of our deferred tax assets.

The evaluation includes the consideration of all available evidence, both positive and negative, regarding the estimated future reversals of existing taxable temporary differences, estimated future taxable income exclusive of reversing temporary differences and carryforwards, historical taxable income in prior carryback periods if carryback is permitted, and potential tax planning strategies which may be employed to prevent an operating loss or tax credit carryforward from expiring unused. In situations where a three-year cumulative loss condition exists, accounting standards limit the ability to consider projections of future results as positive evidence to assess the realizability of deferred tax assets. Valuation allowances are established when it is estimated that it is more likely than not that the tax benefit of the deferred tax asset will not be realized.

Results in 2021, 2020 and 2019 include impacts from income taxes that differ from applicable standard tax rates, primarily related to income tax valuation allowances. In 2020, ATI's U.S. operations returned to a three-year cumulative loss position, limiting our ability to utilize future projections as sources of income when analyzing the need for a valuation allowance. The consolidated income tax provision of \$77.7 million for fiscal year 2020 primarily relates to increases to deferred tax asset valuation allowances based on an analysis of the expected realization of deferred tax assets and liabilities within applicable expiration periods. In 2021, ATI continues to maintain income tax valuation allowances on its U.S. Federal and state deferred tax assets. In addition, we have \$15.8 million of valuation allowances on amounts recorded in other comprehensive loss on the consolidated balance sheet as of December 31, 2021.

At December 31, 2019, our U.S. results had switched from a three-year cumulative loss position to a three-year cumulative income position, allowing ATI to utilize forecasts of future profits as a source of income when evaluating the overall need for a valuation allowance. We determined that valuation allowances on net deferred tax asset balances for federal and certain state jurisdictions are no longer required. Certain individual tax attributes still require a valuation allowance based on expected utilization. At December 31, 2019, our deferred tax asset valuation allowance was \$94.5 million. The change in the overall valuation allowance for 2019 includes amounts utilized during the year as part of the reported effective tax rate, as well as a \$45.1 million reduction at December 31, 2019 based on a change in judgment on the realizability of deferred tax assets.

While we remain in a cumulative loss condition, our ability to evaluate the realizability of deferred tax assets is generally limited to the ability to offset timing differences on taxable income associated with deferred tax liabilities. Therefore, a change in estimate of deferred tax asset valuation allowances for federal, state, or foreign jurisdictions during this cumulative loss

condition period will primarily be affected by changes in estimates of the time periods that deferred tax assets and liabilities will be realized, or on a limited basis to tax planning strategies that may result in a change in the amount of taxable income realized.

Beginning in 2020, the U.S. government has enacted various relief packages in response to the COVID-19 pandemic. Due to our valuation allowance in the U.S., the impact to income tax expense has been minimal. We are assessing employee retention tax credits and other available government incentives and may recognize benefits from these various pandemic-related legislative initiatives in future periods.

Retirement Benefits

We have defined contribution retirement plans or benefit pension plans covering substantially all of our employees. We also sponsor several postretirement plans covering certain hourly and salaried employees and retirees. These plans provide health care and life insurance benefits for eligible employees. Company contributions to defined contribution retirement plans are generally based on a percentage of eligible pay or based on hours worked, and are funded with cash. All of ATI's defined benefit pension plans are closed to new entrants, and at most ATI operations with pension participants the plans are frozen for all future benefit accruals, with less than 10% of participants in ATI's U.S. qualified defined benefit plans still earning additional pension service. Additionally, all of the remaining, collectively-bargained defined benefit retiree health care plans at ATI's operations are closed to new entrants, with cost caps in place for these obligations. As a result of these actions, ATI's retirement savings and other postretirement benefit programs have largely transitioned to a defined contribution structure.

Under U.S. generally accepted accounting principles, amounts recognized in financial statements for defined benefit pension plans are determined on an actuarial basis, rather than as contributions are made to the plan. A significant element in determining our pension income or expense in accordance with the accounting standards is the expected investment return on plan assets. In establishing the expected return on plan investments, which is reviewed annually in the fourth quarter, we take into consideration input from our third party pension plan asset managers and actuaries regarding the types of securities the plan assets are invested in, how those investments have performed historically, and expectations for how those investments will perform in the future. Our weighted average expected long-term return on pension plan investments was 6.71% in 2021, and the weighted average expected long-term rate of return on pension plan investments for 2022 will be 6.43%. We apply the assumed rate of return to the market value of plan assets at the end of the previous year. This produces the expected return on plan assets that is included in annual pension expense for the current year. The actual returns on pension plan assets for the last five years have been 12.4% for 2021, 15.2% for 2020, 15.1% for 2019, (4.8)% for 2018, and 16.9% for 2017. The effect of increasing, or lowering, the expected return on pension plan investments by 0.25% would result in additional pre-tax annual income, or expense, of approximately \$5 million. The cumulative difference between the expected return and the actual return on plan assets is deferred and amortized into pension income or expense over future periods. The amount of expected return on plan assets can vary significantly from year-to-year since the calculation is dependent on the market value of plan assets as of the end of the preceding year. U.S. generally accepted accounting principles allow companies to calculate the expected return on pension assets using either an average of fair market values of pension assets over a period not to exceed five years, which reduces the volatility in reported pension income or expense, or their fair market value at the end of the previous year. However, the U.S. Securities and Exchange Commission currently does not permit companies to change from the fair market value at the end of the previous year methodology, which is the methodology that we use, to an averaging of fair market values of plan assets methodology. As a result, our results of operations and those of other companies, including companies with which we compete, may not be comparable due to these different methodologies in calculating the expected return on pension investments.

In accordance with accounting standards, we determine the discount rate used to value pension plan liabilities as of the last day of our fiscal year. The discount rate reflects the current rate at which the pension liabilities could be effectively settled. In estimating this rate, we receive input from our actuaries regarding the rates of return on high quality, fixed-income investments with maturities matched to the expected future retirement benefit payments. Based on this assessment, we established a discount rate of 2.95% for valuing the pension liabilities as of December 31, 2021, and for determining the pension expense for 2022. We had previously assumed a discount rate of 2.60% at the end of 2020 and 3.40% at the end of 2019. The estimated effect of changing the discount rate by 0.50% would decrease pension liabilities in the case of an increase in the discount rate, or increase pension liabilities in the case of a decrease in the discount rate, by approximately \$145 million. Such a change in the discount rate would decrease pension expense in the case of an increase in the discount rate, or increase pension expense in the case of a decrease in the discount rate, by less than \$1 million. The effect on pension liabilities for changes to the discount rate, as well as the net effect of other changes in actuarial assumptions and experience, are deferred and amortized over future periods in accordance with the accounting standards.

As discussed above, gains and losses due to differences between actual and expected results for investment returns on plan assets, changes in the discount rate used to value benefit obligations, and other changes in estimates such as participant life expectancy are deferred and recognized in the consolidated statement of operations over future periods. However, for balance

sheet presentation, these gains and losses are included in the determination of benefit obligations, net of plan assets, included on the year-end consolidated balance sheet. At December 31, 2021, the Company had approximately \$1.4 billion of pre-tax net actuarial losses on its pension obligations, primarily related to an extended decline over the last several years in the discount rate used to value the pension obligations. These actuarial losses have been recognized on the consolidated balance sheet through a reduction in stockholders' equity, and are being recognized in the consolidated statement of operations through expense amortizations over future years. Due to all of ATI's defined benefit plans being closed to new entrants, with the population predominately frozen for future benefit accruals, the amortization period for accumulated other comprehensive loss recognition for all of these plans is average remaining life expectancy, which is approximately 17 years on a weighted average basis.

With respect to our postretirement plans, under most of the plans, our contributions towards retiree medical premiums are capped based upon the cost as of certain dates, thereby creating a defined contribution. In accordance with U.S. generally accepted accounting standards, postretirement expenses recognized in financial statements associated with defined benefit plans are determined on an actuarial basis, rather than as benefits are paid. We use actuarial assumptions, including the discount rate and the expected trend in health care costs, to estimate the costs and benefit obligations for these plans. The discount rate, which is determined annually at the end of each fiscal year, is developed based upon rates of return on high quality, fixed-income investments. At the end of 2021, we determined the rate to be 2.80%, compared to a 2.45% discount rate in 2020, and a 3.25% discount rate in 2019. The estimated effect of changing the discount rate by 0.50% would decrease postretirement obligations in the case of an increase in the discount rate, or increase postretirement obligations in the case of a decrease in the discount rate, by approximately \$12 million. Such a change in the discount rate would decrease postretirement benefit expense in the case of an increase in the discount rate, or increase postretirement benefit expense in the case of a decrease in the discount rate, by less than \$1 million. Based upon predictions of continued significant medical cost inflation in future years, the annual assumed rate of increase in the per capita cost of covered benefits of health care plans is 6.5% in 2022 and is assumed to gradually decrease to 4.0% in the year 2047 and remain level thereafter. Assumed health care cost trend rates can have a significant effect on the benefit obligation for health care plans, however, the Company's contributions for most of its retiree health plans are capped based on a fixed premium amount, which limits the impact of future health care cost increases.

New Accounting Pronouncements Adopted

In August 2020, the Financial Accounting Standards Board (FASB) issued new accounting guidance related to accounting for convertible instruments. Under this new guidance, embedded conversion features are no longer separated from the host contract for convertible instruments with conversion features that are not required to be accounted for as derivatives, or that do not result in substantial premiums accounted for as paid-in capital. As such, a convertible debt instrument will be accounted for as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. By removing those separation models, the reported interest rate of convertible debt instruments typically will be closer to the coupon interest rate. The new guidance also addresses how convertible instruments are accounted for in the diluted earnings per share calculation, requiring the if-converted method, and requires enhanced disclosures about the terms of convertible instruments and contracts in an entity's own equity. This new guidance is effective for ATI in fiscal year 2022, with early adoption permitted.

We adopted this new accounting guidance related to accounting for convertible instruments effective January 1, 2021 using the modified transition approach with the cumulative effect recognized as an adjustment to the opening balance of retained earnings. This new guidance is applicable to our 3.5% Convertible Senior Notes due 2025 (the 2025 Convertible Notes) that were issued in June 2020, for which the embedded conversion option was required to be separately accounted for as a component of stockholders' equity. Upon adoption on January 1, 2021, long-term debt increased by \$45.4 million and stockholders' equity decreased by the same amount, representing the net impact of two adjustments: (1) the \$49.8 million value of the embedded conversion, which is net of allocated offering costs, previously classified in additional paid-in capital in stockholders' equity, and (2) a \$4.4 million increase to retained earnings for the cumulative effect of adoption primarily related to the non-cash interest expense recorded in fiscal year 2020 for the amortization of the portion of the 2025 Convertible Notes allocated to stockholders' equity. Prospectively, the reported interest expense for the 2025 Convertible Notes will no longer include the non-cash interest expense of the equity component as required under prior accounting standards and will be closer to the 3.5% cash coupon rate. There was no impact to ATI's earnings per share calculation as it previously applied the if-converted method to the 2025 Convertible Notes given our flexibility to settle conversions of the 2025 Convertible Notes in cash, shares of ATI's common stock or a combination thereof, at our election.

Pending Accounting Pronouncements

In November 2021, the FASB issued new accounting guidance related to disclosures about certain types of government assistance. This new guidance requires business entities that account for transactions with a government by analogizing to a grant or contribution accounting model to make certain annual disclosures. It requires disclosure of the nature and significant terms and considerations of the transactions, the accounting policies used and the effects of those transactions on an entity's financial statements. This new guidance is effective for ATI in fiscal year 2022, with early adoption permitted. We did not early adopt this guidance. The adoption of these changes is not expected to have an impact on our consolidated financial statements other than the annual disclosure requirements.

Forward-Looking Statements

From time-to-time, the Company has made and may continue to make "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Certain statements in this report relate to future events and expectations and, as such, constitute forward-looking statements. Forward-looking statements include those containing such words as "anticipates," "believes," "estimates," "expects," "would," "should," "will," "will likely result," "forecast," "outlook," "projects," and similar expressions. Such forward-looking statements are based on management's current expectations and include known and unknown risks, uncertainties and other factors, many of which the Company is unable to predict or control, that may cause our actual results or performance to materially differ from any future results or performance expressed or implied by such statements. Various of these factors are described in Item 1A, Risk Factors, of this Annual Report on Form 10-K and will be described from time-to-time in the Company filings with the SEC, including the Company's Annual Reports on Form 10-K and the Company's subsequent reports filed with the SEC on Form 10-Q and Form 8-K, which are available on the SEC's website at www.sec.gov and on the Company's website at www.atimetals.com. We assume no duty to update our forward-looking statements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

As part of our risk management strategy, we utilize derivative financial instruments, from time to time, to hedge our exposure to changes in energy and raw material prices, foreign currencies, and interest rates. We monitor the third-party financial institutions that are our counterparty to these financial instruments on a daily basis and diversify our transactions among counterparties to minimize exposure to any one of these entities. Fair values for derivatives were measured using exchange-traded prices for the hedged items including consideration of counterparty risk and ATI's credit risk. Our exposure to volatility in interest rates is presently not material, as nearly all of our debt is at fixed interest rates.

Volatility of Interest Rates. We may enter into derivative interest rate contracts to maintain a reasonable balance between fixed- and floating-rate debt. ATI has a \$50 million floating-for-fixed interest rate swap which, as amended and extended to June 2024, converts a portion of the Term Loan to a 4.21% fixed rate. We designated the interest rate swap as a cash flow hedge of our exposure to the variability of the payment of interest on a portion of its Term Loan borrowings. The ineffective portion at hedge inception, determined from the fair value of the swap immediately prior to amendment in July 2019, was amortized to interest expense over the initial Term Loan swap maturity date of January 12, 2021. Any gain or loss associated with this hedging arrangement is included in interest expense. At December 31, 2021, the net mark-to-market valuation of the outstanding interest rate swap was an unrealized pre-tax loss of \$1.6 million, comprised of \$0.9 million in other current liabilities and \$0.7 million in other long-term liabilities on the balance sheet.

Volatility of Energy Prices. Energy resources markets are subject to conditions that create uncertainty in the prices and availability of energy resources. The prices for and availability of electricity, natural gas, oil and other energy resources are subject to volatile market conditions. These market conditions often are affected by political and economic factors beyond our control. Increases in energy costs, or changes in costs relative to energy costs paid by competitors, have and may continue to adversely affect our profitability. To the extent that these uncertainties cause suppliers and customers to be more cost sensitive, increased energy prices may have an adverse effect on our results of operations and financial condition. We use approximately 6 to 8 million MMBtu's of natural gas annually, depending upon business conditions, in the manufacture of our products. These purchases of natural gas expose us to risk of higher gas prices. For example, a hypothetical \$1.00 per MMBtu increase in the price of natural gas would result in increased annual energy costs of approximately \$6 to \$8 million. We use several approaches to minimize any material adverse effect on our financial condition or results of operations from volatile energy prices. These approaches include incorporating an energy surcharge on many of our products and using financial derivatives to reduce exposure to energy price volatility.

At December 31, 2021, the outstanding financial derivatives used to hedge our exposure to energy cost volatility included natural gas hedges. At December 31, 2021, we hedged approximately 70% of our annual forecasted domestic requirements for natural gas for 2022, approximately 35% for 2023 and approximately 5% for 2024. At December 31, 2021, the net mark-to-market valuation of the outstanding natural gas hedges was an unrealized pre-tax gain of \$1.6 million, comprised of \$2.0

million in prepaid expenses and other current assets, \$0.5 million in other assets, \$0.7 million in other current liabilities and \$0.2 million in other long-term liabilities on the balance sheet. For the year ended December 31, 2021, the effects of natural gas hedging activity decreased cost of sales by \$5.3 million.

Volatility of Raw Material Prices. We use raw materials surcharge and index mechanisms to offset the impact of increased raw material costs; however, competitive factors in the marketplace can limit our ability to institute such mechanisms, and there can be a delay between the increase in the price of raw materials and the realization of the benefit of such mechanisms. For example, in 2021 we used approximately 60 million pounds of nickel; therefore a hypothetical change of \$1.00 per pound in nickel prices would result in increased costs of approximately \$60 million. While we enter into raw materials futures contracts from time-to-time to hedge exposure to price fluctuations, such as for nickel, we cannot be certain that our hedge position adequately reduces exposure. We believe that we have adequate controls to monitor these contracts, but we may not be able to accurately assess exposure to price volatility in the markets for critical raw materials.

The majority of our products are sold utilizing raw material surcharges and index mechanisms. However, as of December 31, 2021, we had entered into financial hedging arrangements, primarily at the request of our customers, related to firm orders, for an aggregate amount of approximately 5 million pounds of nickel with hedge dates through 2024. The aggregate notional amount hedged is approximately 10% of a single year's estimated nickel raw material purchase requirements. Any gain or loss associated with these hedging arrangements is included in cost of sales. At December 31, 2021, the net mark-to-market valuation of our outstanding raw material hedges was an unrealized pre-tax gain of \$4.9 million, comprised of \$5.0 million in prepaid expenses and other current assets, \$0.1 million in other assets, and \$0.2 million in other current liabilities on the balance sheet.

Foreign Currency Risk. Foreign currency exchange contracts are used, from time-to-time, to limit transactional exposure to changes in currency exchange rates. We sometimes purchase foreign currency forward contracts that permit us to sell specified amounts of foreign currencies expected to be received from our export sales for pre-established U.S. dollar amounts at specified dates. The forward contracts are denominated in the same foreign currencies in which export sales are denominated. These contracts are designated as hedges of the variability in cash flows of a portion of the forecasted future export sales transactions which otherwise would expose the Company to foreign currency risk, primarily the euro. In addition, we may also hedge forecasted capital expenditures and designate cash balances held in foreign currencies as hedges of forecasted foreign currency transactions. At December 31, 2021, we had no significant outstanding foreign currency forward contracts.

Item 8. Financial Statements and Supplementary Data

Report of Independent Registered Public Accounting Firm

**To the Shareholders and the Board of Directors of
Allegheny Technologies Incorporated and Subsidiaries**

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Allegheny Technologies Incorporated and Subsidiaries (the Company) as of December 31, 2021 and 2020, the related consolidated statements of operations, comprehensive income (loss), cash flows, and statements of changes in consolidated equity for each of the three years in the period ended December 31, 2021, and the related notes (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, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, 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, 2021, 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 25, 2022 expressed an unqualified opinion thereon.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, in 2021 the Company elected to change its method of accounting for valuing inventories that previously used the last-in, first-out (LIFO) method to the average cost method for raw materials and to the first-in, first-out (FIFO) method for work-in-process and finished goods inventory for all years presented.

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 Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter 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 matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill impairment assessment

Description of the Matter

At December 31, 2021, the Company had \$227.9 million of goodwill on its consolidated balance sheet. As discussed in Note 1 to the consolidated financial statements, goodwill is reviewed annually for impairment, or more frequently if impairment indicators arise. The assessment of goodwill for impairment requires a comparison of the fair value of each reporting unit that has goodwill associated with its operations to its carrying amount, including goodwill. If the Company's carrying amount of a reporting unit exceeds its fair value, an impairment loss would be measured as the excess of the carrying value over the calculated fair value.

Auditing the Company's annual goodwill impairment analysis was complex and highly judgmental due to the significant estimation required to determine the fair value of the Company's reporting units. In particular, the fair value estimate of the Company's Forged Products reporting unit was sensitive to significant assumptions, such as revenue growth, profitability and the weighted-average cost of capital. These significant assumptions are forward looking and could be materially affected by future market or economic conditions.

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 goodwill impairment evaluation process, including controls over management's review of the significant assumptions described above.

Our audit procedures to test the estimated fair value of the Company's reporting units included, among others, evaluating management's significant assumptions described above and used within the fair value calculation, and testing the completeness and accuracy of the underlying data. For example, we evaluated the reasonableness of management's significant assumptions by analyzing the general economic environment and the economic environment of the Company's industry. We compared certain significant assumptions to existing market information and, where relevant, to the plans of the Company, including management's expectations regarding the Company's business model, customer base, product mix and other relevant factors. We evaluated management's ability to accurately project future operating results by comparing actual results to management's historical forecasts. Additionally, we performed sensitivity analyses of the significant assumptions to evaluate the changes in the fair value of the reporting units that would result from reasonably expected changes in the significant assumptions. With the assistance of our valuation specialists, we evaluated the reasonableness of the Company's valuation methodology and significant assumptions. Our procedures, among others, included evaluating the selection of the discount rate by comparing the selected discount rate to the Company's weighted average cost of capital, testing the source information underlying the determination of the discount rate, and developing a range of independent estimates and comparing those to the discount rate selected by management. Furthermore, we tested management's annual reconciliation of the fair value of the reporting units to the market capitalization of the Company. In addition, we evaluated the impact of changes in management's forecast from the annual impairment assessment date to December 31, 2021.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1996.

Pittsburgh, Pennsylvania

February 25, 2022

Allegheny Technologies Incorporated and Subsidiaries
Consolidated Statements of Operations

(In millions, except per share amounts)

For the Years Ended December 31,	2021	2020*	2019*
Sales	\$ 2,799.8	\$ 2,982.1	\$ 4,122.5
Cost of sales	2,466.6	2,689.3	3,484.5
Gross profit	333.2	292.8	638.0
Selling and administrative expenses	226.9	201.0	267.2
Impairment of goodwill	—	287.0	—
Restructuring charges (credits)	(11.3)	1,107.5	4.5
Operating income (loss)	117.6	(1,302.7)	366.3
Nonoperating retirement benefit income (expense)	37.2	(62.1)	(73.6)
Interest expense, net	(96.9)	(94.4)	(99.0)
Debt extinguishment charge	(65.5)	(21.5)	(21.6)
Other income (loss), net	18.2	(1.2)	64.4
Income (loss) before income taxes	10.6	(1,481.9)	236.5
Income tax provision (benefit)	26.8	77.7	(28.5)
Net income (loss)	(16.2)	(1,559.6)	265.0
Less: Net income attributable to noncontrolling interests	22.0	13.0	12.5
Net income (loss) attributable to ATI	\$ (38.2)	\$ (1,572.6)	\$ 252.5
Basic net income (loss) attributable to ATI per common share	\$ (0.30)	\$ (12.43)	\$ 2.01
Diluted net income (loss) attributable to ATI per common share	\$ (0.30)	\$ (12.43)	\$ 1.81

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

The accompanying notes are an integral part of these statements.

Allegheny Technologies Incorporated and Subsidiaries
Consolidated Statements of Comprehensive Income (Loss)

(In millions)

For the Years Ended December 31,	2021	2020*	2019*
Net income (loss)	\$ (16.2)	\$ (1,559.6)	\$ 265.0
Currency translation adjustment			
Unrealized net change arising during the period	(4.6)	32.5	(4.0)
Derivatives			
Net derivatives gain (loss) on hedge transactions	15.5	(2.8)	9.7
Reclassification to net income (loss) of net realized (gain) loss	(11.4)	6.0	(4.1)
Income taxes on derivative transactions	—	—	(4.7)
Total	4.1	3.2	10.3
Postretirement benefit plans			
Actuarial loss			
Amortization of net actuarial loss	89.5	85.3	87.2
Net gain (loss) arising during the period	155.9	(128.4)	(180.5)
Prior service cost			
Amortization to net income (loss) of net prior service credits	(1.8)	(3.1)	(2.6)
Settlement gain	(21.9)	—	—
Income taxes on postretirement benefit plans	(15.5)	—	(20.4)
Total	237.2	(46.2)	(75.5)
Other comprehensive income (loss), net of tax	236.7	(10.5)	(69.2)
Comprehensive income (loss)	220.5	(1,570.1)	195.8
Less: Comprehensive income attributable to noncontrolling interests	26.8	24.4	11.2
Comprehensive income (loss) attributable to ATI	\$ 193.7	\$ (1,594.5)	\$ 184.6

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

The accompanying notes are an integral part of these statements.

Allegheny Technologies Incorporated and Subsidiaries
Consolidated Balance Sheets

<i>(In millions, except share and per share amounts)</i>	December 31, 2021	December 31, 2020*
Assets		
Cash and cash equivalents	\$ 687.7	\$ 645.9
Accounts receivable, net	470.0	345.8
Short-term contract assets	53.9	38.9
Inventories, net	1,046.3	997.1
Prepaid expenses and other current assets	48.8	38.3
Total Current Assets	2,306.7	2,066.0
Property, plant and equipment, net	1,528.5	1,469.2
Goodwill	227.9	240.7
Other assets	222.1	259.0
Total Assets	\$ 4,285.2	\$ 4,034.9
Liabilities and Stockholders' Equity		
Accounts payable	\$ 375.5	\$ 290.6
Short-term contract liabilities	116.2	111.8
Short-term debt and current portion of long-term debt	131.3	17.8
Other current liabilities	233.4	233.1
Total Current Liabilities	856.4	653.3
Long-term debt	1,711.6	1,550.0
Accrued postretirement benefits	258.1	326.7
Pension liabilities	415.4	673.6
Other long-term liabilities	211.0	189.9
Total Liabilities	3,452.5	3,393.5
Equity:		
ATI Stockholders' Equity:		
Preferred stock, par value \$0.10: authorized-50,000,000 shares; issued-none	—	—
Common stock, par value \$0.10: authorized-500,000,000 shares; issued-127,484,902 shares at December 31, 2021 and 126,820,440 shares at December 31, 2020; outstanding-127,253,045 shares at December 31, 2021 and 126,817,768 shares at December 31, 2020	12.7	12.7
Additional paid-in capital	1,596.7	1,625.5
Retained earnings	72.7	106.5
Treasury stock: 231,857 shares at December 31, 2021 and 2,672 shares at December 31, 2020	(4.8)	—
Accumulated other comprehensive loss, net of tax	(991.7)	(1,223.6)
Total ATI Stockholders' Equity	685.6	521.1
Noncontrolling Interests	147.1	120.3
Total Stockholders' Equity	832.7	641.4
Total Liabilities and Stockholders' Equity	\$ 4,285.2	\$ 4,034.9

*December 31, 2020 reflects the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to December 31, 2020 amounts as a result of this change.

The accompanying notes are an integral part of these statements.

