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PROTECTING TOMORROW

Key Achievements

Ensuring No Waste Is Ever Wasted–Advancing The Circular Economy

Continued growth and opportunity in sustainable waste management:

Began construction of **Rookery Energy Recovery** facility in the U.K.

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Advanced U.K. pipeline of **4 development projects**,

totaling 1.5M metric tonnes of annual capacity

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PDF DOWNLOAD OF ALL KEY ACHIEVEMENTS

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Supporting the Circular Economy

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Sustainability Blueprint

What we do every day helps our communities, clients and customers find practical solutions to significant societal challenges: waste and materials management, clean energy, and global climate change. In short, we all work every day to protect tomorrow.

How? To protect tomorrow, we focus on the following principles:

- **Ensuring no waste is wasted.** We provide our communities and clients access to sustainable waste and materials management, from the largest fleet of energy-from-waste facilities in the world, to wastewater treatment, to tailored commercial waste services.
- **Protecting the environment.** Environmental performance is a core part of our service offerings. It's how we differentiate ourselves from landfilling. However, simply offering more sustainable waste management options is not enough. Consistently remaining below current standards and full compliance with our discharge limits are the minimum expectations. Strong performance is the key to continued strong relationships with our communities and customers, and the prerequisite to new business opportunities.
- **Achieving world-class safety and health performance.** Protecting the safety and health of our coworkers is paramount. We believe that success comes with building and maintaining a robust safety culture throughout our business with employee leadership, robust training programs and engagement at all levels of the business.
- **Creating and maintaining an inclusive, respectful and equitable corporate culture.** Our dedicated workforce drives our business and our success. Attracting and retaining talented and diverse individuals is key to building a successful team. It also helps foster innovation and continuous improvement, thereby contributing to reduced costs and revenue growth.
- **Partnering with our communities.** Mutual acceptance and respect between Covanta and surrounding communities is essential to productive operations. We work continually to be a good neighbor and to invest human and financial resources in the communities where our facilities are located.

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Video: Protecting Tomorrow—People

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Video: Protecting Tomorrow—Planet

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Video: Protecting Tomorrow—Prosperity

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Sustainability Blueprint

Mission Statement

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Mission Statement

Our mission is to provide sustainable waste and energy solutions to ensure no waste is ever wasted.

At Covanta we believe the materials discarded every day should be utilized to their fullest potential to preserve the world's valuable resources and generate clean energy for our client communities and the world we live in.

This is how Covanta is powering today and protecting tomorrow.

PROTECTION:
We will conduct our business in an environmentally sound manner that is protective of human health and the environment.

COMPLIANCE:
We will manage our work to assure compliance with all applicable environmental regulations and requirements.

CONSERVATION:
We will minimize impact to the environment by encouraging pollution prevention at the source, waste minimization, recycling and responsible disposal of production by-products.

QUALIFICATION:
We will ensure that all employees have the necessary information, resources and training to make informed environmental decisions.

COMMITMENT:
Covanta is committed to be an industry leader in environmental protection by achieving superior awareness and performance through a process of continuous improvement.

Environmental awareness and performance is the responsibility of every employee. By embracing this philosophy, we all can make a difference.

Stephen J. Jones, President and CEO

Sustainability Blueprint

A Message from Our CEO

At Covanta, our mission is to ensure that no waste is ever wasted. It's our business, our purpose and our value proposition to recover, recycle and reimagine waste, extracting the highest value from the byproducts of our daily life.

As a society, we are facing some of the greatest environmental challenges in our history, including global climate change and natural resources degradation. Both are linked to and exacerbated by the proliferation of solid waste in our communities. Covanta is working to solve the complexities that waste poses while addressing the needs of our diverse stakeholders.

We create value from waste in three primary ways: reducing contributions to climate change by diverting municipal solid waste from landfill and using it to generate baseload renewable energy; helping our customers reduce risks and meet their sustainability goals by safely and responsibly disposing of operational waste; and recycling valuable materials from the waste stream. This model makes Covanta an integral contributor to a more sustainable waste ecosystem.

Recovering Energy from Waste

After waste has been reduced, reused and recycled as much as possible by our client companies and municipal partners, we convert what remains to clean, reliable energy. This Energy-from-Waste ("EfW") process is a widely recognized way to mitigate contributions to climate change by avoiding the potent methane emissions associated with landfills. In 2018, we processed 20.6 million tons of waste and generated the equivalent of 10.4 million MWh of electricity in the form of steam and electricity, enough to power a million homes. In North America and Europe, we processed more waste—and generated more energy—than we have achieved in any other year in the history of the company.

In 2018 and 2019, we achieved two key milestones in our plans for international EfW expansion. In December 2018, we announced the financial close of the Earls Gate Centre with our strategic development partner Green Investment Group (GIG). Earls Gate will be a combined heat and power facility located in Grangemouth, Scotland, with long-term waste and energy contracts. In 2019, we began construction of the Rookery South Energy Recovery Facility in the United Kingdom, also in partnership with GIG. When completed in 2022, the facility—the second of four UK projects we are launching with GIG—will process 545,000 tons of non-recyclable waste per year. This will generate more than 60 megawatts of renewable energy annually—enough to meet the needs of over 112,500 homes.

Investing in Our People

We know that our commitment to creating value from waste would not be possible without the talent and dedication of our people. Ensuring their safety is a fundamental part of our culture and operations, and 2018 was the safest year in company history. Our EfW facilities saw a 31 percent reduction in incidents year-over-year, while our total case incident rate reached a record low.

We are also continuing to build an inclusive culture that celebrates individuality. We made significant progress in our diversity and inclusion (D&I) strategy in 2018 and 2019 through in-person D&I awareness workshops for all full-time employees and by launching three new Employee Resource Groups. I was also proud to join the CEO Action for Diversity & Inclusion™, a coalition of more than 700 companies pledging to advance D&I in the workplace.

Supporting Clients' Sustainability Goals

In addition to minimizing our clients' risks by securely and responsibly disposing of sensitive, confidential or recalled products, we support their zero waste and other sustainability goals.

For example, in support of New York City's goal of sending zero waste to landfills by 2030, we began full operations in 2019 at the second marine transfer station located in Manhattan in partnership with the New York City Department of Sanitation. Together with the operations at the Queens marine transfer station, Covanta will process more than a third of New York City's residential waste, generating clean energy and avoiding the greenhouse gas emissions that would have otherwise occurred in a landfill.

Recycling Valuable Materials

We continue to make investments in the recovery of materials from our ash. Since operations began in 2015, our Fairless Hills facility has processed over 400,000 tons of ferrous and non-ferrous metals from a growing fleet of our facilities, drastically increasing the quantity and quality of recovered metal. In 2019, we began constructing our first Total Ash Processing System (TAPS) adjacent to our metal processing facility. Once operational, TAPS will enable increased recycling of small metal fractions and the recovery of aggregate for reuse as construction material while reducing the volume of ash requiring landfill disposal by up to 65 percent.

In addition to the materials recovery at our EfW facilities, Covanta Environmental Solutions advanced the recycling of 85 million gallons of wastewater through pretreatment, beneficially reused 9 million gallons of wastewater and recycled 2.3 million gallons of oil. Together with our metals recycling and additional recycling services, including our UnWrapp depackaging solution, we recycled 933 thousand tons of material in 2018 alone.

Engaging with Our Communities

Our partnership with communities remains strong. We are proud to work with our communities to support local initiatives and volunteer our time, expertise and resources. We met our goal of eight community interactions per EfW facility at 98 percent of our locations. We are particularly proud of our advancement of STEM and green education initiatives, including tours, scholarships and outreach to disadvantaged communities. We increasingly rely on a strong pipeline of environmentally minded students with science, engineering and technical skills to help us not only sustain *our* business in the future, but help solve our world's global environmental challenges, including climate change.

Focusing on Our Future

As we continue to work toward our short- to medium-term sustainability goals, we keep a longer-term view on the societal, environmental and market forces that may impact our business and industry. Emerging waste management trends, regulations and technologies may present business risks but also market opportunities. We are always looking for new, collaborative ways to address climate change, reduce pollution and demonstrate community leadership. For example, we have established a new sustainability goal to set a science-based target and implementation plan in line with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures. We are also working with several local municipalities to establish microgrids connected with our EfW facilities, helping provide resiliency to the electrical grid. As clarity and momentum builds around the development of a circular economy, we will continue to leverage innovation and technology to promote and extract value from the evolving waste ecosystem.

I invite you to explore our 2019 sustainability report and microsite to learn more about how Covanta is contributing to a more sustainable society. While we know that the issues are complex and the needs are great, we are excited about the opportunities they present to help us continue protecting tomorrow.

Sincerely,

Stephen J. Jones,
President and Chief Executive Officer

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Video: CEO Steve Jones talks about Protecting Tomorrow

Sustainability Blueprint

Our Vision for Sustainable Waste Management

Today's Commitment:

Further reduce GHG emissions and recover more materials for the circular economy

Energy from Waste (EfW) is an important part of an overall sustainable waste management approach, recognized in the European Union and U.S. EPA waste management hierarchies as preferable to landfilling for those materials remaining after waste reduction, reuse and recycling efforts have been exhausted. After recycling takes place, EfW facilities recover energy from remaining waste materials in an environmentally sound manner. While doing so, EfW facilities reduce our need for fossil-based energy and reduce greenhouse gas (GHG) emissions relative to landfilling. According to U.S. EPA life-cycle emission analysis, EfW facilities reduce the amount of CO_2e in the atmosphere by approximately one ton for every ton of municipal solid waste (MSW) combusted.

However, we believe there is more that we can do. Our current materials management goals are centered around recovering more value from the waste resource, whether it be by recovering more energy at existing EfW facilities, constructing new best-in-class EfW facilities with even lower emission profiles, continuing our expansion of recycling services to our commercial or industrial clients, or continuing to mine our ash for valuable resources like metals and aggregates. Doing so will help us further reduce GHG emissions and recover more materials to put back into the economy.

Tomorrow's Goal:

Set a science-based target and implementation plan by 2022 to help prevent the most significant impacts of global climate change

To forestall the most severe impacts of climate change, scientists have concluded that we need to keep global temperature rise well below 2.0 degrees Celsius. Within the waste management sector, this will take transformative change. Fully implanting the waste management hierarchy globally will be a major step forward—achieving the recycling and energy recovery rates of leaders in Europe will reduce GHG emissions by one billion metric tonnes of carbon equivalents per year by 2050.

One key component will be drastically reducing, if not outright eliminating, landfilling. Landfilling is the world's third-largest source of anthropogenic methane, a potent GHG over 80 times as strong as CO_2 over a 20-year timeframe. Waste reduction, recycling, composting and anaerobic digestion will all play important roles; however, there will always be a need to manage the residual waste remaining after aggressively implementing source reduction, material reuse and recycling. This is where energy recovery augmented with novel materials management technologies will likely continue to play a key role.

Making energy recovery facilities more efficient, reducing their size and the complexity of resources needed for their construction, integrating them into microgrids and combined heat and power systems, and mining combustion ash for all usable materials are imperatives for the future. Our work today already puts us in a leadership position in many of these areas; however, we recognize that the extent of the challenge presented will require even more innovation. It is for this reason that we continue to evaluate evolving technologies, including carbon capture and sequestration, that may help reduce the carbon footprint of energy recovery even further in the future, while minimizing other environmental impacts.

As part of our vision for protecting tomorrow, we have established a new sustainability goal to set a science-based target in line with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures.

Sustainability Blueprint

Leadership & Governance

Advancing our vision and sustainability goals takes leadership across all levels of the organization, up to and including our Board of Directors.

In 2018, Covanta's Board of Directors had five standing committees that operate under written charters approved by the full board: Audit; Compensation; Nominating and Governance; Finance; and Supply Chain and Construction. In accordance with applicable SEC rules and regulations and New York Stock Exchange listing standards, all the directors who serve on the Audit, Compensation or Nominating and Governance Committees have been determined by the board, in its business judgment, to be "independent" from the Company and its management. The charters of all the committees can be viewed on our website at www.covanta.com.

Governance and oversight of our sustainability strategy and program is critical for its success. Ultimately, our board, specifically the Nominating and Governance Committee, has responsibility for oversight of our sustainability strategy and program. The Chief Sustainability Officer, reporting to our EVP and Chief Legal Counsel and EVP Supply Chain, has the overall responsibility for the sustainability program at Covanta. At a minimum annually, our Chief Sustainability Officer reviews the Company's sustainability performance and strategy with the Nominating and Governance committee. For a full description of how we integrate sustainability into our business strategy, please refer to our 2018 10-K and our 2019 Proxy Statement.

Covanta values diversity at all levels. Our Board of Directors values diversity of experience, perspective, education, race, gender and national origin as part of its overall annual evaluation of director nominees for election or re-election. Currently, of our twelve Directors, three are women and one is racially or ethnically diverse.

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Sustainability Blueprint

Our Policies

Policy of Business Conduct

Our management of many aspects of sustainability is governed by a set of corporate policies that help put our vision into action. The following policies govern our business practices and our approach to our work.

- Covanta Mission Statement & Environmental Policy
- Total Health & Safety Policy
- Policy of Business Conduct
- Sustainability Policy
- Community Outreach & Environmental Justice Policy

Covanta's complete governance information, structure, annual filings and related charters can be accessed from the Investor Relations home page.

As Covanta's business continues to evolve, we know our ability to succeed and prosper will depend on strong governance procedures supported by the quality and character of our employees. Covanta's Policy of Business Conduct, available to employees on the company website and intranet site, outlines the company's expectations for the highest standards of personal integrity and professional judgment from all employees. Annually, each employee is required to review an electronic copy of the Policy of Business Conduct before completing an electronic certification that confirms compliance for the prior year and commits to compliance in the coming year.

Cybersecurity

Our information systems and those of our third-party service providers and vendors are vulnerable to an increasing threat of continually evolving cybersecurity risks. Overall, ethics, policy and compliance risk and cybersecurity risk are overseen by the Audit Committee and the Nominating and Governance Committee.

Whistleblower Procedures

We encourage the reporting of concerns about any activity being conducted, or failing to be conducted, by or on behalf of Covanta or any of its employees, as detailed in our Policy of Business Conduct. In addition, we have an anonymous third-party hotline available to report such concerns, all of which will be taken seriously.

Supply Chain Management

Covanta views the supply chain as a strategic component of our business. We continually seek ways to improve our performance, reduce costs and ensure that we are working with a diverse base of responsible global suppliers that meet our high standards for conduct and performance. In addition to being cost-competitive and having a core competency in their areas of expertise, suppliers we seek should promote a positive workplace culture characterized by long-term partnerships and sustainable solutions; companies we partner with support minority, women and disabled veterans' business enterprises.

We expect our suppliers to uphold Covanta's Supplier Code of Conduct, which outlines our expectations of all suppliers we work with. We require suppliers to complete a detailed supplier qualification questionnaire and provide select supporting documentation. Supplier responses are assessed according to the following categories: company management, corporate social responsibility (including confirmation of appropriate environmental, social and governance controls), product/process design, operational excellence, continuous improvement and costs. We undertake this review process for all new suppliers, and we repeat it every two years for existing supplier

relationships. Based on the results of the assessment, we may identify areas for improvement and develop carefully monitored action plans.

We also focus on ethics and compliance through awareness trainings and in monthly meetings with the global procurement team. Since Covanta operates in the United Kingdom (UK), all employees globally comply with the 2010 UK Bribery Act, an international standard of combating corruption.

For more information on doing business with Covanta, please see our Partners and Suppliers page.

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SUSTAINABILITY REPORT

Sustainability Blueprint > Our Policies

Community Outreach and Environmental Justice Policy

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Community Outreach & Environmental Justice Policy

Covanta is committed to engage with and support the communities in which we have or will have facilities. Covanta believes in the meaningful opportunity for all people, regardless of race, ethnicity, color, income, national origin or education level to be knowledgeable and have the right to participate in public decisions and actions which have an impact on their environment and neighborhoods. To implement this policy consistent with our sustainability objectives, Covanta commits:

- To reduce discharges and minimize emissions from our facilities and to reduce other potential impacts of our operations, taking into account cumulative impacts.
- To identify and engage with individuals and organizations in the communities in which we operate, or in which we may operate, that are interested in our operations.
- To have open, two-way communication with communities on issues which may be of interest or concern to them, including environmental and quality of life issues in the community. Such communication shall include participation in meetings with community members or affected groups.

- To have an enhanced public participation strategy with communities on major facility permit actions and engage in substantive conversations with community members during the early stages of the permitting process.
- To work diligently to respond to issues identified by communities in which we operate.
- To promptly and effectively notify the community in the event of situations that may adversely impact the environment or their health.

Stephen J. Jones, President and CEO

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A Total Safety and Health Policy

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A Total Safety and Health Policy

Total Safety and Health is the ongoing integration of Safety and Health into all activities with the objective of eliminating illnesses and injuries and continuously improving performance.

- **Nothing is more important than Safety and Health...**
  not production, not throughput, not profits.
- **Accidents, illnesses and injuries are preventable...**
  they are not inevitable.
- **Safety and Health is a management responsibility...**
  and Safety and Health can be managed.
- **Safety and Health is an individual responsibility...**
  and a condition of employment.
- **Safety and Health is a way of life...**
  around the clock, both on and off the job.

- **Every task must be performed with a concern for Safety and Health...**
  for ourselves, our fellow employees, our contractors, our visitors, our customers and the communities in which we operate.

A Commitment to Total Safety and Health is a Commitment to Doing Things Right.

Stephen J. Jones, President and CEO

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Sustainability Policy

Vision

It is in the best interests of our company and society as a whole that our company moves along the path to sustainability. To that end, we will strive to achieve the following vision of performance and will publicly communicate this commitment and periodically report our progress and challenges in fulfilling it:

1. Economic success: the wise use of financial resources

A. Company economic prosperity

We will:

- Conduct our business to prosper economically and create long-term value for our shareholders
- Invest in research and development to expand and/or improve our core competency

B. Community economic prosperity

We will help our community prosper economically in three ways:

- Seek to employ local people, purchase goods and services locally and pay taxes
- Provide cost competitive and reliable waste disposal and energy generation
- Participate in civic and philanthropic efforts

2. Social responsibility: respect for people

A. Fair dealing with customers

- We will be honest and fair with our customers, compete ethically for their business, respect their privacy, anticipate their needs and provide them with safe and effective products and services while taking into account sustainability concerns.

B. Respect for employees

- We will treat our employees in a respectful, fair and nonexploitative way, especially with regard to compensation and benefits; promotion; training and development; open, constructive dialogue with management; involvement in decision-making; working conditions that are safe, healthy and noncoercive; privacy rights; labor law rights; employment-termination practices; and work-life balance. We will ensure that all employees have the necessary information, resources and training to make informed decisions on environmental and health and safety matters.

C. Diversity, fair hiring practices

- We will promote diversity and a culture of inclusion and use hiring practices that are fair, responsible, nondiscriminatory and nonexploitative for our employees and board members.

D. Responsible governance

- We will manage our risks appropriately, use our economic power responsibly and operate our business in a way that is ethical and legal.

E. Respect for stakeholders

- We will be transparent, respectful and fair to local populations, investors, suppliers and other stakeholders outside of our organization who may be affected by our operations. We will engage our key stakeholders to understand their needs and seek relationships with them based on integrity. We will work collaboratively toward a good neighbor relationship with our communities, governments, business partners and supply chain to enhance the well-being of others.

3. Environmental responsibility: respect for life and the wise management and use of natural resources

A. Resource conservation

- We will minimize our impact to the environment by conserving energy and natural resources to the extent practicable. We will promote sound materials and energy management by encouraging pollution prevention at the source, material reuse, recycling and recovery of materials and energy through energy from waste.

B. Waste prevention and management

- We will reduce to the extent practicable the solid waste and emissions of greenhouse gases and other harmful air pollutants from our operations and will maintain and implement programs to ensure compliance with all applicable environmental regulations.

C. Environmental risk control and restoration

- We will minimize the risk of spills and other potentially harmful environmental incidents, restore the environment in case of an event and enhance it to better support biodiversity.

D. Reduction of supply chain impacts

- We will work with others in our supply chain to help minimize adverse environmental impacts and risks and to optimize environmental benefits.

E. Collaboration with communities

- We will collaborate with our communities to protect and improve the environment.

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Sustainability Blueprint

Listening to Our Stakeholders

Suppliers help us deliver solutions sustainably and successfully around the world. We conduct business in a fair and professional manner. We are in regular communication with our suppliers, from initial screening and vendor selection through the fulfillment of procurement activities. We strive for the highest possible standards of business ethics, professional courtesy and competency in our engagements with suppliers. We are always looking for more sustainable sources of raw materials.

Researchers and equipment suppliers investigate new technologies. These technologies can help reduce emissions and improve the efficiency of Covanta processes. We support research conducted by academic institutions and the U.S. EPA, including those through the EPA's Cooperative Research and Development Agreement mechanism. We also subcontract third parties to study various topics related to our industry. Engagement is monthly, quarterly or annually, depending on the scope of the project, project phase and project manager.

Industry groups focus on energy, climate change and other environmental issues. These industry groups include the Energy Recovery Council, Business Council for Sustainable Energy, Biomass Power Association and the Ontario Waste Management Association. Covanta plays a leadership role or actively contributes to these engagements, with our executives serving on the boards or as association members.

Investors and shareholders support and invest in our business. We regularly engage with our shareholders through quarterly calls, roadshows, conferences and individual calls. These activities supplement our regular announcements and filed financial statements where we update stakeholders on our strategic progress, financial health and plans about our growth. More recently, our communications have included a more concerted effort to disseminate our sustainability strategy and performance through enhanced disclosure in our 10-K reports and proxy statements. Please visit our Investor Relations webpage to access investor news, presentations and financial filings.

Municipal and corporate customers engage us to handle their waste resources in a sustainable manner. Each of our facilities has designated management personnel responsible for interacting with our customers and partners. We meet with our municipal partners at each facility either monthly, quarterly or when deemed appropriate.

Community members live near our facilities and/or benefit from our services. Engagement with the community starts at the beginning of a facility's development. We inform interested parties about the basic scope, objectives and operational aspects of a project. We also provide forums for community members to discuss concerns they may have about our facilities' operations. Our outreach to communities may include in-person meetings, phone calls and informational publications. At our EfW facilities, we have standardized our community engagement process as part of our facility-specific Community Outreach Plans (COPs). Our Community Outreach and Environmental Justice Policy is the foundation on which our plans are built. Visit the Community Relations section of this report for more information.

Policy makers shape policy surrounding our materials management and energy solutions, including EfW and our Materials Processing Facilities (MPFs). We strive to ensure that the economic, environmental and societal benefits of EfW are taken into consideration when new policies are formulated. We do this by taking part in workgroups and other meetings or commenting on proposed changes in current policies. We engage with policy makers across our global operations.

Government regulators ensure we meet all our legislative requirements. We also partner with regulators to conduct research and help develop innovative technologies that will increase the efficiency, safety and effectiveness of our sustainable solutions, including EfW. Project management meetings related to specific research initiatives may take place on a monthly, quarterly or annual basis, as appropriate.

Suppliers help us deliver solutions sustainably and successfully around the world. We conduct business in a fair and professional manner. We are in regular communication with our suppliers, from initial screening and vendor selection through the fulfillment of procurement activities. We strive for the highest possible standards of business ethics, professional courtesy and competency in our engagements with suppliers. We are always looking for more sustainable sources of raw materials.

Employees drive the creation of business value and deliver innovative and sustainable solutions to our customers. We have used periodic employee engagement surveys to gather information about employee interests, satisfaction and concerns. More recently, we have gathered feedback more directly through our Diversity & Inclusion (D&I) training sessions. We also engage with employees through team meetings, individual performance reviews, skills development, professional training and other frequent activities and communications. Read more about engagement with employees in the Workforce Engagement section of this report.

Nonprofit and nongovernmental organizations (NGOs) help us address issues related to environmental stewardship and social justice. We collaborate and interact with select organizations, including the Go Green Initiative and the Ocean Conservancy Trash Free Seas Alliance, to strengthen our policies, activities and performance. Through our Community Outreach and Environmental Justice Policy, we work to understand and resolve issues and concerns of our local community members.

Industry peers help drive our industry toward greater sustainability leadership. We interact with our peers and competitors through industry groups and at industry conferences or events. Working with peers can help promote more sustainable waste management and energy solutions.

Covanta's sustainability program and disclosures are designed with its stakeholders in mind. We regularly engage with key external stakeholders to understand and address their highest priority interests and concerns related to our business. We communicate on a regular basis with individuals, groups and organizations to better achieve our mission of providing sustainable waste and energy solutions to ensure no waste is ever wasted.

Employees

Our corporate culture is focused on the triple bottom line of sustainability (people, planet, prosperity) in support of our mission. Whether it involves protecting the safety and health of our coworkers, leading continuous improvement ideas, interacting with our communities or operating our facilities efficiently, our employees drive our business. We deliver on our business mission by fostering a strong safety culture, supporting community involvement and building a respectful workforce that champions diversity and inclusivity.

Engagement Highlights:

- Annual performance reviews between employees and managers
- Periodic and frequent structured training exercises in the areas of safety, health and environment (SHE), environmental sustainability, health & wellness, diversity & inclusion and business ethics
- Peer mentoring and feedback opportunities
- Monthly facility meetings to communicate feedback and learnings from recent company events, updates on safety and health initiatives, and updates on site safety concerns
- Monthly departmental discussions

Clients

To help our corporate and municipal clients meet their sustainability goals, we deliver sustainable waste and materials management solutions, from the largest fleet of EfW facilities in the world to wastewater treatment, reverse distribution, product depackaging and tailored commercial waste services.

Engagement Highlights:

- Frequent communications on sustainability challenges and opportunities
- Cooperative engagement on public policy issues pertaining to energy; climate change resiliency, adaptation and mitigation; and waste management

Community

Mutual acceptance and respect between Covanta and our communities is essential to productive operations. We work continually to be a good neighbor and to invest human and financial resources in the communities where our facilities are located.

Engagement Highlights:

- 100 percent of our EfW facilities have formal community engagement plans focused around community stewardship, sustainable communities, green education and environmental responsibility.
- Over 20,000 community members are toured through our EfW facilities annually.

Investors

Our goal is to provide an attractive free cash flow profile to our investors by utilizing our irreplaceable infrastructure assets to offer sustainable waste, material and energy services while investing in new initiatives in the U.S. and overseas to expand the breadth of our capabilities. We regularly communicate our business strategies and financial performance to investors in our company through financial reports, SEC filings and proxy statements as well as investor conferences and meetings.

Engagement Highlights:

- During 2018, our management participated in 15 non-deal road shows, seven investor conferences and over 100 investor conference calls.
- In late 2018, in order to receive more comprehensive investor feedback we also commissioned a third-party perception study of our investors and sell-side analysts, providing them an opportunity to discuss their views on Covanta's growth prospects, strengths and weaknesses, disclosures, and opportunities for improvement. Feedback from this study was shared with senior management and the Board of Directors.

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2019 Stakeholder Panel

2019 Stakeholder Panel

In 2019, we continued the tradition of reaching out to our stakeholders by convening a panel group comprised of select subject matter experts closely connected to Covanta from among the following stakeholder groups: academia, clients, customers, community members, investors and business partners.

In cooperation with an independent third party, we conducted a set of interviews and a group panel discussion over the course of two months. We gathered feedback on Covanta's ongoing sustainability management strategy and corporate disclosures. The expertise and insights shared on Covanta's material ESG (Environmental, Social, Governance) topics through this process confirmed the basis for the disclosures in this report and further supported Covanta's strategic planning and goal setting looking forward. Panelists also reviewed drafts of this report to further enhance and strengthen Covanta's approach to disclosure.

2019 Panelists*

We invited a group of customers, partners, investors, academics, clients, community members, and environmental activists to participate on our stakeholder panel. We are grateful for the insights provided by this diverse and representative panel.

J.K. Evicks Manager, The Bama Companies, Inc.	**Don Pugh** Senior Environmental Engineer, American Airlines	**Adrian Barnes** Manager, Green Investment Group	**Edward Northam** Head of Europe, Green Investment Group
Michael Jay Walsh, PhD. Assistant Research Professor, Boston University	**Dereth Glance** Executive Director, Onondaga County Resource Recovery Agency (OCRRA)	**Adrienne Esposito** Executive Director, Citizens Campaign for the Environment	

*Not a complete list of stakeholder panel participants.

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Sustainability Blueprint

Materiality Analysis

Waste resource utilization refers to the responsible management of the many products and materials that become waste streams around the world. The issue encompasses a focus on finding the most sustainable next step for each waste in order to lessen, to the extent possible, impacts on the environment and society.

Related GRI topics: Procurement Practices 2016 and Materials 2016

Community relations refers to our communications and activities with local community organizations and individuals. Included are impacts on the economy, taxes, job creation, noise and odor, air pollutants and community engagement, as well as support of local initiatives through philanthropy and monetary and service donations.

Related GRI topics: Indirect Economic Impacts 2016, Local Communities 2016 and Customer Health and Safety 2016

Customer relations with both municipalities and corporate customers encompasses customer satisfaction, day-to-day customer support, service pricing and business and operational excellence.

Related GRI topic: Customer Privacy 2016

Air pollutants (non-GHG air emissions) can pose risks to people and may cause other damages to the environment. This issue also covers management and regulation of air emissions, including improved air quality through technological innovation, advanced equipment and robust process management.

Related GRI topic: Emissions 2016

Climate change and greenhouse gas emissions (GHGs) include all issues related to man-made activities that can either increase or avoid GHGs, which consequently can generate related climate risks or opportunities.

Related GRI topic: Emissions 2016

Financial performance includes the financial health of the company and strategic planning to provide long-term value creation for the company's stakeholders.

Related topics: Economic Performance 2016 and Market Presence 2016

A materiality analysis brings to the surface those issues that matter most to our internal and external stakeholders and to our company's long-term business success.

We conduct materiality analyses to better inform the depth and breadth of our disclosure and strategic planning. Our analyses meet the requirements of the Global Reporting Initiative's (GRI) Principles for Defining Report Content.

Our first analysis was completed in 2009, and our third materiality analysis in 2015. Given the robust nature of our process, we are confident that the results of the 2015 analysis remain relevant to this reporting cycle. As part of the 2015 analysis, we:

- Analyzed a comprehensive array of stakeholder source documents, representing input from our key stakeholder groups;
- Convened a diverse and representative stakeholder panel to utilize their expertise and hear their insights;
- Gathered internal feedback from Covanta managers and employees on priority topics to understand perceptions of potential impacts across our value chain;
- Used all input to develop and review an extensive list of environmental, social, governance and economic topics relevant to our business operations;
- Mapped each topic onto a matrix to identify the highest-scoring issues for both our stakeholders and company; and
- Shared the materiality analysis results with our stakeholder panel, reviewed their feedback and confirmed our final material issues internally (see diagram).

For a complete description of the materiality process and issues, please refer to our 2014-2015 Sustainability Report.

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Sustainability Blueprint

Progress on Goals

To advance our company's mission, implement our vision for more sustainable waste management, and advance our sustainability performance across all three pillars of sustainability, we have set a series of goals and targets around our material issues. Our current set of goals was developed by our senior leadership team in 2015 and contained a mix of short- and long-term targets. Over time, including in this reporting cycle, we have updated and augmented our targets to sustain our continuous improvement.

SAFETY AND HEALTH

GOAL		PERFORMANCE INDICATORS	PROGRESS IN 2017–2018
Achieve world-class safety and health performance through disciplined continuous improvement, safety leadership at all levels, full employee engagement and an integrated, interdependent world-class safety culture.	**Financial Linkage** Organizations with an integrated and interdependent safety culture are more likely to achieve and sustain injury free workplaces and demonstrate outstanding safety management and performance. Safety leadership, teamwork, peer support, trust, open and honest communication, employee engagement at all levels and organizational pride are hallmarks of integrated and interdependent safety cultures. While incident rates and other safety metrics ultimately demonstrate performance, they are lagging indicators and ineffective at tracking the efficacy of cultural development.	Develop and assess the efficacy of safety culture performance metrics. Implement, track and report these metrics to demonstrate measurable improvements in Covanta's safety culture through the end of 2020.	**Achieved:** Completed the 3rd party program and culture review in 2017. Improvements made after the review helped lead to a 31% reduction in incidents from 2017 to 2018.
		Complete a review of our root cause analysis and corrective action process and implement changes as necessary by the end of 2016 to ensure the process adequately evaluates and resolves issues as identified.	**Achieved:** A review of our root cause analysis and corrective action process was completed in early 2017. Initial Changes were made in the incident reviews in 2018. Further refinements were made in 2019 which allowed for more detailed investigations and root cause analyses.
		New Indicator: Move Beyond Zero by focusing on the three P's: Participation, Performance, and Potential opportunities for improvement. Will develop and implement focused behavioral safety observation process to capture and report data by 2020.	**In Progress:** To date, employees have completed over 12,000 observations in the ProcessMap tool, initially focused on lockout/tagout procedures, line-of-fire risks and hand safety.

ENVIRONMENT

GOAL		PERFORMANCE INDICATORS	PROGRESS IN 2017–2018
Energy-from-Waste (EfW) facilities are subject to stringent regulatory standards that are currently being reviewed by the U.S. Environmental Protection Agency. In addition, acquisitions and organic growth are also creating new challenges. We are committed to 100% compliance with all discharge limits (air, water, etc.) at all facilities while also maintaining emissions at levels consistent with past performance—well below existing standards.	**Financial Linkage** 100% compliance with discharge limits avoids fines and other monetary penalties. More importantly, we view full and continual compliance with all applicable laws, regulations and permits to be a basic condition of responsible operation. By demonstrating and continuing full compliance, we build our reputation and garner intangible value as a responsible member of the local community.	100% compliance with stack test standards and continuous emission monitor (CEM) reporting limits at all EfW facilities.	**In Progress:** 100% compliance with stack test standards and 99.95% compliance with CEM limits at our EfW facilities for 2017-2018.
		100% compliance with discharge limits at Covanta Environmental Solutions (CES) and other new facilities within one year of acquisition.	**Achieved:** 99.8% compliance with POTW wastewater discharge limits at CES facilities.
		Maintain EfW emissions performance gains achieved.	**Achieved:** All EfW emissions performance gains were maintained as of the end of 2018.
		New Indicator: Set a science-based target and implementation plan by 2022 in line with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures.	**In Progress:** While EfW is a critical element of reducing GHG emissions from the waste management sector today, reaching the levels of GHG reductions that we need by mid-century to stem the largest impacts of climate change will require innovative thinking. This is why we announced this new goal with our 2018 sustainability report.
		New Indicator: Implement five projects by 2023 to further reduce emissions in EJ communities.	**In Progress:** Installation of new Low NOx technology is currently in various stages of development in nine units at three facilities.

MATERIALS MANAGEMENT

GOAL		PERFORMANCE INDICATORS	PROGRESS IN 2017–2018
Advance sustainable waste management and life-cycle greenhouse gas reductions through increased landfill diversion, greater operational efficiency and expansion of waste reduction, reuse and recycling.	**Financial Linkage** Reducing landfill management of ash from energy recovery by finding new beneficial reuse opportunities, and by recovering more usable materials (e.g., metals) prior to disposal, reduces costs and generates new revenues streams. Increasing the tons of wastes avoided, recycled or reused for our clients expands our service offerings and helps meet our clients' needs, thereby generating additional sources of revenue and potentially longer-term client relationships. **Climate Change Linkage** More sustainable waste and materials management can be a significant source of GHG emissions mitigation. Growing landfill diversion and moving up the waste hierarchy, both for our own operations and for our clients', are our most powerful drivers in reducing GHG emissions.	By 2020, increase the amount of waste managed through energy recovery and other sustainable waste management operations by 10% relative to a 2014 baseline.	**In Progress:** 2018 overall tons processed up 1.7% relative to baseline. Current U.K. development pipeline will add another 1.6M tons of capacity.
		Original Indicator: Increase total wastes avoided, recycled or reused under our management by 25% by 2020 relative to a 2014 baseline of 548,000 tons. **Revised Indicator:** Increase total wastes avoided, recycled or reused under our management by 100% by 2022 relative to a 2014 baseline of 548,000 tons.	**Achieved:** After meeting our goal in 2016, we've continued to improve. In 2018, we avoided, recycled or reused 933,000 tons of waste, a 64% increase in four years. Our total ash processing system (TAPS) will significantly expand these gains. To continue to drive our success, we are expanding our target with this report.
		Achieve additional energy efficiency improvements at our energy recovery facilities of 60,000 MWh in total by the end of 2020.	**In Progress:** 22,000 MWh of additional energy efficiency improvements, over one-third of our goal of 60,000 MWh, has been completed.

COMMUNITY RELATIONS

GOAL		PERFORMANCE INDICATORS	PROGRESS IN 2017–2018
Expand the number and quality of our community outreach programs.	**Financial Linkage** Covanta has been investing in community outreach programs for more than two decades. This comprehensive outreach translates to improved business opportunities, including renewal of existing contracts and favorable permitting terms; strong relationships; and better operational standing.	**New Indicator:** Update the Community Affairs engagement plan using a new facility-centered process to better integrate community outreach into business management and planning.	**In Progress** Resource guide completed by 2016 and in use by facilities. Existing plan has been a great resource but can be better integrated into facility-level planning.
		At each EfW facility, perform a minimum of eight community interactions per year, beginning in 2016, that deliver demonstrative impact to our Protecting Tomorrow programs, local community programs and sustainable solid waste management education.	**In Progress:** 97.5% of our EfW facilities met the goal. The one facility not meeting the goal was closed in early 2019 and still completed seven out of eight of the required elements.

WORKFORCE ENGAGEMENT

GOAL		PERFORMANCE INDICATORS	PROGRESS IN 2017–2018
Create and maintain an inclusive, respectful and equitable environment that leverages the unique talents, perspectives and experiences of our diverse workforce to help retain top talent, meet and exceed our business objectives, and surpass the expectations of our diverse client communities, business partners and shareholders.	**Financial Linkage** Our employees drive our business and our success. Attracting the best talent; hiring and retaining a diverse workforce with regard to age, race, gender, ethnicity and other dimensions of diversity; fostering/encouraging/etc. the inclusion of all employees and their ideas—this fosters innovation and continuous improvement, thereby contributing to reduced costs and revenue growth, including through the development of new businesses and services. A low attrition rate, especially for top performers, means that we can retain qualified and talented individuals, preserve institutional knowledge and reduce recruiting and training costs.	Develop diversity and inclusion educational awareness training for employees and managers. Complete training with 30% of the workforce by the end of 2016 with full completion in the following year.	**Achieved:** Training fully completed in 2019.
		Create and initiate a mentoring program by the end of 2016 to facilitate the retention, development and advancement of our workforce. Develop and monitor metrics to drive gender, ethnic & racial diversity and senior management participation in the program.	**Achieved:** The first wave of the program began in 2017 with a group of 40 mentor/mentee pairs. Currently on the second wave of the program. 18% of mentees were female and 24% were non-white.
		Original Indicator: Attract the best talent and increase the diversity of our external and internal candidate pools by 2018 as measured by the percentage of diverse new hires relative to the overall U.S. workforce and the percentage of diverse promotions into management relative to the U.S. management workforce. **Revised Indicator:** Continue to increase the share of diverse gender and race/ethnicity representation at all levels of the organization, and more specifically in leadership positions. Ultimately, we strive to have similar representation as the communities in which we operate and serve.	**Refocused:** Tracking candidate pools proved very difficult and, in the case of external candidate pools, in conflict with the need to protect candidate privacy.Our revised goal is more readily measured and aligns with work already underway to improve diversity. As a result of our initial efforts, the share of women and underrepresented groups in management positions reached 14% and 22% respectively in October 2019 (manager and higher).

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SUSTAINABILITY REPORT

Materials Management

GOAL

Advance sustainable waste management and life cycle GHG reductions through increased landfill diversion, greater operational efficiency, and expansion of waste reduction, reuse and recycling.

PROGRESS

In 2018, we avoided, recycled or reused 933,000 tons of waste, a 64% increase in four years.

Waste is a valuable resource. Whether we approach the subject of waste management from the perspective of climate change, the waste hierarchy, zero waste or the circular economy, the basic goal remains consistent: extract as much value from waste as possible with the least amount of environmental impact. Our mission is to do just that and ensure no waste is ever wasted.

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Materials Management

Recovering Energy from Waste

Covanta's specially designed "Energy-from-Waste" (EfW) facilities produce electricity and/or steam for export through the combustion of post-recycled, non-hazardous municipal solid waste ("MSW") that has been diverted from landfill. EfW facilities are defined as renewable by 30 states, the District of Columbia, Puerto Rico, U.S. federal law, Europe and China and are recognized as preferable to landfilling in the solid waste management hierarchy.

Huntsville EfW facility

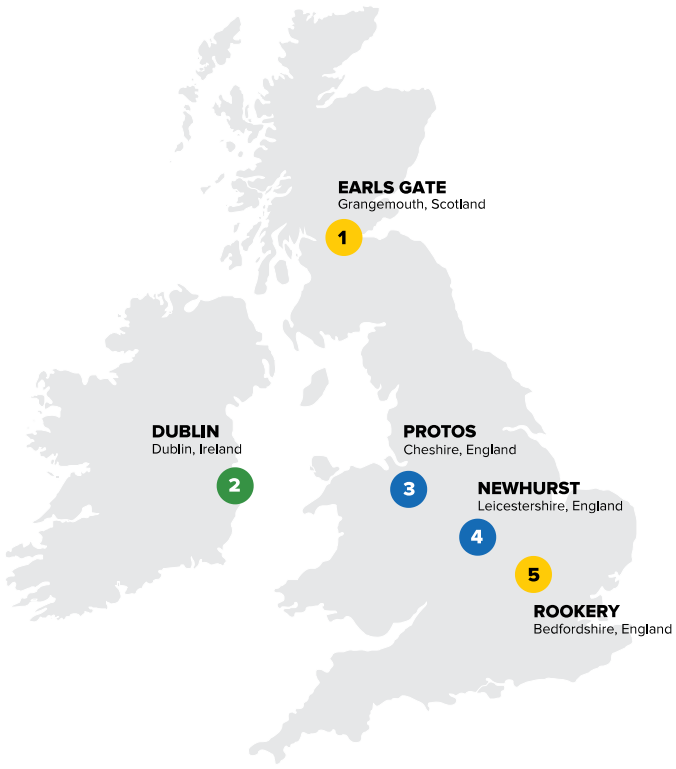
EfW facilities are a widely recognized means for reducing greenhouse gases—particularly methane—by eliminating emissions that would have otherwise occurred in landfill. Compared to landfills equipped with gas-to-energy recovery systems, EfW facilities are nine to 14 times as effective in capturing the energy that remains in MSW after recycling.