Allegheny Technologies Incorporated and Subsidiaries
Consolidated Statements of Cash Flows

(In millions)

For the Years Ended December 31,	2021	2020*	2019*
Operating Activities:			
Net income (loss)	\$ (16.2)	\$ (1,559.6)	\$ 265.0
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	143.9	143.3	151.1
Deferred taxes	1.0	69.9	(40.9)
Impairment of goodwill	—	287.0	—
Debt extinguishment charge	65.5	21.5	21.6
Gain from disposal of property, plant and equipment, net	(2.9)	(2.9)	(90.6)
Net loss (gain) from sales of businesses	(13.8)	—	7.1
Non-cash restructuring charges	—	1,041.5	—
Non-cash joint venture impairment charge	—	—	11.4
Change in operating assets and liabilities:			
Retirement benefits	(110.7)	(91.9)	(103.3)
Accounts receivable	(126.0)	208.4	(52.1)
Inventories	(53.9)	158.2	25.2
Accounts payable	88.5	(230.5)	30.1
Accrued income taxes	(2.6)	2.4	4.9
Accrued liabilities and other	43.3	119.6	0.6
Cash provided by operating activities	16.1	166.9	230.1
Investing Activities:			
Purchases of property, plant and equipment	(152.6)	(136.5)	(168.2)
Proceeds from disposal of property, plant and equipment	20.8	5.9	92.0
Proceeds from sales of businesses, net of transaction costs	53.1	—	158.1
Other	1.4	1.9	(0.2)
Cash provided by (used in) investing activities	(77.3)	(128.7)	81.7
Financing Activities:			
Borrowings on long-term debt	675.7	391.4	350.0
Payments on long-term debt and finance leases	(515.6)	(212.1)	(507.6)
Net borrowings under credit facilities	21.7	0.2	4.9
Purchase of convertible note capped call	—	(19.4)	—
Debt issuance costs	(9.5)	(9.1)	(5.5)
Debt extinguishment charge	(64.5)	(19.1)	(20.9)
Dividends paid to noncontrolling interests	—	(7.2)	(14.0)
Shares repurchased for income tax withholding on share-based compensation	(4.8)	(7.8)	(9.9)
Cash provided by (used in) financing activities	103.0	116.9	(203.0)
Increase in cash and cash equivalents	41.8	155.1	108.8
Cash and cash equivalents at beginning of year	645.9	490.8	382.0
Cash and cash equivalents at end of year	\$ 687.7	\$ 645.9	\$ 490.8

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

Amounts presented on the Consolidated Statements of Cash Flows may not agree to the corresponding changes in consolidated balance sheet items due to the accounting for purchases and sales of businesses and the effects of foreign currency translation.

The accompanying notes are an integral part of these statements.

Allegheny Technologies Incorporated and Subsidiaries
Statements of Changes in Consolidated Equity

<i>(In millions, except per share amounts)</i>	ATI Stockholders						
	Common Stock	Additional Paid-In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Non- controlling Interests	Total Equity
Balance, December 31, 2018	\$ 12.7	\$ 1,615.4	\$ 1,422.0	\$ (30.6)	\$ (1,133.8)	\$ 105.9	\$ 1,991.6
Net income	—	—	252.5	—	—	12.5	265.0
Other comprehensive loss	—	—	—	—	(67.9)	(1.3)	(69.2)
Cumulative effect of change in accounting principle	—	—	5.1	—	—	—	5.1
Dividends paid to noncontrolling interest	—	—	—	—	—	(14.0)	(14.0)
Employee stock plans	—	2.6	(0.3)	12.4	—	—	14.7
Balance, December 31, 2019*	\$ 12.7	\$ 1,618.0	\$ 1,679.3	\$ (18.2)	\$ (1,201.7)	\$ 103.1	\$ 2,193.2
Net income (loss)	—	—	(1,572.6)	—	—	13.0	(1,559.6)
Other comprehensive income (loss)	—	—	—	—	(21.9)	11.4	(10.5)
Equity component of convertible note	—	49.8	—	—	—	—	49.8
Convertible note capped call	—	(19.4)	—	—	—	—	(19.4)
Dividends paid to noncontrolling interest	—	—	—	—	—	(7.2)	(7.2)
Employee stock plans	—	(22.9)	(0.2)	18.2	—	—	(4.9)
Balance, December 31, 2020*	\$ 12.7	\$ 1,625.5	\$ 106.5	\$ —	\$ (1,223.6)	\$ 120.3	\$ 641.4
Net income (loss)	—	—	(38.2)	—	—	22.0	(16.2)
Other comprehensive income	—	—	—	—	231.9	4.8	236.7
Cumulative effect of adoption of new accounting standard	—	(49.8)	4.4	—	—	—	(45.4)
Employee stock plans	—	21.0	—	(4.8)	—	—	16.2
Balance, December 31, 2021	\$ 12.7	\$ 1,596.7	\$ 72.7	\$ (4.8)	\$ (991.7)	\$ 147.1	\$ 832.7

*December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to December 31, 2020 amounts as a result of this change.

The accompanying notes are an integral part of these statements.

Notes to Consolidated Financial Statements

Note 1. Summary of Significant Accounting Policies

Principles of Consolidation and Reporting

The consolidated financial statements include the accounts of Allegheny Technologies Incorporated and its subsidiaries. The financial results of majority-owned joint ventures are consolidated into the Company's operating results and financial position, with the minority ownership interest recognized in the consolidated statement of operations as net income attributable to noncontrolling interests, and as equity attributable to the noncontrolling interests within total stockholders' equity. The results for the Shanghai STAL Precision Stainless Steel Company Limited (STAL) are reported on a one month lag. Investments in which the Company exercises significant influence, but which it does not control (generally a 20% to 50% ownership interest) are accounted for under the equity method of accounting, whereby ATI's carrying value of the equity method investment on the statement of financial position is the capital investment and any undistributed profit or loss, and is classified in Other (noncurrent) assets. The profit or loss attributable to ATI from equity method investments is included in the consolidated statements of operations as a component of Other (non-operating) income (expense). See Note 7 for further explanation of the Company's joint ventures. Intercompany accounts and transactions have been eliminated. Unless the context requires otherwise, "Allegheny Technologies," "ATI" and the "Company" refer to Allegheny Technologies Incorporated and its subsidiaries.

Risks and Uncertainties and Use of Estimates

The preparation of consolidated financial statements in conformity with United States generally accepted accounting principles requires management to make estimates and assumptions that affect reported amounts of assets and liabilities at the date of the financial statements, as well as the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates. Management believes that the estimates are reasonable. Certain prior year amounts have been reclassified in order to conform with the 2021 presentation.

The Company markets its products to a diverse customer base, principally throughout the United States. No single customer accounted for more than 10% of sales for any year presented. The major end markets for the ATI's products are customers in the aerospace & defense, energy, automotive, construction and mining, food equipment and appliances, and medical markets.

At December 31, 2021, ATI has approximately 6,300 active employees, of which approximately 20% are located outside the United States. Approximately 40% of ATI's workforce is covered by various collective bargaining agreements (CBAs), predominantly with the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied & Industrial Service Workers International Union, AFL-CIO, CLC (USW). The Company's CBA with the USW involving approximately 1,100 active full-time represented employees located primarily within the AA&S segment operations, as well as a number of inactive employees, expired on February 28, 2021. USW-represented employees continued to work under the terms of the expired CBA until March 30, 2021 when they engaged in a strike. On July 14, 2021, ATI announced that a new four-year labor agreement with the USW was ratified, ending the strike. The Company has CBAs with approximately 800 full-time employees that expire in 2022.

Change in Accounting Principle:

During the fourth quarter of 2021, the Company elected to change its method for valuing its inventories that previously used the last-in, first-out (LIFO) method to a current costing method consisting of the average cost method for raw materials and the first-in, first-out (FIFO) method for work-in-process and finished goods inventory, hereafter referred to as "current cost method". Total inventories accounted for under the LIFO method represented approximately 65% of the Company's total inventories prior to this change in method. The Company believes that using the current cost method is preferable as it improves comparability with the Company's peers, more closely resembles the physical flow of inventory, and aligns with how the Company internally manages the business.

The effects of the change in accounting principle of changing from LIFO to the current cost method have been retrospectively applied to all periods presented. As a result of the retrospective application of the change in accounting principle, certain financial statement line items in the Company's consolidated statements of operations, comprehensive income (loss), shareholders' equity and cash flows for the years ended December 31, 2019 were adjusted as necessary. This change in accounting principle had no impact to any of the consolidated financial statements for 2020.

The following table reflects the effect of the change in the accounting principle on the 2021 consolidated financial statements:

For the Year Ending December 31, 2021	As Computed under LIFO	As Computed under Current Cost Method	Effect of Change
<i>(dollars in millions, except per share data)</i>			
Statement of Operations			
Cost of sales	\$ 2,559.2	\$ 2,466.6	\$ (92.6)
Gross profit	\$ 240.6	\$ 333.2	\$ 92.6
Operating income	\$ 25.0	\$ 117.6	\$ 92.6
Income (loss) before income taxes	\$ (82.0)	\$ 10.6	\$ 92.6
Net loss	\$ (108.8)	\$ (16.2)	\$ 92.6
Net loss attributable to ATI	\$ (130.8)	\$ (38.2)	\$ 92.6
Basic net loss per common share	\$ (1.03)	\$ (0.30)	\$ 0.73
Diluted net loss per common share	\$ (1.03)	\$ (0.30)	\$ 0.73
Statement of Comprehensive Income			
Net loss	\$ (108.8)	\$ (16.2)	\$ 92.6
Comprehensive income	\$ 127.9	\$ 220.5	\$ 92.6
Comprehensive income attributable to ATI	\$ 101.1	\$ 193.7	\$ 92.6
Balance Sheet			
Inventories, net	\$ 953.7	\$ 1,046.3	\$ 92.6
Total current assets	\$ 2,214.1	\$ 2,306.7	\$ 92.6
Total assets	\$ 4,192.6	\$ 4,285.2	\$ 92.6
Retained earnings (deficit)	\$ (19.9)	\$ 72.7	\$ 92.6
Total ATI stockholders' equity	\$ 593.0	\$ 685.6	\$ 92.6
Total stockholders' equity	\$ 740.1	\$ 832.7	\$ 92.6
Total liabilities and stockholders' equity	\$ 4,192.6	\$ 4,285.2	\$ 92.6
Statement of Cash Flows			
Net loss	\$ (108.8)	\$ (16.2)	\$ 92.6
Adjustments to reconcile net loss to net cash provided by operating activities:			
Inventories	\$ 38.7	\$ (53.9)	\$ (92.6)

The following tables reflect the impact to the financial statement line items as a result of the change in accounting principle for the prior periods presented in the accompanying financial statements:

For the Year Ending December 31, 2019	As Reported		Adjustments		As Adjusted	
<i>(dollars in millions, except per share data)</i>						
Statement of Operations						
Cost of sales	\$	3,484.7	\$	(0.2)	\$	3,484.5
Gross profit	\$	637.8	\$	0.2	\$	638.0
Operating income	\$	366.1	\$	0.2	\$	366.3
Other income, net	\$	69.7	\$	(5.3)	\$	64.4
Income before income taxes	\$	241.6	\$	(5.1)	\$	236.5
Net income	\$	270.1	\$	(5.1)	\$	265.0
Net income attributable to ATI	\$	257.6	\$	(5.1)	\$	252.5
Basic net income per common share	\$	2.05	\$	(0.04)	\$	2.01
Diluted net income per common share	\$	1.85	\$	(0.04)	\$	1.81
Statement of Comprehensive Income						
Net income	\$	270.1	\$	(5.1)	\$	265.0
Comprehensive income	\$	200.9	\$	(5.1)	\$	195.8
Comprehensive income attributable to ATI	\$	189.7	\$	(5.1)	\$	184.6
Statement of Cash Flows						
Net income	\$	270.1	\$	(5.1)	\$	265.0
Adjustments to reconcile net income to net cash provided by operating activities:						
Net loss from sales of businesses	\$	1.8	\$	5.3	\$	7.1
Inventories	\$	25.4	\$	(0.2)	\$	25.2

As a result of the accounting change, retained earnings as of January 1, 2019 increased from \$1,422.0 million, as originally reported using the LIFO method, to \$1,427.1 million using the current cost method. The change of \$5.1 million is reflected as a cumulative change in accounting principle in the consolidated statements of shareholders' equity.

Cash and Cash Equivalents

Cash equivalents are highly liquid investments that are readily convertible to cash with original maturities of three months or less.

Accounts Receivable

Accounts receivable are presented net of a reserve for doubtful accounts of \$3.8 million and \$4.3 million at December 31, 2021 and 2020, respectively. Trade credit is extended based upon evaluations of each customer's ability to perform its obligations, which are updated periodically. The Company's accounts receivable reserves are determined based on expected credit losses. Amounts are written-off against the reserve in the period it is determined that the receivable is uncollectible.

Inventories

Inventories are stated at the lower of cost or net realizable value. Costs include direct material, direct labor and applicable manufacturing and engineering overhead, and other direct costs. The term net realizable value is defined as estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. During the fourth quarter of 2021, the Company elected to change its method for valuing its inventories that previously used the LIFO method to the average cost method for raw materials and the FIFO method for work-in-process and finished goods inventory. The Company believes that the current cost method is preferable as it improves comparability with the Company's peers, more closely resembles the physical flow of our inventory, and aligns with how the Company internally manages the business. Other

inventories, including the inventory of the Company's non-U.S. operations, will continue to be valued using the FIFO or average cost methods. The effects of the change in accounting principle of LIFO to the current cost method have been retrospectively applied to all periods presented. See above in "Change in Accounting Principle" section for more information.

The Company evaluates product lines on a quarterly basis to identify inventory carrying values that exceed estimated net realizable value. The calculation of a resulting reserve, if any, is recognized as an expense in the period that the need for the reserve is identified. It is the Company's general policy to write-down to scrap value any inventory that is identified as slow-moving or aged more than twelve months, subject to sales, backlog and anticipated orders considerations. In some instances this aging criterion is up to twenty-four months. Inventory valuation reserves also include amounts pertaining to intercompany profit elimination between different subsidiaries.

Long-Lived Assets

Property, plant and equipment are recorded at cost, including capitalized interest, and include long-lived assets acquired under finance leases. Depreciation is primarily recorded using the straight-line method. Prior to December 2020, property, plant and equipment associated with the Hot-Rolling and Processing Facility (HRPF) in the AA&S segment was being depreciated utilizing the units of production method of depreciation, which the Company believed provided a better matching of costs and revenues. However, based on changed business conditions resulting from the decision to exit production of standard stainless sheet products and the recognition of an impairment charge on the property, plant and equipment associated with the HRPF in December 2020 (see Note 19 for further discussion), depreciation of the remaining carrying value of the HRPF began using the straight-line method in December 2020. The Company periodically reviews estimates of useful life and production capacity assigned to new and in service assets. Significant enhancements, including major maintenance activities that extend the lives of property and equipment, are capitalized. Costs related to repairs and maintenance are charged to expense in the period incurred. The cost and related accumulated depreciation of property and equipment retired or disposed of are removed from the accounts and any related gains or losses are included in income.

The Company monitors the recoverability of the carrying value of its long-lived assets. An impairment charge is recognized when an indicator of impairment occurs and the expected net undiscounted future cash flows from an asset's use (including any proceeds from disposition) are less than the asset's carrying value and the asset's carrying value exceeds its fair value. If an impairment loss is recognized, the adjusted carrying value of the long-lived asset is its new cost basis and this new cost basis is depreciated over the remaining useful life of the asset. Assets to be disposed of by sale are stated at the lower of their fair values or carrying amounts and depreciation is no longer recognized.

Leases

The Company classifies leases as either operating or financing, and records a right-of-use (ROU) asset and a lease liability on the consolidated balance sheets as further discussed below. The lease liability is equal to the present value of the minimum lease payments for the term of the lease, including any optional renewal periods determined to be reasonably certain to be exercised, using the discount rate determined at lease commencement. This discount rate is the rate implicit in the lease, if known; otherwise, the incremental borrowing rate (IBR) for the expected lease term is used. The Company's IBRs approximate the rate the Company would have to pay to borrow on a collateralized basis over a similar term at lease inception. The ROU asset is equal to the initial measurement of the lease liability plus any lease payments made to the lessor at or before the commencement date and any unamortized initial direct costs incurred by the lessee, less any unamortized lease incentives received. The Company has elected to not separate lease components from non-lease components for all asset classes, and has made an accounting policy election to apply the short-term exception, which does not require the capitalization of leases with terms of 12 months or less.

The Company has lease contracts for real property and machinery and equipment, primarily for mobile, office and information technology equipment. At inception of a contract, the Company determines whether the contract is or contains a lease. If the Company has a right to obtain substantially all of the economic benefits from the use of the identified asset and the right to direct the use of the asset, then the contract contains a lease. Several of the Company's real property lease contracts include options to extend the lease term, and the Company reassesses the likelihood of renewal on at least an annual basis. In addition, several real property leases include variable lease payments, for items such as common area maintenance and utilities, which are expensed as incurred as variable lease expense.

There are two types of leases: operating leases and finance leases. Lease classification is determined at lease commencement. A finance lease exists when specific criteria are met that indicate that all the risk and rewards related to the leased assets are transferred to the lessee. All other leases not meeting the finance lease criteria are classified as operating leases. Operating lease expense is recognized on a straight-line basis on the consolidated statement of operations. Finance leases have front-loaded expense recognition which is reported as amortization expense and interest expense on the consolidated statement of operations. ROU assets for operating leases are classified in other long-term assets, and ROU assets for finance leases are

classified in property, plant and equipment on the consolidated balance sheet. For operating leases, short-term lease liabilities are classified in other current liabilities, and long-term lease liabilities are classified in other long-term liabilities on the consolidated balance sheet. For finance leases, short-term lease liabilities are classified in short-term debt, and long-term lease liabilities are classified in long-term debt on the consolidated balance sheet. On the cash flow statement, payments for operating leases are classified as operating activities. Payments for finance leases are classified as a financing activity, with the exception of the interest component of the payment which is classified as an operating activity.

Goodwill

Goodwill is reviewed annually for impairment, or more frequently if impairment indicators arise. The review for goodwill impairment requires a comparison of the fair value of each reporting unit that has goodwill associated with its operations with its carrying amount, including goodwill. If this comparison reflects impairment, then the loss would be measured as the excess of the carrying value over the calculated fair value.

Generally accepted accounting standards provide the option to qualitatively assess goodwill for impairment before completing a quantitative assessment. Under the qualitative approach, if, after assessing the totality of events or circumstances, including both macroeconomic, industry and market factors, and entity-specific factors, the Company determines it is likely (more likely than not) that the fair value of a reporting unit is greater than its carrying amount, then the quantitative impairment analysis is not required. The quantitative assessment may be performed each year for a reporting unit at the Company's option without first performing a qualitative assessment. The Company's quantitative assessment of goodwill for possible impairment includes estimating the fair market value of a reporting unit which has goodwill associated with its operations using discounted cash flow and multiples of cash earnings valuation techniques, plus valuation comparisons to recent public sale transactions of similar businesses, if any. These impairment assessments and valuation methods require the Company to make estimates and assumptions regarding revenue growth, changes in working capital and capital expenditures, selling prices and profitability that drive cash flows, and the weighted average cost of capital. Many of these assumptions are determined by reference to market participants identified by the Company. Although management believes that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions.

Other events and changes in circumstances may also require goodwill to be tested for impairment between annual measurement dates. While a decline in stock price and market capitalization is not specifically cited as a goodwill impairment indicator, a company's stock price and market capitalization should be considered in determining whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. Additionally, a significant decline in a company's stock price may suggest that an adverse change in the business climate may have caused the fair value of one or more reporting units to fall below carrying value. A sustained decline in market capitalization below book value may be determined to require an interim goodwill impairment review.

Environmental

Costs that mitigate or prevent future environmental contamination or extend the life, increase the capacity or improve the safety or efficiency of property utilized in current operations are capitalized. Other costs that relate to current operations or an existing condition caused by past operations are expensed. Environmental liabilities are recorded when the Company's liability is probable and the costs are reasonably estimable, but generally not later than the completion of the feasibility study or the Company's recommendation of a remedy or commitment to an appropriate plan of action. The accruals are reviewed periodically and, as investigations and remediations proceed, adjustments of the accruals are made to reflect new information as appropriate. Accruals for losses from environmental remediation obligations do not take into account the effects of inflation, and anticipated expenditures are not discounted to their present value. The accruals are not reduced by possible recoveries from insurance carriers or other third parties, but do reflect allocations among potentially responsible parties (PRPs) at Federal Superfund sites or similar state-managed sites after an assessment is made of the likelihood that such parties will fulfill their obligations at such sites and after appropriate cost-sharing or other agreements are entered. The measurement of environmental liabilities by the Company is based on currently available facts, present laws and regulations, and current technology. Such estimates take into consideration the Company's prior experience in site investigation and remediation, the data concerning cleanup costs available from other companies and regulatory authorities, and the professional judgment of the Company's environmental experts in consultation with outside environmental specialists, when necessary.

Foreign Currency Translation

Assets and liabilities of international operations are translated into U.S. dollars using year-end exchange rates, while revenues and expenses are translated at average exchange rates during the period. The resulting net translation adjustments are recorded as a component of accumulated other comprehensive income (loss) in stockholders' equity.

Sales Recognition

The following is the Company's accounting policy as it relates to Accounting Standards Codification Topic 606 (ASC 606), Revenue from Customers. This guidance provides a five-step analysis of transactions to determine when and how revenue is recognized, and requires an entity to recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services.

The following is the Company's accounting policy as it relates to the five-step analysis for revenue recognition:

1. **Identify the contract:** The Company has determined that the contract with the customer is established when the customer purchase order is accepted or acknowledged. Long-term agreements (LTAs), which typically extend multiple years, are used by the Company and certain of its customers for its specialty materials, in the form of mill products, powders, parts and components, to reduce their supply uncertainty. While these LTAs generally define commercial terms including pricing, termination clauses and other contractual requirements, they do not represent the contract with the customer.
2. **Identify the performance obligation in the contract:** When the Company accepts or acknowledges the customer purchase order, the type of good or service is defined on a line by line basis. Individual performance obligations are established by virtue of the individual line items identified on the sales order acknowledgment at the time of issuance. Generally, the Company's revenue relates to the sale of goods and contains a single performance obligation for each distinct good. Conversion services that transform customer-owned inventory to a different dimension, product form, and/or changed mechanical properties are classified as "goods".
3. **Determine the transaction price:** Pricing is also defined on a sales order acknowledgment on a line item basis and includes an estimate of variable consideration when required by the terms of the individual customer contract. Variable consideration is when the selling price of the good is not known or is subject to adjustment under certain conditions. Types of variable consideration may include volume discounts, customer rebates and surcharges. ATI also provides assurances that goods or services will meet the product specifications contained within the acknowledged customer contract. As such, returns and refunds reserves are estimated based upon past product line history or, at certain locations, on a claim by claim basis.
4. **Allocate the transaction price to the performance obligation:** Since a customer contract generally contains only one performance obligation, this step of the analysis is generally not applicable to the Company.
5. **Recognize revenue when or as the performance obligation is satisfied:** Performance obligations generally occur at a point in time and are satisfied when control passes to the customer. For most transactions, control passes at the time of shipment in accordance with agreed upon delivery terms. On occasion, shipping and handling charges occur after the customer obtains control of the good. When this occurs, the shipping and handling services are considered activities to fulfill the promise to transfer the good.

Certain customer agreements involving production of parts and components require revenue to be recognized over time due to there being no alternative use for the product without significant economic loss and an enforceable right to payment including a normal profit margin from the customer in the event of contract termination. The Company uses an input method for determining the amount of revenue, and associated standard cost, to recognize over-time revenue, cost and gross margin for these customer agreements. The input methods used for these agreements include costs incurred and labor hours expended, both of which give an accurate representation of the progress made toward complete satisfaction of that particular performance obligation.

Contract assets are recognized when ATI's conditional right to consideration for goods or services have transferred to the customer. A conditional right indicates that additional performance obligations associated with the contract are yet to be satisfied. Contract assets are assessed separately for impairment purposes. If ATI's right to consideration from the customer is unconditional, this asset is accounted for as a receivable and presented separately from other contract assets. A right is unconditional if nothing other than the passage of time is required before payment of that consideration is due. Performance obligations that are recognized as revenue at a point-in-time and are billed to the customer are recognized as accounts receivable. Payment terms vary from customer to customer depending upon credit worthiness, prior payment history and other credit considerations.

Contract costs are the incremental costs of obtaining and fulfilling a contract (i.e., costs that would not have been incurred if the contract had not been obtained) to provide goods and services to customers. Contract costs for ATI largely consist of design and development costs for molds, dies and other tools that ATI will own and that will be used in producing the products under

the supply arrangement. Contract costs are classified as non-current assets and amortized to expense on a systematic and rational basis over a period consistent with the transfer to the customer of the goods or services to which the asset relates.

Contract liabilities are recognized when ATI has received consideration from a customer to transfer goods or services at a future point in time when the Company performs under the contract. Elements of variable consideration discussed above may be recorded as contract liabilities. In addition, progress billings and advance payments from customers for costs incurred to date are also reported as contract liabilities.

Research and Development

Our research, development and technical service activities are closely interrelated and are directed toward development of new products, improvement of existing products, cost reduction, process improvement and control, quality assurance and control, development of new manufacturing methods, and improvement of existing manufacturing methods. Research and development costs are expensed as incurred. Company funded research and development costs were \$16.5 million in 2021, \$14.1 million in 2020, and \$17.8 million in 2019. Customer funded research and development costs were \$3.5 million in 2021, \$0.7 million in 2020, and \$2.4 million in 2019.

Stock-based Compensation

The Company accounts for stock-based compensation transactions, such as nonvested restricted stock or stock units and performance equity awards, using fair value. Compensation expense for an award is estimated at the date of grant and is recognized over the requisite service period. Compensation expense is adjusted for equity awards that do not vest because service or performance conditions are not satisfied. However, compensation expense already recognized on plans which vest based solely on the attainment of market conditions, such as total shareholder return measures, is not adjusted based on the award attainment status at the end of the measurement period. Compensation expense is adjusted for estimated forfeitures over the award measurement period.

Income Taxes

The provision for, or benefit from, income taxes includes deferred taxes resulting from temporary differences in income for financial and tax purposes using the liability method. Such temporary differences result primarily from differences in the carrying value of assets and liabilities. Future realization of deferred income tax assets requires sufficient taxable income within the carryback and/or carryforward period available under tax law.

The Company evaluates on a quarterly basis whether, based on all available evidence, it is probable that the deferred income tax assets are realizable. Valuation allowances are established when it is estimated that it is more likely than not that the tax benefit of the deferred tax asset will not be realized. The evaluation includes the consideration of all available evidence, both positive and negative, regarding the estimated future reversals of existing taxable temporary differences, estimated future taxable income exclusive of reversing temporary differences and carryforwards, historical taxable income in prior carryback periods if carryback is permitted, and potential tax planning strategies which may be employed to prevent an operating loss or tax credit carryforward from expiring unused. The verifiable evidence such as future reversals of existing temporary differences and the ability to carryback are considered before the subjective sources such as estimate future taxable income exclusive of temporary differences and tax planning strategies.