EfW facilities are also resilient sources of baseload energy, meaning they generate their electricity consistently. As a result, they serve as a valuable complement to intermittent renewable resources, such as wind and solar. EfW facilities are also often built near demand, where power is delivered for distribution to the grid. This proximity reduces the energy losses associated with long-distance transmission of electricity and provides unique opportunities for integration of EfW facilities in local community microgrids.

Several of our facilities export steam to local communities, businesses, and even an army base. The facility we operate in Huntsville, Alabama, provides up to 180,000 pounds of steam per hour to the Redstone Arsenal for heating and cooling needs. We also operate four combined heat and power (CHP) plants that generate both steam and electricity, resulting in greater overall efficiencies in capturing the heat energy available in the waste resource. Our Niagara Falls facility's steam supplies a local industrial park, including a 100% recycled paper mill as a perfect example of how EfW contributes to a Circular Economy. Our Dublin, Ireland, facility will be joining the list of CHP plants shortly—Dublin's District Heating Scheme, scheduled to begin construction in 2020, will be linked to our EfW facility. The plant will have the potential to provide enough steam heat for up to 50,000 more homes.

Development Overview – U.K.

The United Kingdom is committed to more sustainable waste management through the diversion of waste from landfills to energy recovery and recycling. Covanta is proud to be part of this transformation through the construction of new EfW capacity with our partner Green Investment Group.



Click on each for more information

Earls Gate
Grangemouth, Scotland

STATUS:

IN CONSTRUCTION

OUTPUT:

215,000 METRIC TONNES / 21 MW

INVESTMENT:

£210 MILLION

PARTNERS:

COVANTA + GIG (50%) / BROCKWELL ENERGY (50%)

Dublin
Dublin, Ireland

STATUS:

OPERATIONAL

OUTPUT:

600,000 METRIC TONNES / 60 MW

INVESTMENT:

€550 MILLION

PARTNERS:

CVA (50%) / GIG (50%)

Protos
Cheshire, England

STATUS:

IN DEVELOPMENT

OUTPUT

400,000 METRIC TONNES / 45 MW

PARTNERS:

GIG / NON-JV PARTNER: BIFFA

Newhurst
Leicestershire, England

STATUS:

IN DEVELOPMENT

OUTPUT

350,000 METRIC TONNES / 40 MW

PARTNERS:

GIG / NON-JV PARTNER: BIFFA

Rookery
Bedfordshire, England

STATUS:

IN CONSTRUCTION

OUTPUT

545,000 METRIC TONNES / 60 MW

INVESTMENT

€460 MILLION

PARTNERS:

COVANTA AND GIG (80%) / VEOLIA (20%)

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Case Study: Parker Hannifin finds flexibility with Covanta's EfW solutions

Making Sustainable Changes One Facility at a Time

Sometimes all that's needed is one really good example in order to generate change throughout an organization. In this case, it is a 75-person team in Davenport, Iowa that caught the attention of company leaders with their efforts to improve their location's sustainability achievements and reduce waste sent to the landfill. While there are sustainability goals at the corporate level at the 100-year-old Parker Hannifin, a leader in motion and control technologies, it can be challenging to spread the word to 55,000 employees at 336 manufacturing locations around the world. Parker Hannifin found the best solution was to allow each of its locations to have a hand in charting its own course.

Download the Case Study PDF

That being said, a hose manufacturing plant for Parker Hannifin's Hose Products Division wanted to consider additional eco-friendly and feasible options for recycling rubber hose. Hose Products Division's Davenport facility makes hydraulic assemblies for the industrial and hydraulic markets. The process to create these materials generates a variety of waste materials, which include scrap hose and couplings as well as other rubber and plastic materials associated with the assembly process. These items all need to go somewhere if they can't be reused or recycled. The majority of these materials were ending up in the scrap yard or a landfill.

> We looked at fuel blending and other alternatives and then we found Covanta. With its Energy-from-Waste solutions, Covanta offered us flexibility.
>
> **Dennis Lynn**, Conservation Team Leader, Parker Hannifin Davenport

"We knew we needed to do more," said Dennis Lynn, Conservation Team Leader at Parker Hannifin Davenport. "Beyond the desire to not add to the landfill, the scrap yard was having trouble removing the metal wire that reinforces our hose. They basically wouldn't accept it any longer." Lynn and the Conservation Team worked diligently to find new options.

Mastering a New Approach

In operation since July 2016, Hose Products Division's new approach to recycling hydraulic hose has resulted in an ample amount of non-hazardous waste being shipped to Covanta. Over 200,000 pounds of non-hazardous waste has shipped to Covanta's Energy-from-Waste facility in Indianapolis, Indiana instead of local landfills. Once the waste arrives at the Indiana facility, it is entered into Covanta's high-temperature combustion process that destroys it at temperatures of 2,000°F, producing clean energy as a byproduct that is then used to feed the steam loop in downtown Indianapolis. The steam is used to heat nearly all downtown businesses, as well as Indiana University, Purdue University's Indianapolis campus and Eli Lilly, the area's largest pharmaceutical manufacturer.

Once the waste arrives at the Indiana facility, it is entered into Covanta's high-temperature combustion process that destroys it at temperatures of 2,000°F, producing clean energy as a byproduct that is then used to feed the steam loop in downtown Indianapolis. The steam is used to heat nearly all downtown businesses, as well as Indiana University, Purdue University's Indianapolis campus and Eli Lilly, the area's largest pharmaceutical manufacturer.

By identifying additional waste streams to include in the material sent to Covanta, including food and other non-manufacturing wastes, the Conservation Team anticipates they will be able to further reduce the amount of waste ordinarily sent to landfills over the next several years.

Besides making an impact on their sustainability goal, another benefit that the Davenport Con-servation Team expects from reducing waste sent to the landfill is facilitating the attainment of ISO 14001 certification for any customers requiring it. ISO's (International Standards Organization) 14001 certification serves as accreditation of an organization or company's environmental management program against a pre-established set of qualifiers.

In 2016, we sent 31 tons of waste to the landfill compared to a three-year average of 80 tons – that's more than a 60 percent reduction.

Dennis Lynn, Conservation Team Leader, Parker Hannifin Davenport

Building Blocks for Success

The achievements at Davenport have been noticed throughout the Parker Hannifin organization. "Earning the 2016 Green Teamwork Award validated this team's hard work," acknowledges Lynn. "Out of 55,000 employees, Parker Hannifin's global leaders recognized the Davenport team as leading the way in green initiatives and our global leadership continues to be a motivator to move the needle even further."

As a result of the great partnership and experiences at the Davenport facility, additional Parker Hannifin sites are evaluating potential partnerships with Covanta as well.
According to Lynn: "The road to zero waste-to-landfill is no easy task. By working with Covanta, we know that this goal is achievable."
For more information on Parker Hose Products Division products or services, please visit parker.com/HPD

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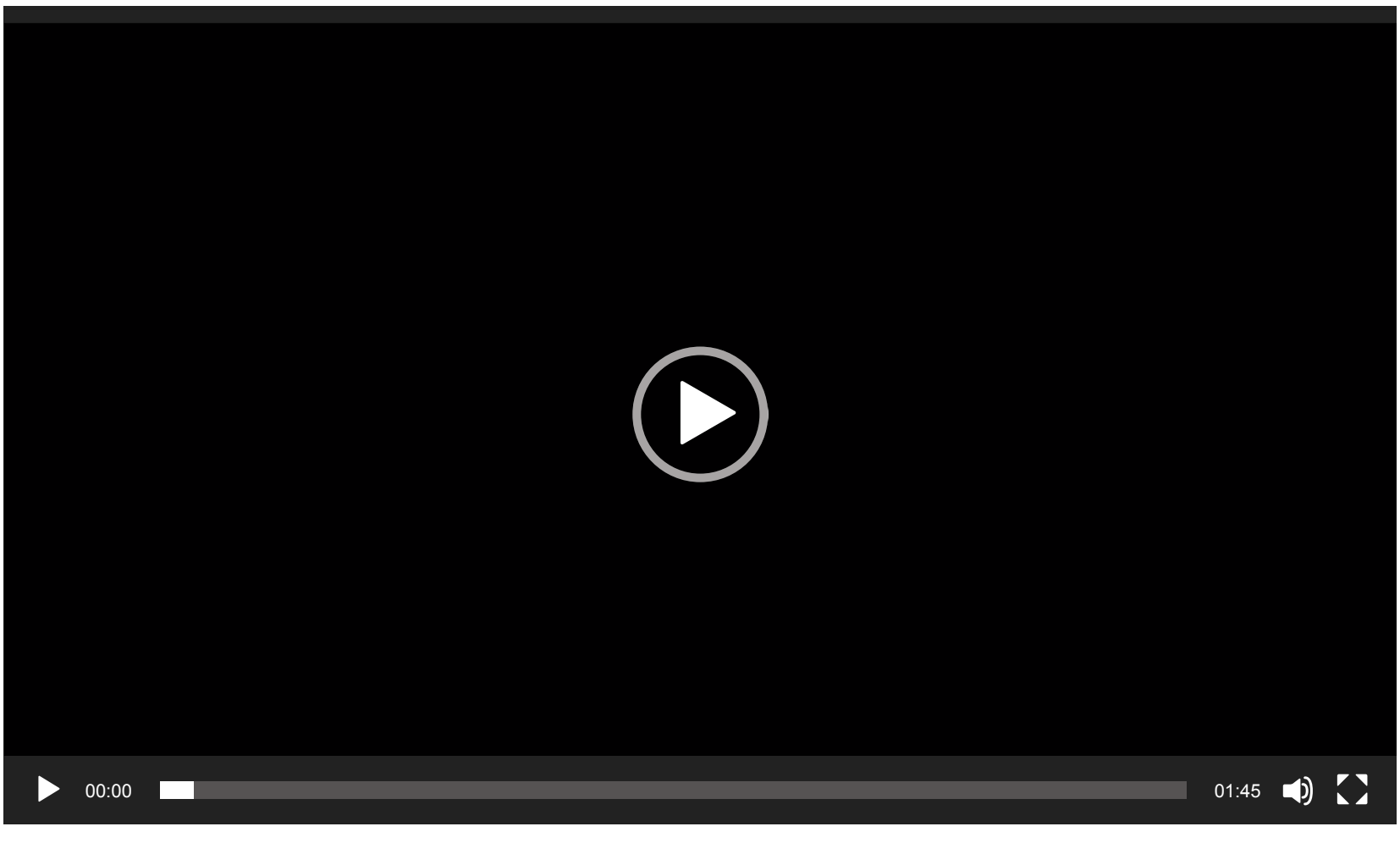
Case Study: Covanta's Sustainable Alternative to Landfilling

Rookery South Energy Recovery Facility

Covanta has partnered with the Green Investment Group (GIG) and Veolia to develop the Rookery South Energy Recovery Facility (ERF) in Bedfordshire, England, representing a major milestone in Covanta's U.K. development plan.

The facility—currently in the construction phase—represents a sustainable alternative to landfilling in the local community by using post-recycled household, commercial and non-hazardous industrial residual waste as fuel to generate clean electricity. Once complete, it will have the capacity to process 545,000 metric tons of residual waste per year while generating more than 60 megawatts of low carbon electricity for the national grid, powering the equivalent of more than 112,500 homes for one year.



During the three-year construction period, more than 300 jobs will be created and the local supply chain will be tapped for goods and services as much as possible. Once operations begin in 2022, Covanta and its partners are committed to contributing back to the local community near the facility through a targeted engagement plan. This includes developing a Community Trust Fund, a dedicated Woodland Creation Fund to support local tree plantings and the Rookery South Community Energy Initiative (RSCEI), through which Covanta will contribute 10 percent of the electricity costs of every household that qualifies to participate.

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SUSTAINABILITY REPORT

Covanta's Eight EfW Facilities in Florida Can Facilitate a Total of 5.3 Million Tons of Annual Waste Disposal

In 2018, Covanta completed the acquisition of the business that provides operating and maintenance services to the Solid Waste Authority (SWA) of Palm Beach County for two Energy-from-Waste (EfW) facilities located in West Palm Beach, Florida. Together, the two facilities process more than 1.7 million tons of municipal solid waste each year and generate enough electricity annually to satisfy both their own power requirements and those of approximately 74,000 homes.

Covanta's Eight EfW Facilities in Florida Can Facilitate a Total of 5.3 Million Tons of Annual Waste Disposal

Both facilities maintain state-of-the-art pollution control equipment, and the second facility also features a unique rooftop rainwater collection system that includes a two-million-gallon cistern. This system provides a portion of the water necessary to operate the facility, reducing the use of treated water.

This footprint expansion in Palm Beach—following the acquisition of the operating contract for the Pinellas County Resource Recovery Facility near Tampa in 2014—now brings Covanta's waste disposal capacity in Florida to a total of 5.3 million tons per year through the operation of eight EfW facilities in the state.

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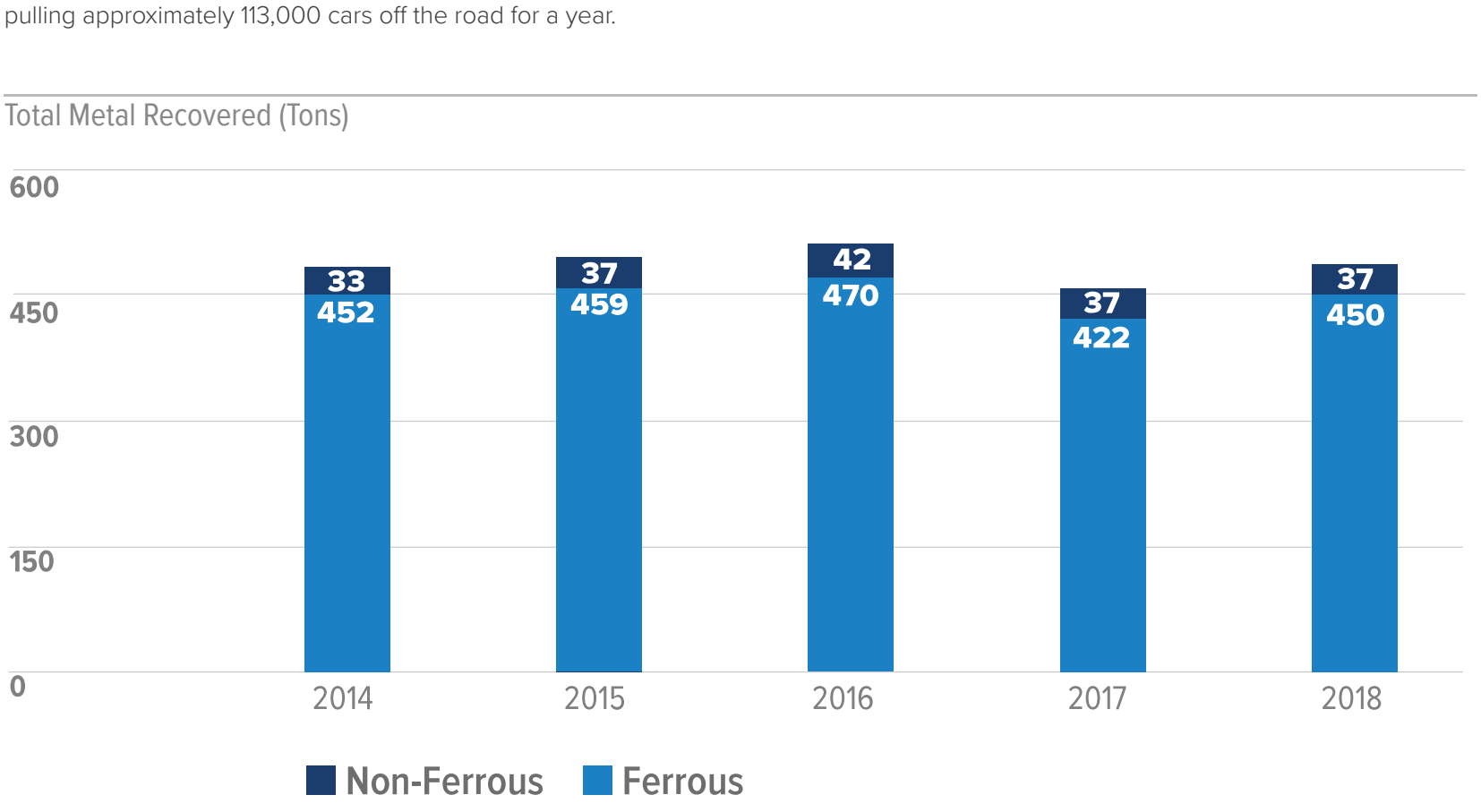
Materials Management

Recovering Materials

Covanta is continually seeking new and innovative ways to increase the value of waste and divert materials from the landfill. After combustion takes place in our EfW facilities, we recover valuable metals from the remaining ash for recycling.

Recycling metal recovers valuable natural resources and reduces GHG remissions, as the production and mining of new metals is a carbon-intensive process. We recover both ferrous metals and non-ferrous metals (such as aluminum, brass and copper). By recovering and recycling 500,000 tons of metal each year, Covanta's operations save more than 1.2 million tons of GHGs, or the equivalent of pulling approximately 113,000 cars off the road for a year.

Total Metal Recovered (Tons)



Since 2012, Covanta has made significant investments to recycle more metal from the waste stream, including 70 individual metal enhancement projects that have avoided landfilling over 100,000 tons of metal per year.

Our most recent focus has been on improving the quality of metals extracted from the ash for recycling. An important part of this journey has been the 2016 launch of commercial operations of our metals recycling and processing facility in Fairless Hills, Pennsylvania. The facility improves the quality of recycled metal and increases its value by using advanced processing techniques to recover, clean, sort and deliver an end product ready for the open market. The ferrous operation in Fairless Hills processes metal from up to 15 plants in six surrounding states, while the non-ferrous operation separates metal from more than 30 plants across 15 states.

Covanta Metals Management - Recycling Non-Ferrous Metal from Energy-from-Waste Facilit...

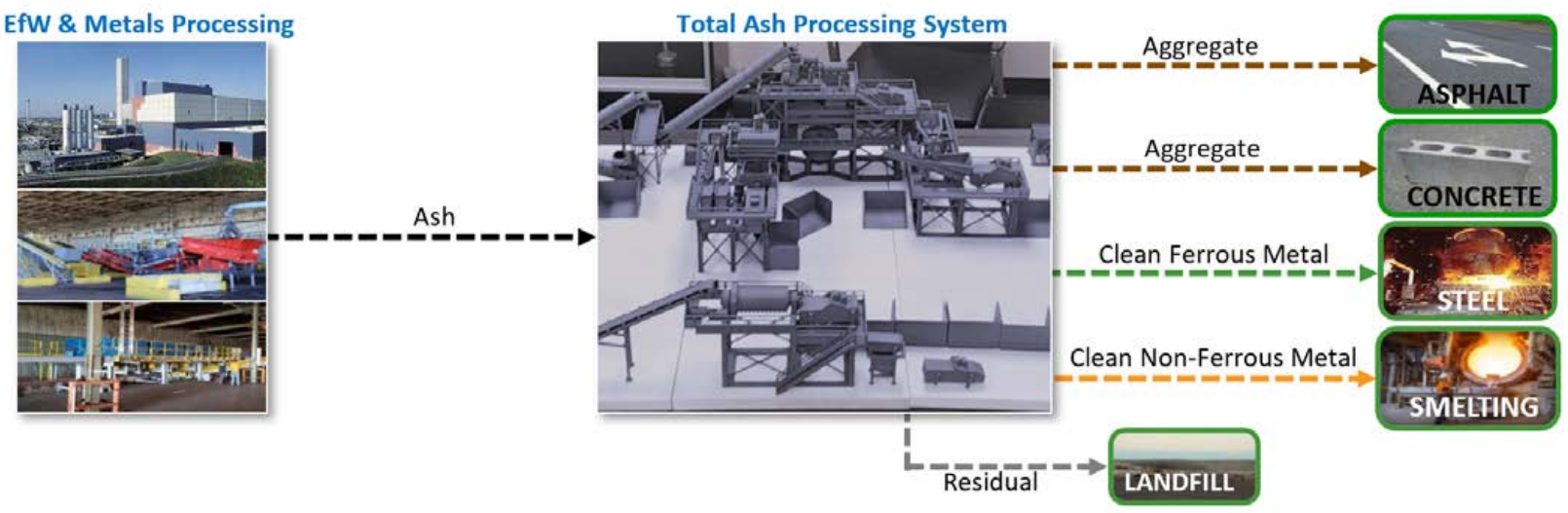
Recycling metals from EfW facilities avoids greenhouse gas emissions and recovers natural resources that would have otherwise been lost in landfills.

Total Ash Processing System (TAPS)

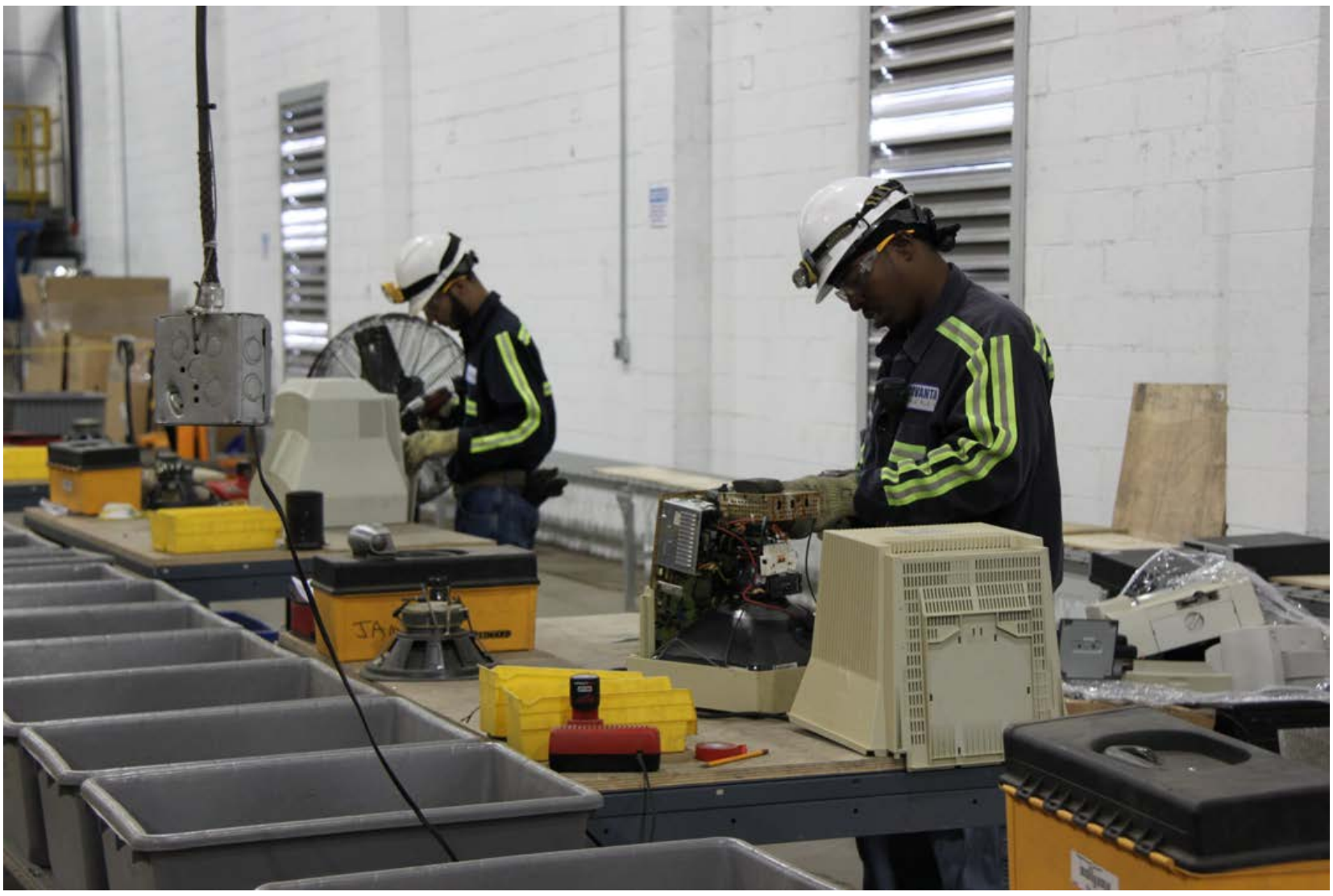
Covanta has long viewed ash reuse as a major opportunity to enhance our EfW plant operations while opening new markets. Building on the success of the Fairless Hills facility, we have taken another innovative step toward extracting the most value from post-combustion ash while diverting even more material from landfill by beginning constructing our first Total Ash Processing System (TAPS) in 2019.

TAPS is a unique new technology that further separates the ash from EfW facilities into its component parts. This enables increased recovery of small metal fractions and the recovery of aggregate for reuse as construction material, reducing the volume of ash requiring landfill disposal by as much as 65 percent. Once metals are removed from the ash and recycled, potential reuse applications of what remains include hot-mix asphalt for driveways and parking lots and ready-mix concrete for commercial use.

The first TAPS plant is in Fairless Hills, Pennsylvania, adjacent to Covanta's existing metals processing facility. It's designed to process over 400,000 tons of ash from multiple EfW facilities, recovering previously untapped value from these waste streams. We expect the new facility to pave the way for additional TAPS opportunities to further complement our EfW portfolio.



TAPS consists of a modular batch system to effectively separate aggregates and fine metal fractions through the use of high intensity magnets, eddy current separators, and specialty equipment.



Electronic Waste Recycling

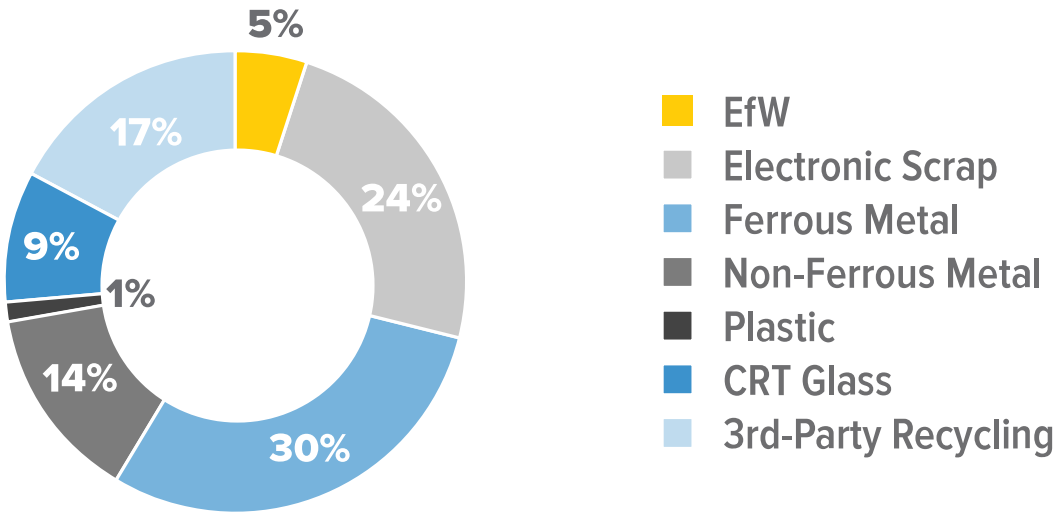
According to the U.S. EPA, electronic waste (e-waste) is the source of 70 percent of heavy metals—including mercury and lead—in landfills, presenting an ongoing risk to the environment. In response to the growing need for electronics recycling, Covanta established ECOvanta, an electronic waste recycling facility in Southwest Philadelphia, dedicated to safe, secure e-waste recycling that keeps pollutants out of landfills, reduces the effects of e-waste on the environment and prevents data from falling into the hands of those who might exploit it. We work with many states, counties and municipalities to collect more than 15 million pounds of old electronics per year in our e-Stewards-certified facility. We recycle or reuse more than 95 percent of that in accordance with our Electronic Waste Policy and Safety and Health Policy.

E-waste recycling facility featured in NowThis News in the series “One Small Step”.

What Happens to e-Waste?

Covanta Environmental Solution’s e-Waste operation in Philadelphia disassembles, sorts and shreds e-waste into separate streams that are sent to various downstream processors that specialize in different commodities. Only about 5% of the incoming waste is sent for energy recovery (e.g., mixed-in trash, wood, particle board cabinets). *Electronic scrap,* the shredded hard drives, circuit boards and computer parts we think of when we think of e-waste, makes up less than 25% of the incoming e-waste and is sent to specialty processors who can recover the valuable materials.

Fate of Processed e-Waste



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Case Study: Following the waste Hierarchy at Land O'Lakes

Here several team members stand around a line casualty bin that Covanta will later pick up, separate and process.

A Change for the Butter

Land O'Lakes, Inc. has been in operation for more than 95 years making everything from butter to milk to food for animals, doing business in all 50 states and in more than 60 countries. What began as a group of farmers coming together in Minnesota and Wisconsin to market and distribute members' dairy products, grew into an organization with almost 4,000 members including dairy producers, agriculture producers and co-op members, plus more than 10,000 employees. With a mission to preserve and use land more effectively, Land O'Lakes has a distinguished reputation for being a good corporate citizen. But simply being good wasn't good enough for Land O'Lakes. They wanted to do more.

Case Study PDF Download

This desire to do more was a key motivator for Josh Becking, EH&S Manager at the Land O' Lakes Dairy Foods plant in Kent, Ohio, who recalls: "When I first joined Land O'Lakes in 2012, with the exception of cardboard, most all other waste from this facility was sent to the landfill."

The Dairy Foods division is one of the most recognizable divisions of Land O'Lakes, producing cheese and butter in all forms from the pats used in restaurants, the stick or tubs sold in grocery stores and the large blocks used by the food industry.

Becking and his colleagues in Kent made some initial progress by recycling paper and plastics discarded in the facility's breakrooms. However, to make the meaningful inroads necessary to further reduce waste, they knew they needed a sound and reliable collaborator.

"We first began working with Covanta because they had a solution to our line casualty challenges."

Josh Becking, EH&S Manager, Land O' Lakes Dairy Foods

New Processes and Waste Removal Practices

For the past three years, the Kent, Ohio team has worked with Covanta to find ways to address the waste previously sent to landfill. "We first began working with Covanta because they had a solution to our line casualty challenges," said Becking. "Like with every production line, there are some items that aren't going to make it to store shelves. But we couldn't find a place outside of the landfill to take these items because no one could separate the product from the package." The line casualties are comprised of the plastic for the cup to hold the butter, the foil to cover the butter, and the butter itself which becomes grease as the product melts, making one butter pat potentially three different waste streams.

Undeterred by the multiple hard-to-recycle waste streams associated with one tiny product, Covanta's solution was for the line casualties to be fed into a shredder for de-packaging. As a result, all of the components are now separated, including the butter and grease. Then the plastic and foil are recycled, and the butter and grease are sent to the anaerobic digester which produces energy (biogas). The biogas provides electricity for the processing facility and heat which is reused as part of the digestion process.

To ensure a simple process for Kent employees, Covanta provides several containers to the team on a weekly basis. The containers are placed strategically throughout the production floor where employees deposit the line casualties for later disposal. To avoid spillage or melting of cold products, the containers are stowed in cold storage until pick up. Each container holds approximately 1,000 pounds.

The Kent facility also generates solids (fats and fat by-products) from its wastewater pre-treatment facility which are picked up twice a week via tanker trucks supplied by Covanta and taken for processing.

"We even have Covanta on speed dial for emergencies," added Becking. "For example, we send buttermilk to our facility in Pennsylvania. There was an issue at the plant and they were not able to accept our delivery. We called Covanta and those dairy contents were sent to the anaerobic digester, not the landfill." The Kent team originally sought to divert five-to-seven percent of the facility's waste from the landfill. "In the past few months we have reduced our waste to landfill by 20 percent," said Becking.

"There is always more that can be done, but, we're making progress. Covanta's been right there with us."

Hallie Davidson, Talent Acceleration Program Associate, Land O' Lakes Dairy Foods

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Empowering Employees

Change is never easy. Not all of the 167 people in the Kent facility were on board at first with the new waste management initiatives. "We're asking employees to do extra work to sort and place waste differently," said Hallie Davidson, Talent Acceleration Program associate.

"Hallie's full-time job is to ensure that we meet our landfill reductions goals," said Becking. "She is out on the floor every day asking employees what can be done so that we can get better–better at reaching our goals and also better at how we engage the employees in the waste reduction process. Hallie is the face and voice of the program. She helped create enthusiasm and support for the program."

In 2017, the Kent facility was recognized by the Land O'Lakes, Inc. corporate team as the overall winner among its U.S. facilities in the pursuit of improved sustainability.

"It was amazing to have corporate recognize us and promote our work to facilities around the globe," said Becking. "The recognition prompted many calls from other facilities to learn more about how we've been able to be successful."

"There is always more that can be done," added Davidson. "But, we're making progress. Covanta's been right there with us – helping, guiding and delivering on their promises to us."

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Inaugural Green Bond Issuance

Our Inaugural Green Bond Issuance Further Exemplifies Our Sustainability Leadership

As part of Covanta's commitment to and ongoing investment in environmental sustainability, in August 2019 we issued our first set of green bonds. The $50 million tax-exempt bonds—issued through the Pennsylvania Economic Development Financing Authority, with a 20-year maturity and a coupon of 3.25 percent—are in compliance with the Green Bond Principles and will finance eligible green expenditures at select facilities in Pennsylvania, specifically costs related to our metals recycling activities, construction of our new total ash processing system ("TAPS") and maintenance of our Energy-from-Waste facility.

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Materials Management

Covanta Environmental Solutions

From assuring the destruction of confidential materials to converting liquid waste into a clean renewable resource, Covanta Environmental Solutions (CES) helps more than 3,500 customers across the U.S. and Canada identify opportunities to minimize waste and find beneficial uses for materials that would otherwise be thrown away.

Covanta Environmental Solutions employees in Indianapolis

CES allows us to better serve our growing customer base of commercial and industrial waste generators. CES manages a variety of solid and liquid waste types that are collected through our own transportation logistics capabilities or through licensed third parties. In this way, we help our customers achieve their zero-waste-to-landfill, GHG-reduction or other sustainability/circularity goals while virtually eliminating their long-term environmental liability exposures.

CES offers environmental solutions in three focus areas:

- Sustainable Materials Management;
- Healthcare Solutions; and
- Field and Onsite Services

CES offers a variety of sustainable materials management services, including:

Packaged Goods Recycling:

Our innovative UnWrapp™ depackaging process provides a disposal solution for consumer-packaged goods that may be contaminated, expired or off-specification. The products may be composted, reused, repurposed or treated for discharge to the local publicly owned treatment works plant (POTW). In most cases, the packaging can be recycled. Beyond the environmental benefits, this process offers the ability to reduce liability risk for companies who need to assure the destruction of unusable materials.

In 2018, 5,700 tons of material were depackaged.

Wastewater Treatment:

Through screening, pH adjustment, oil-water separation, flocculation (or clumping of fine particulates) and sedimentation, we safely recycle wastewater back into productive use in cooperation with POTWs. Our in-house lab capabilities ensure proper treatment and compliance with all permits, offering a better alternative to liquid solidification for landfilling or deep well injection.

In 2018:

- 85 million gallons of wastewater were recycled through pretreatment;
- 9 million gallons of wastewater were beneficially reused; and
- 3 million gallons of oil were recycled

Covanta recycles millions of gallons of wastewater every year. Learn more here.

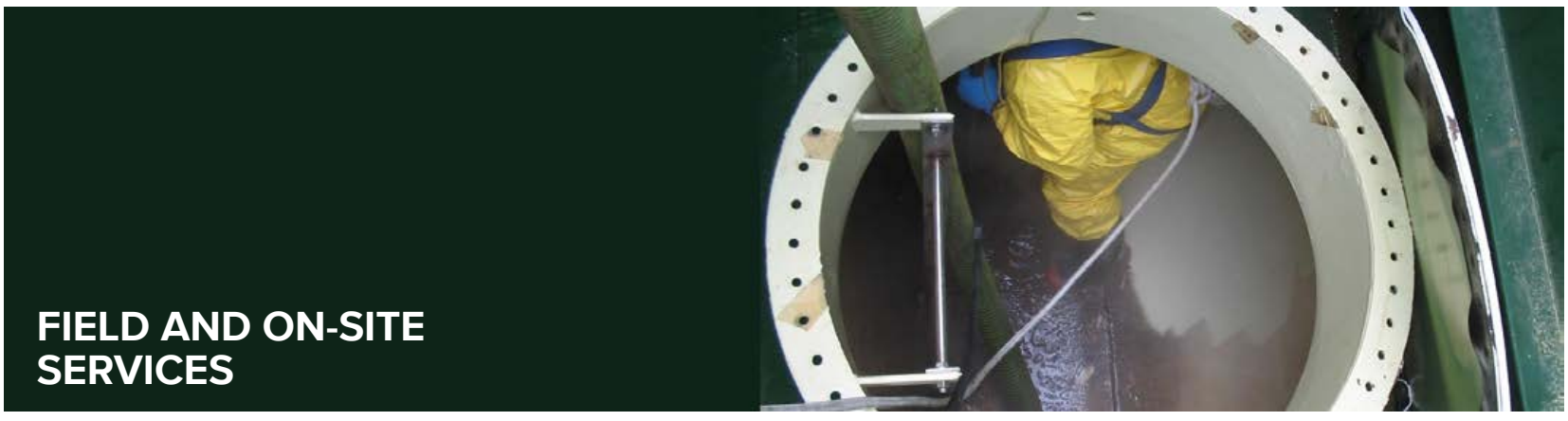
HEALTHCARE SOLUTIONS

We provide custom pharmaceutical waste solutions for consumers, medical professionals, law enforcement and healthcare facilities to protect water resources, prevent accidental poisonings and reduce the risk of drugs being misused—all while creating renewable energy. Our Drug Enforcement Authority (DEA) Reverse Distribution Network provides nationwide capabilities for reverse distribution and drug take-back programs. Since 2010, Covanta has disposed of more than 2,500 tons of unused and expired medications and pharmaceuticals from take-back programs.

Over 750 kiosks will be placed at designated locations across New York and California for the collection of unused medications.

In an exciting expansion of our capacities in this area, CES has launched two pilot pharmaceutical take-back programs in cooperation with the New York State Department of Environmental Conservation (NYSDEC) and the California Product Stewardship Council. These programs allow for kiosks and drop-off boxes to be installed at more than 750 retail pharmacies, hospitals and long-term care facilities across New York and California where consumers can return unused and expired medications for safe and secure disposal. Covanta is responsible for collecting, transferring, processing, and disposing of the collected medications in our EfW facilities.

We are working to expand this successful model through agreements with other municipalities and state agencies around the country. Locate your nearest drop-off location here.



FIELD AND ON-SITE SERVICES

We have the equipment and trained personnel necessary to safely and sustainably help our customers address their most demanding environmental challenges related to waste disposal. This includes in-plant cleaning, washing or removal of tanks and other vessels, lab packing of chemicals, safety consulting and decontamination.

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Case Study: Repurposing waste water at American Airline's Wheel and Brake Center

It's Not Just Dirty Water

Unless you work in the airline industry you probably never thought about what happens to tires on the plane when they have reached their end of life, or even more specifically, cleaning those tires. At American Airlines Wheel & Brake Center (AA W&BC) that's one of the many things they focus on. The AA W&BC in Tulsa, OK, processes over one million tons of tire rubber or about 25,000-26,000 tires a year. When the tires arrive at the facility, they have been used for a number of cycles and have grease, hydraulic fluid and break dust on them.

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To clean the tires to recover to usable rubber, the tires are run through a machine that resembles a car wash. That process generates waste water –"dirty water" by all accounts.

But what happens to the dirty water? "Before we started working with Covanta, we would have treated the dirty water to remove most of the contaminants, stored it, and then solidified and disposed of the water in the landfill," said Thelma Latimer-Davis, Manager, Environmental Engineering, American Airlines.

"Our work with Covanta is very important to this city. We're helping to establish a 'green' community."

Thelma Latimer-Davis, American Airlines Manager, Environmental Engineering

Dirty Water's Second Life

Today, the waste water from the AA W&BC gets a second life positively impacting a refinery just a short way across town. How did this happen? It started with a company that prides itself on grassroots-style, employee-driven and supported recycling programs. Through employee efforts the facility was recycling more than half of its waste in 2014. "We knew that there was more opportunity," said Latimer-Davis. "We saw other companies in other industries going to zero waste to landfill and knew that we had to find a way to get there too."

"It really is about partnership," added Teresa Sellers, Senior Environmental Engineer, American Airlines. "Recycling is such an important activity but without a good partner or partners and support from employees even the best efforts won't be successful."

It's no secret that the airline industry has had its share of economic troubles over the years. This cost-containment environment factored greatly into the team's journey to zero landfill. It was important to find a partner that could cost-effectively help achieve their goals.

"The fact that Covanta was located in Tulsa made this happen," said Latimer-Davis. "By partnering with them for our waste water recycling, we do not incur costs to ship water across state lines – they are less than 10 miles away."