It is the Company's policy to classify interest and penalties recognized on underpayment of income taxes as income tax expense. It is also the Company's policy to recognize deferred tax amounts stranded in accumulated other comprehensive income (AOCI), which result from tax rate differences on changes in AOCI balances, as an element of income tax expense in the period that the related balance sheet item associated with the AOCI balance ceases to exist. In the case of derivative financial instruments accounted for as hedges, or marketable securities, ATI uses the portfolio method where the stranded deferred tax amount is recognized when all items of a particular category, such as cash flow hedges of a particular risk such as a foreign currency hedge, are settled. In the case of defined benefit pension and other postretirement benefit plans, the stranded deferred tax balance is recognized as an element of income tax expense in the period the benefit plan is extinguished.

Net Income Per Common Share

Basic and diluted net income per share are calculated by dividing the net income available to common stockholders by the weighted average number of common shares outstanding during the year. Diluted amounts assume the issuance of common stock for all potentially dilutive share equivalents outstanding. The calculations of all diluted income/loss per share figures for a period exclude the potentially dilutive effect of dilutive share equivalents if there is a net loss since the inclusion in the calculation of additional shares in the net loss per share would result in a lower per share loss and therefore be anti-dilutive.

New Accounting Pronouncements Adopted

In August 2020, the Financial Accounting Standards Board (FASB) issued new accounting guidance related to accounting for convertible instruments. Under this new guidance, embedded conversion features are no longer separated from the host contract for convertible instruments with conversion features that are not required to be accounted for as derivatives, or that do not result in substantial premiums accounted for as paid-in capital. As such, a convertible debt instrument will be accounted for as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. By removing those separation models, the reported interest rate of convertible debt instruments typically will be closer to the coupon interest rate. The new guidance also addresses how convertible instruments are accounted for in the diluted earnings per share calculation, requiring the if-converted method, and requires enhanced disclosures about the terms of convertible instruments and contracts in an entity's own equity. This new guidance is effective for the Company in fiscal year 2022, with early adoption permitted.

The Company adopted this new accounting guidance related to accounting for convertible instruments effective January 1, 2021 using the modified transition approach with the cumulative effect recognized as an adjustment to the opening balance of retained earnings. This new guidance is applicable to the Company's 3.5% Convertible Senior Notes due 2025 (the 2025 Convertible Notes) that were issued in June 2020, for which the embedded conversion option was required to be separately accounted for as a component of stockholders' equity. Upon adoption on January 1, 2021, long-term debt increased by \$45.4 million and stockholders' equity decreased by the same amount, representing the net impact of two adjustments: (1) the \$49.8 million value of the embedded conversion, which is net of allocated offering costs, previously classified in additional paid-in capital in stockholders' equity, and (2) a \$4.4 million increase to retained earnings for the cumulative effect of adoption primarily related to the non-cash interest expense recorded in fiscal year 2020 for the amortization of the portion of the 2025 Convertible Notes allocated to stockholders' equity. Prospectively, the reported interest expense for the 2025 Convertible Notes will no longer include the non-cash interest expense of the equity component as required under prior accounting standards and will be closer to the 3.5% cash coupon rate. There was no impact to the Company's earnings per share calculation as it previously applied the if-converted method to the 2025 Convertible Notes given ATI's flexibility to settle conversions of the 2025 Convertible Notes in cash, shares of ATI's common stock or a combination thereof, at ATI's election.

Pending Accounting Pronouncements

In November 2021, the FASB issued new accounting guidance related to disclosures about certain types of government assistance. This new guidance requires business entities that account for transactions with a government by analogizing to a grant or contribution accounting model to make certain annual disclosures. It requires disclosure of the nature and significant terms and considerations of the transactions, the accounting policies used and the effects of those transactions on an entity's financial statements. This new guidance is effective for the Company in fiscal year 2022, with early adoption permitted. The Company did not early adopt this guidance. The adoption of these changes is not expected to have an impact on the Company's consolidated financial statements other than the annual disclosure requirements.

Note 2. Revenue from Contracts with Customers

Disaggregation of Revenue

The Company operates in two business segments: High Performance Materials & Components (HPMC) and Advanced Alloys & Solutions (AA&S). Revenue is disaggregated within these two business segments by diversified global markets, primary geographical markets, and diversified products. Comparative information of the Company's overall revenues (in millions) by global and geographical markets for the fiscal years ended December 31, 2021, 2020 and 2019 were as follows:

(in millions)	2021			2020			2019		
	HPMC	AA&S	Total	HPMC	AA&S	Total	HPMC	AA&S	Total
Diversified Global Markets:									
Aerospace & Defense	\$ 835.5	\$ 297.2	\$1,132.7	\$ 946.9	\$ 413.1	\$1,360.0	\$1,624.1	\$ 506.3	\$2,130.4
Energy*	178.3	413.6	591.9	106.2	512.7	618.9	153.6	643.3	796.9
Automotive	8.7	296.4	305.1	5.5	257.7	263.2	10.5	286.1	296.6
Electronics	1.2	213.9	215.1	0.9	176.8	177.7	0.5	162.7	163.2
Food Equipment & Appliances	0.1	153.0	153.1	—	159.2	159.2	0.3	205.5	205.8
Medical	60.3	71.2	131.5	47.7	71.4	119.1	85.4	87.0	172.4
Construction/Mining	24.0	98.2	122.2	18.6	123.4	142.0	42.5	152.5	195.0
Other	47.0	101.2	148.2	38.8	103.2	142.0	61.6	100.6	162.2
Total	\$1,155.1	\$1,644.7	\$2,799.8	\$1,164.6	\$1,817.5	\$2,982.1	\$1,978.5	\$2,144.0	\$4,122.5

*Includes the oil & gas, downstream processing, and specialty energy markets.

(in millions)	2021			2020			2019		
	HPMC	AA&S	Total	HPMC	AA&S	Total	HPMC	AA&S	Total
Primary Geographical Market:									
United States	\$ 571.3	\$ 963.6	\$1,534.9	\$ 641.0	\$1,168.1	\$1,809.1	\$1,042.6	\$1,412.0	\$2,454.6
China	49.5	320.9	370.4	31.0	284.5	315.5	93.9	261.7	355.6
United Kingdom	136.7	17.2	153.9	101.9	24.6	126.5	156.7	17.1	173.8
Germany	74.1	47.2	121.3	76.6	48.8	125.4	147.2	72.1	219.3
Hong Kong	76.3	0.9	77.2	19.0	1.2	20.2	0.9	0.4	1.3
Canada	36.3	39.6	75.9	28.3	40.6	68.9	50.7	55.6	106.3
Rest of World	210.9	255.3	466.2	266.8	249.7	516.5	486.5	325.1	811.6
Total	\$1,155.1	\$1,644.7	\$2,799.8	\$1,164.6	\$1,817.5	\$2,982.1	\$1,978.5	\$2,144.0	\$4,122.5

Comparative information of the Company's major high-value and standard products based on their percentages of sales is included in the following table. In conjunction with the Company's announced ongoing exit of lower-margin standard stainless sheet products in the fourth quarter of 2020 (see Note 19), ATI reclassified certain items as High-Value Products within AA&S segment results. Prior period information reflects these reclassifications. HRP conversion service sales in the AA&S segment are excluded from this presentation.

	2021			2020			2019		
	HPMC	AA&S	Total	HPMC	AA&S	Total	HPMC	AA&S	Total
Diversified Products:									
High-Value Products									
Nickel-based alloys and specialty alloys	43 %	37 %	39 %	38 %	35 %	36 %	38 %	41 %	39 %
Precision rolled strip	— %	33 %	19 %	— %	25 %	15 %	— %	23 %	12 %
Precision forgings, castings and components	38 %	— %	16 %	34 %	— %	14 %	36 %	— %	18 %
Titanium and titanium-based alloys	19 %	6 %	12 %	28 %	11 %	17 %	26 %	11 %	18 %
Zirconium and related alloys	— %	17 %	10 %	— %	15 %	9 %	— %	11 %	6 %
Total High-Value Products	100 %	93 %	96 %	100 %	86 %	91 %	100 %	86 %	93 %
Standard Products									
Standard stainless products	— %	7 %	4 %	— %	14 %	9 %	— %	14 %	7 %
Total	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

The Company maintains a backlog of confirmed orders totaling \$2.1 billion, \$1.4 billion and \$2.3 billion at December 31, 2021, 2020 and 2019, respectively. Due to the structure of the Company's LTAs, 80% of this backlog at December 31, 2021 represented booked orders with performance obligations that will be satisfied within the next twelve months. The backlog does not reflect any elements of variable consideration.

Accounts Receivable

As of December 31, 2021 and 2020, accounts receivable with customers were \$473.8 million and \$350.1 million, respectively. The following represents the rollforward of accounts receivable - reserve for doubtful accounts for the fiscal years ended December 31, 2021, 2020 and 2019:

(in millions)

Accounts Receivable - Reserve for Doubtful Accounts

Balance as of December 31, 2018	\$	6.0
Expense to increase the reserve		0.2
Write-off of uncollectible accounts		(1.6)
Balance as of December 31, 2019		4.6
Expense to increase the reserve		0.2
Write-off of uncollectible accounts		(0.5)
Balance as of December 31, 2020		4.3
Expense to increase the reserve		0.3
Write-off of uncollectible accounts		(0.8)
Balance as of December 31, 2021	\$	3.8

Contract balances

The following represents the rollforward of contract assets and liabilities for the fiscal years ended December 31, 2021, 2020 and 2019:

(in millions)

Contract Assets

Short-term	2021	2020	2019
Balance as of beginning of fiscal year	\$ 38.9	\$ 38.5	\$ 51.2
Recognized in current year	93.8	84.2	74.5
Reclassified to accounts receivable	(76.2)	(83.9)	(79.9)
Reclassification to/from long-term and contract liability	(2.6)	0.1	—
Divestiture	—	—	(7.3)
Balance as of period end	\$ 53.9	\$ 38.9	\$ 38.5
Long-term	2021	2020	2019
Balance as of beginning of fiscal year	\$ —	\$ 0.1	\$ 0.1
Recognized in current year	—	—	—
Reclassified to accounts receivable	—	—	—
Reclassification to/from short-term	—	(0.1)	—
Balance as of period end	\$ —	\$ —	\$ 0.1

(in millions)

Contract Liabilities

Short-term	2021	2020	2019
Balance as of beginning of fiscal year	\$ 111.8	\$ 78.7	\$ 71.4
Recognized in current year	161.5	170.3	126.1
Amounts in beginning balance reclassified to revenue	(84.1)	(54.9)	(49.2)
Current year amounts reclassified to revenue	(72.9)	(90.1)	(76.0)
Divestiture	(0.8)	—	—
Other	0.1	—	1.9
Reclassification to/from long-term and contract asset	0.6	7.8	4.5
Balance as of period end	\$ 116.2	\$ 111.8	\$ 78.7
Long-term	2021	2020	2019
Balance as of beginning of fiscal year	\$ 32.0	\$ 25.9	\$ 7.3
Recognized in current year	56.6	14.9	24.2
Amounts in beginning balance reclassified to revenue	(1.0)	(1.0)	(1.1)
Current year amounts reclassified to revenue	—	—	—
Reclassification to/from short-term	(3.2)	(7.8)	(4.5)
Balance as of period end	\$ 84.4	\$ 32.0	\$ 25.9

Contract costs for obtaining and fulfilling a contract were \$5.2 million and \$5.4 million as of December 31, 2021 and 2020, respectively, which are reported in other long-term assets on the consolidated balance sheet. Amortization expense for the fiscal years ended December 31, 2021, 2020 and 2019 of these contract costs was \$1.0 million, \$1.4 million, and \$1.4 million, respectively.

Note 3. Inventories

Inventories at December 31, 2021 and 2020 were as follows (in millions):

	2021	2020*
Raw materials and supplies	\$ 160.3	\$ 207.6
Work-in-process	829.6	690.7
Finished goods	121.8	181.6
Total inventories at current cost	1,111.7	1,079.9
Inventory valuation reserves	(65.4)	(82.8)
Total inventories, net	\$ 1,046.3	\$ 997.1

* Previously, the Company utilized the LIFO method to account for a substantial portion of its inventory. As described in Note 1, in the fourth quarter of 2021 the Company elected to change the method of accounting for the inventory under the LIFO method to the current cost method. The effects of this change in accounting principle have been retrospectively applied to all periods presented.

The remaining inventories, including the inventory of the Company's non-U.S. operations, were not impacted by this change in accounting principle and continue to be valued using the FIFO and average cost methods, and these inventory values do not differ materially from current cost.

Note 4. Property, Plant and Equipment

Property, plant and equipment at December 31, 2021 and 2020 was as follows:

<i>(In millions)</i>	2021	2020
Land	\$ 34.4	\$ 34.8
Buildings	575.5	564.7
Equipment and leasehold improvements	2,870.2	2,736.9
	3,480.1	3,336.4
Accumulated depreciation and amortization	(1,951.6)	(1,867.2)
Total property, plant and equipment, net	\$ 1,528.5	\$ 1,469.2

Construction in progress at December 31, 2021 and 2020 was \$215.3 million and \$233.4 million, respectively. Depreciation and amortization for the years ended December 31, 2021, 2020 and 2019 was as follows:

<i>(In millions)</i>	2021	2020	2019
Depreciation of property, plant and equipment	\$ 117.4	\$ 119.5	\$ 127.1
Software and other amortization	26.5	23.8	24.0
Total depreciation and amortization	\$ 143.9	\$ 143.3	\$ 151.1

Note 5. Goodwill and Other Intangible Assets

At December 31, 2021, the Company had \$227.9 million of goodwill on its consolidated balance sheet, all of which relates to the HPMC segment. Goodwill decreased \$12.8 million in 2021 due to the allocation of \$12.2 million to the sale of the Flowform Products business (see Note 6 for further information) and a \$0.6 million decrease from the impact of foreign currency translation on goodwill denominated in functional currencies other than the U.S. dollar.

The Company performs its annual goodwill impairment evaluations in the fourth quarter of each year. The \$227.9 million of goodwill as of December 31, 2021 on the Company's consolidated balance sheet is comprised of \$161.2 million at the Forged Products reporting unit and \$66.7 million at the Specialty Materials reporting unit. For the Company's annual goodwill impairment evaluation performed in the fourth quarter of 2021, quantitative goodwill assessments were performed for these two HPMC reporting units with goodwill. Fair values were determined by using a quantitative assessment that may include discounted cash flow and multiples of cash earnings valuation techniques, plus valuation comparisons to recent public sale transactions of similar businesses, if any, which represents Level 3 unobservable information in the fair value hierarchy. These impairment assessments and valuation methods require the Company to make estimates and assumptions regarding revenue growth, changes in working capital and capital expenditures, selling prices and profitability that drive cash flows, and the weighted average cost of capital. Many of these assumptions are determined by reference to market participants the Company

has identified. For example, the weighted average cost of capital used in the discounted cash flow assessment was 11.3% and the long-term growth rates ranged from 3% to 3.5%. Although the Company believes that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions. The Specialty Materials reporting unit had a fair value that was significantly in excess of carrying value. The Forged Products reporting unit had a fair value that exceeded carrying value by more than 40%, representing an increase in fair value subsequent to the interim goodwill impairment charge recorded for this reporting unit in the second quarter of 2020 as discussed below, and the annual evaluation as of December 31, 2020. As a result, no impairments were determined to exist from the annual goodwill impairment evaluation for the year ended December 31, 2021. In order to validate the reasonableness of the estimated fair values of the reporting units as of the valuation date, a reconciliation of the aggregate fair values of all reporting units to market capitalization was performed using a reasonable control premium.

During the second quarter of 2020, the Company performed an interim goodwill impairment analysis on the Forged Products reporting unit and its \$460.4 million goodwill balance based on assessed potential indicators of impairment, including recent disruptions to the global commercial aerospace market resulting from the COVID-19 pandemic, and the increasing uncertainty of near-term demand requirements of aero-engine and airframe markets based on government responses to the pandemic and ongoing interactions with customers. In the previous 2019 annual goodwill impairment evaluation, this reporting unit had a fair value that exceeded carrying value by approximately 30%. For the 2020 interim impairment analysis, fair value was determined by a quantitative assessment that used a discounted cash flow technique, which represents Level 3 unobservable information in the fair value hierarchy. The impairment assessment and valuation method require the Company to make estimates and assumptions regarding future operating results, cash flows, changes in working capital and capital expenditures, selling prices, profitability, and the cost of capital. Many of these assumptions are determined by reference to market participants the Company has identified. For example, the weighted average cost of capital used in the discounted cash flow assessment was 11.6%, and the long-term growth rate was 3.5%. Although the Company believes that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions. As a result of the second quarter 2020 interim goodwill impairment evaluation, the Company determined that the fair value of the Forged Products reporting unit was below carrying value, including goodwill, by \$287.0 million. This was primarily due to changes in the timing and amount of expected cash flows resulting from lower projected revenues, profitability and cash flows due to near-term reductions in commercial aerospace market demand. Consequently, during the second quarter of 2020, the Company recorded a \$287.0 million impairment charge for the partial impairment of the Forged Products reporting unit goodwill, most of which was assigned from the Company's 2011 Ladish acquisition that was not deductible for income tax purposes. This goodwill impairment charge was excluded from 2020 HPMC business segment results.

No indicators of impairment were observed in 2021 and 2020 associated with any of the Company's long-lived assets in the HPMC segment. There were no goodwill impairments for the year ended December 31, 2019. Accumulated goodwill impairment losses as of December 31, 2021 and 2020 were \$528.0 million and as of 2019 were \$241.0 million.

Other intangible assets, which are included in Other assets on the accompanying consolidated balance sheets as of December 31, 2021 and 2020 were as follows:

	December 31, 2021		December 31, 2020	
	Gross carrying amount	Accumulated amortization	Gross carrying amount	Accumulated amortization
<i>(in millions)</i>				
Technology	\$ 61.2	\$ (32.3)	\$ 76.8	\$ (33.4)
Customer relationships	24.8	(10.6)	27.0	(10.4)
Trademarks	48.8	(26.0)	52.4	(24.5)
Total amortizable intangible assets	<u>\$ 134.8</u>	<u>\$ (68.9)</u>	<u>\$ 156.2</u>	<u>\$ (68.3)</u>

During 2021, total amortizable intangible assets net, decreased \$14.0 million due to the sale of the Company's Flowform Products business. This decrease consisted of the sale of \$21.4 million gross intangible assets, net of \$7.4 million accumulated amortization, associated with the divested business. See Note 6 for further information regarding the Flowform Products sale.

Amortization expense related to intangible assets was approximately \$8 million, \$8 million and \$10 million for the years ended December 31, 2021, 2020 and 2019, respectively. For each of the years ending December 31, 2022 through 2026, annual amortization expense is expected to be approximately \$7 million.

Note 6. Divestitures

On August 13, 2021, the Company completed the sale of its Flowform Products business for \$55 million. Located in Billerica, MA, this operation uses flowforming process technologies to produce thin-walled components in net or near-net shapes across multiple alloy systems for use in the aerospace & defense and energy markets. The Company received cash proceeds, net of transaction costs and working capital adjustments, of \$53.1 million on the sale of this business during the year ended December 31, 2021, which is reported as an investing activity on the consolidated statement of cash flows. With \$12.2 million of goodwill allocated to this operation from ATI's Forged Products reporting unit, the Company recognized a \$13.8 million pretax gain in 2021, which is recorded in other income/expense, net, on the consolidated statement of operations and is excluded from HPMC segment results. This business is reported as part of the HPMC segment through the date of sale. Flowform Products' sales were \$26 million in 2020.

On June 3, 2019, the Company completed the sale of two non-core forging facilities for \$37 million. Located in Portland, IN and Lebanon, KY, these operations primarily use traditional forging methods to produce carbon steel forged products for use in the oil & gas, transportation and construction & mining industries. The Company received cash proceeds, net of transaction costs and working capital adjustments, of \$33.0 million on the sale of this business during the year ended December 31, 2019, which is reported as an investing activity on the consolidated statement of cash flows. With \$10.4 million of goodwill allocated to these operations from ATI's Forged Products reporting unit, the Company recognized a \$13.3 million pre-tax loss in 2019, which is recorded in other income, net, on the consolidated statement of income and is excluded from HPMC segment results. This business is reported as part of the HPMC segment through the date of sale.

On July 22, 2019, the Company completed the sale of its Cast Products business, which produces titanium investment castings that are primarily used by aerospace & defense OEMs in the production of commercial jet airframes and engines. As part of the \$127 million transaction, ATI retained a small post-casting machining facility in Salem, OR. The Company received cash proceeds, net of transaction costs and working capital adjustments, of \$125.1 million on the sale of this business in 2019, which is reported as an investing activity on the consolidated statement of cash flows. The Company recognized a \$6.2 million gain in 2019, which included a \$10.2 million impairment charge on the carrying value of long-lived assets of the retained Salem operation (\$4.5 million for property, plant and equipment, \$1.4 million for operating lease right of use assets, \$1.0 million for finance lease right of use assets, and \$3.3 million of finite-lived intangible assets). This long-lived asset impairment charge was based on an analysis of the estimated fair values, including asset appraisals using market approaches, which represent Level 3 unobservable information in the fair value hierarchy. This gain on the sale of the Cast Products business is recorded in other income, net, on the consolidated statement of income and is excluded from HPMC segment results. This business is reported as part of the HPMC segment through the date of sale.

Note 7. Joint Ventures

The financial results of majority-owned joint ventures are consolidated into the Company's operating results and financial position, with the minority ownership interest recognized in the consolidated statement of operations as net income attributable to noncontrolling interests, and as equity attributable to the noncontrolling interests within total stockholders' equity. Investments in which the Company exercises significant influence, but which it does not control (generally a 20% to 50% ownership interest) are accounted for under the equity method of accounting. Stockholders' equity includes undistributed earnings of investees accounted for under the equity method of accounting of approximately \$13.8 million at December 31, 2021.

Majority-Owned Joint Ventures

STAL:

The Company has a 60% interest in the Chinese joint venture known as STAL. The remaining 40% interest in STAL is owned by China Baowu Steel Group Corporation Limited, a state authorized investment company whose equity securities are publicly traded in the People's Republic of China. STAL is part of ATI's AA&S segment, and manufactures Precision Rolled Strip® (PRS) stainless products mainly for the electronics and automotive markets located in Asia. Cash and cash equivalents held by STAL as of December 31, 2021 were \$100.2 million.

Next Gen Alloys LLC:

During 2017, the Company formed Next Gen Alloys LLC, a joint venture with GE Aviation for the development of a new meltless titanium alloy powder manufacturing technology. ATI owns a 51% interest in this joint venture. The titanium alloy powders are being developed for use in additive manufacturing applications, including 3D printing. Next Gen Alloys LLC funds its development activities through the sale of shares to the two joint venture partners. Cash and cash equivalents held by this joint venture as of December 31, 2021 were \$1.0 million.

Equity Method Joint Ventures

A&T Stainless:

The Company has a 50% interest in A&T Stainless, a joint venture with an affiliate company of Tsingshan Group (Tsingshan) to produce 60-inch wide stainless sheet products for sale in North America. Tsingshan purchased its 50% joint venture interest in A&T Stainless in 2018 for \$17.5 million, of which \$12.0 million has been received by ATI. The A&T Stainless operations included the Company's previously-idled direct roll and pickle (DRAP) facility in Midland, PA. ATI provided hot-rolling conversion services to A&T Stainless using the AA&S segment's Hot-Rolling and Processing Facility. ATI accounts for the A&T Stainless joint venture under the equity method of accounting.

In late March 2018, ATI filed for an exclusion from the Section 232 tariffs on behalf of A&T Stainless, which imports semi-finished stainless slab products from Indonesia. In April 2019, the Company learned that this exclusion request was denied by the U.S. Department of Commerce. ATI filed new requests on behalf of A&T Stainless for exclusion from the Section 232 tariffs in October 2019. These requests were denied by the U.S. Department of Commerce in the second quarter of 2020, and the 25% tariff remains in place.

In 2019, A&T Stainless evaluated its long-lived assets for impairment as the tariff exclusion denial represented a potential impairment indicator. The joint venture partners had continued to evaluate longer-term solutions to return this strategic initiative to profitability, and determined during the fourth quarter of 2019 that idling this facility was probable if a near-term tariff exclusion was not received. As a result, A&T Stainless recorded a \$14.2 million non-cash impairment charge during December 2019 on its long-lived assets. ATI recognized a \$7.1 million equity loss for its 50% share of this \$14.2 million impairment. In addition, ATI had net receivables for working capital advances and administrative services from A&T Stainless and evaluated these for collectability, and a \$4.3 million reserve was recorded in December 2019 based on ATI's share of the estimated fair value of the joint venture's net assets. The total \$11.4 million joint venture impairment charge for the long-lived asset impairment and receivables reserve was reported within other income, net on the consolidated statement of operations in December 2019 and was excluded from AA&S segment results.

Due to repeated tariff exclusion denials, ATI announced on March 31, 2020 that A&T Stainless would be idling the DRAP facility in 2020, in an orderly shut down process that was completed in the third quarter of 2020. A&T Stainless recorded a \$4.8 million charge in 2020 for contractual termination benefits as a result of the idling decision. ATI's share of the A&T Stainless results were losses of \$0.9 million, \$10.6 million, and \$19.3 million for the fiscal years ended December 31, 2021, 2020 and 2019, respectively, which is included within other income/expense, net, on the consolidated statements of operations. AA&S segment results in 2021, 2020 and 2019 include equity method recognition of A&T Stainless operating losses of \$0.9 million, \$8.2 million and \$12.2 million, respectively. ATI's share of the A&T Stainless charges for termination benefits in 2020 and long-lived asset impairment charges in 2019 were excluded from AA&S segment results.

No additional impairment charges were required during 2021 or 2020 on the long-lived assets of A&T Stainless or ATI's receivables from the joint venture, based on ATI's share of the estimated fair value of its net assets. As of December 31, 2021, ATI had net receivables from A&T Stainless for working capital advances and administrative services, including the \$4.3 million reserve, of \$2.9 million, of which \$0.7 million was reported in prepaid expenses and other current assets and \$2.2 million in other long-term assets on the consolidated balance sheet. As of December 31, 2020, ATI had net receivables from A&T Stainless for working capital advances and administrative services of \$14.0 million, of which \$0.5 million was reported in prepaid expenses and other current assets and \$13.5 million in other long-term assets on the consolidated balance sheet. In addition, ATI evaluated the collectability of its remaining \$5.5 million receivable from Tsingshan, which is reported in other long-term assets on the consolidated balance sheet, and concluded that no impairment or loss in expected value exists at this time.

Sales to A&T Stainless, which are included in ATI's consolidated statement of operations for the 2020 and 2019 fiscal years, were \$18.4 million and \$14.6 million, respectively. There were no sales to A&T Stainless for the 2021 fiscal year. There were no accounts receivable from A&T Stainless at December 31, 2021 or December 31, 2020.