In March 2014, AA W&BC started to transport its waste water to the Covanta Tulsa facility. The company now sends Covanta 800 tons per year. Once the waste water arrives at the Covanta facility, it is processed through the Liquid Direct Injection process which pumps the waste water through atomizing nozzles directly into the combustion chambers where the contaminants are destroyed and the water is vaporized, thus avoiding landfills and eliminating potential landfill leachate impacts. The steam produced by the Covanta Energy-from - Waste facility is transported through a high-pressure pipeline across the street to a refinery and offsets the refinery's use of fossil fuel to make industrial steam for its many processes.

"Our Liquid Direct Injection process handles a high volume of liquid waste," said Jennifer Minney, Southwest Region Sales Manager, Covanta. "The non-hazardous liquid from places such as American Airlines Wheel and Brake Center is injected directly into the 2000°F boiler, destroying any contaminants, and, in this case, providing a much needed solution to another business in the city."

"People are talking about what we've accomplished but most importantly the conversation about sustainability is continuing. Who knows what other great ideas are out there waiting for someone to bring to life?"

Thelma Latimer-Davis, American Airlines Manager, Environmental Engineering

Recognizing Importance Of Repurposing Water

In 2015, the AA W&BC earned the Henry Bellmon Award for "setting the standards for sustainability in Oklahoma" as a direct recognition for their waste water work. Sustainable Tulsa, the organization that sponsors the Henry Bellmon Awards, focuses on building a culture of

sustainability in Tulsa.

“Winning the Henry Bellmon Award, gives us the opportunity to show others in Tulsa what we’ve been able to do,” said Latimer-Davis. “It also demonstrates to the aerospace industry – which there is a lot of here – that zero waste-to-landfill can be achieved even in places where the main activity is maintenance and not manufacturing.” “Our work with Covanta is very important to this city,” Latimer-Davis continued. “We’re helping to establish a ‘green’ community. People are talking about what we’ve accomplished but most importantly the conversation about sustainability is continuing. Who knows what other great ideas are out there waiting for someone to bring to life?”

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SUSTAINABILITY REPORT

Quality Control: Inbound Waste Management

CES maintains a strict inspection and quality control process to ensure the safe, secure and monitored destruction of inbound non-hazardous waste streams.

Our clients begin with a material characterization form that describes the source of the waste and its expected components. This is accompanied by relevant supporting documentation—such as safety data sheets, product inserts and analytical results—to confirm that the waste is non-hazardous, according to the Resource Conservation and Recovery Act. Once our expert material profilers confirm that the waste is acceptable and safe for our operators to process, our compliance team inspects selected containers upon delivery to ensure integrity, treatability and conformance to the documented non-hazardous profile. Materials that pass inspection are sent to be processed for treatment, recycling or disposal. Materials failing inspection are deemed “off-specification.” In these situations, we will communicate with the waste generator to identify the material and reject the waste if it is confirmed to be hazardous.

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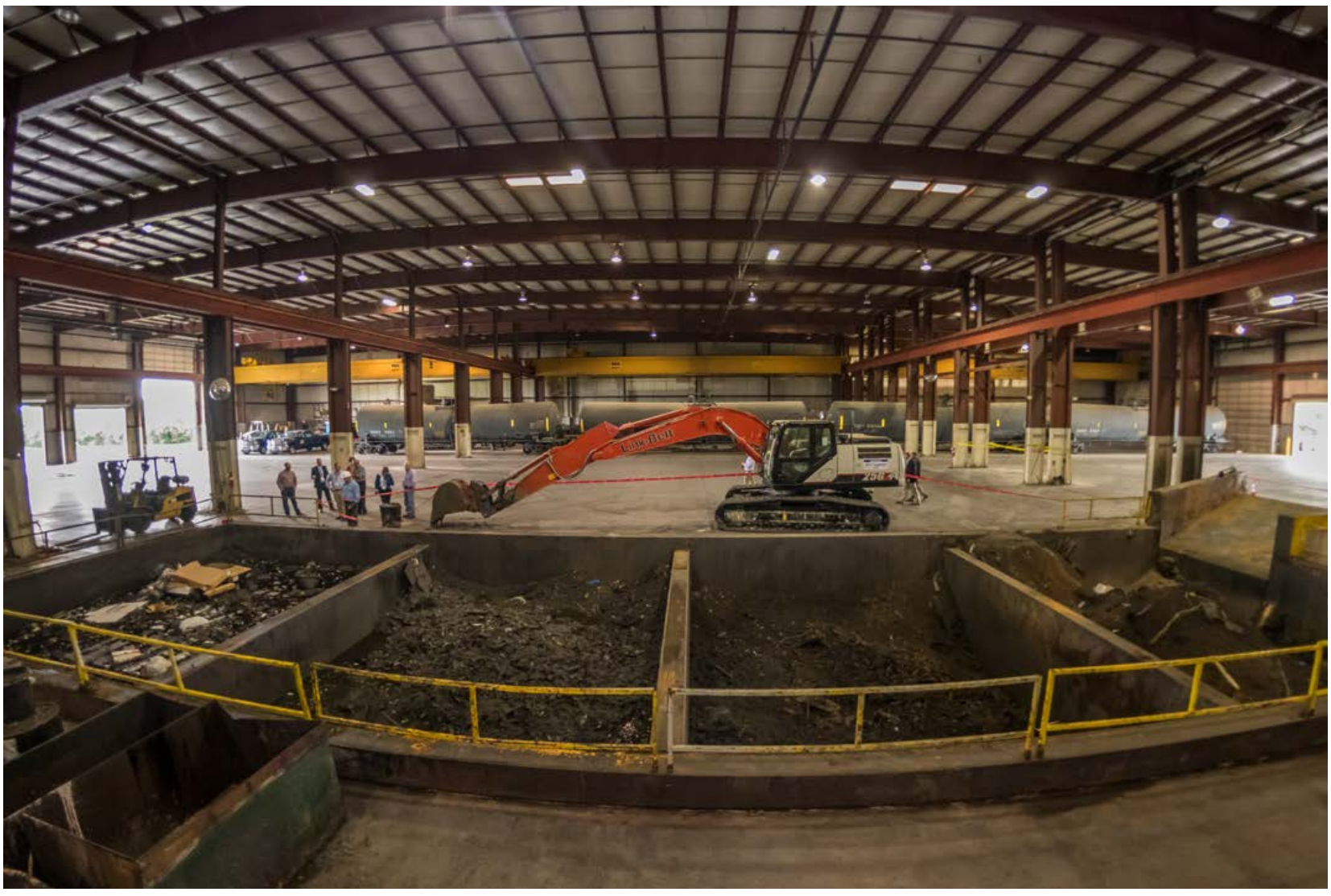
Expanding Material Processing in the Midwest



Covanta Indianapolis Ribbon Cutting

As part of our dedication to expanding sustainable solutions for our customers, Covanta Environmental Solutions opened two state-of-the-art material processing facilities (MPFs) in Milwaukee and Indianapolis in 2017 and 2018, respectively. In addition to helping customers reduce waste sent to landfills through energy recovery solutions, the new MPFs provide liquid and solid waste recycling and treatment; product destruction and de-packaging; tanker, railcar and industrial facility cleaning; and transportation and logistics services.

After 20 years of success at its former site in Milwaukee, the new MPF now has twice as much capacity and can treat more than 60 million gallons of liquid waste annually, returning clean, reusable water to local supplies.

In Indianapolis, the new MPF was built less than three miles from Covanta's existing EfW facility, allowing for improved efficiencies for new and existing customers. Co-locating EfW and MPF facilities allows Covanta to meet the needs of multiple types of customers in a coordinated way, facilitates easier inspection of in-bound loads and reduces processing congestion. It also allows us to convert waste that is difficult to handle (such as liquids) into a solidified form that's easier to transport directly to the nearby EfW facility for immediate processing.

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Beneficially Reusing Wastewater in Our Own Operations

In accordance with the waste hierarchy and our commitment to responsible water management for our own operations, Covanta utilizes certain wastewaters as direct replacements for certain processes that would otherwise use potable water at our EfW facilities, in our air pollution control equipment or for other facility uses. Depending on composition and contaminants, wastewaters may be mutually beneficial, offering a reuse solution for the generator and providing some properties that are useful in our own processes.

Learn more about how we're reusing wastewaters with industry partner Globalcycle here.

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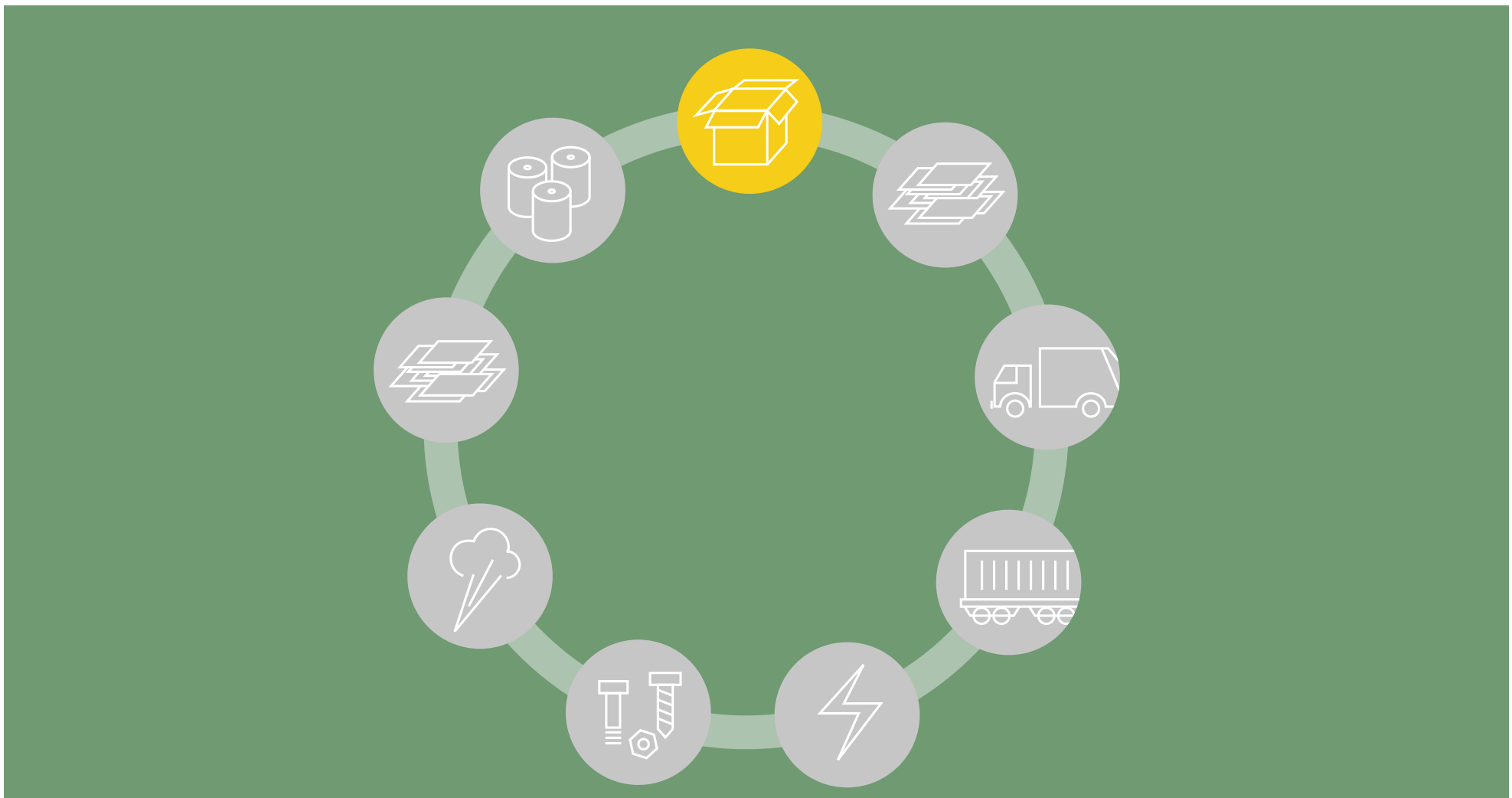
SUSTAINABILITY REPORT

Materials Management

Supporting the Circular Economy



NEW PRODUCTS

Greenpac Mill can produce 540,000 tons of lightweight 100% recycled linerboard annually. Some of the linerboard is used by Jamestown Container to make corrugated boxes for market.

WASTE MATERIAL

Diamond Packaging uses corrugated boxes from Jamestown Container. Diamond Packaging, the only American-owned folding carton manufacturer to achieve zero manufacturing waste-to-landfill status, corrugated waste from Diamond Packaging winds up back at Greenpac Mill as a raw material.

WASTE MATERIAL TRANSPORT

Greenpac Mill's and Diamond Packaging's unrecyclable wastes are sent to Covanta Niagara for energy recovery.

WASTE MATERIAL TRANSPORT

Other wastes arrive in sealed rail cars through our new intermodal facility.

ENERGY

Covanta Niagara generates enough electricity to run the facility and supply over 15,000 homes every year.

METALS RECOVERY

Ferrous & non-ferrous metals recovered from the ash are sent to recyclers for processing. That's enough ferrous metal to build two Peace Bridges between Buffalo and Canada.

ENERGY

Steam from the energy recovery process, is delivered through overhead pipes to the Greenpac Mill and other local industrial customers including Goodyear, Praxair, and Cascades Containerboard Packaging – Niagara Falls. Generating the 3 billion lbs. of steam delivered from waste saves the equivalent of 3,600 tractor trailers of fuel oil.

WASTE MATERIAL

Waste paper, collected from homes and businesses, supplies all of the fiber required by Greenpac Mill.

ENERGY

Greenpac Mill uses waste-to-energy steam produced by Covanta Niagara in its process, including for drying the 100% recycled paper.

One of the highest ideals of sustainable waste management is that products, components and materials are always kept at their highest utility and continually circulate in a restorative system. Thus, there is very little "waste" since materials are always used as inputs for another process. While many focus on materials as the core of the circular economy, there is a critical need for the energy to help power the reintroduction of end-of-life materials into new products as well as the safe and effective management of residuals that may not be suitable for circularity.

"Our employees believe in our partnership with Covanta. They enjoy coming to work and, most of all, they speak confidently about the company when they are outside of our buildings, which drives positivity in the community. We set out from day one to have a green presence and we continue to look for ways to improve and be more creative."

Murray Hewitt, Greenpac General Manager

One of the ways Covanta leverages its EfW offerings to support circularity is through co-location agreements. Covanta takes in the nonrecyclable waste from a neighboring industry partner and, in return, supplies the energy recovered from the company's waste to power its own business once again. To maximize engineering and cost efficiencies, the most successful partnerships are with companies that are within approximately two miles of an EfW facility.

A prime example of this circular model is the collaboration between Covanta's EfW facility in Niagara Falls, New York and Greenpac Mill, a local paper manufacturer. Steam generated by Covanta during the combustion of Greenpac's nonrecyclable waste is returned and used to dry the paper Greenpac produces. Roughly 200 miles to the east, an EfW facility owned by the Onondaga County Resource

Recovery Agency (OCRRA) and operated by Covanta has a similar symbiotic relationship with a local 100% recycled paper mill, converting the mill's recycling byproducts into electricity and capturing thousands of tons of metal for recycling. In turn, the mill provides a local outlet for recycled paper collected by OCRRA.

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Case Study: A green anchor within the circular economy

Operating at The Center of The Circle

Today, much of the world economy operates in a linear fashion: we extract resources from the earth, manufacture and produce materials, distribute them to customers who use them, and then discard the materials. Different economies have, to varying degrees, been able to return some materials back to the economy through recycling. For example, countries like Germany, Austria and the Netherlands are successfully recycling 60 percent of municipal solid waste (MSW). However, countries like the United States and Canada do far worse. Even when companies in the United States and Canada are successful at recycling, the result is products made out of the recycled materials that are of lower quality, a result called “downcycling.”

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In contrast, a circular economy aims to always keep products, components and materials at their highest utility and value, returning them back into the market at the end of their first lifecycle at the highest level possible. Nearly every step of a circular economy requires an energy input and leftover waste can help meet this need.

A significant example of a circular economy in practice today can be found in Niagara Falls, New York and is the direct result of companies colocating with an Energy-from-Waste (EfW) facility. Here, six different companies from a variety of industries are connected to Covanta Niagara, a pioneer in the modern Energy-from-Waste industry that began converting refuse into clean, renewable energy in the 1980s. Through these colocation partnerships, Covanta supplies steam generated through processing up to 2,250 tons of waste per day to the neighboring businesses and takes in nonrecyclable waste in return to add to its feedstock. In many ways, it can be said that several of these businesses benefit from other’s inputs and outputs.

“The reason colocation works for us is that we’re able to secure a predictable price [for exporting steam] that is potentially higher than what we would get for a wholesale energy price on the electrical grid. That is attractive to our investors.”

Dave Burke, manager of export steam sales at Covanta

“From the customer’s perspective, they’re likely going to get a reduced price on their energy and there are the ancillary benefits of being able to send their waste to us and avoid landfills. Also, by providing turnkey steam for our clients, it eliminates the need for them to own and operate a fossil-fueled boiler house, creating a competitive advantage by allowing these organizations to focus on their core business.”

Following the Inputs and Outputs

An example of the colocation and circular process begins in Niagara when bales of waste paper collected from homes and businesses are delivered to Greenpac Mill. Considered the most advanced and largest facility of its kind in North America, Greenpac Mill manufactures a lightweight linerboard made with 100 percent recycled fibers and has an annual production capacity of 540,000 tons. The linerboard is produced with significantly less water and less fiber than similar strength paper, making Greenpac's product the strongest fully-recycled linerboard in North America. But not every bit of paper sent to Greenpac Mill can be used.

So, what happens to the paper that can't be used to create the linerboard? It is sent to Covanta Niagara where the output of unusable paper becomes the input for energy recovery.

When the unrecyclable waste from Greenpac Mill arrives at Covanta, it is mixed with other waste and metered onto the state-of-the-art grate system where the combustion process occurs. During the combustion process, water in steel boiler tubes is heated up and converted into high temperature steam (energy recovery) and is sent back into the community as electricity to supply over 15,000 homes a year. Steam generated in the process is sent to the mill via a dedicated line built just for Greenpac Mill, where it is used for drying paper in the manufacturing process. Additionally, the steam is distributed to other companies along the steam loop including Praxair, Goodyear, Niacet and Norampac, for use in their production processes. In this way, unusable paper and other non-paper contamination become the input for energy recovery in the form of steam, which is then used as an input for other processes at the companies in this circular system. And don't forget the linerboard that Greenpac Mill makes. Local companies such as Diamond Packaging of Rochester, New York use boxes made from the Greenpac linerboard. Diamond Packaging is the only American-owned folding carton manufacturer to achieve zero manufacturing waste-to-landfill status. Some waste materials from Diamond Packaging becomes part of the bales of waste paper sent to Greenpac Mill to begin the process again, and any non-recyclable wastes are sent to Covanta for energy recovery. By moving products via pipe-bridge and short transportation, there is a great improvement in the carbon footprint for these colocated businesses. In fact, by opting for EfW conversion rather than the landfill for its residuals, Greenpac Mill avoids the emission of close to 12,000 tons of CO_2e (carbon dioxide equivalent) just by itself. That's comparable to removing 2,500 cars from the roads for a year. "You could call us the 'green anchor' for this community," said Kevin O'Neil, Covanta Niagara's business manager. "Essentially, we are a utility for these businesses and our steam keeps them going so they can employ more than 600 people in good paying manufacturing jobs."