Uniti:

ATI has a 50% interest in the industrial titanium joint venture known as Uniti LLC (Uniti), with the remaining 50% interest held by VSMPO, a Russian producer of titanium, aluminum, and specialty steel products. Uniti is accounted for under the equity method of accounting. ATI's share of Uniti's income was \$1.0 million in 2021, \$1.2 million in 2020, and \$1.5 million in 2019, which is included in AA&S segment's operating results, and within other income/expense, net, on the consolidated statements of operations. Sales to Uniti, which are included in ATI's consolidated statements of operations, were \$45.8 million in 2021, \$36.7 million in 2020, and \$31.3 million in 2019. Accounts receivable from Uniti were \$6.1 million and \$1.4 million at December 31, 2021 and 2020, respectively.

Note 8. Asset Retirement Obligations

The Company maintains reserves where a legal obligation exists to perform an asset retirement activity and the fair value of the liability can be reasonably estimated. These asset retirement obligations (AROs) include liabilities where the timing and (or) method of settlement may be conditional on a future event, that may or may not be within the control of the entity. At December 31, 2021, the Company had recognized AROs of \$19.0 million related to landfill closures, decommissioning costs, facility leases and conditional AROs associated with manufacturing activities using what may be characterized as potentially hazardous materials.

Estimates of AROs are evaluated annually in the fourth quarter, or more frequently if material new information becomes known. Accounting for asset retirement obligations requires significant estimation and in certain cases, the Company has determined that an ARO exists, but the amount of the obligation is not reasonably estimable. The Company may determine that additional AROs are required to be recognized as new information becomes available.

In 2020, the Company finalized a settlement agreement for an indemnity claim concerning a conditional ARO with the buyer of a formerly-owned business and as a result, the Company reduced ARO reserves by \$4.3 million, which is recorded in other income/expense, net, on the consolidated statements of operations (see Note 9). The Company increased ARO reserves by \$4.1 million in 2020 as a result of changes in the expected timing of payments on ARO's resulting from facility idlings as discussed in Note 19, which is recorded in restructuring charges on the consolidated statement of operations. Both of these 2020 items are presented as revisions of estimates in the table below.

Changes in asset retirement obligations for the years ended December 31, 2021 and 2020 were as follows:

<i>(In millions)</i>	2021	2020
Balance at beginning of year	\$ 24.0	\$ 23.7
Accretion expense	0.8	0.9
Payments	(5.6)	(0.4)
Revisions of estimates	—	(0.2)
Divestiture	(0.2)	—
Balance at end of year	<u>\$ 19.0</u>	<u>\$ 24.0</u>

Note 9. Supplemental Financial Statement Information

Cash and cash equivalents at December 31, 2021 and 2020 were as follows:

<i>(In millions)</i>	2021	2020
Cash	\$ 222.8	\$ 158.2
Other short-term investments	464.9	487.7
Total cash and cash equivalents	<u>\$ 687.7</u>	<u>\$ 645.9</u>

Other current liabilities included salaries, wages and other employee-related liabilities of \$92.7 million and \$92.8 million, and accrued interest of \$15.2 million and \$18.0 million at December 31, 2021 and 2020, respectively.

Other income (expense) for the years ended December 31, 2021, 2020, and 2019 was as follows:

<i>(in millions)</i>	2021	2020	2019*
Rent, royalty income and other income	\$ 1.1	\$ 0.9	\$ 2.9
Gains from disposal of property, plant and equipment, net	2.9	2.9	90.7
Net equity income (loss) on joint ventures (See Note 7)	0.1	(7.0)	(10.7)
Gain (loss) on sales of businesses, net (See Note 6)	13.8	—	(7.1)
Joint venture restructuring and impairment charges (See Note 7)	—	(2.4)	(11.4)
Adjustment to indemnification for conditional ARO costs (See Note 8)	—	4.3	—
Other	0.3	0.1	—
Total other income (expense), net	<u>\$ 18.2</u>	<u>\$ (1.2)</u>	<u>\$ 64.4</u>

* The year ended December 31, 2019 reflects impacts from the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements.

Gains from disposal of property, plant and equipment, net for the years ended December 31, 2020 and 2019 include \$2.5 million and \$91.7 million, respectively, on sales of certain oil and gas rights in Eddy County, NM. These cash gains are reported as an investing activity on the consolidated statement of cash flows for the years ended December 31, 2020 and 2019, and are excluded from segment operating results. These oil and gas rights were initially acquired in 1972 along with land purchased by Teledyne, Inc., which later became part of ATI. The land was subsequently sold, with the Company retaining the underlying oil and gas rights that it sold in 2019 and 2020.

Note 10. Debt

Debt at December 31, 2021 and 2020 was as follows:

<i>(In millions)</i>	2021	2020
Allegheny Technologies 5.875% Senior Notes due 2023 (a)	\$ —	\$ 500.0
Allegheny Technologies 5.875% Senior Notes due 2027	350.0	350.0
Allegheny Technologies 5.125% Senior Notes due 2031	350.0	—
Allegheny Technologies 4.875% Notes due 2029	325.0	—
Allegheny Technologies 3.5% Convertible Senior Notes due 2025	291.4	291.4
Allegheny Technologies 4.75% Convertible Senior Notes due 2022	84.2	84.2
Allegheny Ludlum 6.95% Debentures due 2025 (b)	150.0	150.0
Term Loan due 2024	200.0	200.0
U.S. revolving credit facility	—	—
Foreign credit agreements	27.4	5.5
Finance leases and other	85.7	48.0
Debt issuance costs	(20.8)	(14.5)
Equity component of convertible debt	—	(46.8)
Total short-term and long-term debt	<u>1,842.9</u>	<u>1,567.8</u>
Short-term debt and current portion of long-term debt	<u>131.3</u>	<u>17.8</u>
Total long-term debt	<u>\$ 1,711.6</u>	<u>\$ 1,550.0</u>

(a) Bearing interest at 7.875% effective February 15, 2016.

(b) The payment obligations of these debentures issued by Allegheny Ludlum, LLC are fully and unconditionally guaranteed by ATI.

Interest expense was \$97.6 million in 2021, \$96.1 million in 2020, and \$104.9 million in 2019. Interest expense was reduced by \$4.3 million, \$7.7 million, and \$4.7 million, in 2021, 2020, and 2019, respectively, from interest capitalization on capital projects. Interest and commitment fees paid were \$97.5 million in 2021, \$95.4 million in 2020, and \$105.7 million in 2019. Net interest expense includes interest income of \$0.7 million in 2021, \$1.7 million in 2020, and \$5.9 million in 2019.

Scheduled principal payments during the next five years are \$131.6 million in 2022, \$19.6 million in 2023, \$217.1 million in 2024, \$454.7 million in 2025, and \$7.5 million in 2026. The 2022 amount includes \$84.2 million of convertible debt that would be settled in shares of ATI stock if the conversion price target is reached; see further discussion below in the section titled “2022 Convertible Notes”. See Note 11, Leases, for the portion of these scheduled principal payments that are related to finance leases.

Debt Extinguishment Charges

In October 2021, ATI recognized a \$65.5 million debt extinguishment charge on the redemption of the 5.875% Senior Notes due 2023 (2023 Notes), which included a \$64.5 million cash make-whole payment related to the early extinguishment of the 2023 Notes as required by the applicable indenture, and a \$1.0 million charge for deferred debt issue costs, as further discussed below.

In June 2020, ATI recognized a \$21.5 million debt extinguishment charge on the partial redemption of the 4.75% Convertible Senior Notes due 2022 (the 2022 Convertible Notes), which included a \$19.1 million cash make-whole payment related to the early extinguishment of the 2022 Convertible Notes partial redemption, as required by the applicable indenture, and a \$2.4 million charge for deferred debt issue costs, as further discussed below.

In December 2019, the Company redeemed all \$500 million aggregate principal amount outstanding of the 5.95% Senior Notes due 2021 (2021 Notes), which had a January 15, 2021 maturity date, resulting in a \$21.6 million pre-tax debt extinguishment charge, which included a \$20.9 million cash make-whole payment related to the early extinguishment of the 2021 Notes as required by the applicable indenture, and a \$0.7 million charge for deferred debt issue costs.

2029 and 2031 Notes

On September 14, 2021, ATI issued \$325 million aggregate principal amount of 4.875% Senior Notes due 2029 (2029 Notes) and \$350 million aggregate principal amount of 5.125% Senior Notes due 2031 (2031 Notes). Interest on the 2029 Notes is payable semi-annually in arrears at a rate of 4.875% per year, and the 2029 Notes will mature on October 1, 2029. Interest on the 2031 Notes is payable semi-annually in arrears at a rate of 5.125% per year, and the 2031 Notes will mature on October 1, 2031. Total combined net proceeds of \$665.7 million from both of these issuances were primarily used to fund the full redemption of the \$500 million aggregate principal amount outstanding of the 2023 Notes on October 14, 2021, including a make-whole payment and accrued interest, following a 30 day notice of redemption as required by the 2023 Notes indenture. As such, in the fourth quarter 2021, the Company recognized a \$65.5 million debt extinguishment charge.

Underwriting fees and other third-party expenses for the issuance of the 2029 and 2031 Notes were \$4.7 million each, and are being amortized to interest expense over the 8-year and 10-year terms of the 2029 and 2031 Notes, respectively. The 2029 and 2031 Notes are unsecured and unsubordinated obligations of the Company and equally ranked with all of its existing and future senior unsecured debt. The 2029 and 2031 Notes restrict the Company’s ability to create certain liens, to enter into sale leaseback transactions, guarantee indebtedness and to consolidate or merge all, or substantially all, of its assets. The Company has the option to redeem the 2029 and 2031 Notes, as a whole or in part, at any time or from time to time, on at least 15 days, but not more than 60 days, prior notice to the holders of the Notes at redemption prices specified in the 2029 and 2031 Notes. The 2029 and 2031 Notes are subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the 2029 and 2031 Notes) at a repurchase price in cash equal to 101% of the aggregate principal amount of the Notes repurchased, plus any accrued and unpaid interest on the 2029 or 2031 Notes repurchased, as applicable.

2025 Convertible Notes

In 2020, the Company issued \$291.4 million aggregate principal amount of 2025 Convertible Notes. The Company used a portion of the net proceeds from the offering of the 2025 Convertible Notes to repurchase \$203.2 million aggregate principal amount of its outstanding 2022 Convertible Notes, resulting in a \$21.5 million debt extinguishment charge. The Company also used \$19.4 million of the net proceeds of the offering of the 2025 Convertible Notes to pay the cost of capped call transactions, described below, which was recorded as a reduction to additional paid-in-capital in stockholders’ equity on the consolidated balance sheet. The remainder of the net proceeds from the offering were used for general corporate purposes.

As of December 31, 2021, the fair value of the 2025 Convertible Notes is \$379 million based on the quoted market price, which is classified in Level 1 of the fair value hierarchy. The 2025 Convertible Notes have a 3.5% cash coupon rate that is payable semi-annually in arrears on each June 15 and December 15, commencing December 15, 2020. Including amortization of deferred issuance costs, the effective interest rate is 4.2% for the year ended December 31, 2021 and 8.4% for the year ended December 31, 2020. The effective interest rate is lower in 2021 due to the early-adoption of new accounting guidance on January 1, 2021, as described below. Remaining deferred issuance costs were \$6.5 million and \$8.2 million at December 31, 2021 and 2020, respectively. Interest expense on the 2025 Convertible Notes was as follows:

<i>(in millions)</i>	Fiscal year ended December 31,	
	2021	2020
Contractual coupon rate	\$ 10.2	\$ 5.3
Amortization of debt issuance costs	1.7	0.7
Total interest expense	\$ 11.9	\$ 6.0

The Company does not have the right to redeem the 2025 Convertible Notes prior to June 15, 2023. On or after June 15, 2023 and prior to the 41st scheduled trading day immediately preceding the maturity date, the Company may redeem all or any portion of the 2025 Convertible Notes, at its option, at a redemption price equal to 100% of the principal amount thereof, plus any accrued and unpaid interest if the last reported sale price of ATI's common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on the trading day immediately preceding the date on which ATI provides written notice of redemption.

The initial conversion rate for the 2025 Convertible Notes is 64.5745 shares of ATI common stock per \$1,000 principal amount of the 2025 Convertible Notes, equivalent to an initial conversion price of approximately \$15.49 per share (18.8 million shares). Prior to the close of business on the business day immediately preceding March 15, 2025, the 2025 Convertible Notes will be convertible at the option of the holders of 2025 Convertible Notes only upon the satisfaction of specified conditions and during certain periods. Thereafter, until the close of business on the second scheduled trading day immediately preceding the maturity date, the 2025 Convertible Notes will be convertible at the option of holders of 2025 Convertible Notes at any time regardless of these conditions. Conversions of the 2025 Convertible Notes may be settled in cash, shares of ATI's common stock or a combination thereof, at ATI's election.

As a result of this flexible settlement feature of the 2025 Convertible Notes, the embedded conversion option was required to be separately accounted for as a component of stockholders' equity. The value of the embedded conversion option was determined to be \$51.4 million based on the estimated fair value of comparable senior unsecured debt without the conversion feature, using an income approach of expected present value. During the 2020 fiscal year, the equity component was amortized as additional non-cash interest expense, commonly referred to as phantom yield, over the term of the 2025 Convertible Notes using the effective interest method. As a result, as of December 31, 2020, \$49.8 million of the 2025 Convertible Notes was recorded in additional paid-in-capital in stockholders' equity (\$51.4 million of the gross \$291.4 million net of \$1.6 million of allocated offering costs). Due to the non-cash phantom yield and including debt issue cost amortization, the 2025 Convertible Notes had reported interest expense in 2020 at an 8.4% rate, higher than the 3.5% cash coupon rate. Effective January 1, 2021, ATI early-adopted new accounting guidance as discussed in Note 1 that eliminated the equity component classification of the embedded conversion option, as well as the phantom yield portion of interest expense on a prospective basis. Upon adoption on January 1, 2021, long-term debt increased by \$45.4 million representing the \$46.8 million equity component of convertible debt as of December 31, 2020 in the above table, net of reclassified debt issue costs.

Holders of the 2025 Convertible Notes may require ATI to repurchase their 2025 Convertible Notes upon the occurrence of certain events that constitute a fundamental change under the indenture governing the 2025 Convertible Notes at a purchase price equal to 100% of the principal amount thereof, plus any accrued and unpaid interest to, but excluding, the fundamental change repurchase date. In connection with certain corporate events or if ATI issues a notice of redemption, it will, under certain circumstances, increase the conversion rate for holders who elect to convert their 2025 Convertible Notes in connection with such corporate event or during the relevant redemption period.

In connection with the pricing of the 2025 Convertible Notes, ATI entered into privately negotiated capped call transactions with certain of the initial purchasers or their respective affiliates (collectively, the Counterparties). The capped call transactions are expected generally to reduce potential dilution to ATI's common stock upon any conversion of the 2025 Convertible Notes and/or offset any cash payments ATI is required to make in excess of the principal amount of converted 2025 Convertible Notes, as the case may be, with such reduction and/or offset subject to a cap based on the cap price. The cap price of the

capped call transactions initially is approximately \$19.76 per share, and is subject to adjustments under the terms of the capped call transactions.

2022 Convertible Notes

As of December 31, 2021, the Company had \$84.2 million of aggregate principal amount of the 2022 Convertible Notes outstanding. Interest on the 2022 Convertible Notes is payable in cash semi-annually in arrears on each January 1 and July 1, commencing January 1, 2017. As of December 31, 2021, the fair value of the 2022 Convertible Notes is \$102 million based on the quoted market price, which is classified in Level 1 of the fair value hierarchy. Interest on the 2022 Convertible Notes at the 4.75% cash coupon rate is payable semi-annually in arrears on each January 1 and July 1. Including amortization of deferred issuance costs, the effective interest rate is 5.4% for the fiscal years ended December 31, 2021, 2020 and 2019. Remaining deferred issuance costs were \$0.3 million and \$0.7 million at December 31, 2021 and 2020, respectively. Interest expense on the 2022 Convertible Notes was as follows:

<i>(in millions)</i>	Fiscal year ended December 31,		
	2021	2020	2019
Contractual coupon rate	\$ 4.0	\$ 8.6	\$ 13.7
Amortization of debt issuance costs	0.5	1.0	1.5
Total interest expense	\$ 4.5	\$ 9.6	\$ 15.2

The Company does not have the right to redeem the 2022 Convertible Notes prior to their stated maturity date. Holders of the 2022 Convertible Notes have the option to convert their notes into shares of the Company's common stock, at any time prior to the close of business on the business day immediately preceding the stated maturity date (July 1, 2022). The initial conversion rate for the remaining \$84.2 million of 2022 Convertible Notes is 69.2042 shares of ATI common stock per \$1,000 (in whole dollars) principal amount of Notes (5.8 million shares), equivalent to conversion price of \$14.45 per share, subject to adjustment in certain events. Other than receiving cash in lieu of fractional shares, holders do not have the option to receive cash instead of shares of common stock upon conversion. Accrued and unpaid interest that exists upon conversion of a note will be deemed paid by the delivery of shares of ATI common stock and no cash payment or additional shares will be given to the holders.

If the Company undergoes a fundamental change as defined in the agreement, holders of the 2022 Convertible Notes may require the Company to repurchase the notes in whole or in part for cash at a price equal to 100% of the principal amount of the notes to be purchased plus any accrued and unpaid interest to, but excluding, the repurchase date.

2027 Notes

On November 22, 2019, ATI issued \$350 million aggregate principal amount of 5.875% Senior Note due 2027 (2027 Notes). Interest on the 2027 Notes is payable semi-annually in arrears at a rate of 5.875% per year and will mature on December 1, 2027. Net proceeds of \$344.5 million from this issuance, as well as cash on hand, were used to retire the 2021 Notes as discussed above. Underwriting fees and other third-party expenses for the issuance of the 2027 notes were \$5.5 million, and are being amortized to interest expense over the 8-year term of the 2027 Notes. The 2027 Notes are unsecured and unsubordinated obligations of the Company and equally ranked with all of its existing and future senior unsecured debt. The 2027 Notes restrict the Company's ability to create certain liens, to enter into sale leaseback transactions, guarantee indebtedness and to consolidate or merge all, or substantially all, of its assets. The Company has the option to redeem the 2027 Notes, as a whole or in part, at any time or from time to time, on at least 30 days, but not more than 60 days, prior notice to the holders of the Notes at redemption prices specified in the 2027 Notes. The 2027 Notes are subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the 2027 Notes) at a repurchase price in cash equal to 101% of the aggregate principal amount of the Notes repurchased, plus any accrued and unpaid interest on the 2027 Notes repurchased.

2023 Notes

The 5.875% stated interest rate payable on the 2023 Notes was subject to adjustment in the event of changes in the credit ratings on the 2023 Notes by either Moody's or Standard & Poor's. Each notch of credit rating downgrade from the credit ratings in effect when the 2023 Notes were issued in July 2013 increased interest expense by 0.25% on the 2023 Notes, up to a maximum 4 notches by each of the two rating agencies, or a total 2.0% potential interest rate change up to 7.875%. The annual interest rate on the 2023 Notes has been at the maximum 7.875% since February 2016 until their redemption in October 2021 as discussed above.

Credit Agreements

The Company has an Asset Based Lending (ABL) Credit Facility, which is collateralized by the accounts receivable and inventory of the Company's domestic operations. The ABL facility, which matures in September 2024, includes a \$500 million revolving credit facility, a letter of credit sub-facility of up to \$200 million, and as of December 31, 2020, a \$200 million term loan (Term Loan). In June 2020, the Company exercised its right to borrow an additional \$100 million under the term loan portion of the ABL, with the same September 2024 maturity date. The Term Loan has an interest rate of 2.0% plus a LIBOR spread and can be prepaid in increments of \$25 million if certain minimum liquidity conditions are satisfied. In addition, the Company has the right to request an increase of up to \$200 million in the maximum amount available under the revolving credit portion of the ABL for the duration of the ABL. The Company has a \$50 million floating-for-fixed interest rate swap that converts a portion of the Term Loan to a 4.21% fixed interest rate. The swap matures in June 2024.

The applicable interest rate for revolving credit borrowings under the ABL facility includes interest rate spreads based on available borrowing capacity that range between 1.25% and 1.75% for LIBOR-based borrowings and between 0.25% and 0.75% for base rate borrowings. The ABL facility contains a financial covenant whereby the Company must maintain a fixed charge coverage ratio of not less than 1.00:1.00 after an event of default has occurred and is continuing or if the undrawn availability under the ABL revolving credit portion of the facility is less than the greater of (i) \$87.5 million, calculated as 12.5% of the then applicable maximum advance amount under the revolving credit portion of the ABL and the outstanding Term Loan balance, or (ii) \$62.5 million. The Company does not meet this required fixed charge coverage ratio at December 31, 2021. As a result, the Company is unable to access this remaining 12.5%, or \$87.5 million, of the ABL facility until it meets the required ratio. Additionally, the Company must demonstrate minimum liquidity, as calculated in accordance with the terms of the ABL facility, during the 90 day period immediately preceding the stated maturity date of the 4.75% Convertible Notes due 2022. The ABL also contains customary affirmative and negative covenants for credit facilities of this type, including limitations on the Company's ability to incur additional indebtedness or liens or to enter into investments, mergers and acquisitions, dispositions of assets and transactions with affiliates, some of which are more restrictive at any time during the term of the ABL when the Company's fixed charge coverage ratio is less than 1.00:1.00 and its undrawn availability under the revolving portion of the ABL is less than the greater of (a) \$150 million or (b) 30% of the sum of the maximum advance amount under the revolving credit portion of the ABL and the outstanding Term Loan balance. On September 30, 2019, the Company amended and restated the ABL and costs associated with entering into this amendment were \$2.2 million, and are being amortized to interest expense over the term of the facility ending September 2024, along with \$2.1 million of unamortized deferred costs that were previously recorded for the ABL.

As of December 31, 2021, there were no outstanding borrowings under the revolving portion of the ABL, and \$48.3 million was utilized to support the issuance of letters of credit. There were no revolving credit borrowings under the ABL during 2021. Average borrowings under the revolving portion of the ABL for the fiscal year ended December 31, 2020 were \$28 million, bearing an average annual interest rate of 2.2%. The Company also has foreign credit facilities, primarily in China, that total \$65 million based on December 31, 2021 foreign exchange rates, under which \$27.4 million was drawn as of December 31, 2021.

The Company has no off-balance sheet financing relationships as defined in Item 303(a)(4) of SEC Regulation S-K, with variable interest entities, structured finance entities, or any other unconsolidated entities. At December 31, 2021, the Company had not guaranteed any third-party indebtedness.

Note 11. Leases

The Company has entered into finance lease contracts with lenders for progress payments on machinery and equipment that is being constructed at the request and specification of the Company. As of December 31, 2021, the lenders had made \$22.0 million of progress payments on behalf of the Company, and \$19.4 million of progress payments are scheduled to be paid. Upon payment of the final progress payments by the lenders, finance leases will commence, and \$41.4 million, discounted using the applicable discount rates at lease inception, of ROU assets and lease liabilities will be recognized by the Company. Progress payments made on behalf of the Company in 2021 include \$16.2 million received as proceeds on the sale of ongoing construction in progress projects that were converted to leases, which is presented as an investing activities source of cash on the consolidated statement of cash flows for the year ended December 31, 2021.

The following represents the components of lease cost and other information for both operating and financing leases for the years ending December 31, 2021, 2020 and 2019:

(\$ in millions)

	December 31, 2021	Year ended December 31, 2020	December 31, 2019
Lease Cost			
Finance Lease Cost:			
Amortization of right of use asset	\$ 7.1	\$ 3.5	\$ 1.7
Interest on lease liabilities	3.1	1.0	0.5
Operating lease cost	22.7	20.8	20.5
Short-term lease cost	1.6	1.9	3.1
Variable lease cost	0.9	0.9	0.8
Sublease income	(0.3)	(0.1)	—
Total lease cost	\$ 35.1	\$ 28.0	\$ 26.6
Other information			
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows from finance leases	\$ 3.0	\$ 1.0	\$ 0.5
Operating cash flows from operating leases	\$ 20.0	\$ 21.7	\$ 20.8
Financing cash flows from finance leases	\$ 14.3	\$ 6.2	\$ 2.4
Right of use assets obtained in exchange for new finance lease liabilities	\$ 58.9	\$ 42.3	\$ 14.1
Right of use assets obtained in exchange for new operating lease liabilities (a)	\$ 4.8	\$ 12.4	\$ 35.9
Weighted average remaining lease term - finance leases	5 years	4 years	4 years
Weighted average remaining lease term - operating leases	5 years	6 years	6 years
Weighted average discount rate - finance leases	5.2 %	6.2 %	5.3 %
Weighted average discount rate - operating leases	6.5 %	6.9 %	7.0 %

(a) Several of the Company's real property lease contracts include options to extend the lease term. The Company reassesses the likelihood of exercising renewal clauses on at least an annual basis. For the year ended December 31, 2019, ATI recorded \$10.2 million of additional ROU assets and lease liabilities for likely renewals at certain leased locations.

The following table reconciles future minimum undiscounted rental commitments for operating leases to the operating lease liabilities recorded on the consolidated balance sheet as of December 31, 2021 (in millions):

	December 31, 2021
2022	\$ 17.2
2023	13.1
2024	9.8
2025	7.9
2026	5.6
2027 and thereafter	12.4
Total undiscounted lease payments	\$ 66.0
Present value adjustment	(11.6)
Operating lease liabilities	\$ 54.4

The following table reconciles future minimum undiscounted rental commitments for finance leases to the finance lease liabilities recorded on the consolidated balance sheet as of December 31, 2021 (in millions):

	December 31, 2021	
2022	\$	23.4
2023		22.5
2024		18.9
2025		14.4
2026		7.7
2027 and thereafter		8.5
Total undiscounted lease payments	\$	95.4
Present value adjustment		(10.8)
Finance lease liabilities	\$	84.6

Note 12. Derivative Financial Instruments and Hedging

As part of its risk management strategy, the Company, from time-to-time, utilizes derivative financial instruments to manage its exposure to changes in raw material prices, energy costs, foreign currencies, and interest rates. In accordance with applicable accounting standards, the Company accounts for most of these contracts as hedges.

The Company sometimes uses futures and swap contracts to manage exposure to changes in prices for forecasted purchases of raw materials, such as nickel, and natural gas. Under these contracts, which are generally accounted for as cash flow hedges, the price of the item being hedged is fixed at the time that the contract is entered into and the Company is obligated to make or receive a payment equal to the net change between this fixed price and the market price at the date the contract matures.

The majority of ATI's products are sold utilizing raw material surcharges and index mechanisms. However, as of December 31, 2021, the Company had entered into financial hedging arrangements primarily at the request of its customers, related to firm orders, for an aggregate notional amount of approximately 5 million pounds of nickel with hedge dates through 2024. The aggregate notional amount hedged is approximately 10% of a single year's estimated nickel raw material purchase requirements.

At December 31, 2021, the outstanding financial derivatives used to hedge the Company's exposure to energy cost volatility included natural gas cost hedges. At December 31, 2021, the company hedged approximately 70% of the Company's annual forecasted domestic requirements for natural gas for 2022, approximately 35% for 2023 and approximately 5% for 2024.

While the majority of the Company's direct export sales are transacted in U.S. dollars, foreign currency exchange contracts are used, from time-to-time, to limit transactional exposure to changes in currency exchange rates for those transactions denominated in a non-U.S. currency. The Company sometimes purchases foreign currency forward contracts that permit it to sell specified amounts of foreign currencies expected to be received from its export sales for pre-established U.S. dollar amounts at specified dates. The forward contracts are denominated in the same foreign currencies in which export sales are denominated. These contracts are designated as hedges of the variability in cash flows of a portion of the forecasted future export sales transactions which otherwise would expose the Company to foreign currency risk, primarily euros. In addition, the Company may also hedge forecasted capital expenditures and designate cash balances held in foreign currencies as hedges of forecasted foreign currency transactions. At December 31, 2021, the Company had no significant outstanding foreign currency forward contracts.

The Company may enter into derivative interest rate contracts to maintain a reasonable balance between fixed- and floating-rate debt. The Company has a \$50 million floating-for-fixed interest rate swap that matures in June 2024 which converts half of the Term Loan to a 4.21% fixed rate. The Company designated the interest rate swap as a cash flow hedge of the Company's exposure to the variability of the payment of interest on a portion of its Term Loan borrowings. The ineffective portion at hedge inception, determined from the fair value of the swap immediately prior to amendment in July 2019, was amortized to interest expense over the initial Term Loan swap maturity date of January 12, 2021.

There are no credit risk-related contingent features in the Company's derivative contracts, and the contracts contained no provisions under which the Company has posted, or would be required to post, collateral. The counterparties to the Company's derivative contracts were substantial and creditworthy commercial banks that are recognized market makers. The Company controls its credit exposure by diversifying across multiple counterparties and by monitoring credit ratings and credit default swap spreads of its counterparties. The Company also enters into master netting agreements with counterparties when possible.

The fair values of the Company's derivative financial instruments are presented below, representing the gross amounts recognized which are not offset by counterpart or by type of item hedged. All fair values for these derivatives were measured using Level 2 information as defined by the accounting standard hierarchy, which includes quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, and inputs derived principally from or corroborated by observable market data.

(In millions)

Asset derivatives	Balance sheet location	December 31, 2021	December 31, 2020
Derivatives designated as hedging instruments:			
Natural gas contracts	Prepaid expenses and other current assets	\$ 2.0	\$ 0.2
Nickel and other raw material contracts	Prepaid expenses and other current assets	5.0	3.7
Natural gas contracts	Other assets	0.5	0.2
Nickel and other raw material contracts	Other assets	0.1	0.7
Total derivatives designated as hedging instruments		7.6	4.8
Total asset derivatives		\$ 7.6	\$ 4.8
Liability derivatives			
Derivatives designated as hedging instruments:			
Interest rate swap	Other current liabilities	\$ 0.9	\$ 1.0
Natural gas contracts	Other current liabilities	0.7	0.3
Nickel and other raw material contracts	Other current liabilities	0.2	0.1
Interest rate swap	Other long-term liabilities	0.7	2.5
Natural gas contracts	Other long-term liabilities	0.2	0.1
Total derivatives designated as hedging instruments		2.7	4.0
Total liability derivatives		\$ 2.7	\$ 4.0

Assuming market prices remain constant with those at December 31, 2021, a pre-tax gain of \$5.2 million is expected to be recognized over the next 12 months.

For derivative financial instruments that are designated as cash flow hedges, the gain or loss on the derivative is reported as a component of other comprehensive income (OCI) and reclassified into earnings in the same period or periods during which the hedged item affects earnings. For derivative financial instruments that are designated as fair value hedges, changes in the fair value of these derivatives are recognized in current period results and are reported as changes within accrued liabilities and other on the consolidated statements of cash flows. There were no outstanding fair value hedges as of December 31, 2021 or 2020. The Company did not use net investment hedges for the periods presented. The effects of derivative instruments in the tables below are presented net of related income taxes, excluding any impacts of changes to income tax valuation allowances affecting results of operations or other comprehensive income, when applicable. The 2019 income tax provision includes \$6.0 million of tax expense for the recognition of a stranded deferred tax balance arising from deferred tax valuation allowances associated with a cash flow hedge portfolio that fully settled in the fourth quarter of 2019 (see Notes 15 and 17 for further explanation on tax impacts within accumulated other comprehensive income (loss)). This tax impact is also excluded from the table below.

Activity with regard to derivatives designated as cash flow hedges for the years ended December 31, 2021 and 2020 were as follows (in millions):

Derivatives in Cash Flow Hedging Relationships	Amount of Gain (Loss) Recognized in OCI on Derivatives		Amount of Gain (Loss) Reclassified from Accumulated OCI into Income (a)	
	2021	2020	2021	2020
Nickel and other raw material contracts	\$ 6.2	\$ —	\$ 5.4	\$ (0.6)
Natural gas contracts	5.2	(0.1)	4.0	(2.8)
Foreign exchange contracts	0.2	(0.1)	0.1	(0.1)
Interest rate swap	0.1	(1.8)	(0.8)	(1.1)
Total	\$ 11.7	\$ (2.0)	\$ 8.7	\$ (4.6)

- (a) The gains (losses) reclassified from accumulated OCI into income related to the derivatives, with the exception of the interest rate swap, are presented in cost of sales in the same period or periods in which the hedged item affects earnings. The gains (losses) reclassified from accumulated OCI into income on the interest rate swap are presented in interest expense in the same period as the interest expense on the Term Loan is recognized in earnings.

The disclosures of gains or losses presented above for nickel and other raw material contracts and foreign currency contracts do not take into account the anticipated underlying transactions. Since these derivative contracts represent hedges, the net effect of any gain or loss on results of operations may be fully or partially offset.

Note 13. Fair Value of Financial Instruments

The estimated fair value of financial instruments at December 31, 2021 was as follows:

<i>(In millions)</i>	Total Carrying Amount	Fair Value Measurements at Reporting Date Using		
		Total Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Observable Inputs (Level 2)
Cash and cash equivalents	\$ 687.7	\$ 687.7	\$ 687.7	\$ —
Derivative financial instruments:				
Assets	7.6	7.6	—	7.6
Liabilities	2.7	2.7	—	2.7
Debt (a)	1,863.7	2,003.2	1,690.1	313.1

The estimated fair value of financial instruments at December 31, 2020 was as follows:

<i>(In millions)</i>	Total Carrying Amount	Fair Value Measurements at Reporting Date Using		
		Total Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Observable Inputs (Level 2)
Cash and cash equivalents	\$ 645.9	\$ 645.9	\$ 645.9	\$ —
Derivative financial instruments:				
Assets	4.8	4.8	—	4.8
Liabilities	4.0	4.0	—	4.0
Debt (a)	1,629.1	1,847.7	1,594.2	253.5

- (a) The total carrying amount for debt excludes debt issuance costs related to the recognized debt liability which is presented in the consolidated balance sheet as a direct reduction from the carrying amount of the debt liability. The December 31, 2020 debt carrying value includes \$46.8 million for the unamortized balance of the portion of the 2025 Convertible Notes recorded in stockholders' equity due to the flexible settlement feature of the notes (see Note 10).

In accordance with accounting standards, fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. Accounting standards established three levels of a fair value hierarchy that prioritizes the inputs used to measure fair value. This hierarchy requires entities to maximize the use of observable inputs and minimize the use of unobservable inputs. The three levels of inputs used to measure fair value are as follows:

Level 1 – Quoted prices in active markets for identical assets or liabilities.

Level 2 – Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data.

Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets and liabilities. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

The availability of observable market data is monitored to assess the appropriate classification of financial instruments within the fair value hierarchy. Changes in economic conditions or model-based valuation techniques may require the transfer of financial instruments from one fair value level to another. In such instances, the transfer is reported at the beginning of the reporting period.

The following methods and assumptions were used by the Company in estimating the fair value of its financial instruments:

Cash and cash equivalents: Fair values were determined using Level 1 information.

Derivative financial instruments: Fair values for derivatives were measured using exchange-traded prices for the hedged items. The fair value was determined using Level 2 information, including consideration of counterparty risk and the Company's credit risk.

Short-term and long-term debt: The fair values of the 2022 and 2025 Convertible Notes, the 2023 Notes (prior to redemption in October 2021), the Allegheny Ludlum 6.95% Debentures due 2025, the 2027 Notes, the 2029 Notes and the 2031 Notes were determined using Level 1 information. The fair values of other short-term and long-term debt were determined using Level 2 information.

Note 14. Retirement Benefits

The Company has defined contribution retirement plans or defined benefit pension plans covering substantially all employees. Company contributions to defined contribution retirement plans are generally based on a percentage of eligible pay or based on hours worked. Benefits under the defined benefit pension plans are generally based on years of service and/or final average pay. The Company also sponsors several postretirement plans covering certain collectively-bargained salaried and hourly employees. The plans provide health care and life insurance benefits for eligible retirees. In most retiree health care plans, Company contributions towards premiums are capped based on the cost as of a certain date, thereby creating a defined contribution.

ATI instituted several initiatives over a multi-year period as part of its retirement benefit liability reduction strategy. Future benefit accruals for all participants in the U.S. defined benefit pension plans other than those subject to a CBA were frozen at the end of 2014, and subsequently CBAs were negotiated to close these plans to new entrants. As a result of these actions, the Company has now completely closed all defined benefit pension plans to new entrants, and has substantially limited the number of employees still accruing benefit service to approximately 1,100 participants, or less than 10% of the population in the U.S. qualified defined benefit pension plans. Additionally, all of ATI's remaining collectively-bargained, capped defined benefit retiree health care plans are now closed to new entrants. These liability management actions have transitioned ATI's retirement benefit and other postretirement benefit programs largely to a defined contribution structure. Since 2013, five annuity buyouts of retired participants and two voluntary cash out programs of deferred participants during this period have helped to reduce the total participants in ATI's U.S. qualified defined benefit pension plans by more than 60%.

Beginning on June 1, 2020, in response to the economic challenges created by the COVID-19 pandemic, the Company reduced its qualified non-elective contribution percentage and suspended all Company match contributions for salaried participants in the ATI 401(k) Savings Plan, and deferred the funding temporarily of Company contributions to this plan until mid-2021, resulting in \$7.3 million reported in other current liabilities for this deferral on the consolidated balance sheet as of December 31, 2020. Costs for defined contribution retirement plans were \$20.4 million in 2021, \$29.9 million in 2020, and \$44.8 million in 2019. Company contributions to these defined contribution plans are funded with cash. There were no other postretirement benefit costs for a defined contribution plan in 2021, and such costs were \$0.7 million, and \$1.0 million for the fiscal years ended December 31, 2020 and 2019, respectively.

The components of pension and other postretirement benefit expense for the Company's defined benefit plans included the following:

<i>(In millions)</i>	Pension Benefits			Other Postretirement Benefits		
	2021	2020	2019	2021	2020	2019
Service cost—benefits earned during the year	\$ 15.1	\$ 12.7	\$ 12.7	\$ 1.5	\$ 2.3	\$ 1.9
Interest cost on benefits earned in prior years	68.4	86.3	105.5	8.0	10.7	14.8
Expected return on plan assets	(136.4)	(134.5)	(131.3)	—	—	—
Amortization of prior service cost (credit)	0.6	0.7	0.3	(2.4)	(3.8)	(2.9)
Amortization of net actuarial loss	75.6	74.5	73.7	13.9	10.8	13.5
Settlement gain	—	—	—	(64.9)	—	—
Curtailement gain	—	—	—	—	(0.2)	—
Termination benefits	—	10.9	—	—	6.7	—
Total retirement benefit expense (income)	\$ 23.3	\$ 50.6	\$ 60.9	\$ (43.9)	\$ 26.5	\$ 27.3

On July 14, 2021, ATI announced that a new four-year labor agreement with the USW was ratified (see Note 1 for further discussion). As a result of this new CBA, ATI recognized a \$64.9 million pretax settlement gain in the third quarter of 2021, which is recorded in nonoperating retirement benefit income/expense on the consolidated statement of operations, related to a plan termination that eliminated certain postretirement medical benefit liabilities, comprised of \$43.0 million of long-term postretirement benefit liabilities as of July 2021 and \$21.9 million of amounts recorded in accumulated other comprehensive income at that date. Discrete tax effects related to this event were \$15.5 million of income tax expense (see Note 17 for further discussion).

In the fourth quarter of 2020, the Company recorded a \$17.4 million termination benefits charge for pension and postretirement medical obligations, net of a \$0.2 million curtailment gain, related to facility closures in the AA&S segment resulting from the Company's strategic shift to exit lower-margin standard stainless products. See Note 19 for further explanation.

Actuarial assumptions used to develop the components of defined benefit pension expense and other postretirement benefit expense were as follows:

	Pension Benefits			Other Postretirement Benefits		
	2021	2020	2019	2021	2020	2019
Discount rate	2.60 %	3.40 %	4.40 %	2.45 %	3.25 %	4.35 %
Rate of increase in future compensation levels	1.00 %	1.00 %	0.50% - 1.00%	—	—	—
Weighted average expected long-term rate of return on assets	6.71 %	7.16 %	7.52 %	— %	— %	4.0 %

Actuarial assumptions used for the valuation of defined benefit pension and other postretirement benefit obligations at the end of the respective periods were as follows:

	Pension Benefits		Other Postretirement Benefits	
	2021	2020	2021	2020
Discount rate	2.95 %	2.60 %	2.80 %	2.45 %
Rate of increase in future compensation levels	2.00% - 3.00%	1.00 %	—	—

A reconciliation of the funded status for the Company's defined benefit pension and other postretirement benefit plans at December 31, 2021 and 2020 was as follows:

<i>(In millions)</i>	Pension Benefits		Other Postretirement Benefits	
	2021	2020	2021	2020
Change in benefit obligations:				
Benefit obligation at beginning of year	\$ 2,720.1	\$ 2,633.9	\$ 357.6	\$ 345.3
Service cost	15.1	12.7	1.5	2.3
Interest cost	68.4	86.3	8.0	10.7
Benefits paid	(235.0)	(258.0)	(28.9)	(30.4)
Subsidy received	—	—	0.4	0.8
Effect of currency rates	(1.3)	4.3	—	—
Net actuarial (gains) losses – discount rate change	(104.0)	235.3	(9.0)	25.5
– other	53.7	(5.3)	0.7	(0.8)
Plan curtailments	—	—	—	(2.5)
Settlement gain	—	—	(43.0)	—
Termination benefits	—	10.9	—	6.7
Benefit obligation at end of year	<u>\$ 2,517.0</u>	<u>\$ 2,720.1</u>	<u>\$ 287.3</u>	<u>\$ 357.6</u>

Actuarial effects of changes in discount rates are separately identified in the preceding table. Net actuarial (gains) losses – other for 2021 is primarily comprised of revisions to estimates for mortality, termination rates, retirement rates, forms of benefit payment elected, and other demographic assumptions based on an updated study of plan experience.

<i>(In millions)</i>	Pension Benefits		Other Postretirement Benefits	
	2021	2020	2021	2020
Change in plan assets:				
Fair value of plan assets at beginning of year	\$ 2,046.4	\$ 1,902.1	\$ —	\$ 0.1
Actual returns on plan assets and plan expenses	233.8	258.9	—	(0.1)
Employer contributions	77.3	138.8	—	—
Effect of currency rates	(1.6)	4.6	—	—
Benefits paid	(235.0)	(258.0)	—	—
Fair value of plan assets at end of year	<u>\$ 2,120.9</u>	<u>\$ 2,046.4</u>	<u>\$ —</u>	<u>\$ —</u>

Pension benefit payments in 2021 include \$70 million for the annuity buyout of smaller pension balances in a U.S. defined benefit pension plan involving approximately 1,000, or 7% of participants. Pension benefit payments in 2020 include \$86 million for the annuity buyout of smaller pension balances in a U.S. defined benefit pension plan involving approximately 1,200, or 8% of participants. These actions were also part of ATI's retirement benefit liability management strategy to reduce the overall size of the pension obligation and to lower administrative costs.

Assets (liabilities) recognized in the consolidated balance sheets:

	Pension Benefits		Other Postretirement Benefits	
	2021	2020	2021	2020
Noncurrent assets	\$ 25.0	\$ 5.4	\$ —	\$ —
Current liabilities	(5.7)	(5.5)	(29.2)	(30.9)
Noncurrent liabilities	(415.4)	(673.6)	(258.1)	(326.7)
Total amount recognized	<u>\$ (396.1)</u>	<u>\$ (673.7)</u>	<u>\$ (287.3)</u>	<u>\$ (357.6)</u>

Changes to accumulated other comprehensive loss related to pension and other postretirement benefit plans in 2021 and 2020 were as follows:

<i>(In millions)</i>	Pension Benefits		Other Postretirement Benefits	
	2021	2020	2021	2020
Beginning of year accumulated other comprehensive loss	\$ (1,600.3)	\$ (1,569.7)	\$ (119.1)	\$ (103.5)
Amortization of net actuarial loss	75.6	74.5	13.9	10.8
Amortization of prior service cost (credit)	0.6	0.7	(2.4)	(3.8)
Settlement gain	—	—	(21.9)	—
Remeasurements	147.6	(105.8)	8.3	(22.6)
End of year accumulated other comprehensive loss	\$ (1,376.5)	\$ (1,600.3)	\$ (121.2)	\$ (119.1)
Net change in accumulated other comprehensive loss	\$ 223.8	\$ (30.6)	\$ (2.1)	\$ (15.6)

Amounts included in accumulated other comprehensive loss at December 31, 2021 and 2020 were as follows:

<i>(In millions)</i>	Pension Benefits		Other Postretirement Benefits	
	2021	2020	2021	2020
Prior service (cost) credit	\$ (9.9)	\$ (10.6)	\$ 3.4	\$ 7.0
Net actuarial loss	(1,366.6)	(1,589.7)	(124.6)	(126.1)
Accumulated other comprehensive loss	(1,376.5)	(1,600.3)	(121.2)	(119.1)
Deferred tax effect	507.6	561.4	42.4	38.1
Accumulated other comprehensive loss, net of tax	\$ (868.9)	\$ (1,038.9)	\$ (78.8)	\$ (81.0)

Amounts in accumulated other comprehensive loss presented above do not include any effects of deferred tax asset valuation allowances. See Note 15 for further discussion on deferred tax asset valuation allowances.

Retirement benefit expense for 2022 for defined benefit plans is estimated to be approximately \$37 million, comprised of \$16 million for pension expense and \$21 million of expense for other postretirement benefits. The net actuarial loss is recognized in the consolidated statement of operations using a corridor method. Because all of ATI's pension plans are inactive, cumulative gains and losses in excess of 10% of the greater of the projected benefit obligation or the market value of plan assets are amortized over the expected average remaining future lifetime of participants, which is approximately 17 years on a weighted average basis. Prior service cost (credit) amortization is recognized in level amounts over the expected service of the active membership as of the amendment effective date. Amounts in accumulated other comprehensive loss that are expected to be recognized as components of net periodic benefit cost in 2022 are:

<i>(In millions)</i>	Pension Benefits	Other Postretirement Benefits	Total
	Amortization of prior service cost (credit)	\$ 0.4	\$ (0.9)
Amortization of net actuarial loss	64.0	13.3	77.3
Amortization of accumulated other comprehensive loss	\$ 64.4	\$ 12.4	\$ 76.8

The accumulated benefit obligation for all defined benefit pension plans was \$2,498.0 million and \$2,703.9 million at December 31, 2021 and 2020, respectively. Additional information for pension plans with accumulated benefit obligations and projected benefit obligations in excess of plan assets:

<i>(In millions)</i>	Pension Benefits	
	2021	2020
Projected benefit obligation	\$ 2,417.0	\$ 2,611.8
Accumulated benefit obligation	\$ 2,398.0	\$ 2,595.6
Fair value of plan assets	\$ 1,995.9	\$ 1,932.8

Cash contributions to ATI's U.S. qualified defined benefit pension plans were \$67 million in 2021, \$130 million in 2020 and \$145 million in 2019. The Company funds the U.S. defined benefit pension plans in accordance with the Employee Retirement Income Security Act of 1974, as amended, and the Internal Revenue Code. As a result of the American Rescue Plan Act (ARPA) enacted in March 2021, the rules governing pension funding calculations changed, and minimum funding requirements were reduced. As a result of these ARPA changes, ATI's prior contributions have generated a credit balance that may be utilized to offset future minimum required contributions. ATI made a \$50 million voluntary cash contribution to the ATI Pension Plan in the third quarter 2021 to improve the plan's funded position, bringing the total U.S. qualified defined benefit

pension plan contributions to \$67 million for fiscal year 2021. The Company has no required cash contributions to its U.S. qualified defined benefit pension plans in 2022, and expects to make voluntary cash contributions of approximately \$50 million to these plans in 2022. In addition, for 2022, the Company expects approximately \$10 million of payments for U.S. nonqualified pension benefits and for contributions to its U.K. defined benefit pension plan. Certain U.K. assets are pledged as collateral to the trustee of the U.K. defined benefit pension plan to support statutory funding requirements. This security agreement has a maximum value of approximately \$62 million based on year-end 2021 exchange rates.

The following table summarizes expected benefit payments from the Company's various pension and other postretirement defined benefit plans through 2031, and also includes estimated Medicare Part D subsidies projected to be received during this period based on currently available information. Pension benefit payments for the U.S. qualified defined benefit pension plans and the U.K. defined benefit plan are made from pension plan assets.

<i>(In millions)</i>	Pension Benefits	Other Postretirement Benefits	Medicare Part D Subsidy
2022	\$ 161.2	\$ 29.2	\$ 0.1
2023	160.8	28.4	0.1
2024	158.5	26.4	0.1
2025	156.3	24.5	0.1
2026	153.9	22.5	0.1
2027-2031	<u>724.3</u>	<u>86.6</u>	<u>0.2</u>

The annual assumed rate of increase in the per capita cost of covered benefits (the health care cost trend rate) for health care plans was 6.5% in 2022 and is assumed to gradually decrease to 4.0% in the year 2047 and remain at that level thereafter. Assumed health care cost trend rates can have a significant effect on the amounts reported for the health care plans, however, the Company's contributions for most of its retiree health plans are capped based on a fixed premium amount, which limits the impact of future health care cost increases.

The fair values of the Company's pension plan assets are determined using net asset value (NAV) as a practical expedient, or by information categorized in the fair value hierarchy level based on the inputs used to determine fair value, as further discussed in Note 13. The fair values at December 31, 2021 were as follows:

<i>(In millions)</i>	Total	NAV	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Asset category					
Equity securities:					
U.S. equities	\$ 509.8	\$ 281.4	\$ 228.4	\$ —	\$ —
International equities	408.8	396.6	12.2	—	—
Debt securities and cash:					
Fixed income and cash equivalents	667.7	442.3	24.5	200.9	—
Floating rate	40.0	40.0	—	—	—
Private equity	176.7	176.7	—	—	—
Hedge funds	292.1	292.1	—	—	—
Real estate and other	25.8	25.8	—	—	—
Total assets	<u>\$ 2,120.9</u>	<u>\$ 1,654.9</u>	<u>\$ 265.1</u>	<u>\$ 200.9</u>	<u>\$ —</u>

The fair values of the Company's pension plan assets at December 31, 2020 were as follows:

<i>(In millions)</i>			Quoted Prices in Active Markets for Identical Assets	Significant Observable Inputs	Significant Unobservable Inputs
Asset category	Total	NAV	(Level 1)	(Level 2)	(Level 3)
Equity securities:					
U.S. equities	\$ 452.0	\$ 264.7	\$ 187.3	\$ —	\$ —
International equities	477.1	448.7	28.4	—	—
Debt securities and cash:					
Fixed income and cash equivalents	588.0	306.3	80.3	201.4	—
Floating rate	47.4	47.4	—	—	—
Private equity	130.0	130.0	—	—	—
Hedge funds	325.0	325.0	—	—	—
Real estate and other	26.9	26.9	—	—	—
Total assets	\$ 2,046.4	\$ 1,549.0	\$ 296.0	\$ 201.4	\$ —

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. Investments in U.S. and International equities, and Fixed Income are predominantly held in common/collective trust funds and registered investment companies. Some of these investments are publicly traded securities and are classified as Level 1, while others are public investment vehicles valued using the NAV provided by the administrator of the fund. The NAV is based on the value of the underlying assets owned by the fund, minus its liabilities, and then divided by the number of shares outstanding. These investments are not classified in the fair value hierarchy. In addition, some fixed income instruments are investments in debt instruments that are valued using external pricing vendors and are classified within Level 2 of the fair value hierarchy.

Floating interest rate global debt instruments are both domestic and foreign and include first lien debt, second lien debt and structured finance obligations, among others. These instruments are valued using NAV and are not classified in the fair value hierarchy.

Private equity investments include both Direct Funds and Fund-of-Funds. Direct Funds are investments in Limited Partnership (LP) interests. Fund-of-Funds are investments in private equity funds that invest in other private equity funds or LPs. Fair value of these investments is determined utilizing net asset values, and are not classified in the fair value hierarchy.

Hedge fund investments are made as a limited partner in hedge funds managed by a general partner. Fair value of these investments is determined utilizing net asset values, and are not classified in the fair value hierarchy.

Real estate investments are made as a limited partner in a portfolio of properties managed by a general partner. Fair value of these investments is determined utilizing net asset values, and are not classified in the fair value hierarchy.

For certain investments which have formal financial valuations reported on a one-quarter lag, fair value is determined utilizing net asset values adjusted for subsequent cash flows, estimated financial performance and other significant events.

For 2022, the weighted average expected long-term rate of return on defined benefit pension assets is 6.43%. In developing expected long-term rate of return assumptions, the Company evaluated input from its third party pension plan asset managers and actuaries, including reviews of their asset class return expectations and long-term inflation assumptions. An expected long-term rate of return is based on expected asset allocations within ranges for each investment category and projected annual compound returns. The Company's actual, weighted average returns on pension assets for the last five years have been 12.4% for 2021, 15.2% for 2020, 15.1% for 2019, (4.8)% for 2018, and 16.9% for 2017.