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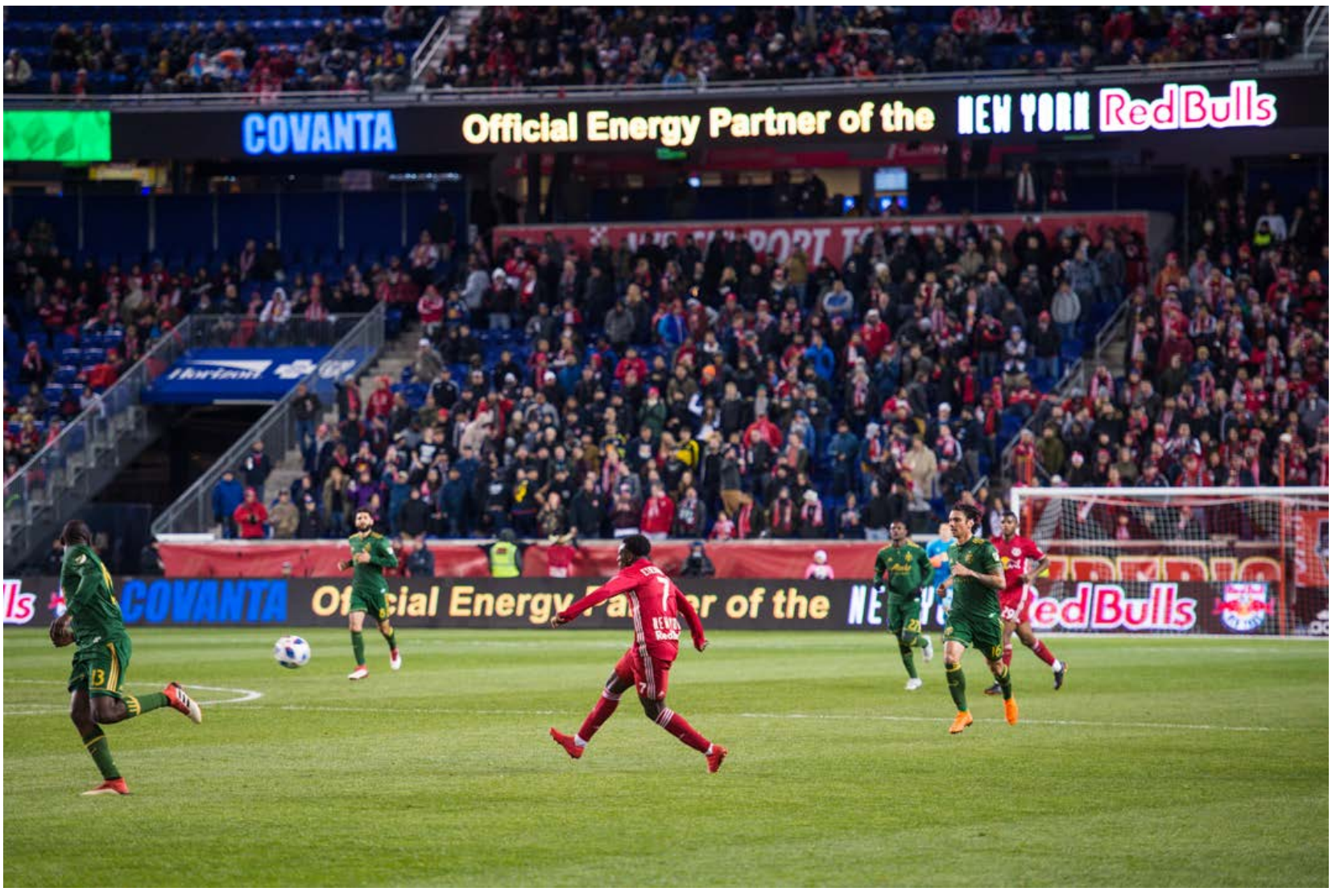
SUSTAINABILITY REPORT

Delivering Renewable Energy to the New York Red Bulls



In 2018, Covanta was proud to be named the Official Energy Partner of the New York Red Bulls, the Major League Soccer team based in Harrison, New Jersey. Covanta Essex in Newark, New Jersey powers Red Bulls Arena with 100 percent renewable Energy-from-Waste. The Red Bulls will save more than 5,000 tons of carbon dioxide, an amount equivalent to the annual carbon that is offset by a forest over six times the size of New York City's Central Park. Additionally, Covanta's electricity results in a further net lifecycle greenhouse gas reduction of 9,500 tons by keeping waste of out of landfills – the same savings achieved by pulling 1,800 cars off the road.

Covanta is also sharing its story with visitors to Red Bull Arena through LED graphical displays and videos visible throughout the stadium.

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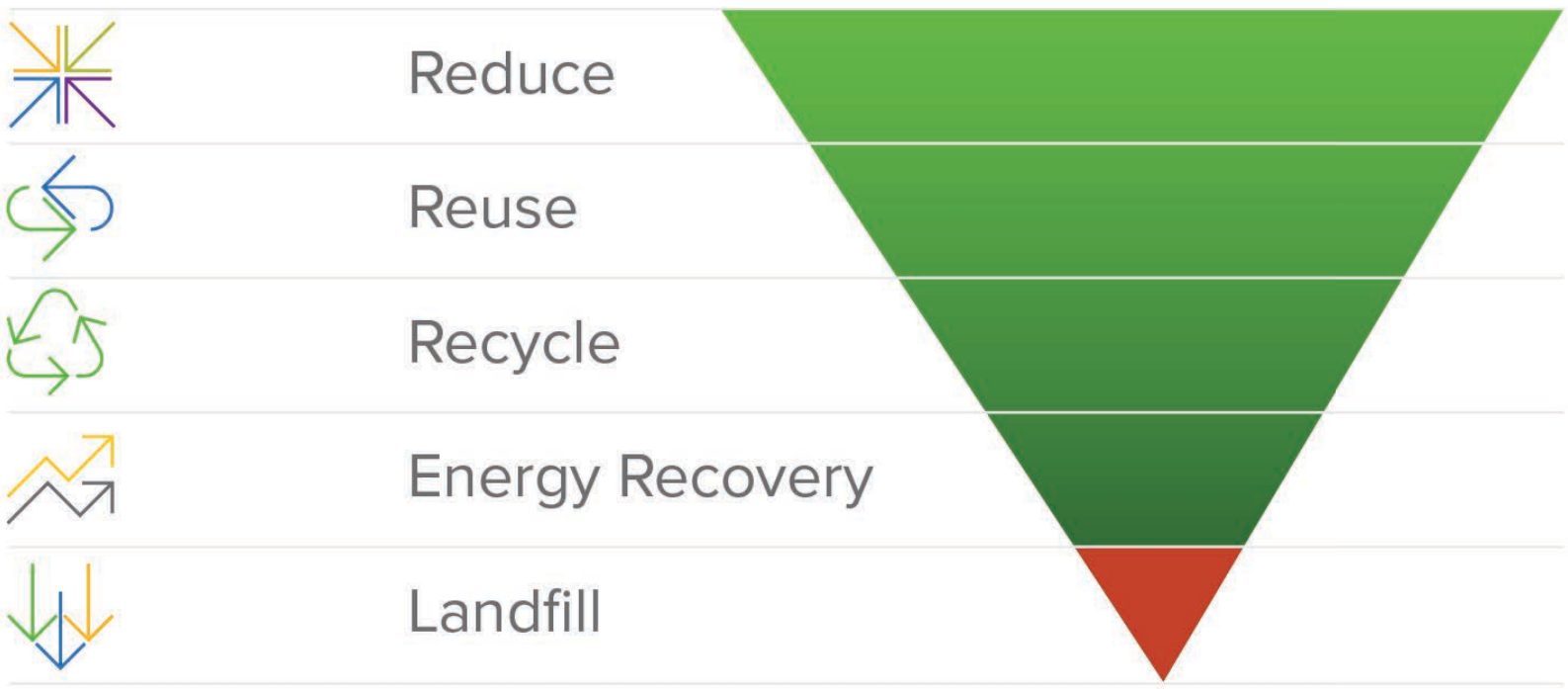
Materials Management

Zero Waste to Landfill

One pathway to a more circular economy is through "zero waste to landfill" (ZWTL) which, at its core, is exactly what it sounds like: a strategy to divert all waste from disposal in a landfill. Businesses are achieving this goal by moving up the waste hierarchy: reducing materials consumption and waste; reusing materials; recycling, composting and using anaerobic digestion; and then, for anything left over, recovering energy through Energy-from-Waste (EfW) facilities so that nothing is wasted.



The waste management hierarchy

Through our EfW and material processing facilities, Covanta works closely with our customers and municipal partners to address their waste disposal challenges. Whether a short-term contract that provides for sustainable disposal (such as a product recall) or a long-term partnership that facilitates the achievement of ZWTL goals, we have the technical expertise, capacity and infrastructure to develop tailored solutions for our corporate clients. EfW is a critical part of many companies' efforts, effectively capturing the energy value from materials that cannot be recycled while reducing costs and environmental impact.

Our process provides our customers with confidence and credibility in the claims they make about their ZWTL performance. Third-party verification through independent audits is available to assess the validity of a company's ZWTL claims. For more information, please see Covanta's white paper, *ZWTL Verification*.

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Case Study: J+J Flooring's zero waste-to-landfill solution

Designing A Solution For Zero Waste-To-Landfill

Imagine that you are a competitive long-distance runner. You know that the finish line is just over this last hill. As you tighten your muscles drawing the last power you have to make it up the hill, the exhaustion hits you and you are suddenly unsure if you will actually make it to the end. But you do! That's where J+J Flooring Group, a leading manufacturer of commercial specified flooring, was just two short years ago. Not on the last leg of an actual marathon, but facing the last major hurdle in its efforts to reduce the company's reliance on sending waste to landfills.

"We needed to complete the cycle and we knew that something could be done with this last bit of material. We believed that it was better to get energy from it than bury it in a landfill."

Russ Delozier, J+J Flooring Group Director of Sustainability

Making Something From Nothing

J+J Flooring Group was founded almost six decades ago by Tom Jones and Rollins Jolly who realized there were advantages by going into business together. The company focused on putting its people first, producing products with pride, providing value to customers and making a difference in the community – a set of values and a mission it continues to uphold today.

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A milestone for the company came in the early 1990s when it created the "Green Team" comprised of employees focused on sustainable processes. Over the next 24 years, through effective reuse, recycling and repurposing methods, the company systematically addressed areas within its plants and office space to reduce their impact on the environment and significantly decreased the amount of waste the company directly sent to local landfills.

Despite all of these efforts, the team found that there was still some waste that was going to the landfill.

"That's when we made a conscious decision to find a way to get to zero waste-to-landfill," said Russ Delozier, Director of Sustainability, J+J Flooring Group.

New Partner With A Solution

Delozier and his team researched possible solutions and partners to get J+J to landfill-free.

"When I visited their plant in Dalton, Ga. I was impressed," said Hugh Moore, Southeast Regional Sales Manager for Covanta. "We get a lot of calls from companies that say they are close to landfill-free but they have a lot of work still to do. That was not the case with J+J. In fact, they are the model story – they walked the walk of getting to zero waste."

Delozier and this team were equally impressed with the Covanta Huntsville, Ala. plant during their tour and the two teams agreed to work together. But J+J had one more challenge back in Dalton before the partnership could begin. The city of Dalton has a flow controlled process for its landfills so businesses are prohibited from sending waste out of the county. The new relationship with Covanta would require J+J to transport waste not only out of the county, but across state lines.

"We had several good discussions with the local government officials," said Delozier. "It was really about explaining how the material we were planning to move to Covanta was not 'waste' per se but actually 'energy'. Eventually it worked out." Moore added, "Not too many businesses would take on such discussions with local governments about waste management but Russ and his team were ready for that challenge! And even though there are transportation costs associated with going to Huntsville, they are willing to do it because it takes the waste out of the landfills and allows it to be converted to energy to benefit others."

Now any waste at J+J's Dalton, Ga., campus that cannot be recycled, reused or repurposed – approximately two percent of its total waste – will be sent to Covanta. Since J+J started shipping materials to Covanta, they are transporting about 11 tons of waste material to Huntsville every 6-8 weeks.

Once at Huntsville, the material is sorted and then processed to make steam. The steam travels through a six-mile pipe to the Red Stone Arsenal in Huntsville providing heat and cooling to the buildings. The Redstone Arsenal, a U.S. Army garrison, services a number of tenants including the Army Materiel Command, the Missile Defense Agency of the Department of Defense and NASA's Marshall Space Flight Center.

J+J's zero waste achievement is not just for manufacturing waste. It also includes all waste collected from the company's Dalton administrative headquarters and manufacturing campus (more than 950,000 square feet). Waste is collected from all bathrooms, break areas, offices, conference rooms, design studios and other areas.

Going A Step Further – Certification

For J+J, a company that prides itself on sustainability and green processes, just being able to state that they were zero waste-to-landfill was not enough.

"There's value in a third party verification or certification of this achievement," said Delozier. As the team soon found out, certification is not a simple task.

Third party verification is an independent audit that assesses the validity of zero waste-to-landfill claims. The process looks both at where the waste has gone in the past and the management processes in place. This second point is important: the verifier wants to make sure that a business will sustain past performance in diverting waste from landfills.

"The certification process was thorough, tough and well worth it," said Delozier. "GreenCircle, the vendor we selected to provide the certification, looked at our material flow analysis and even spent time with our vendors and our vendors' vendors."

In May 2015, J+J received its official certification from GreenCircle, becoming the first commercial flooring manufacturer in the U.S. to earn this distinction. This achievement is five years ahead of the company's initial goal of being 100 percent landfill-free by 2020.

"My advice for other companies on this journey – buckle up!" said Delozier. "Truly, you need to be committed to it because it's not easy. It takes time, patience and funding. Identify a waste champion with authority to make decisions throughout the process and have a good flow diagram of your organization showing where the waste is…and ultimately it will get easier every year."

Not Slowing Down

Not unlike the marathon runner who draws on his last bit of energy to cross the finish line breathing deeply, sore and exhausted but vowing to run the next race, J+J is not done yet.

"We still have elements of our 20/20 sustainability vision – a set of environmental performance goals we aim to achieve by 2020 – to complete," said Delozier. "It's a never-ending journey, but it's an important one."

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Case Study: Helping Subaru go zero landfill

When you open Born Green, an environmental overview from Subaru of Indiana Automotive, Inc. (SIA), the first thing you read is: “Being an environmental steward means you are always thinking about the future. This forward-thinking has helped SIA achieve many firsts in our industry.”

One significant first for SIA was to earn the title of the first automotive assembly plant in the U.S. to achieve zero landfill status, with some assistance from Covanta, a world-leading provider of renewable waste and energy solutions.

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That was in 2004, two years ahead of its parent-company-driven schedule.

And the company continues to maintain this mindset today, according to Born Green, “ensuring that vehicles are green from the moment they are ‘born.’ Every Subaru built at SIA is built with environmental stewardship as a guiding principle.” The manufacturer of Subaru Outback and Legacy vehicles is often referred to as a pioneer in adopting the holistic reduce, reuse, recycle, recover (the four “Rs”) mantra of the waste management strategy. Commenting on this well-deserved reputation, Michelle Long, Assistant Manager of Subaru’s Environmental Compliance & Energy Section, said: “We were given the tools to pursue zero landfill before others and we invested in it. Today, we’ve had thousands of companies visit the site to see what we do, so yes, you can say we’re living up to the ‘pioneer’ title.”

But how did this 3.5 million square foot car manufacturing plant working with huge coils of steel, and literally thousands of tons of metal, glass, electronic components, and all the associated packaging, achieve zero landfill?

“There are five-to-10 large industrial businesses in the area but we stand out to people looking for work because we’re committed to preserving the environment. Associates like working here – they’re proud of it.”

Michelle Long, Subaru Assistant Manager Environmental Compliance & Energy Section

Getting Dirty and Creative

The journey began back in 2002 with a group of dedicated, enthusiastic associates who seized the corporate directive to reduce waste and get to zero landfill. The first order of business was a series of carefully orchestrated “dumpster dives” to examine in minute detail what was being thrown away. Accomplishing this entailed spreading the plant’s trash out within a controlled area to analyze the content and understand its origin and contribution to the car manufacturing process. This very visual display of its waste stream enabled SIA to evaluate opportunities to reduce consumption, eliminate unnecessary packaging, utilize reusable containers, and develop new markets for recycling of by-products through innovative and efficiency-oriented techniques.

This same spirit of passion and enthusiasm in meeting challenges head on continues today. SIA’s nearly 4,500 associates continue to play a vital role in sustainability. “All associates – whether they work in HR, Legal or the plant -- are given environmental goals or challenges,” said Long. “The spirit of Kaizen – or continuous improvement – is alive and well within our walls. Associates are encouraged to think about ways to do things differently. And they are rewarded for their creativity and dedication to sustainability. Prizes help keep the ideas coming!”

Partnering for the Long Haul

Getting to zero landfill also meant enlisting Covanta as a strategic partner.

“We began working with SIA in 2004,” said Dave Schroeder, Director of National Accounts for Covanta Environmental Solutions. “Together we developed best practices in sustainable waste management and provided the plant with a local Energy-from-Waste (EfW) disposal solution.” There are 215 pounds of waste generated per vehicle at SIA’s plant. Approximately 185 pounds are recyclable steel. For the non-hazardous waste left over after efforts to reduce, reuse and recycle are exhausted, SIA ships approximately four percent of the total waste, or 3,000 tons, to Covanta for disposal and energy and metal recovery each year. From 2000 to 2015, SIA reduced the amount of waste per vehicle produced by 53 percent and cut costs to the tune of millions of dollars each year through adoption of the four “Rs.”

“At our Indianapolis Resource Recovery Facility, SIA’s non-hazardous waste is diverted from the landfill and used as fuel to create steam power for Indianapolis’ downtown heating loop,” said Schroeder.

Long added: “Leveraging Covanta’s EfW facilities benefits the local community and advances our sustainability and zero landfill initiatives. We’ve also seen value within our business from our partnership with Covanta – increased product quality, efficiency of the line and cost reductions are just a few examples.”

The benefits also extend to reputation and factor into recruitment. “Our zero landfill status provides a positive image for SIA in the Lafayette area,” said Long.

Lasting Legacy

As champions of sustainability and zero landfill, SIA encourages companies from other industries to visit and study their processes. The company also started the Zero Landfill Pledge to encourage others to join the effort.

When asked to provide guidance to companies interested in launching their own successful zero landfill programs, Long said, “There are three major steps to consider: One, create an inventory of waste, understanding where it is generated and what happens to it. Two, make the program your own, customizing it to what works within your culture. And three, get associate/employee input – some of the best ideas come from the workforce. It’s also important to celebrate your successes, both large and small. It will help motivate you for each new step along the way.”

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Case Study: Becoming the first Green Circle Certified microelectronics company

Manufacturer Creates Tiny Parts, but Drives Big Environmental Impact

Nestled in the city of Rolla, Missouri – population of just over 20,000– is a global technology leader in developing and manufacturing innovative materials and processes used for the reliable fabrication of cutting-edge microdevices used in tablet computers, smartphones, digital cameras, and televisions. From cell phones to tablets to televisions, Brewer Science's anti-reflective coatings revolutionized microelectronics manufacturing and ushered in today's high-speed, lightweight electronic devices that are now so often taken for granted. Beyond driving innovation in the microprocessor industry, the company is leading the way in sustainability for the industry and for its local neighborhood.

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The Mission: Run an Environmentally Responsible Organization

As early adopters of sustainability and environmental responsibility, Brewer Science leaders made finding ways to better the environment a priority for the business. The company recently published an e-book about its efforts titled: "Moving Forward: A Story of Sustainable Manufacturing" which highlighted some early achievements including: converting 520,000 pounds of hazardous waste into fuel that could replace natural gas and coal; gathering more than 597 tons of waste for recycling through its mini-bin program; and collecting 811,000 pounds of appliances, electronics and tires through a community program – all of which would have gone to the landfill!

"Since we began our efforts almost 20 years ago, we've done a lot of work with each part of the facility (manufacturing, shipping and the workshops) to identify waste streams and educate our employees about why this (recycling/reuse) is the right thing to do," said Rory McCarthy, Environmental Manager, Brewer Science. "We even had employees involved in 'dumpster diving' to assess what materials could be used outside of a landfill." Camron Stover, Environmental Engineer, Brewer Science, added: "As part of our culture, new employees are engaged on sustainability and our way of working right from the new hire orientation. It's not a matter of a few executives pushing through a pet project, but rather, the desire to be an ecofriendly company has been a truly grassroots effort. It is the committed employees who have made sustainability and environmental stewardship part of the Brewer Science brand."

The team wanted to take the next step and reach a key sustainability goal of getting to zero waste-to-landfill and to be certified by a third-party for achieving this milestone. However, the challenge was effectively handling and managing the waste that couldn't be recycled, reused or repurposed. Approximately, 7% of the waste (such as cafeteria and bathroom waste, as well as floor sweepings) was keeping the company from achieving its goal of zero waste-to-landfill.

Persistence Leads to the Right Partner & Solution

In 2013, Brewer Science and Covanta began discussions about how a service partnership would enhance Brewer Science's sustainability initiatives and help reach its zero waste-to-landfill goal. "It took almost two years to get the relationship going," said McCarthy. "We did several visits to Covanta sites to see their functionality, check compliance and to ensure that we had the right partner who shared our overall goals and vision for the environment."
But persistence paid off and in 2015 the discussions resulted in the transition and implementation of a sustainable waste solution. The new partnership included the installation and operation of new equipment for the bulk accumulation and transport of compacted materials to Covanta's Energy-from-Waste (EfW) facility in Tulsa, Oklahoma.

One piece of new equipment was a large compactor. The compactor was selected to facilitate the in-plant collection and accumulation of non-recyclable materials as well as to optimize load weights of outbound shipments to Covanta. Its large size enabled Brewer Science to reduce the number of hauling requirements. And no one can miss the large signs/banners that remind employees of the power of zero waste-to-landfill.

"The compactor was an important step because it gave us a place to put the waste we couldn't recycle or reuse," said McCarthy. "It served as a visual reminder of what we were doing to get to zero waste-to-landfill and it got our employees even more involved since 'feeding' the compactor properly became a slogan to educate employees about what should and shouldn't be placed in the compactor."

Since its installation, the compactor is picked up every four months by a third-party hauler contracted by Covanta. When the compactor, filled with non-recyclable waste items, arrives at the Tulsa plant, it is mixed with municipal solid waste and metered onto the state-of-the-art grate system where the combustion process occurs. During the combustion process, water in steel boiler tubes is heated up and converted into high temperature steam. The steam is then used to power a turbine generator that produces clean, renewable energy that is sold to Public Service Company of Oklahoma for use in the surrounding communities. "Before the compactor, all of this waste was going to the landfill," said Stover.