The plan assets for the ATI Pension Plan, the Company's primary U.S. qualified defined benefit pension plan, represent nearly 90% of ATI's total pension plan assets at December 31, 2021. The ATI Pension Plan invests in a diversified portfolio consisting of an array of asset classes that attempts to maximize returns while minimizing volatility. These asset classes include U.S. domestic equities, non-U.S. developed market equities, emerging market equities, hedge funds, private equity, traditional fixed income consisting of long government/credit and alternative credit, and real estate. The Company continually monitors the investment results of these asset classes and its fund managers, and explores other potential asset classes for possible future investment.

The target asset allocations for ATI Pension Plan for 2022, by major investment category, are:

<u>Asset category</u>	Target asset allocation range
U.S. equity	18% - 40%
Global equity	10% - 30%
Debt securities and cash	15% - 40%
Private equity	0% - 15%
Hedge funds	10% - 20%
Real estate and other	0% - 10.0%

As of December 31, 2021, the Company's pension plans had outstanding commitments to invest up to \$62 million in global debt securities, \$97 million in private equity investments and \$44 million in real estate investments. These commitments are expected to be satisfied through the reallocation of pension trust assets while maintaining investments within the target asset allocation ranges.

The Company contributes to several multiemployer defined benefit pension plans under collective bargaining agreements that cover certain of its union-represented employees. The risks of participating in such plans are different from the risks of single-employer plans, in the following respects:

- a. Assets contributed to a multiemployer plan by one employer may be used to provide benefits to employees of other participating employers.
- b. If a participating employer ceases to contribute to the plan, the unfunded obligations of the plan may be borne by the remaining participating employers.
- c. If the Company ceases to have an obligation to contribute to the multiemployer plan in which it had been a contributing employer, it may be required to pay to the plan an amount based on the underfunded status of the plan and on the history of the Company's participation in the plan prior to the cessation of its obligation to contribute. The amount that an employer that has ceased to have an obligation to contribute to a multiemployer plan is required to pay to the plan is referred to as a withdrawal liability.

A subsidiary of the Company participates in the Steelworkers Western Independent Shops Pension Plan (WISPP) for union-represented employees of the primary titanium operations in Albany, OR, which is funded on an hours-worked basis. ATI's contributions to the WISPP exceed 5% of this plan's total contributions for the plan year ended September 30, 2020, which is the most recent information available from the Plan Administrator. As of December 31, 2020, manufacturing operations at this facility were indefinitely idled, and a limited number of employees that participate in the WISPP remain active in maintenance and other functions. It is reasonably possible that a significant reduction or the elimination of hours-worked contributions due to changes in operating rates at this facility could result in a withdrawal liability assessment in a future period. A complete withdrawal liability is estimated to be approximately \$35 million on an undiscounted basis. If this complete withdrawal liability was incurred, ATI estimates that payments of the obligation would be required on a straight-line basis over a 20-year period.

The Company's participation in multiemployer plans for the years ended December 31, 2021, 2020 and 2019 is reported in the following table.

Pension Fund	EIN / Pension Plan Number	Pension Protection Act Zone Status (1)		FIP / RP Status Pending / Implemented (2)	in millions			Surcharge Imposed (3)	Expiration Dates of Collective Bargaining Agreements
		2021	2020		Company Contributions				
					2021	2020	2019		
Steelworkers Western Independent Shops Pension Plan	90-0169564 / 001	Green	Green	N/A	\$ 0.1	\$ 0.7	\$ 0.9	No	2/28/2025
Boilermakers-Blacksmiths National Pension Trust	48-6168020 / 001	Yellow	Yellow	Yes	2.0	2.1	2.5	No	9/30/2026
IAM National Pension Fund	51-6031295 / 002	Red	Red	Yes	1.9	2.0	2.2	Yes	Various between 2022-2023 (4)
Total contributions					<u>\$ 4.0</u>	<u>\$ 4.8</u>	<u>\$ 5.6</u>		

- (1) The most recent Pension Protection Act Zone Status is based on information provided to ATI and other participating employers by each plan, as certified by the plan's actuary. A plan in the "deep red" zone had been determined to be in "critical and declining status", based on criteria established by the Internal Revenue Code (Code), and is in critical status (as defined by the "red" zone) and is projected to become insolvent (run out of money to pay benefits) within 15 years (or within 20 years if a special rule applies). A plan in the "red" zone had been determined to be in "critical status", based on criteria established by the Code, and is generally less than 65% funded. A plan in the "yellow" zone has been determined to be in "endangered status", based on criteria established under the Code, and is generally less than 80% funded. A plan in the "green" zone has been determined to be neither in "critical status" nor in "endangered status", and is generally at least 80% funded. Additionally, a plan may voluntarily place itself into a rehabilitation plan.

In April 2019, the Company received notification from the IAM National Pension Fund (IAM Fund) that its' actuary certified the IAM Fund as "endangered status" for the plan year beginning January 1, 2019, and that the IAM Fund was voluntarily placing itself in "red" zone status and implementing a rehabilitation plan. In April 2020 and 2021, the Company received notification from the IAM Fund that it was certified by its actuary as being in "red" zone status for the plan years beginning January 1, 2020 and 2021. A 5% contribution surcharge was imposed as of June 1, 2019 for the rest of 2019, increasing to a 10% surcharge rate beginning January 1, 2020 in addition to the contribution rate specified in the applicable collective bargaining agreements. The contribution surcharge ends when an employer begins contributing under a collective bargaining agreement that includes terms consistent with the rehabilitation plan.

In April 2019, the Company received notifications from the Boilermakers-Blacksmiths National Pension Trust (Blacksmiths Trust) that it was certified by its actuary as being in "red" zone status for the plan year beginning January 1, 2019. A rehabilitation plan has been adopted for the Blacksmiths Trust, and the Company and the Blacksmiths union agreed to adopt the rehabilitation plan in 2019 prior to a contribution surcharge being imposed. In April 2020 and 2021, the funding status improved for the Blacksmiths Trust as it was certified by its actuary as being in the "yellow" zone for the plan years beginning January 1, 2020 and 2021.

- (2) The "FIP / RP Status Pending / Implemented" column indicates whether a Funding Improvement Plan, as required under the Code by plans in the "yellow" zone, or a Rehabilitation Plan, as required under the Code to be adopted by plans in the "red" or "deep red" zones, is pending or has been implemented as of the end of the plan year that ended in 2021.
- (3) The "Surcharge Imposed" column indicates whether ATI's contribution rate for 2021 included an amount in addition to the contribution rate specified in the applicable collective bargaining agreement, as imposed by a plan in "critical status" or "critical and declining status", in accordance with the requirements of the Code.
- (4) The Company is party to five separate bargaining agreements that require contributions to this plan. Expiration dates of these collective bargaining agreements range between February 27, 2022 and November 13, 2023.

Note 15. Accumulated Other Comprehensive Income (Loss)

The changes in AOCI by component, net of tax, for the fiscal years ended December 31, 2021, 2020 and 2019 were as follows (in millions):

	Post-retirement benefit plans	Currency translation adjustment	Derivatives	Deferred Tax Asset Valuation Allowance	Total
Balance, December 31, 2018	\$ (1,005.8)	\$ (73.9)	\$ (4.8)	\$ (49.3)	\$ (1,133.8)
OCI before reclassifications	(141.6)	(2.7)	7.4	—	(136.9)
Amounts reclassified from AOCI	(a) 64.3	(b) —	(c) (3.1)	(d) 7.8	69.0
Net current-period OCI	(77.3)	(2.7)	4.3	7.8	(67.9)
Balance, December 31, 2019	(1,083.1)	(76.6)	(0.5)	(41.5)	(1,201.7)
OCI before reclassifications	(99.3)	21.1	(2.0)	—	(80.2)
Amounts reclassified from AOCI	(a) 62.5	(b) —	(c) 4.6	(d) (8.8)	58.3
Net current-period OCI	(36.8)	21.1	2.6	(8.8)	(21.9)
Balance, December 31, 2020	(1,119.9)	(55.5)	2.1	(50.3)	(1,223.6)
OCI before reclassifications	118.3	(9.4)	11.7	—	120.6
Amounts reclassified from AOCI	(a) 53.9	(b) —	(c) (8.7)	(d) 66.1	111.3
Net current-period OCI	172.2	(9.4)	3.0	66.1	231.9
Balance, December 31, 2021	\$ (947.7)	\$ (64.9)	\$ 5.1	\$ 15.8	\$ (991.7)
Attributable to noncontrolling interests:					
Balance, December 31, 2018	\$ —	\$ 11.1	\$ —	\$ —	\$ 11.1
OCI before reclassifications	—	(1.3)	—	—	(1.3)
Amounts reclassified from AOCI	—	(b) —	—	—	—
Net current-period OCI	—	(1.3)	—	—	(1.3)
Balance, December 31, 2019	—	9.8	—	—	9.8
OCI before reclassifications	—	11.4	—	—	11.4
Amounts reclassified from AOCI	—	(b) —	—	—	—
Net current-period OCI	—	11.4	—	—	11.4
Balance, December 31, 2020	—	21.2	—	—	21.2
OCI before reclassifications	—	4.8	—	—	4.8
Amounts reclassified from AOCI	—	(b) —	—	—	—
Net current-period OCI	—	4.8	—	—	4.8
Balance, December 31, 2021	\$ —	\$ 26.0	\$ —	\$ —	\$ 26.0

- (a) Amounts were included in net periodic benefit cost for pension and other postretirement benefit plans (see Note 14).
(b) No amounts were reclassified to earnings.
(c) Amounts related to derivatives are included in cost of goods sold or interest expense in the period or periods the hedged item affects earnings (see Note 12).
(d) Represents the net change in deferred tax asset valuation allowances on changes in AOCI balances between the balance sheet dates. The 2021 income tax provision includes \$6.4 million of tax expense for the recognition of a stranded deferred tax balance arising from deferred tax valuation allowances that was associated with certain postretirement medical benefits due to plan termination (see Notes 14 and 17). The 2019 income tax provision includes \$6.0 million of tax expense for the recognition of a stranded deferred tax balance arising from deferred tax valuation allowances that was associated with a cash flow hedge portfolio that fully settled in the fourth quarter of 2019.

Other comprehensive income (loss) amounts (OCI) reported above by category are net of applicable income tax expense (benefit) for each year presented. Income tax expense (benefit) on OCI items is recorded as a change in a deferred tax asset or liability. Amounts recognized in OCI include the impact of any deferred tax asset valuation allowances, when applicable. Foreign currency translation adjustments, including those pertaining to noncontrolling interests, are generally not adjusted for income taxes as they relate to indefinite investments in non-U.S. subsidiaries.

Reclassifications out of AOCI for the fiscal years ended December 31, 2021, 2020 and 2019 were as follows:

Details about AOCI Components (In millions)	Amount reclassified from AOCI (c)			Affected line item in the consolidated statement of operations
	Fiscal year ended			
	December 31, 2021	December 31, 2020	December 31, 2019	
Postretirement benefit plans				
Prior service credit	\$ 1.8 (a)	\$ 3.1 (a)	\$ 2.6 (a)	
Actuarial losses	(89.5) (a)	(85.3) (a)	(87.2) (a)	
Settlement gain	21.9 (a)	—	—	
	(65.8) (c)	(82.2) (c)	(84.6) (c)	Total before tax
	(11.9)	(19.7)	(20.3)	Tax benefit (d)
	<u>\$ (53.9)</u>	<u>\$ (62.5)</u>	<u>\$ (64.3)</u>	Net of tax
Derivatives				
Nickel and other raw material contracts	\$ 7.1 (b)	\$ (0.8) (b)	\$ 5.1 (b)	
Natural gas contracts	5.3 (b)	(3.7) (b)	(1.2) (b)	
Foreign exchange contracts	0.1 (b)	(0.1) (b)	0.7 (b)	
Interest rate swap	(1.1) (b)	(1.4) (b)	(0.5) (b)	
	11.4 (c)	(6.0) (c)	4.1 (c)	Total before tax
	2.7	(1.4)	1.0	Tax provision (benefit) (d)
	<u>\$ 8.7</u>	<u>\$ (4.6)</u>	<u>\$ 3.1</u>	Net of tax

- (a) Amounts are included in nonoperating retirement benefit expense (see Note 14).
- (b) Amounts related to derivatives, with the exception of the interest rate swap, are included in cost of goods sold in the period or periods the hedged item affects earnings. Amounts related to the interest rate swap are included in interest expense in the same period as the interest expense on the Term Loan is recognized in earnings (see Note 12).
- (c) For pretax items, positive amounts are income and negative amounts are expense in terms of the impact to net income. Tax effects are presented in conformity with ATI's presentation in the consolidated statements of operations.
- (d) These amounts exclude the impact of any deferred tax asset valuation allowances, when applicable, including recognition of stranded balances (see Note 17 for further explanation).

Note 16. Stockholders' Equity

Preferred Stock

Authorized preferred stock may be issued in one or more series, with designations, powers and preferences as shall be designated by the Board of Directors. At December 31, 2021, there were no shares of preferred stock issued.

Dividends

Under the ABL facility, there is no limit on dividend declarations or payments provided that the undrawn availability, after giving effect to a particular dividend payment, is at least the greater of \$150 million and 30% of the maximum revolving credit availability, and no event of default under the ABL facility has occurred and is continuing or would result from paying the dividend. In addition, there is no limit on dividend declarations or payments if the undrawn availability is less than the greater of \$150 million and 30% of the maximum revolving credit advance amount but more than the greater of \$75 million and 15% of the maximum revolving credit advance amount, if (i) no event of default has occurred and is continuing or would result from paying the dividend, (ii) the Company demonstrates to the administrative agent that, prior to and after giving effect to the payment of the dividend (A) the undrawn availability, as measured both at the time of the dividend payment and as an average for the 60 consecutive day period immediately preceding the dividend payment, is at least the greater of \$75 million and 15% of the maximum revolving credit availability, and (B) the Company maintains a fixed charge coverage ratio of at least 1.00:1.00, as calculated in accordance with the terms of the ABL facility.

Share-based Compensation

In May 2020, the Company's stockholders approved the Allegheny Technologies Incorporated 2020 Incentive Plan (the "2020 Incentive Plan"). Following adoption, all new share-based compensation awards are being made under the 2020 Incentive Plan. Shares previously remaining available for grant under prior incentive plans, or which become available for award due to the forfeiture or cancellation of prior awards under those prior plans, are available for award under the 2020 Incentive Plan. Outstanding grants previously made under prior incentive plans remain in effect in accordance with relevant terms.

Awards earned under the Company's share-based incentive compensation programs are generally paid with shares held in treasury, if sufficient treasury shares are held, and any additional required share payments are made with newly issued shares. At December 31, 2021, 3.5 million shares of common stock were available for future awards under the 2020 Incentive Plan. The general terms of each arrangement granted under the 2020 Incentive Plan, and predecessor plans, the method of estimating fair value for each arrangement, and award activity is reported below.

Beginning in 2016, the Company implemented a new share-based incentive compensation program, the Long-Term Incentive Plan (LTIP). The LTIP consists of both Restricted Share Units (RSU) and Performance Share Units (PSU). These share units convey participants the right to receive shares of ATI common stock if the performance or market requirements, and service conditions, of the LTIP award are attained. The Company's previous share-based compensation program included a Performance/Restricted Stock Program (PRSP) of nonvested stock awards for which vesting and expense continued into fiscal year 2020 for certain participants.

Nonvested stock awards/units:

Restricted Share Units: RSUs are rights to receive shares of Company stock when the award vests. The RSUs generally vest over three years based on employment service, with one-third of the award vesting on each of the first, second and third anniversaries of the grant date. RSU awards to non-employee directors vest in one year. No dividends are accumulated or paid on the RSUs. The fair value of the RSU award is measured based on the stock price at the grant date.

Nonvested stock awards: Prior to 2016, awards of nonvested stock were granted to employees under the PRSP, with either performance and/or service conditions. Awards of nonvested stock are also granted to non-employee directors, with service conditions. For nonvested stock awards, dividend equivalents, whether in stock or cash form, accumulate but are not paid until the underlying award vests.

The fair value of nonvested stock awards is measured based on the stock price at the grant date, adjusted for non-participating dividends, as applicable, based on the current dividend rate. For nonvested stock awards to employees in 2014 and 2015 under the Company's PRSP, one-half of the nonvested stock ("performance shares") vested only on the attainment of an income target, measured cumulatively over a three-year period. The remaining nonvested stock awarded to most employees under the 2015 PRSP vests over a service period of three years; for certain senior executives this service period is five years for the 2015 award. The remaining PRSP nonvested stock awarded to employees under the 2014 PRSP vest over a service period of five years, with accelerated vesting to three years if the performance shares' vesting criterion was attained. Expense for each of these awards was recognized based on estimates of attaining the performance criterion, including estimated forfeitures. The three-year cumulative income statement metrics in 2014 and 2015 PRSP awards were not met, and the performance share portions were forfeited. The remaining service portions of the 2014 and 2015 PRSP awards vested at the completion of the applicable service periods.

Compensation expense related to all nonvested stock awards and units was \$14.3 million in 2021, \$9.6 million in 2020, and \$9.8 million in 2019. Approximately \$8.9 million of unrecognized fair value compensation expense relating to restricted stock units is expected to be recognized through 2024, with \$6.6 million expected to be recognized in 2022, including estimates of service period forfeitures. Activity under the Company's nonvested stock awards and restricted share units for the years ended December 31, 2021, 2020, and 2019 was as follows:

(Shares in thousands, \$ in millions)

	2021		2020		2019	
	Number of shares/units	Weighted Average Grant Date Fair Value	Number of shares/units	Weighted Average Grant Date Fair Value	Number of shares	Weighted Average Grant Date Fair Value
Nonvested, beginning of year	929	\$ 17.9	756	\$ 19.6	1,055	\$ 23.7
Granted	1,033	17.5	647	10.1	396	10.8
Vested	(505)	(8.9)	(450)	(11.2)	(681)	(14.5)
Forfeited	(48)	(0.9)	(24)	(0.6)	(14)	(0.4)
Nonvested, end of year	1,409	\$ 25.6	929	\$ 17.9	756	\$ 19.6

Performance awards:

Performance Share Units: In 2016, the Company established the PSU award. The 2016 through 2020 PSU award opportunities are determined at a target number of units, and the number of shares awarded is based on attainment of two ATI financial performance metrics. PSU awards through 2020 are accounted for as performance condition plans with service vesting requirements, with compensation expense during the performance period recognized based on estimates of attaining the performance criteria, including estimated forfeitures, and is evaluated on a quarterly basis. The metrics for PSU awards through 2018 measured (1) net income attributable to ATI and (2) return on invested capital, over a three-year performance period. The metrics for the 2019 and 2020 PSU awards measured (1) net income attributable to ATI and (2) return on capital employed, over a three-year performance period. The 2019 and 2020 PSU awards each have a threshold attainment of 25% and a maximum attainment of 200% of the target financial performance metrics and target share units, measured over the applicable three-year performance period. For certain senior executives, the number of PSUs to be awarded based on the performance criteria is modified up or down by up to 20% based on the Company's relative total shareholder return (TSR) over the performance measurement period ("TSR Modifier"), but not above the maximum number of PSUs to be vested. The TSR Modifier is measured as the return of the Company's stock price (including assumed dividend reinvestment, if any) at the end of the performance period as compared to the stock prices (including assumed dividend reinvestment, if any) of a group of industry peers. The fair value of the PSU award is measured based on the stock price at the grant date, including the effect of the TSR Modifier. The fair value of the TSR Modifier is estimated using Monte Carlo simulations of stock price correlation, projected dividend yields and other variables over a three-year time horizon matching the TSR performance measurement period. Expense recognition varies with the level of performance achieved.

The 2021 PSU award opportunities are determined at a target number of share units, and the number of shares awarded is based on TSR, representing the measured return of the Company's stock price (including assumed dividend reinvestment, if any) at the end of the three year period as compared to the stock prices (including assumed dividend reinvestment, if any) of a group of industry peers. The 2021 PSU award is accounted for as a market condition plan with service vesting requirements, with expense recognized over the service period without regard to the level of TSR attainment or shares awarded. The actual number of shares awarded at the end of the measurement period may range from a minimum of zero to a maximum of two times target. TSR is determined over eight distinct quarterly periods as measured from January 1, 2021 through the end of each quarterly period starting with the quarter ending March 31, 2022, through December 31, 2023; earned payouts from each TSR measurement period are banked and averaged to determine the final payout at the conclusion of the three-year period. The fair value for this award was estimated using Monte Carlo simulations of stock price correlation, projected dividend yields and other variables over the three-year time horizon matching the TSR measurement period.

At December 31, 2021, a maximum of 3.0 million shares have been reserved for issuance for the PSU awards. The Company recognized \$6.8 million and \$14.6 million of compensation expense in 2021 and 2019, respectively, for the PSU awards, and compensation income of \$6.7 million in 2020 due to decreased financial performance attainment estimates, which required reversal of previously-recognized expense. Forfeited share units in 2019, 2020 and 2021 were 48,598, 50,050 and 71,801, respectively, with a weighted average grant date fair value of \$1.1 million, \$1.4 million and \$1.7 million, respectively.

The estimated fair value of each PSU award, the target share units awarded and projected future compensation expense to be recognized for these awards, including actual and estimated forfeitures at December 31, 2021 was as follows:

(Shares in thousands, \$ in millions)

PSU Award Performance Period	Award Fair Value	December 31, 2021 Unrecognized Compensation Expense	Compensation Expense Expected to be Recognized in the next 12 months	Target Share Units
2019-2021	\$ 14.7	\$ —	\$ —	479
2020-2022	\$ 13.5	—	—	674
2021-2023	\$ 9.3	6.6	3.1	459
Total		<u>\$ 6.6</u>	<u>\$ 3.1</u>	

At December 31, 2021, the 2019 PSU awards vested with financial performance attainment between threshold and target and at -20% for the TSR Modifier, resulting in the issuance of 103,621 shares in the first quarter of 2022. At December 31, 2020, the 2018 PSU awards vested between threshold and target attainment, and at -10% for the TSR Modifier, resulting in 301,170 shares being issued in early 2021. At December 31, 2019, the 2017 PSU awards vested above target attainment and at +20% for the TSR Modifier, resulting in the issuance of 669,898 shares. Aggregate compensation expense recognized over the three year performance period for the 2020 PSU award could range from zero to \$24 million, including estimated forfeitures, based on the actual financial performance attained. As of December 31, 2021, ATI projects that performance attainment will be below threshold for the 2020 PSU award.

Note 17. Income Taxes

Income (loss) before income taxes for the Company's U.S. and non-U.S. operations was as follows:

(In millions)	2021	2020*	2019*
U.S.	\$ (42.1)	\$ (1,505.4)	\$ 185.1
Non-U.S.	52.7	23.5	51.4
Income (loss) before income taxes	<u>\$ 10.6</u>	<u>\$ (1,481.9)</u>	<u>\$ 236.5</u>

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

The income tax provision (benefit) was as follows:

(In millions)	2021	2020	2019
Current:			
Federal	\$ 0.7	\$ 0.6	\$ 2.2
State	(0.3)	(1.1)	0.2
Foreign	9.4	6.7	8.1
Total	<u>9.8</u>	<u>6.2</u>	<u>10.5</u>
Deferred:			
Federal	18.6	26.6	(4.6)
State	(0.9)	47.1	(40.4)
Foreign	(0.7)	(2.2)	6.0
Total	<u>17.0</u>	<u>71.5</u>	<u>(39.0)</u>
Income tax provision (benefit)	<u>\$ 26.8</u>	<u>\$ 77.7</u>	<u>\$ (28.5)</u>

The following is a reconciliation of income taxes computed at the statutory U.S. Federal income tax rate to the actual effective income tax provision (benefit):

<i>(In millions)</i>	2021	2020*	2019*
Taxes computed at the federal rate	\$ 2.2	\$ (311.2)	\$ 49.7
Goodwill	2.6	50.4	—
State and local income taxes, net of federal tax benefit	0.4	(0.2)	0.3
Valuation allowance	17.6	335.5	(89.1)
Repatriation of foreign earnings (GILTI)	2.0	0.2	3.5
Restructuring	—	—	4.2
Recognition of stranded deferred tax balance	3.9	—	—
Foreign earnings taxed at different rate	3.0	1.7	2.7
Withholding taxes	3.4	2.1	2.7
Preferential tax rate	(6.2)	(4.6)	(4.1)
Other	(2.1)	3.8	1.6
Income tax provision (benefit)	<u>\$ 26.8</u>	<u>\$ 77.7</u>	<u>\$ (28.5)</u>

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

In 2021, the Company allocated \$12.2 million of the goodwill from ATI's Forged Products reporting unit to the sale of Flowform Products (see Note 6 for further explanation) which was non-deductible for tax purposes, resulting in a \$2.6 million expense included as a reconciling item in the table above.

In 2020, the Company recorded a \$287.0 million pre-tax charge for goodwill impairment (see Note 5 for additional information) which included a portion that was non-deductible for tax purposes, resulting in a \$50.4 million expense included as a reconciling item in the table above.

The provision for income taxes for the year ended December 31, 2021 is mainly attributable to the \$15.5 million in discrete tax effects related to the postretirement medical benefits settlement gain discussed in Note 14, in accordance with ATI's accounting policy for recognizing deferred tax amounts stranded in accumulated other comprehensive income (loss) (AOCI). This \$15.5 million is presented within two lines in the above table, \$11.6 million within valuation allowance and \$3.9 million on the recognition of stranded deferred tax balance line which represents the difference between current and historical tax rates in AOCI. The \$11.6 million has two components: \$5.2 million of additional required valuation allowance on ATI's net deferred tax assets following the reduction of deferred tax liabilities in AOCI associated with the recognition of the AOCI portion of the retirement benefit settlement gain of \$21.9 million, and \$6.4 million of "trapped" valuation allowances remaining in AOCI from prior periods that are now recognized upon extinguishment of the retirement benefit plan (see Notes 14 and 15).

The Company recognizes deferred tax assets to the extent it believes these deferred tax assets are more likely than not to be realized. Valuation allowances are established when it is estimated that it is more likely than not the tax benefit of the deferred tax asset will not be realized. In making such determination, the Company considers all available evidence, both positive and negative, regarding the estimated future reversals of existing taxable temporary differences, estimated future taxable income exclusive of reversing temporary differences and carryforwards, historical taxable income in prior carryback periods if carryback is permitted, and potential tax planning strategies which may be employed to prevent an operating loss or tax credit carryforward from expiring unused. The verifiable evidence such as future reversals of existing temporary differences and the ability to carryback are considered before the subjective sources such as estimate future taxable income exclusive of temporary differences and tax planning strategies. In situations where a three-year cumulative loss position exists, the ability to consider projections of future results as positive evidence to assess the realizability of deferred tax assets is subjective. If the Company determines that it would not be able to realize its deferred tax assets in the future in excess of their recorded net amount, an adjustment to the deferred tax asset valuation allowance would result.

In 2021, ATI incurred tax expense associated with the valuation allowance due to the postretirement medical benefit settlement gain along with the U.S. operations plus permanent adjustments (goodwill and GILTI) being a loss. The overall balance of the valuation allowance decreased in total mainly due to the overall change in AOCI associated with the Company's retirement benefit plans.

In 2020, ATI's U.S. operations returned to a three-year cumulative loss position, limiting the ability to utilize future projections as verifiable sources of income when analyzing the need for a valuation allowance. The consolidated income tax provision for

fiscal year 2020 included a \$335.5 million increase to the deferred tax asset valuation allowance based on an analysis of the expected more likely than not realization of deferred tax assets and liabilities within applicable expiration periods, primarily on U.S. federal and state tax attributes.

Previously, at December 31, 2019, the Company's U.S. results reported a three-year cumulative income position, allowing the Company to utilize forecasts of future profits as a verifiable source of income when evaluating whether it was more likely than not that the deferred tax assets would be realized. The Company determined that a valuation allowance on certain net deferred tax asset balances for federal and certain state jurisdictions were no longer required. Certain individual tax attributes still required a valuation allowance based on the expected utilization of the tax attributes was not more likely than not to be realized by the Company. The change in the overall valuation allowance for 2019 included amounts utilized during the year as part of the reported effective tax rate, as well as a \$45.1 million reduction at December 31, 2019 based on a change in judgment on the realizability of deferred tax assets.

The Company also maintained valuation allowances on deferred tax amounts recorded in AOCI in 2021, 2020 and 2019 of \$15.8 million, \$50.3 million, and \$41.5 million, respectively, which are not reflected in the preceding table reconciling amounts recognized in the income tax provision (benefit) recorded in the statement of operations (see Note 15). The 2019 income tax provision includes \$6.0 million of tax expense for the recognition of a stranded deferred tax balance in AOCI arising from deferred tax valuation allowances associated with a cash flow hedge portfolio that fully settled in the fourth quarter of 2019. See Notes 12 and 15 for additional information on cash flow hedge activity.

Additionally, the Tax Cuts and Jobs Act (Tax Act) requires a current year inclusion in U.S. federal taxable income of certain earnings of controlled foreign corporations, commonly referred to as Global Intangible Low-Taxed Income (GILTI). In 2021 and 2019, GILTI represents an unfavorable rate item of \$2.0 million and \$3.5 million which is primarily related to the Company's income associated with the PRS joint venture operations in China. The impact in 2020 related to GILTI is minimal due to the global COVID-19 pandemic. In 2019, the Company utilized pre-January 1, 2018 net operating losses (NOLs) to offset the 2019 income inclusion of \$16.8 million (\$3.5 million net tax effect). The Company has elected to recognize GILTI liabilities as an element of income tax expense in the period incurred.

In the fourth quarter of 2021, the Company was granted a preferential tax rate related to the PRS joint venture operations in China for tax years 2021 through 2023. The preferential tax rate is 15%, compared to the statutory rate of 25%. The Company must re-apply for the High Tech-New Enterprise status every three years to be eligible for the preferential rate. This same preferential tax rate was in effect for tax years 2018 through 2020.

In 2019, the Company restructured certain foreign legal entities, including the elimination of entities that were no longer cost-effective following changes of the Tax Act, which resulted in \$4.2 million of tax expense related to previously-recognized net operating loss carryforwards.

Deferred income taxes result from temporary differences in the recognition of income and expense for financial and income tax reporting purposes, and differences between the fair value of assets acquired in business combinations accounted for as purchases for financial reporting purposes and their corresponding tax bases. Deferred income taxes represent future tax benefits or costs to be recognized when those temporary differences reverse. The categories of assets and liabilities that have resulted in differences in the timing of the recognition of income and expense at December 31, 2021 and 2020 were as follows:

<i>(In millions)</i>	<u>2021</u>	<u>2020</u>
Deferred income tax assets		
Net operating loss tax carryovers	\$ 298.7	\$ 309.4
Pensions	94.3	153.8
Postretirement benefits other than pensions	69.8	86.5
Tax credits	40.2	37.7
Other items	103.9	82.9
Gross deferred income tax assets	606.9	670.3
Valuation allowance for deferred tax assets	(431.0)	(461.8)
Total deferred income tax assets	175.9	208.5
Deferred income tax liabilities		
Bases of property, plant and equipment	114.0	119.2
Inventory valuation	32.5	53.3
Bases of amortizable intangible assets	18.0	12.5
Other items	24.7	35.9
Total deferred tax liabilities	189.2	220.9
Net deferred tax liability	\$ (13.3)	\$ (12.4)

Changes in the valuation allowance for deferred tax assets in 2021 in the above table compared to 2020 include the following:

- \$17.6 million of additional valuation allowance recorded as income tax expense and included in the reconciliation of the current year income tax provision;
- reductions in the valuation allowance related to the benefit in AOCI of \$66.1 million (as discussed in Note 15);
- the amount adjusted through additional paid-in capital and retained earnings of \$12.3 million associated with new accounting methods adopted in the first quarter of 2021 (see Note 1); and
- \$5.4 million related to the presentation of state taxes and certain adjustments that have a direct valuation allowance offset, resulting in no net tax expense or benefit.

As part of the Tax Act in 2017, a limitation on deductible interest expense was created, which limits deductible interest expense to 30% of adjusted taxable income, as defined in the Tax Act, for various periods. As part of the 2020 Coronavirus Aid, Relief, and Economic Security Act (CARES Act), the limitation was increased from 30% of adjusted taxable income to 50% of adjusted taxable income, as defined, for tax years 2019 and 2020. Additionally, a taxpayer was able to utilize the 2019 adjusted taxable income calculation for the 2020 tax year. The Company has calculated an interest expense limitation as part of the 2021 income tax provision and has reflected a deferred tax asset associated with the limitation within the “other items” asset category above at December 31, 2021. The Company was not limited in its deductible interest expense in years 2020 or 2019.

The following summarizes the carryforward periods for the tax attributes related to NOLs and credits by jurisdiction.

(\$ in millions, U.S. and U.K. NOL amounts are pre-tax and all other items are after-tax)

Jurisdiction	Attribute	Amount	Expiration Period	Amount expiring within 5 years	Amount expiring in 5-20 years
U.S.	NOL	\$734	20 years	\$—	\$734
U.S.	NOL	\$129	Indefinite	\$—	\$—
U.S.	Foreign Tax Credit	\$22	10 years	\$19	\$3
U.S.	Research and Development Credit	\$7	20 years	\$—	\$7
State	NOL	\$140	Various	\$31	\$109
State	NOL	\$1	Indefinite	\$—	\$—
State	Credits	\$11	Various	\$4	\$7
U.K.	NOL	\$55	Indefinite	\$—	\$—
Poland	Economic Zone Credit	\$3	7 years	\$3	\$—

Income taxes paid and amounts received as refunds were as follows:

(In millions)	2021	2020	2019
Income taxes paid	\$ 14.2	\$ 7.8	\$ 15.1
Income tax refunds received	(0.6)	(2.5)	(9.2)
Income taxes paid, net	\$ 13.6	\$ 5.3	\$ 5.9

In general, the Company is responsible for filing consolidated U.S. federal, foreign and combined, unitary or separate state income tax returns. The Company is responsible for paying the taxes relating to such returns, including any subsequent adjustments resulting from the redetermination of such tax liability by the applicable taxing authorities.

Deferred taxes of \$7.8 million have been recorded for foreign withholding taxes on earnings expected to be repatriated to the U.S. The Company does not intend to distribute previously taxed earnings resulting from the one-time transition tax under the Tax Act, and has not recorded any deferred taxes related to such amounts. The remaining excess of the amount for financial reporting over the tax basis of investments in foreign subsidiaries is indefinitely reinvested, and the determination of any deferred tax liability on this amount is not practicable.

Uncertain tax positions are recorded using a two-step process based on (1) determining whether it is more-likely-than-not the tax positions will be sustained on the basis of the technical merits of the position and (2) for those positions that meet the more-likely-than-not recognition threshold, the Company records the largest amount of the tax benefit that is more than 50 percent likely to be realized upon ultimate settlement with the related tax authority. The changes in the liability for unrecognized income tax benefits for the years ended December 31, 2021, 2020 and 2019 were as follows:

(In millions)	2021	2020	2019
Balance at beginning of year	\$ 15.2	\$ 14.4	\$ 14.7
Increases in prior period tax positions	—	—	—
Decreases in prior period tax positions	—	—	—
Increases in current period tax positions	0.3	2.7	0.9
Expiration of the statute of limitations	(1.3)	(1.9)	(1.2)
Settlements	—	—	—
Balance at end of year	\$ 14.2	\$ 15.2	\$ 14.4

For years ended December 31, 2021, 2020 and 2019, the liability includes \$12.3 million, \$13.0 million and \$11.5 million, respectively, of unrecognized tax benefits that are classified within deferred income taxes as a reduction of NOL carryforwards and other tax attributes. The total estimated unrecognized tax benefit that, if recognized, would affect ATI's effective tax rate is approximately \$2 million. At this time, the Company believes that it is reasonably possible that approximately \$2 million of the estimated unrecognized tax benefits as of December 31, 2021 will be recognized within the next twelve months based on the expiration of statutory review periods.

The Company recognizes accrued interest and penalties related to uncertain tax positions as income tax expense. The amounts accrued for interest and penalty charges for the years ended December 31, 2021, 2020 and 2019 were not significant. At

December 31, 2021 and 2020, the accrued liabilities for interest and penalties related to unrecognized tax benefits were \$1.9 million and \$2.3 million, respectively.

The Company, and/or one of its subsidiaries, files income tax returns in the U.S. federal jurisdiction and in various state and foreign jurisdictions. A summary of tax years that remain subject to examination, by major tax jurisdiction, is as follows:

<i>Jurisdiction</i>	<i>Earliest Year Open to Examination</i>
U.S. Federal	2020
States:	
Pennsylvania	2018
Foreign:	
China	2018
Poland	2015
United Kingdom	2019

Note 18. Business Segments

The Company operates under two business segments: High Performance Materials & Components (HPMC) and Advanced Alloys & Solutions (AA&S).

HPMC is comprised of the Specialty Materials and Forged Products businesses, as well as the ATI Europe distribution operations. Approximately 75% of its revenue is derived from the aerospace & defense markets including over 40% of its revenue from products for commercial jet engines. Other major HPMC end markets include medical and energy. HPMC produces a wide range of high performance materials, components, and advanced metallic powder alloys. These are made from nickel-based alloys and superalloys, titanium and titanium-based alloys, and a variety of other specialty materials. Capabilities range from cast/wrought and powder alloy development to final production of highly engineered finished components, including those used for next-generation jet engine forgings and 3D-printed aerospace products.

The AA&S segment includes the Specialty Alloys & Components business, including the primary titanium operations in Richland, WA, the Specialty Rolled Products business, the 60%-owned STAL PRS joint venture, and the Uniti and A&T Stainless 50%-owned joint ventures that are reported in AA&S segment results under the equity method of accounting. See Note 7 for further information on the Company's joint ventures. AA&S is focused on delivering high-value flat products primarily to the energy, aerospace, and defense end-markets, which comprise approximately 45% of its revenue. Other important end markets for AA&S include automotive and electronics. AA&S produces nickel-based alloys, titanium and titanium-based alloys, and specialty alloys in a variety of forms including plate, sheet, and strip products. On December 2, 2020, the Company announced a strategic repositioning of its SRP business, which includes exiting lower-margin standard stainless sheet products, streamlining the production footprint of the AA&S segment and making certain capital investments to increase its focus on higher-margin products and its aerospace & defense end markets. See Note 19 for further discussion of this strategic realignment and its associated long-lived asset impairments, restructuring and other charges recorded in the fourth quarter of 2020.

The measure of segment EBITDA excludes income taxes, depreciation and amortization, corporate expenses, net interest expense, closed operations and other expenses, charges for goodwill and asset impairments, restructuring and other charges, debt extinguishment charges and non-operating gains or losses. Management believes segment EBITDA, as defined, provides an appropriate measure of controllable operating results at the business segment level.

Intersegment sales are generally recorded at full cost or market. Common services are allocated on the basis of estimated utilization.

<i>(In millions)</i>	2021	2020	2019
Total sales:			
High Performance Materials & Components	\$ 1,248.3	\$ 1,235.4	\$ 2,054.2
Advanced Alloys & Solutions	1,762.4	1,947.5	2,392.2
Total sales	3,010.7	3,182.9	4,446.4
Intersegment sales:			
High Performance Materials & Components	93.2	70.8	75.7
Advanced Alloys & Solutions	117.7	130.0	248.2
Total intersegment sales	210.9	200.8	323.9
Sales to external customers:			
High Performance Materials & Components	1,155.1	1,164.6	1,978.5
Advanced Alloys & Solutions	1,644.7	1,817.5	2,144.0
Total sales to external customers	\$ 2,799.8	\$ 2,982.1	\$ 4,122.5

Total international sales were \$1,264.9 million in 2021, \$1,173.0 million in 2020, and \$1,667.9 million in 2019. Of these amounts, sales by operations in the United States to customers in other countries were \$846.3 million in 2021, \$812.3 million in 2020, and \$1,262.6 million in 2019.

<i>(In millions)</i>	2021	2020*	2019*
EBITDA:			
High Performance Materials & Components	\$ 159.9	\$ 129.6	\$ 356.2
Advanced Alloys & Solutions	191.7	115.0	172.6
Total segment EBITDA	351.6	244.6	528.8
Corporate expenses	(55.9)	(40.9)	(65.3)
Closed operations and other expenses	(4.8)	(7.4)	(24.0)
Total ATI Adjusted EBITDA	290.9	196.3	439.5
Depreciation & amortization	(143.9)	(143.3)	(151.1)
Interest expense, net	(96.9)	(94.4)	(99.0)
Restructuring and other credits (charges) (See Note 19)	10.5	(1,132.1)	(4.5)
Strike related costs	(63.2)	—	—
Retirement benefit settlement gain (See Note 14)	64.9	—	—
Impairment of goodwill (See Note 5)	—	(287.0)	—
Joint venture restructuring and impairment charge (See Note 7)	—	(2.4)	(11.4)
Debt extinguishment charge (See Note 10)	(65.5)	(21.5)	(21.6)
Gain on asset sales and sale of business, net	13.8	2.5	84.6
Income (loss) before income taxes	\$ 10.6	\$ (1,481.9)	\$ 236.5

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

Corporate expenses are primarily classified as selling and administrative expenses in the consolidated statement of operations, and consist of salaries and benefits, incentive compensation, facility leases and other costs of ATI's corporate functions.

Closed operations and other expenses are primarily presented in selling and administrative expenses in the consolidated statements of operations. These items included costs at closed facilities, including legal matters, environmental, real estate and other facility costs, and changes in foreign currency remeasurement impacts primarily related to ATI's European Treasury Center operation. Closed operations and other expenses were lower in 2021 and 2020 compared to 2019, reflecting lower legal and retirement benefit expense of closed operations, foreign currency impacts in 2021 and a \$4.3 million gain from settlements of contract indemnity obligations in 2020.

The \$13.8 million net gain on asset sales in 2021 consists of a gain on the sale of the Company's Flowform Products business. The \$2.5 million net gain on asset sales in 2020 consists of a gain on the sale of certain oil and gas rights (see Note 9). The \$84.6 million net gain on asset sales in 2019 consists of a \$91.7 million gain on the sale of certain oil and gas rights (see Note 9) and a \$6.2 million gain on the sale of the Company's Cast Products business, partially offset by a \$13.3 million loss on the

sale of two non-core forging facilities, located in Portland, IN and Lebanon, KY. See Note 6 for further explanation regarding the sale of business transactions.

Certain additional information regarding the Company's business segments is presented below:

<i>(In millions)</i>	2021	2020	2019
Depreciation and amortization:			
High Performance Materials & Components	\$ 75.0	\$ 78.1	\$ 84.6
Advanced Alloys & Solutions	64.5	62.1	63.5
Other	4.4	3.1	3.0
Total depreciation and amortization	\$ 143.9	\$ 143.3	\$ 151.1
Capital expenditures:			
High Performance Materials & Components	\$ 40.2	\$ 83.1	\$ 119.9
Advanced Alloys & Solutions	110.6	45.9	47.4
Corporate	1.8	7.5	0.9
Total capital expenditures	\$ 152.6	\$ 136.5	\$ 168.2
Identifiable assets:			
	2021	2020*	2019*
High Performance Materials & Components	\$ 1,624.8	\$ 1,594.6	\$ 2,162.8
Advanced Alloys & Solutions	1,914.0	1,664.0	2,749.2
Corporate:			
Deferred Taxes	6.3	5.1	64.5
Cash and cash equivalents and other	740.1	771.2	658.1
Total assets	\$ 4,285.2	\$ 4,034.9	\$ 5,634.6

<i>(\$ in millions)</i>	2021	Percent of total	2020	Percent of total	2019	Percent of total
Total assets:						
United States	\$ 3,587.0	84 %	\$ 3,356.8	83 %	\$ 4,956.4	88 %
China	406.4	9 %	325.5	8 %	288.1	5 %
United Kingdom	153.9	4 %	122.4	3 %	141.3	3 %
Other	137.9	3 %	230.2	6 %	248.8	4 %
Total Assets	\$ 4,285.2	100 %	\$ 4,034.9	100 %	\$ 5,634.6	100 %

*December 31, 2020 and 2019 reflects the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements.

Note 19. Restructuring and other charges

For the year ended December 31, 2021, restructuring and other charges were a net benefit of \$10.5 million, which primarily included \$11.3 million of reversals of previously-recognized restructuring charges separately classified on the consolidated statement of operations, as well as an \$0.8 million charge for inventory valuation reserves classified in cost of sales on the consolidated statement of operations related to the 2020 idling of the Albany, OR primary titanium facility. Restructuring items in 2021 include a \$12.0 million reduction in severance-related reserves related to approximately 350 employees based on changes in planned operating rates and revised workforce reduction estimates, partially offset by \$0.7 million of other costs related to facility idlings.

For the year ended December 31, 2020, the Company recorded restructuring and other charges of \$1,132.1 million, predominantly related to the Company's December 2020 announcement to cease production of standard stainless sheet products, which are excluded from business segment results. On December 2, 2020, the Company announced a strategic repositioning of its SRP business within the AA&S segment, with a focus of increasing emphasis on the specialty rolled products portion of its product portfolio, which comprise titanium-based alloys including aerospace-grade titanium plate products, nickel-based alloys, and stainless products with more differentiated characteristics for specialty applications, including thin-gauge PRS.

Restructuring charges recorded on the consolidated statement of operations for the year ended December 31, 2020 were \$1,107.5 million, comprised of \$1,041.5 million of non-cash asset impairment charges, \$60.5 million of employee benefit-related costs, and \$5.5 million of other costs related to facility idlings. The December 2, 2020 decision to exit production of standard stainless products represented a significant indicator of impairment in the carrying value of certain long-lived assets. Based on projected cash flows of the Brackenridge, PA operations, including the HRPF, the Company completed a fair value analysis as of the beginning of the fourth quarter of 2020 and recognized a \$1,032.6 million impairment charge for this facility based on an estimated fair value of \$354 million. This long-lived asset impairment charge was determined using a held in use framework and an income approach, which represents Level 3 unobservable information in the fair value hierarchy. This impairment assessment and valuation method require the Company to make estimates and assumptions regarding future operating results, cash flows, changes in working capital and capital expenditures, selling prices, profitability, and the cost of capital. Many of these assumptions are determined by reference to market participants the Company has identified. For example, the weighted average cost of capital used in the discounted cash flow assessment was 9.3% and the long-term growth rate was 2%. Although the Company believes that the estimates and assumptions used were reasonable, actual results could differ from those estimates and assumptions. Other long-lived asset impairment charges of \$8.9 million were also recognized for various AA&S segment operations identified for closure as part of the standard stainless sheet exit decision.

Restructuring charges also include \$60.5 million of employee benefit costs, representing severance, supplemental unemployment and medical benefits for the elimination of approximately 1,400 positions related to the standard stainless exit, as well as for employees impacted by the idling of the Albany, OR primary titanium operations in the fourth quarter of 2020, and workforce right-sizing actions, including both involuntary reductions and voluntary retirement incentive programs implemented throughout 2020 to better match the Company's cost structure to expected demand, primarily as a result of economic challenges created by the COVID-19 pandemic. Other costs of \$5.5 million included in 2020 restructuring charges primarily relate to asset retirement and environmental obligations (see Note 8 for further explanation) associated with facility idlings.

Other charges for the year ended December 31, 2020 include:

- \$17.4 million of termination benefits for pension and postretirement medical obligations related to facility closures from the standard stainless exit (see Note 14 for further explanation). These costs are classified within nonoperating retirement benefit expense in the consolidated statements of operations.
- \$7.2 million of other charges for inventory valuation reserves, classified in cost of sales on the consolidated statement of operations, primarily related to excess raw material and work in process inventory at the idled Albany, OR primary titanium facility.

Restructuring charges for the fiscal year ended December 31, 2019 of \$4.5 million which are reported as restructuring charges on the consolidated statement of operations and excluded from business segment results, are comprised of severance obligations for the reduction of approximately 70 positions in order to streamline ATI's salaried workforce primarily to improve the cost competitiveness of the U.S.-based SRP business.

Restructuring reserves for severance cost activity is as follows:

	Severance and Employee Benefit Costs		
	December 31, 2021	December 31, 2020	December 31, 2019
Beginning of year balance	\$ 43.4	\$ 4.5	\$ —
Additions/(Adjustments)	(12.0)	60.5	4.5
Payments	(13.7)	(21.6)	—
End of year balance	<u>\$ 17.7</u>	<u>\$ 43.4</u>	<u>\$ 4.5</u>

Of this \$17.7 million restructuring reserve balance at December 31, 2021, \$11.4 million is recorded in other current liabilities and \$6.3 million is recorded in other long-term liabilities on the December 31, 2021 consolidated balance sheet. Of this \$43.4 million restructuring reserve balance at December 31, 2020, \$33.8 million is recorded in other current liabilities and \$9.6 million is recorded in other long-term liabilities on the December 31, 2020 consolidated balance sheet.

Note 20. Per Share Information

The following table sets forth the computation of basic and diluted net income (loss) per common share:

(In millions, except per share amounts)

For the Years Ended December 31,	2021	2020*	2019*
Numerator:			
Numerator for basic net income (loss) per common share -			
Net income (loss) attributable to ATI	\$ (38.2)	\$ (1,572.6)	\$ 252.5
Effect of dilutive securities:			
4.75% Convertible Senior Notes due 2022	—	—	12.8
3.5% Convertible Senior Notes due 2025	—	—	—
Numerator for diluted net income (loss) per common share -			
Net income (loss) attributable to ATI after assumed conversions	\$ (38.2)	\$ (1,572.6)	\$ 265.3
Denominator:			
Denominator for basic net income (loss) per common share—weighted average shares			
	127.1	126.5	125.8
Effect of dilutive securities:			
Share-based compensation	—	—	0.8
4.75% Convertible Senior Notes due 2022	—	—	19.9
3.5% Convertible Senior Notes due 2025	—	—	—
Denominator for diluted net income (loss) per common share—adjusted weighted average shares and assumed conversions			
	127.1	126.5	146.5
Basic net income (loss) attributable to ATI per common share	\$ (0.30)	\$ (12.43)	\$ 2.01
Diluted net income (loss) attributable to ATI per common share	\$ (0.30)	\$ (12.43)	\$ 1.81

*Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method, as described in Note 1 of the Notes to the Consolidated Financial Statements. There were no adjustments to 2020 amounts as a result of this change.

Common stock that would be issuable upon the assumed conversion of the 2022 Convertible Notes and the 2025 Convertible Notes and other option equivalents and contingently issuable shares are excluded from the computation of contingently issuable shares, and therefore, from the denominator for diluted earnings per share, if the effect of inclusion is anti-dilutive. There were 25.6 million and 22.8 million anti-dilutive shares for 2021 and 2020, respectively. There were no anti-dilutive shares for 2019.

Note 21. Commitments and Contingencies

Future minimum rental commitments under leases are disclosed in Note 11. Commitments for expenditures on property, plant and equipment at December 31, 2021 were approximately \$40.2 million.

The Company is subject to various domestic and international environmental laws and regulations that govern the discharge of pollutants and disposal of wastes, and which may require that it investigate and remediate the effects of the release or disposal of materials at sites associated with past and present operations. The Company could incur substantial cleanup costs, fines, and civil or criminal sanctions, third party property damage or personal injury claims as a result of violations or liabilities under these laws or noncompliance with environmental permits required at its facilities. The Company is currently involved in the investigation and remediation of a number of its current and former sites, as well as third party sites.

Environmental liabilities are recorded when the Company's liability is probable and the costs are reasonably estimable. In many cases, however, the Company is not able to determine whether it is liable or, if liability is probable, to reasonably estimate the loss or range of loss. Estimates of the Company's liability remain subject to additional uncertainties, including the nature and extent of site contamination, available remediation alternatives, the extent of corrective actions that may be required, and the number, participation, and financial condition of other PRPs. The Company adjusts its accruals to reflect new information as appropriate. Future adjustments could have a material adverse effect on the Company's consolidated results of operations in a given period, but the Company cannot reliably predict the amounts of such future adjustments.

At December 31, 2021, the Company's reserves for environmental remediation obligations totaled approximately \$13 million, of which \$5 million was included in other current liabilities. The reserve includes estimated probable future costs of \$3 million

for federal Superfund and comparable state-managed sites; \$8 million for formerly owned or operated sites for which the Company has remediation or indemnification obligations; and \$2 million for owned or controlled sites at which Company operations have been or plan to be discontinued. The Company continues to evaluate whether it may be able to recover a portion of future costs for environmental liabilities from third parties and to pursue such recoveries where appropriate.

Based on currently available information, it is reasonably possible that the costs for active matters may exceed the Company's recorded reserves by as much as \$15 million. Future investigation or remediation activities may result in the discovery of additional hazardous materials, potentially higher levels of contamination than discovered during prior investigation, and may impact costs of the success or lack thereof in remedial solutions. Therefore, future developments, administrative actions or liabilities relating to environmental matters could have a material adverse effect on the Company's consolidated financial condition or results of operations.

The timing of expenditures depends on a number of factors that vary by site. The Company expects that it will expend present accruals over many years and that remediation of all sites with which it has been identified will be completed within thirty years.