With a viable landfill diversion strategy that has sent approximately 77 tons of non-hazardous waste to Covanta Tulsa over the past two years, Brewer Science achieved a companywide goal. This milestone was independently verified by GreenCircle Certified, LLC, a third-

party certifier of environmental and sustainability claims. After its completion of extensive audits to verify Brewer Science's sustainability achievements in contributing zero waste-to-landfill, GreenCircle certified the company for both 2016 and 2017. Brewer Science is the only business in the microelectronics and semiconductor industry to earn this recognition.

As noted in Brewer Science's e-book: "This certification is more than a major milestone or a point of pride. In many ways, it represents years of effort and dedication from people at all levels of the company, united and forming a collective mindset to reduce waste and remain stewards of the environment."

Sustainability That Plays

While achieving zero waste-to-landfill certification wasn't easy, it's also not a one-shot deal. "While we celebrated our success and thanked all of our employees for getting us to certification – twice – we can't sit still," said McCarthy.

"Continually driving sustainability is part of the Brewer Science DNA and as our customers are getting increasingly more savvy they expect more from us," he adds. "We take it seriously – not only by finding new ways to improve our efforts within the facility, but we also participate in Adopt-a-Highway programs and collaborate with other companies and the city to bring environmental programs to the forefront in the Rolla community."

Reflecting on the journey that brought them to being the only zero waste-to-landfill certified company in the semiconductor / microprocessor industry, McCarthy credits founder Dr. Terry Brewer who saw the immediate return on investment for the environment, despite the incremental costs incurred by sustainability programs.

"We believe that protecting our environment and conserving resources are essential to running a successful, mindful business," said McCarthy. "The key to success is having leaders who understand that there are other forms of measurement outside of the accounting numbers. We're doing this today for the people of tomorrow."

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Case Study: Tackling the last 5% of waste at Bama Companies

The Perfect Recipe for a Sustainable Future

You might not know the name The Bama Companies, Inc. (Bama) but you've probably eaten one of its biscuits, hand-held pies or pizza dough at leading restaurants across the country. Supplying oven-ready products to customers in over 20 countries utilizing facilities based in the U.S., China and Poland, Bama has grown to become a leading innovator of wholesome bakery products, catering to some of the largest and most well-known restaurant chains in the world.

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From its beginnings in the 1920s, Bama, headquartered in Tulsa, OK, has built a manufacturing organization dedicated to innovation and quality. A key component of this dedication is the vision, drive and commitment from Bama's Owner/CEO, Paula Marshall – to be engaged as a company in continual improvement and minimizing waste – even before the practices of recycling and reusing materials became established elements of successful sustainability programs. Over time, Bama has been able to repurpose its food waste for animal feed and has evaluated and improved the packaging of its own products and that of its vendors and suppliers.

"It's just the right thing to do," said J.K. Evicks, Bama's Environmental Manager. "But even as we worked with employees and our partners, we still found we had almost five percent of our waste that could not be recycled or reused, making it challenging to reach our goal of zero waste-to-landfill by 2017."

The Partnership Begins

"We were really pleased to be asked to work with Bama on their journey to zero waste," said Jennifer Minney, Solutions Sales Manager for Covanta Environmental Solutions. "From visiting their sites we knew that they had a good plan and we made recommendations to help get them over the hump and out of landfills. Our business is waste and it's our job to find options and deliver long-term sustainable solutions for our customers." And find options they did. Within eight months of an initial waste audit, Bama started sending its compacted waste to Covanta's Tulsa Energy-from-Waste facility. Once at Covanta Tulsa, the waste is used as fuel to create electricity and steam used by neighboring Tulsa businesses. "What's great about working with Covanta is that they value partnerships as much as we do," said Evicks. "For example, we wanted recycling options for bulk vegetable oil. Although not part of our scope of work with Covanta, they partnered with us to find a sustainable option, furthering our zero waste-to-landfill mission. Covanta listens and provides consultation and ideas." Thanks to Paula Marshall's vision, Bama officially achieved zero waste-to-landfill in 2014.

"Having a champion – a leader that is driving the recycling/sustainability initiative – is one of the first things I would tell other businesses to do if they are looking to get to zero landfill. But you also need to know what waste you have. You need to get in there and 'dumpster dive' to get a full picture of the opportunities as you engage employees and get them excited about making significant changes."

J.K. Evicks, Bama Companies, Environmental Manager

Generating Excitement and Support Among Employees

Reflecting on their zero waste journey, Terral Eichelberger, Bama's Shipping and Receiving Manager, explained, "Identifying the waste and what to do it with it was painful at times. However, the experience made us aware of the impact waste had on our community and the environment. It took some time but eventually we understood it was the right thing to do." Eichelberger credits Evicks for explaining the value of recycling and keeping it top-of-mind with employees throughout the journey. "He often spoke to us about reuse and that became a very important aspect of the program for employees. Many on the team began to look not just at what we did, but what our vendors and suppliers were sending and made suggestions to those businesses about how they could improve." Evicks agrees that one of the secrets to Bama's success is continual reinforcement of the purpose and benefits of such a sustainability program.

The hard work to generate support internally did not go unnoticed by customers or the community. In fact, Bama received several awards and recognition for their efforts including the Environmental Federation of Oklahoma's Frank Condon Award in 2013. "We've been recognized for what we've been able to accomplish and that's important for the teams and the community but the real value is in being able to share our best practices and help others on the sustainability journey," said Evicks.

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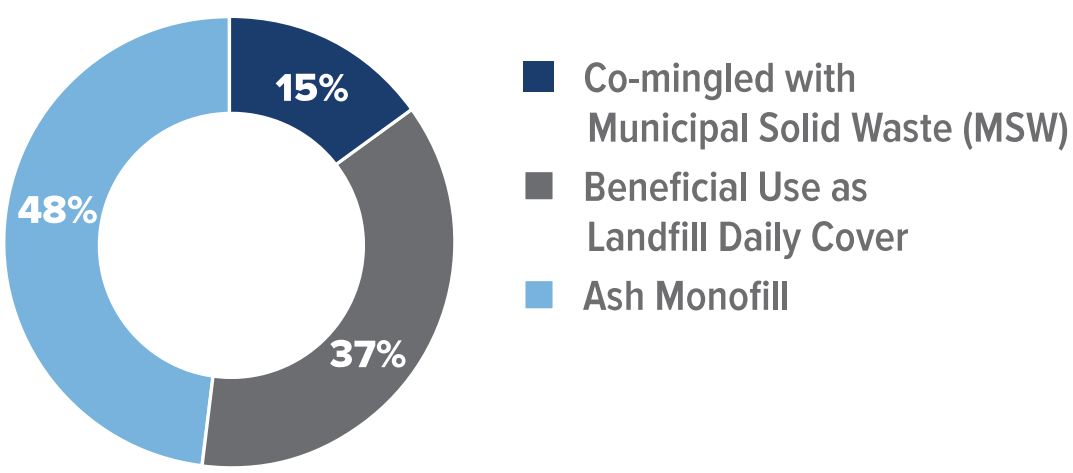
SUSTAINABILITY REPORT

What About the Ash?

Every downstream waste process generates some amount of waste—meaning there is a residue of material that cannot be processed. For example, many recycling processes generate waste streams that cannot be turned into new commodities. EfW facilities generate a non hazardous ash residue composed of the noncombustible material in wastes and, to a lesser extent, materials added for air pollution control, such as activated carbon and lime. Over one-third of our ash is used beneficially at landfills as daily cover or for roadway materials. This practice reduces the amount of virgin soils that need to be used at the landfill.

We are now advancing new ways to reuse and recover more materials from our ash. Learn more about our new Total Ash Processing System (TAPS).

Where Does the Ash go?



In the U.S., roughly half of the total ash is managed in traditional landfills, with the rest placed in ash monofills (or landfills only containing ash). Finding additional uses for ash is a key objective for Covanta and the industry.

For more information, please see Covanta's white paper, Ash from Energy-from-Waste.

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Helping NYC Achieve Zero Waste by 2030

The Manhattan Marine Transfer Station came online in March 2019.

Every week, the average New Yorker throws out nearly 24 pounds of waste at home and work. That adds up to more than six million tons of residential and commercial waste generated annually. In response to the challenge of sustainably managing these waste flows, New York City has committed to the goal of Zero Waste by 2030.

The path to reaching this goal will be multi layered, beginning with the City's existing curbside collection programs for recycling and organic waste. For the remaining waste that is not divertible—including things like diapers, hygiene products and some plastics—Covanta steps in.

In 2019, we commenced operations at the East 91st Street Marine Transfer Station, which is the second in a pair of marine transfer stations under a 20-year waste transport and disposal agreement between Covanta and the Department of Sanitation of New York City.

At full capacity, Covanta will process approximately 33 percent of NYC's residential waste, a crucial step toward meeting the City's Zero Waste by 2030 target.

The site, which operates 24 hours a day, six days a week, is permitted to receive up to 1,860 tons of municipal solid waste each working day. It's outfitted with a 1,900-square-foot entrance and exit ramp that can support up to 17 trucks at a time. Air monitoring is done twice a year and exterminators come monthly.

To help the facility operate as efficiently as possible, it also features:

- Detection systems for radiation, odors and leaks;
- Natural and LED lighting;
- A heating, ventilation and air conditioning system that filters, cleans and recirculates facility air; and
- A "smartboard" that includes both equipment and employee information.

Materials Management

Continuous Improvement

Our business operations have long been grounded in the pursuit of continuous improvement, from leading the development of energy recovery technologies and advanced air pollution control equipment to delivering an increasing array of services to our customers through Covanta Environmental Solutions. Our EfW facilities are routinely online and available for processing MSW over 90 percent of the hours in a year, and we continue to work to improve the operations, reliability and performance that help sustain our company financially, while protecting our people, our communities and the planet.

Over the last four years, Covanta's Continuous Improvement (CI) Group has implemented Lean and Six Sigma tools and methodologies to further advance our ongoing efforts to reduce operating and processing inefficiencies and uncover additional revenue opportunities. Widely applied in the industrial sector, these tools help us maintain our competitive advantage and sustain our growth.

Redefining Continuous Improvement at Covanta

At Covanta, continuous improvement is about recognizing opportunities for innovation and then rallying as a team behind the solutions. Covanta Field Services (CFS)—responsible for managing and performing outage repairs and installations at Covanta's EfW facilities—utilizes the continuous improvement principles to find creative solutions to repair the difficult outages smoothly and quickly. For example:

- A 2018 outage in Covanta Bristol in Connecticut involved two hard-to-reach steam drum cracks that required approximately 4,000 pounds of weld filler metal to repair. Completing the work required the CFS team to develop a new method to cut the drum into pieces and then bevel the pieces back into place. A repair that could have been crippling was instead successfully completed and then held up as a learning experience, and not just for Covanta.
- During a 2018 outage at Covanta Honolulu (H-POWER), an innovative repair method saved valuable time while also improving safety. CFS worked diligently to develop a new system for servicing the facility's superheaters to minimize the amount of time the facility would be offline. Superheaters are large sets of tubes housed in the boiler that heat steam above its boiling point. H-POWER's superheaters had traditionally taken a long time to repair safely. The process took several days just to set up before any work could be done. The new system employs a trolley-like mechanism above the boiler, allowing it to be moved along a pulley when it needs to be worked on, which is safer and takes one-third of the time it had previously, saving 112 welds and their accompanying logistics.

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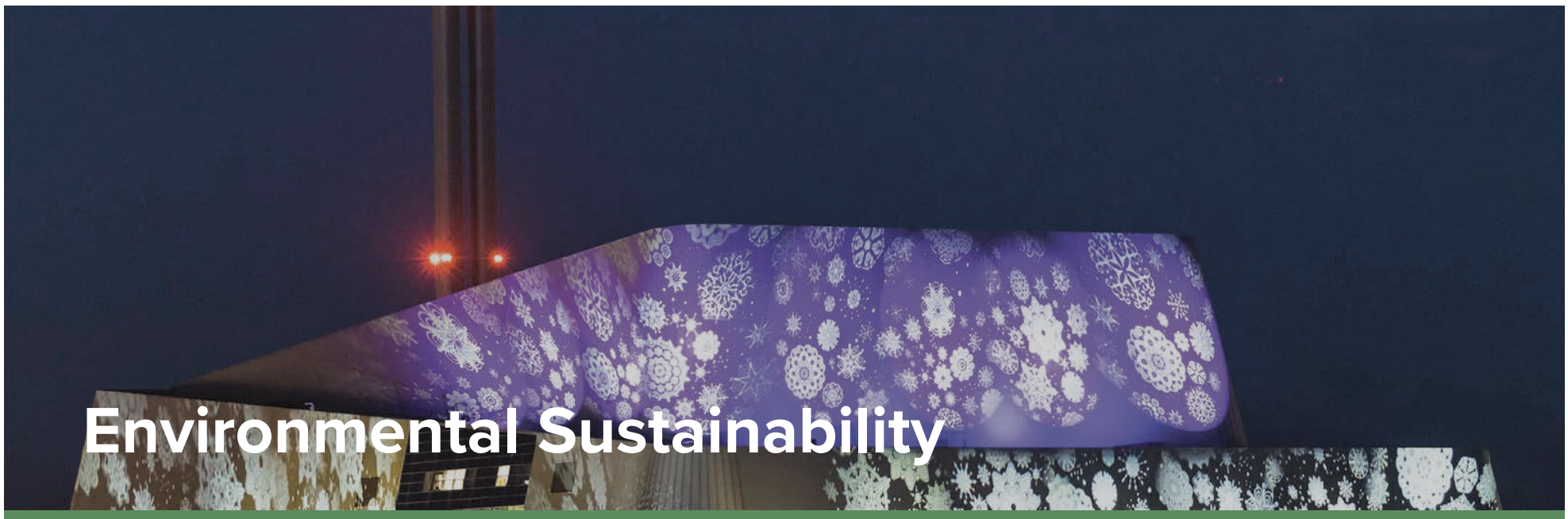

Environmental Sustainability

GOAL

We've committed to implement five projects by 2023 to further reduce emissions in EJ communities. We will also set a science-based GHG reduction target by 2022 to drive further reductions.

PROGRESS

To advance continuous improvement, we've committed to two new Emissions and Climate Change related goals.

By providing an environmentally and socially responsible means of managing solid waste, Covanta's EfW and material processing facilities help our communities move up the waste hierarchy, recover resources in the form of materials and energy, and provide critical local and community waste management infrastructure—all while helping reduce GHG emissions from waste management. Our EfW facilities deliver clean, renewable baseload power right next to load centers, helping provide resiliency to the electrical grid.

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Environmental Sustainability

Addressing Climate Change

The largest part of our business—operating EfW facilities—is widely recognized internationally as a source of GHG mitigation. On average, the U.S. EPA has determined that EfW facilities reduce the amount of GHGs expressed as CO_2 equivalents (GHGs or CO_2e) in the atmosphere by approximately one ton for every ton of municipal solid waste (MSW) combusted. By avoiding emissions that would have otherwise occurred, EfW is the only major source of electricity that reduces GHG emissions. In this way, EfW facilities play an important role in the climate change solution.

Covanta Palm Beach EfW facility

Reducing Net GHGs through EfW

The ways in which materials and waste are managed have a significant impact on climate. The U.S. EPA has found that the full life cycle of materials management, including the provision of goods and food, is responsible for 42% of U.S. GHG emissions. Waste reduction, reuse and recycling are the best ways to reduce GHG emissions from waste management. After we've exhausted those options, EfW is the next best option. Landfills, the third-largest source of the greenhouse gas methane, are the least preferable option. Methane is a potent short-lived climate pollutant that is 34 times stronger than CO_2 over 100 years and 80 times stronger over 20 years, when all of its impacts are considered. And yet, every year, the US landfills 64% of waste, roughly 250 million tons. **Learn more about the importance of methane here.**

EfW facilities reduce GHG emissions, even after consideration of stack emissions from combustion, by:

- diverting post-recycled solid waste from landfills, where it would have emitted the potent GHG methane for decades, even when factoring in landfill gas collection;
- generating energy that otherwise would have been produced by GHG-emitting fossil fuel power plants; and
- recovering metals for recycling, thereby avoiding GHGs and energy associated with the production of products and materials from virgin inputs.

The GHG reductions associated with these three factors are significantly more than the fossil-based CO_2 emissions from the combustion of plastics and other fossil-fuel-based MSW components. U.S. EPA scientists, in a prominent peer reviewed paper, concluded EfW facilities reduce GHG emissions relative to even those landfills equipped with energy recovery systems.

Climate Adaptation and Resiliency

Overwhelming scientific consensus points to a changing climate as a result of human activity. Even with dramatic reductions in GHG emissions, our climate will continue to change, and we will increasingly see the effects of climate change in the form of sea level rise, increased frequency of coastal flooding and increased frequency and severity of storms. A few of our facilities in the United States are located on estuaries that could become affected by storm surge. We also operate numerous inland facilities along the Eastern Seaboard that can be affected by hurricanes and other coastal storms.

During Superstorm Sandy in 2012, several facilities were impacted on a short-term basis due to disruption of MSW collection and transportation systems, local power distribution system outage and equipment damage. The most significant impacts were felt at our Essex County facility where a prolonged local grid outage prevented us from starting up even after our local repairs had been made.

Since then, we've hardened critical infrastructure, raising electrical equipment and even installing a watertight bunker around our emergency generator, to ensure we can start up our facility without grid power.

GHG Inventory Reduction Targets

Many sustainability programs prominently feature reductions of Scope 1 (direct emissions), Scope 2 (purchased electricity), and Scope 3 (supply chain) GHG emissions, often in response to encouragement from groups like CDP and sustainability rankings. We applaud these initiatives, and in many cases, help support our customers' efforts to reduce their Scope 3 emissions inventories associated with waste management. Landfilling can be a major source of Scope 3 emissions. Switching to EfW provides an opportunity to reduce these emissions. As EfW generates a useful product in the form of recovered energy, stack GHG emissions from downstream waste managed at EfW facilities do not get attributed to a generator's Scope 3 inventory, in accordance with accepted Scope 3 guidance.

EfW facilities are known sources of GHG mitigation and are eligible to generate carbon offsets, by providing an alternative to landfill disposal. Our process generates a Scope 1 emission from the combustion of materials containing fossil-based carbon (e.g., plastics), yet also generates a GHG reduction simultaneously by diverting waste from landfills, recycling metals and displacing fossil fuel-fired electricity and steam generation. The more waste we divert from landfilling, the greater the net GHG reduction achieved overall. However, this also translates to an increase in our Scope 1 emissions.

EfW's Most Effective Tools in Reducing GHG Emissions

Project / GHG Reduction Goal Type	GHG Emissions Reduction as Tons CO_2e	
Additional energy recovery capacity	**0.6–1.2**	Per ton of MSW diverted
Recovery of metals from ash	**10.0**	Per ton of aluminum
	5.2	Per ton of copper
	2.0	Per ton of ferrous metal
Energy efficiency projects	**0.8**	Per MWh of electricity saved
Materials management	**1.0**	Per ton of MSW diverted
	0.7	Per ton of packaged foods diverted
Raw materials efficiency	**0.8**	Per ton of lime saved
	2.6	Per ton of ammonia saved

However, we know that we cannot remain complacent. While EfW is a critical element of reducing GHG emissions from the waste management sector today, reaching the levels of GHG reductions that we need by mid-century to stem the largest impacts of climate change will require innovative thinking. As part of our vision for protecting tomorrow, we have established a new sustainability goal to set a science-based target and implementation plan by 2022 in line with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures.

We remain committed to providing customers with more sustainable waste management practices, even though many external assessments of our corporate GHG performance do not recognize the indirect emissions benefits these solutions generate. We also remain committed to transparently reporting our GHG emissions. Covanta reports its GHG emissions to the U.S. EPA GHG Reporting Program and has been responding to the CDP climate change questionnaire since 2007. For more information, please see Covanta's 2018 and 2019 CDP responses, covering 2017 and 2018 disclosures, respectively. Our Scope 1 (direct), Scope 2 (indirect) and Scope 3 (indirect) emissions can be found in the Performance Tables.

EfW and Emissions-Limiting Programs

Although EfW is widely recognized as a source of GHG mitigation, our combustion process results in facility-level GHG emissions that could be subject to cap and trade or other laws or regulations designed to limit or reduce GHG emissions. In 2018, 3.1% of our total equity-share GHG emissions were subject to a cap and trade program. We continue to advocate for consistent treatment of GHG emissions from the waste management sector to ensure that economic signals (e.g., allowance purchase requirements, carbon taxes) align with the relative life cycle GHG emissions of different waste management options.