A number of other lawsuits, claims and proceedings have been or may be asserted against the Company relating to the conduct of its currently and formerly owned businesses, including those pertaining to product liability, patent infringement, commercial, government contracting, construction, employment, employee and retiree benefits, taxes, environmental, health and safety, occupational disease, and stockholder and corporate governance matters. While the outcome of litigation cannot be predicted with certainty, and some of these lawsuits, claims or proceedings may be determined adversely to the Company, management does not believe that the disposition of any such pending matters is likely to have a material adverse effect on the Company's consolidated financial condition or liquidity, although the resolution in any reporting period of one or more of these matters could have a material adverse effect on the Company's consolidated results of operations for that period.

ATI Titanium LLC (ATI Titanium), a subsidiary of Allegheny Technologies Incorporated, is party to a lawsuit captioned US Magnesium, LLC v. ATI Titanium LLC (Case No. 2:17-cv-00923-DB) and filed in federal district court in Salt Lake City, UT, pertaining to a Supply and Operating Agreement between US Magnesium LLC (USM) and ATI Titanium entered into in 2006 (the Supply Agreement). In 2016, ATI Titanium notified USM that it would suspend performance under the Supply Agreement in reliance on certain terms and conditions included in the Supply Agreement. USM subsequently filed a claim challenging ATI Titanium's right to suspend performance under the Supply Agreement, claiming that such suspension was a material breach of the Supply Agreement and seeking monetary damages, and ATI Titanium filed a counterclaim for breach of contract against USM. In 2018, USM obtained leave of the court to add Allegheny Technologies Incorporated as a separate party defendant, and ATI Titanium filed a motion to dismiss the claim against Allegheny Technologies Incorporated, which the court denied on April 19, 2019. After the conclusion of discovery, Allegheny Technologies Incorporated filed a motion for summary judgment. On August 17, 2021, the court granted the motion, and entered summary judgment in favor of Allegheny Technologies Incorporated finding that it is not the alter ego of ATI Titanium and that it did not breach any obligations allegedly owed to USM. A trial date has been set for October 11, 2022. While ATI Titanium intends to vigorously defend against and pursue these claims, it cannot predict their outcomes at this time.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures.

In accordance with Securities Exchange Act Rules 13-1-15(e) and 15d-15(e), our management, under the supervision of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2021.

(b) Management's Report on Internal Control over Financial Reporting.

Management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Securities Exchange Act of 1934, as amended, as a process designed by, or under the supervision of, the company's principal executive and principal financial officers and effected by the company's board of directors, management and other personnel, 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 and includes those policies and procedures that:

Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the company;

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

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. 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.

Internal control over financial reporting cannot provide absolute assurance of achieving financial reporting objectives because of its inherent limitations. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Internal control over financial reporting can also be circumvented by collusion or improper management override. Because of such limitations, there is a risk that material misstatements may not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore, it is possible to design into the process safeguards to reduce, though not eliminate, this risk.

The Company's management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2021. In making this assessment, the Company's management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (COSO) in Internal Control-Integrated Framework.

Based on that assessment, the Chief Executive Officer and Chief Financial Officer concluded as of December 31, 2021, the Company's internal control over financial reporting was effective based on those criteria.

The Company's independent registered public accounting firm that audited the consolidated financial statements included in this Annual Report issued an attestation report on effectiveness of the Company's internal control over financial reporting as of December 31, 2021.

(c) Changes to Internal Control over Financial Reporting.

There were no changes to our internal control over financial reporting that occurred during the quarter ended December 31, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Certifications

The certifications of the Company's Chief Executive Officer and Chief Financial Officer required by the Sarbanes-Oxley Act are included as Exhibits 31 and 32 to this Annual Report on Form 10-K. In addition, in 2021, the Company's Chief Executive Officer provided to the New York Stock Exchange the annual CEO certification pursuant to Section 303A regarding the Company's compliance with the New York Stock Exchange's corporate governance listing standards.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of
Allegheny Technologies Incorporated and Subsidiaries

Opinion on Internal Control over Financial Reporting

We have audited Allegheny Technologies Incorporated and Subsidiaries' internal control over financial reporting as of December 31, 2021, 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, Allegheny Technologies Incorporated and Subsidiaries (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, 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, 2021 and 2020, the related consolidated statements of operations, comprehensive income (loss), cash flows and statement of changes in consolidated equity for each of the three years in the period ended December 31, 2021, and the related notes and our report dated February 25, 2022 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

Pittsburgh, Pennsylvania

February 25, 2022

Item 9B. Other Information

Not applicable.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors and Executive Officers of the Registrant

The information concerning our directors required by this item is incorporated and made part hereof by reference to the material appearing under the heading “Our Corporate Governance” and “Election of Directors” and the information concerning our executive officers required by this item is incorporated and made part hereof by reference to the material appearing under the heading “Members of ATI’s Executive Management,” in the Allegheny Technologies Proxy Statement for the 2022 Annual Meeting of Stockholders (the “2022 Proxy Statement”), which will be filed with the Securities and Exchange Commission, pursuant to Regulation 14A, not later than 120 days after the end of the fiscal year. Information concerning the Audit Committee and its financial expert required by this item is incorporated and made part hereof by reference to the material appearing under the heading “Our Corporate Governance-Board Information- Board Committees” in the 2022 Proxy Statement.

Allegheny Technologies has adopted *Corporate Guidelines for Business Conduct and Ethics* that apply to all employees including its principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. The *Corporate Guidelines for Business Conduct and Ethics* as well as the charters for the Company’s Audit and Risk, Nominating and Governance, Personnel and Compensation, and Technology Committees, as well as periodic and current reports filed with the SEC, are available through the Company’s website at <http://www.atimetals.com> and are available in print free of charge to any shareholder upon request. To obtain a copy, contact the Corporate Secretary, Allegheny Technologies Incorporated, 1000 Six PPG Place, Pittsburgh, Pennsylvania 15222-5479 (telephone: 412-394-2800). The Company intends to post on its website any waiver from or amendment to the guidelines that apply to the Company’s Principal Executive Officer, Principal Financial Officer or Principal Accounting Officer or Controller (or persons performing similar functions) that relate to elements of the code of ethics identified by the Securities and Exchange Commission in Item 406(b) of Regulation S-K.

Item 11. Executive Compensation

Information required by this item is incorporated by reference to “Our Corporate Governance- Director Compensation,” “Executive Compensation” and “Compensation Committee Interlocks and Insider Participation” as set forth in the 2022 Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information relating to the ownership of equity securities by certain beneficial owners and management is incorporated by reference to “Stock Ownership Information” as set forth in the 2022 Proxy Statement.

Equity Compensation Plan Information

Information about our equity compensation plans at December 31, 2021 was as follows:

	(a)		
	Number of Shares to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (1)	Weighted Average Exercise Price of Outstanding Options, Warrants and Rights (2)	Number of Shares Remaining Available for Future Issuance Under Equity Compensation Plans (3) (excluding securities reflected in column (a))
<i>(In thousands, except per share amounts)</i>			
Equity Compensation Plans Approved by Shareholders	4,363	\$ —	3,524
Equity Compensation Plans Not Approved by Shareholders	—	—	—
Total	4,363	\$ —	3,524

- (1) Includes stock-settled equity awards previously granted under the Allegheny Technologies Incorporated 2020 Incentive Plan (the “2020 Incentive Plan”) and prior incentive plans. Amounts reflected for performance share unit awards represent the maximum number of shares that could be awarded at the conclusion of the applicable performance cycle.
- (2) Outstanding stock-settled awards are not included in this calculation.
- (3) Represents shares available for issuance under the 2020 Incentive Plan (which provides for the issuance of stock options, stock appreciation rights, restricted shares, restricted stock units, performance and other stock-based awards). See Note 16. Stockholders’ Equity for a discussion of the Company’s stock-based compensation plans.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information required by this item is incorporated by reference to “Related Party Transactions” and “Our Corporate Governance- Board Information- Board Composition and Independence” as set forth in the 2022 Proxy Statement.

Item 14. Principal Accountant Fees and Services

Information required by this item is incorporated by reference to “Ratification of Selection of Independent Auditors” as set forth in the 2022 Proxy Statement.

PART IV

Item 15. Exhibits, Financial Statements and Financial Statement Schedules

(a) Financial Statements, Financial Statement Schedules and Exhibits:

(1) Financial Statements

The following consolidated financial statements and report are filed as part of this report under Item 8 – “Financial Statements and Supplementary Data”:

[Report of Ernst & Young LLP, Independent Registered Public Accounting Firm](#)

[Consolidated Statements of Operations — Years Ended December 31, 2021, 2020, and 2019](#)

[Consolidated Statements of Comprehensive Income \(Loss\) — Years Ended December 31, 2021, 2020, and 2019](#)

[Consolidated Balance Sheets at December 31, 2021 and 2020](#)

[Consolidated Statements of Cash Flows — Years Ended December 31, 2021, 2020, and 2019](#)

[Statements of Changes in Consolidated Equity — Years Ended December 31, 2021, 2020, and 2019](#)

[Notes to Consolidated Financial Statements](#)

The report of ATI’s independent registered public accounting firm (PCAOB ID: 42) with respect to the above-referenced financial statements and their report on internal control over financial reporting are included in Item 8 and Item 9A of this Form 10-K. Their consent appears as Exhibit 23.1 of this Form 10-K.

(2) Financial Statement Schedules

All schedules set forth in the applicable accounting regulations of the Securities and Exchange Commission either are not required under the related instructions or are not applicable and, therefore, have been omitted.

(3) Exhibits

Exhibits required to be filed by Item 601 of Regulation S-K are listed below. Documents not designated as being incorporated herein by reference are filed herewith. The paragraph numbers correspond to the exhibit numbers designated in Item 601 of Regulation S-K.

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
3.1	<u>Certificate of Incorporation of Allegheny Technologies Incorporated, as amended (incorporated by reference to Exhibit 3.1 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 1999 (File No. 1-12001)).</u>
3.2	<u>Third Amended and Restated Bylaws of Allegheny Technologies Incorporated (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K dated August 10, 2016 (File No. 1-12001)).</u>
4.1	<u>Indenture dated as of December 15, 1995 between Allegheny Ludlum Corporation and The Chase Manhattan Bank (National Association), as trustee, relating to Allegheny Ludlum Corporation's 6.95% Debentures due 2025 (incorporated by reference to Exhibit 4(a) to Allegheny Ludlum Corporation's Report on Form 10-K for the year ended December 31, 1995 (File No. 1-9498)).</u>
4.2	<u>First Supplemental Indenture by and among Allegheny Technologies Incorporated, Allegheny Ludlum Corporation and The Chase Manhattan Bank (National Association), as Trustee, dated as of August 15, 1996 (incorporated by reference to Exhibit 4.1 to Registrant's Current Report on Form 8-K dated August 21, 1996 (File No. 1-12001)).</u>
4.3	<u>Supplemental Indenture, dated as of December 22, 2011, among Allegheny Ludlum Corporation, ALC Merger, LLC, and The Bank of New York Mellon (as successor to The Chase Manhattan Bank (National Association)), as Trustee (incorporated by reference to Exhibit 4.4 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2011 (File No. 1-12001)).</u>
4.4	<u>Indenture, dated June 1, 2009, between Allegheny Technologies Incorporated and The Bank of New York Mellon, as Trustee (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K dated June 3, 2009 (File No. 1-2001)).</u>
4.5	<u>Fifth Supplemental Indenture, dated May 24, 2016, between Allegheny Technologies Incorporated and The Bank of New York Mellon, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated May 24, 2016 (File No. 1-12001)).</u>
4.6	<u>Form of 4.75% Convertible Senior Note due 2022 (incorporated by reference to Exhibit A to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated May 24, 2016 (File No. 1-12004)).</u>
4.7	<u>Form of 5.875% Senior Note due 2027 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated November 22, 2019 (File No. 1-12001)).</u>
4.8	<u>Sixth Supplemental Indenture, dated November 19, 2019, between Allegheny Technologies Incorporated and The Bank of New York Mellon, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated November 22, 2019 (File No. 1-12001)).</u>
4.9	<u>Indenture, dated June 22, 2020, by and between the Company The Bank of New York Mellon, as trustee (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K dated June 22, 2020 (File No. 1-12001)).</u>
4.10	<u>Form of 3.50% Convertible Senior Note due 2025 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated June 22, 2020 (File No. 1-12001)).</u>
4.11	<u>Indenture, dated as of September 9, 2021, by and between Allegheny Technologies Incorporated and Wells Fargo Bank, National Association, as Trustee (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K dated September 14, 2021 (File No. 1-12001)).</u>
4.12	<u>First Supplemental Indenture, dated as of September 9, 2021, by and between Allegheny Technologies Incorporated and Wells Fargo Bank, National Association, as Trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated September 14, 2021 (File No. 1-12001)).</u>
4.13	<u>Form of 4.875% Senior Note due 2029 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated September 14, 2021 (File No. 1-12001)).</u>
4.14	<u>Form of 5.125% Senior Note due 2031 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated September 14, 2021 (File No. 1-12001)).</u>
4.15	<u>Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934 (incorporated by reference to Exhibit 4.13 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 1-12001)).</u>
10.1	<u>Allegheny Technologies Incorporated Fee Continuation Plan for Non-Employee Directors, as amended (incorporated by reference to Exhibit 10.3 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2004 (File No. 1-12001)).*</u>
10.2	<u>Allegheny Technologies Incorporated Benefit Restoration Plan, as amended (incorporated by reference to Exhibit 10.8 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 1999 (File No. 1-12001)).*</u>

Exhibit No.	Description
10.3	<u>Amendment to the Allegheny Technologies Incorporated Pension Plan effective January 1, 2003 (incorporated by reference to Exhibit 10.20 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2003 (File No. 1-12001)).*</u>
10.4	<u>Form of Change in Control Severance Agreement (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K dated December 10, 2019 (File No. 1-12001)).*</u>
10.5	<u>Allegheny Technologies Incorporated Defined Contribution Restoration Plan, as amended and restated as of January 1, 2015 (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015 (File No. 1-12001)).*</u>
10.6	<u>Allegheny Technologies Incorporated 2017 Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017 (File No. 1-12001)).*</u>
10.7	<u>Form of Performance-Vested Restricted Stock Unit Agreement (incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 (File No. 1-12001)).*</u>
10.8	<u>Form of Time-Vested Restricted Stock Unit Agreement (incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 (File No. 1-12001)).*</u>
10.9	<u>Form of Performance-Vested Restricted Stock Unit Agreement (incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 (File No. 1-12001)).*</u>
10.10	<u>Form of Time-Vested Restricted Stock Unit Agreement (incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 (File No. 1-12001)).*</u>
10.11	<u>Allegheny Technologies Incorporated 2020 Incentive Plan (incorporated by reference to Appendix A to the Registrant's Definitive Proxy Statement filed on March 24, 2020 (File No 1-12001)).*</u>
10.12	<u>Form of Time-Vested Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10.16 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 1-12001)).*</u>
10.13	<u>Form of Performance-Vested Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10.17 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 1-12001)).*</u>
10.14	<u>Addendum to Performance-Vested Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10-1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2021 (File No. 1-12001)).*</u>
10.15	<u>Form of Performance-Vested Restricted Stock Unit Agreement (filed herewith)*</u>
10.16	<u>Consulting Agreement, dated February 28, 2021, between Allegheny Technologies Incorporated and John D. Sims (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K dated March 2, 2021 (File No. 1-12002)).*</u>
10.17	<u>First Amended and Restated Revolving Credit, Term Loan, Delayed Draw Term Loan and Security Agreement, dated as of September 30, 2019, by and among the borrowers party thereto, the Company and other guarantors party thereto, the lenders party thereto, and PNC Bank, National Association, as Lender and Agent (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2019 (File No. 1-12001)).*</u>
10.18	<u>Form of Capped Call Confirmation (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K dated June 22, 2020 (File No. 1-12001)).*</u>
18.1	<u>LIFO Preferability Letter (filed herewith).</u>
21.1	<u>Subsidiaries of the Registrant (filed herewith).</u>
23.1	<u>Consent of Ernst & Young LLP (filed herewith).</u>
31.1	<u>Certification of Chief Executive Officer required by Securities and Exchange Commission Rule 13a-14(a) or 15d-14(a) (filed herewith).</u>
31.2	<u>Certification of Principal Financial Officer required by Securities and Exchange Commission Rule 13a-14(a) or 15d-14(a) (filed herewith).</u>
32.1	<u>Certification pursuant to 18 U.S.C. Section 1350 (filed herewith).</u>
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.

Exhibit No.	Description
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File - the cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.

* *Management contract or compensatory plan or arrangement required to be filed as an Exhibit to this Report.*

Certain instruments defining the rights of holders of long-term debt of the Company and its subsidiaries have been omitted from the Exhibits in accordance with Item 601(b)(4)(iii) of Regulation S-K. A copy of any omitted document will be furnished to the Commission upon request.

Item 16. Form 10-K Summary

Not applicable.

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.

ALLEGHENY TECHNOLOGIES INCORPORATED

Date: February 25, 2022

By /s/ Robert S. Wetherbee
Robert S. Wetherbee
Board Chair, President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and as of the 25th day of February, 2022.

 /s/ Robert S. Wetherbee
Robert S. Wetherbee
Board Chair, President and Chief Executive Officer
(Principal Executive Officer)

 /s/ Donald P. Newman
Donald P. Newman
Executive Vice President, Finance and
Chief Financial Officer
(Principal Financial Officer)

 /s/ Karl D. Schwartz
Karl D. Schwartz
Vice President, Controller and
Chief Accounting Officer
(Principal Accounting Officer)

 /s/ Leroy M. Ball
Leroy M. Ball
Director

 /s/ J. Brett Harvey
J. Brett Harvey
Director

 /s/ Herbert J. Carlisle
Herbert J. Carlisle
Director

 /s/ David P. Hess
David P. Hess
Director

 /s/ Carolyn Corvi
Carolyn Corvi
Director

 /s/ Marianne Kah
Marianne Kah
Director

 /s/ James C. Diggs
James C. Diggs
Director

 /s/ David J. Morehouse
David J. Morehouse
Director

Non-GAAP Financial Measures

(Unaudited, dollars in millions, except per share amounts)

The Company reports its financial results in accordance with accounting principles generally accepted in the United States of America ("GAAP"). However, management believes that certain non-GAAP financial measures, used in managing the business, may provide users of this financial information with additional meaningful comparisons between current results and results in prior periods. Non-GAAP financial measures should be viewed in addition to, and not as an alternative for, the Company's reported results prepared in accordance with GAAP. The following table provides the calculation of the non-GAAP financial measures discussed in this annual report.

Fiscal Year Ended December 31	2019*	2020*	2021
Net income (loss) attributable to ATI	\$253	\$(1,573)	\$(38)
Adjustments for special items, pre-tax:			
Strike related costs (a)	\$-	\$-	\$63
Impairment of goodwill (b)	-	287	-
Restructuring and other charges (credits) (c)	5	1,132	(10)
Retirement benefit settlement gain (d)	-	-	(65)
Joint venture restructuring and impairment charges (e)	11	3	-
Gain on asset sales and sale of business, net (f)	(85)	-	(14)
Debt extinguishment charge (g)	22	22	66
Total pre-tax adjustments	(47)	1,444	40
Net change in deferred taxes and valuation allowance (h)	(42)	73	-
Income tax on pre-tax adjustments for special items	1	(9)	15
Net income (loss) attributable to ATI, as adjusted	\$165	\$(65)	\$17

Fiscal Year Ended December 31	2019*		2020*		2021	
	Reported	Adjusted	Reported	Adjusted	Reported	Adjusted
Numerator for Basic net income (loss) per common share -						
Net income (loss) attributable to ATI	\$253	\$165	\$(1,573)	\$(65)	\$(38)	\$17
Effect of dilutive securities	12	12	-	-	-	-
Numerator for Diluted net income (loss) per common share -						
Net income (loss) attributable to ATI after assumed conversions	\$265	\$177	\$(1,573)	\$(65)	\$(38)	\$17
Denominator for Basic net income (loss) per common share -						
Weighted average shares outstanding	126	126	127	127	127	127
Effect of dilutive securities	21	21	-	-	-	1
Denominator for Diluted net income (loss) per common share -						
Adjusted weighted average shares assuming conversions	147	147	127	127	127	128
Diluted net income (loss) attributable to ATI per common share	\$1.81	\$1.21	\$(12.43)	\$(0.52)	\$(0.30)	\$0.13

Non-GAAP Financial Measures

Earnings before interest, taxes, depreciation and amortization (EBITDA)

Fiscal Year Ended December 31	2019*	2020*	2021
Net income (loss)	\$265	\$(1,560)	\$(16)
(+) Depreciation and Amortization	151	143	144
(+) Interest Expense	99	94	97
(+/-) Income Tax Provision (Benefit)	(29)	78	26
(+) Strike related costs (a)	-	-	63
(+) Impairment of goodwill (b)	-	287	-
(+/-) Restructuring and other charges (credits) (c)	5	1,132	(10)
(-) Retirement benefit settlement gain (d)	-	-	(65)
(+) Joint venture restructuring and impairment charges (e)	11	3	-
(-) Gain on asset sales and sale of business, net (f)	(85)	(3)	(14)
(+) Debt extinguishment charge (g)	22	22	66
Total ATI Adjusted EBITDA	\$439	\$196	\$291

* Years ended December 31, 2020 and 2019 reflect the change in inventory accounting method in the fourth quarter of 2021, as described in the Company's Form 10-K. There were no adjustments to 2020 amounts as a result of this change.

The following adjustments are more fully described in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, and Item 8. Financial Statements and Supplementary Data in the 2021 annual report on Form 10-K. This presentation of adjusted results per diluted share includes the effects of convertible debt, if dilutive.

- (a) 2021 results include \$63 million of pre-tax strike related costs primarily consisting of overhead costs recognized in the period due to below-normal operating rates, higher costs for outside conversion activities, and signing bonuses for represented employees.
- (b) 2020 results include a \$287 million pre-tax goodwill impairment charge to write-off a portion of the Company's goodwill related to its Forged Products reporting unit.
- (c) 2021 results include \$10 million of pre-tax net credits for restructuring charges, primarily related to lowered severance-related reserves based on changes in planned operating rates and revised workforce reduction estimates. 2020 results include \$1,132 million in pre-tax restructuring and other charges, including \$1,042 million of long-lived asset impairment charges primarily related to the AA&S segment's Brackenridge, PA operations, which include the Hot-Rolling and Processing Facility, as well as stainless melting and finishing operations, \$60 million of severance-related costs for hourly and salary employees, \$13 million of other costs related to facility idlings including asset retirement obligations and inventory valuation reserves, and \$17 million in pre-tax charges for termination benefits for pension and postretirement medical obligations related to facility closures. 2019 results include a \$5 million pre-tax restructuring charge to streamline ATI's salaried workforce primarily to improve the cost competitiveness of the U.S.-based Flat Rolled Products business.
- (d) 2021 results include a \$65 million pre-tax retirement benefit settlement gain associated with the new collective bargaining agreement with the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied & Industrial Service Workers International Union, AFL-CIO, CLC involving approximately 1,100 active full-time represented employees located primarily within the AA&S segment operations, as well as a number of inactive employees.
- (e) 2020 results include a \$3 million pre-tax charge for ATI's 50% portion of severance charges recorded by the Allegheny & Tsingshan Stainless joint venture. 2019 results include an \$11 million pre-tax joint venture impairment charge for the Allegheny & Tsingshan Stainless joint venture, which included ATI's 50% share of the JV's impairment charge on the carrying value of long-lived assets at the Midland, PA production facility.
- (f) 2021 results include a \$14 million pre-tax gain on the sale of its Flowform Products business, which uses flowforming process technologies to produce thin-walled components in net or near-net shapes across multiple alloy systems for use in the aerospace & defense and energy markets. 2019 results include a \$92 million pre-tax gain on the sale of oil & gas rights in New Mexico and a \$6 million pre-tax net gain on the sale of the cast products business, partially offset by a \$13 million pre-tax loss on the sale of the industrial forgings business.
- (g) 2021 results include a \$66 million pre-tax debt extinguishment charge for the redemption of the \$500 million, 5.875% Notes due 2023. 2020 results include a \$22 million pre-tax debt extinguishment charge for the partial redemption of the \$288 million, 4.75% Convertible Notes due 2022. 2019 results include a \$22 million pre-tax debt extinguishment charge for the full redemption of the \$500 million, 5.95% Senior Notes due 2021.
- (h) 2020 results include a \$73 million tax charge including \$99 million of expense related to deferred tax valuation allowances due to re-entering a three-year cumulative loss condition for U.S. Federal and state jurisdictions, partially offset by a \$26 million benefit associated with the impacts of long-lived asset impairments and other restructuring charges. 2019 results include a \$42 million discrete tax benefit primarily related to the reversal of a portion of deferred tax valuation allowances due to exiting the three-year cumulative loss condition for U.S. Federal and state jurisdictions at year-end 2019.

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INVESTOR INFORMATION

Corporate Headquarters

1000 Six PPG Place
Pittsburgh, PA 15222-5479
412-394-2800

Annual Meeting

The Annual Meeting of Stockholders will be held virtually on Thursday, May 12, 2022 at 12:00 p.m. Eastern Time (11:00 a.m. CT)

Go to [ATImetals.com/annualmeeting](https://atimetals.com/annualmeeting) for details.

Transfer Agent And Registrar

Computershare Inc.
462 South 4th Street Suite 1600
Louisville, KY 40202
1-800-406-4850

computershare.com/investor

Information about:

- Voluntary purchases of ATI common stock for new investors and current stockholders
- Safekeeping of stock certificates at no charge

Stockholder Publications

ATI's Annual Reports, Proxy Statements, Sustainability Report and other publications are available on our website, [ATImetals.com](https://atimetals.com) and also are available upon written request to the Corporate Secretary at the Corporate Headquarters.

For additional information contact:

investorrelations@ATImetals.com

Independent Auditors

Ernst & Young LLP
Pittsburgh, PA

Stock Exchange Listing

The common stock of Allegheny Technologies Incorporated is traded on the New York Stock Exchange (symbol ATI).

Internet Home Page

[ATImetals.com](https://atimetals.com)



Our values.

Integrity

We do the right things the right way; it's the cornerstone of our relationship with every stakeholder.

Safety & Sustainability

We are committed to a Zero Injury Culture, protecting our people and the planet through our products and the way we operate.

Accountability

We do what we say we are going to do. We set a standard for excellence and hold ourselves and our team accountable for our actions, results and delivering value for our customers.

Teamwork & Respect

We seek and celebrate diverse views, capabilities and experiences to power our collaborative work environment.

Innovation

We embrace change and unique perspectives to create sustainable value, acting with urgency and taking calculated risks to learn and continuously improve.



[ATIMETALS.COM](https://www.atimetals.com)