Covanta's EfW position in current emissions-limiting programs is as follows:

- The European Union Emissions Trading Scheme (EU-ETS), the largest and longest running carbon cap and trade program, excludes EfW from the cap. The benefits of EfW are also recognized though the concurrent inclusion of EfW in renewable energy programs *and* the implementation of the landfill directive. The landfill directive calls for a minimum 65% biodegradable waste diversion from landfills to alternatives, including recycling, composting, anaerobic digestion and EfW.
- California's Global Warming Solutions Act of 2006 ("AB 32") seeks to reduce GHG emissions in California to 1990 levels by 2020, through an economy-wide "cap and trade" program. EfW facilities were exempt from the cap and trade program through the end of 2017. A regulation was finalized in 2019 that brought EfW facilities into the cap and trade program with a provision for free allowances that reduce the compliance burden. A resolution passed by the Board of the California Air Resources Board ("CARB") in 2018 directed the agency to provide additional allowances to help further reduce the compliance burden. Landfills, despite being identified as having a higher GHG emissions intensity by California regulators, remain out of the program.
- The Regional Greenhouse Gas Initiative ("RGGI") is an operating regional cap and trade program in the Northeastern United States focused on fossil fuel-fired electric generators; it does not directly affect EfW facilities. We operate one natural gas-fired boiler at our Niagara facility included in the RGGI program.
- EfW is recognized as a source of credits under the United Nations' Clean Development Mechanism (CDM), where more than 40 projects have been registered with a combined annual GHG reduction of 5 million metric tonnes of CO_2e a year.

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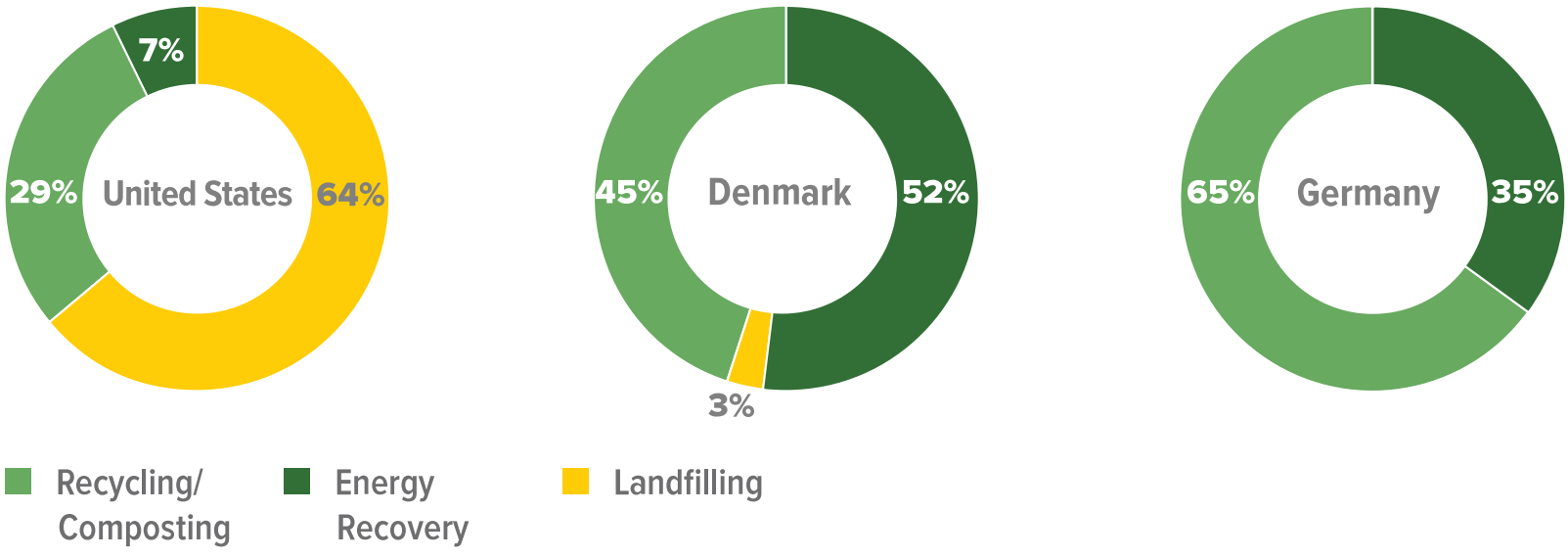
A Global Response to the Threat of Climate Change: Why Address GHG Emissions from Waste?

As affirmed by the Intergovernmental Panel on Climate Change, the warming of the climate system due to past and ongoing emissions is now unequivocal and many of the observed changes are unprecedented. Energy-from-Waste (EfW) can help reduce GHG emissions by keeping the waste, that remains after recycling efforts have been exhausted, out of landfills, generating electricity and recovering metals for recycling.

EfW Around the World



EfW is a widely accepted part of Europe's comprehensive waste management approach, which includes reducing, reusing, recycling/composting, recovering energy and then only landfilling what's left over. If all countries managed their waste as responsibly as European countries like Denmark and Germany, the GHG savings would be equivalent to:

- Closing 1,000 large coal-fired power plants;
- Building two million 1MW wind machines; or
- Doubling the global nuclear power plant capacity.

For more information, please see Covanta's white paper: "Waste and Climate: Reducing Your Footprint"

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What about Plastics?

The combustion of plastics in the waste stream generates fossil CO_2, making its presence in the waste stream bound for EfW facilities undesirable from a climate standpoint.

In addition, plastics increase the overall heat content in the waste. Higher than normal amounts of plastic in the waste can reduce the waste processing capacity of our facilities. For these reasons, we fully support plastics recycling programs as a means to get plastics out of the waste and back into the economy. However, not all plastics are recyclable and some plastics can contain persistent organic pollutants and other compounds that we do not necessarily want reintroduced into new products. For these materials, EfW facilities serve an important role of providing proper solid waste management and recovering energy value from the materials to offset the use of fossil fuels for energy purposes.

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Sustainable Waste Management: Learning from Life Cycle Assessments

Life cycle analysis (LCA) is a tool used by international organizations, including the International Panel on Climate Change (IPCC), and on a national basis by the U.S. EPA, to assess the environmental impacts of a product or process from cradle to grave, or from the extraction of raw materials to final disposition at the end of life. Applied to waste management, LCA facilitates an assessment of the environmental impacts and trade-offs of different management approaches; this assessment is a useful decision-making tool for communities, governments and industry as they consider sustainable waste management. All end-of-life processes have impacts, but an LCA allows for effective comparisons. Well executed LCAs often will validate, or "ground-truth," their results against measured data, such as the proportion of an EfW facility's CO_2 emissions that are from biogenic sources or an EfW facility's net electrical output.

Because LCA looks far beyond an inventory at a single facility, it allows us to quantify the positive and negative impacts of not only the energy recovery process itself, but also the benefits that accrue from avoiding landfill disposal, recovering metals for recycling and displacing grid-connecting electrical generation.

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Turning 10 million Tons of MSW into Clean Energy in Pennsylvania

In March 2018, after 27 years of operation, Covanta reached the milestone of having processed 10 million tons of municipal solid waste (MSW) from the Lancaster County, PA, community—and thereby keeping it out of a landfill that would have been the equivalent of more than 600 football fields filled 10 feet deep. The environmental benefits of recovering the energy from this waste include:

- Offsetting the equivalent GHG emissions of over **1.9 million passenger cars** on the road for one year;
- Producing **5.6 million megawatt-hours of electricity**, enough to supply all the homes in the City of Lancaster for more than 21 years; and
- Recovering 180,000 tons of ferrous metal for recycling, **equivalent to over two Golden Gate Bridges**.

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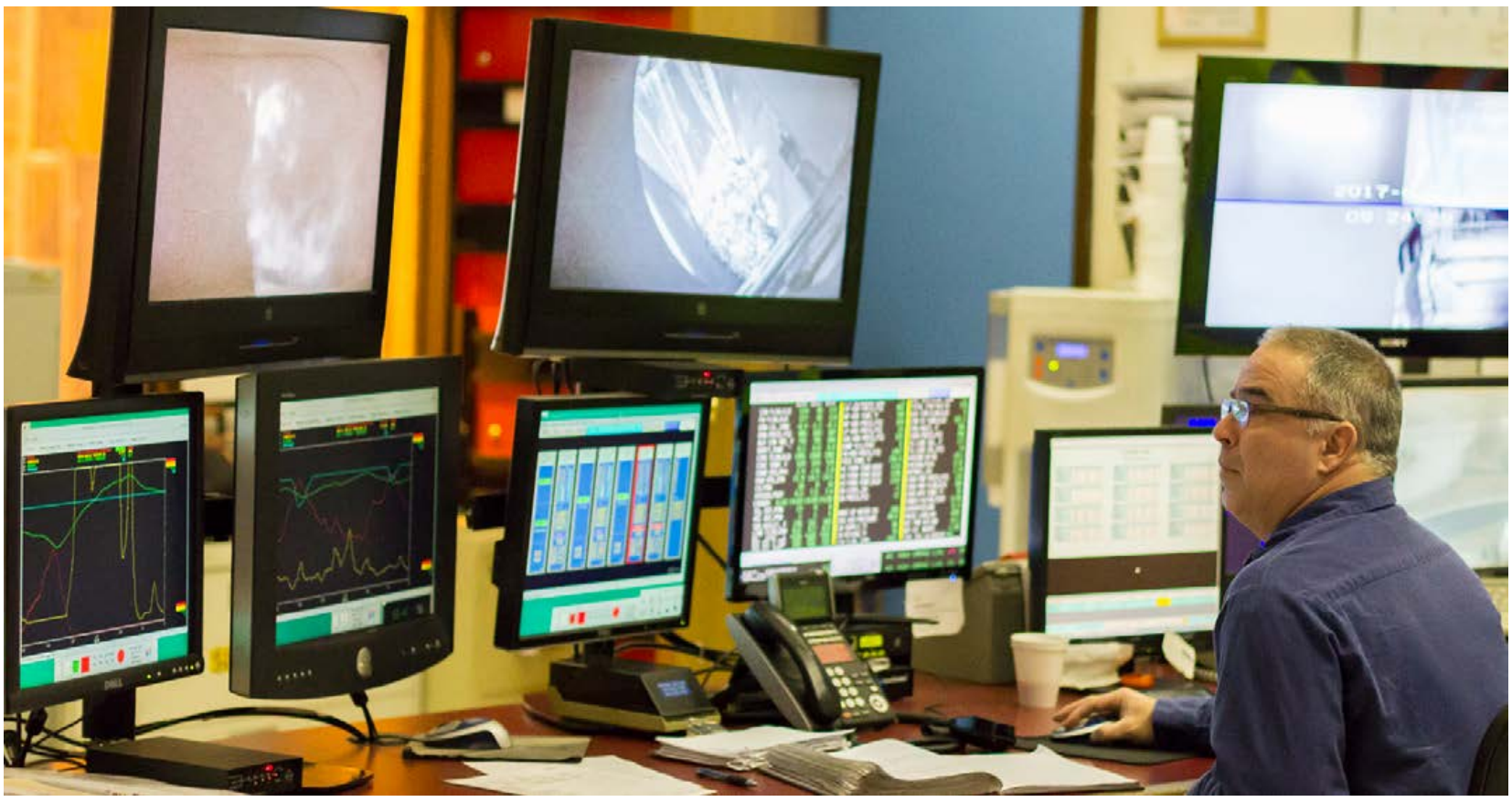
Environmental Sustainability

Minimizing Air Emissions

Like all combustion processes (e.g., cars, trucks, fossil-fuel power plants, landfill gas to energy) and nearly all waste management processes (e.g., landfilling, composting, anaerobic digestion, recycling), Energy-from-Waste (EfW) facilities have air emissions. To minimize emissions, EfW facilities employ a carefully controlled combustion process with temperatures in excess of 2,000°F and sophisticated air pollution control equipment. Emissions are monitored both continuously and with periodic testing performed by regulator-approved third parties. 99.9% of what comes out of the stack is comprised of normal components of air, including water vapor, nitrogen, oxygen and CO_2.



Since the implementation of stringent air pollution standards, such as the Clean Air Act Amendments of 1990, emissions from the industry have dropped dramatically, as the result of both closing outdated facilities and installing new air pollution control equipment. Emissions from Covanta's facilities ***continue*** to decrease. Since the start of the company's sustainability program in 2007, emissions of pollutants at Covanta operated facilities, as measured over the three-year period from 2016–2018, have decreased by up to 69% (Figure 1). In addition to our continued focus on operations and system optimization, our capital improvements are paying dividends in reducing emissions. The new baghouse installation we completed at our Essex County facility in 2016 continues to perform well, having reduced pollutants by up to 90%. Our proprietary low nitrous oxide system (Low NOx™), already installed in 24 units, helps us control NOx emissions and reduce reagent consumption. We are currently planning on installing the technology in nine additional units.

View Detailed 2018 Performance by Facility

These emissions reductions support Covanta's strong record of consistently falling well below federal regulatory limits for emissions (Figure 2). More information is available in our white paper on EfW Emissions.

Covanta Americas 2016–2018 EfW Emissions Compared to 2007

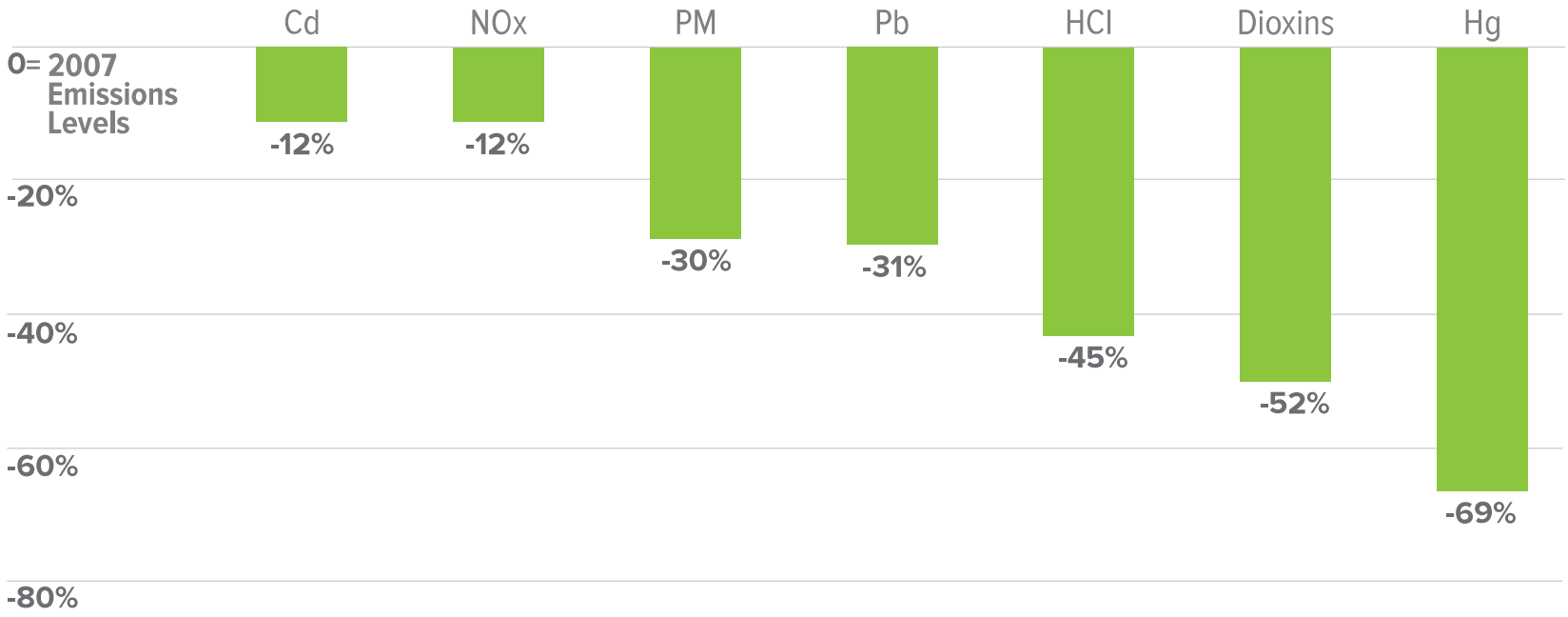


Figure 1. Since Covanta launched its sustainability program in 2007, emissions of pollutants at Covanta-operated facilities, as measured over the three-year period from 2016–2018, have decreased by up to 69%.

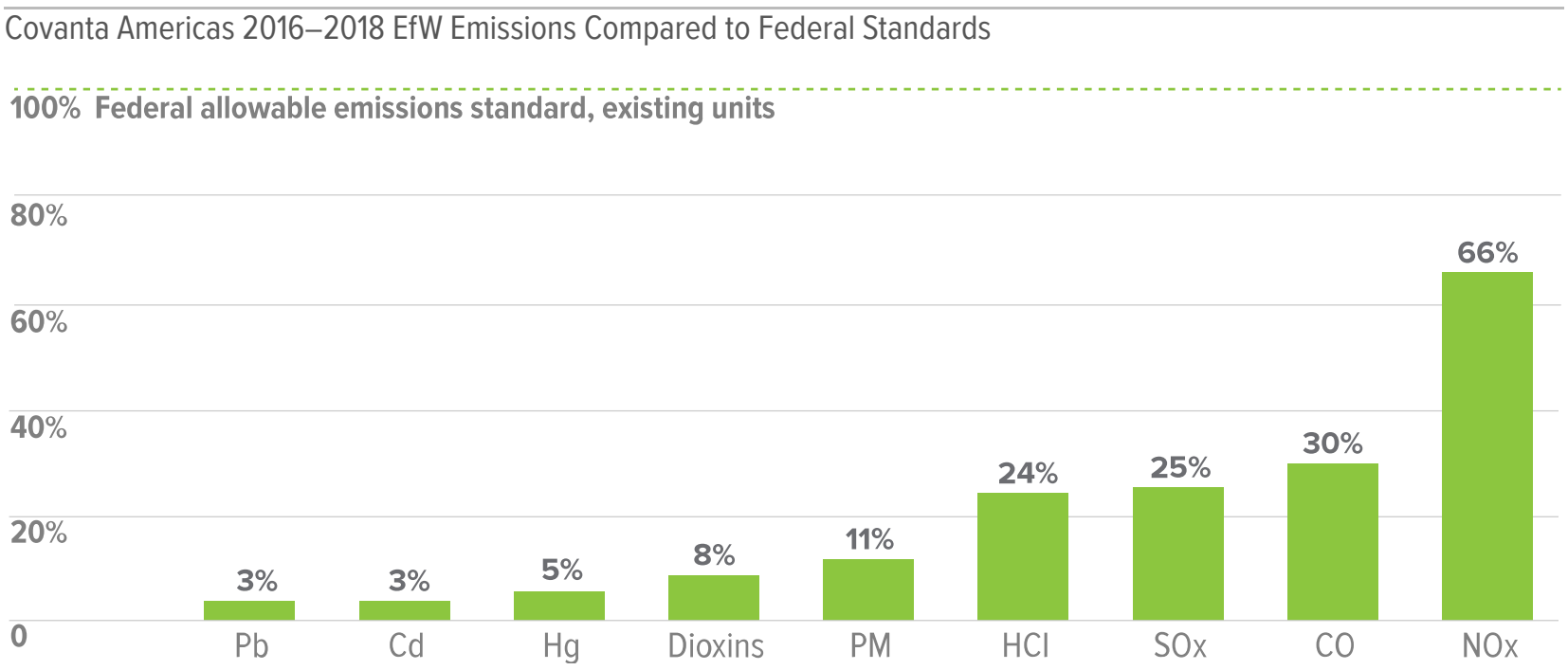


Figure 2. In the U.S., air emissions from Covanta usually operate at 60 to 90 percent or more below permitted parameters.

Detailed Facility Performance

Select an individual U.S. facility to see detailed 2018 environmental performance on life cycle GHG emissions, electricity generation, metals recycling, emissions performance relative to federal guidelines and emissions compared to total emissions in the local county.

Select a facility to download PDF

Our facilities use state-of-the-art control technologies to remove air pollutants associated with the EfW process.

Boiler Design:

Our boilers are specifically designed to ensure complete combustion, thereby recovering as much energy as possible out of the waste resource, including volatile organic compounds (VOCs) and other organic compounds.

Nitrogen Oxides (NOx) Control:

Most boilers are equipped with selective non-catalytic reduction (SNCR) systems, which inject ammonia or urea into the furnace to chemically convert NOx into gaseous nitrogen, a harmless gas that makes up the majority of our atmosphere. In addition, we have installed Covanta's proprietary low nitrous oxide system (Low NOx™) in 24 units, which helps us control NOx emissions and reduce reagent consumption.

Carbon Injection:

After leaving the boiler, combustion gases travel through an extensive air pollution control system. At many of our plants, activated carbon is added to the flue gas stream as it exits the boiler. Gaseous phase contaminants such as mercury and dioxins adsorb to the surface of the carbon so it can be removed downstream in the baghouse.

Scrubber:

A scrubber neutralizes acid gases, including sulfur dioxide and hydrochloric acid, by spraying a lime slurry into the exhaust stream.

Baghouse:

Operating like a very efficient vacuum cleaner, the baghouse removes over 99.5 percent of the particulate matter from the combustion gases. As air is drawn through the baghouse, particulate matter and fly ash are caught on the surface of the bags. Periodically, the bags are cleaned by temporarily reversing the airflow or, in other designs, pulsing the bags with a strong jet of air. The particulate and fly ash are removed from the bottom of the baghouse.

Emission Monitoring:

All of our facilities operate under strict air pollutant control limits. To demonstrate compliance, we use a combination of continuous emission monitoring systems and stack tests performed at least annually.

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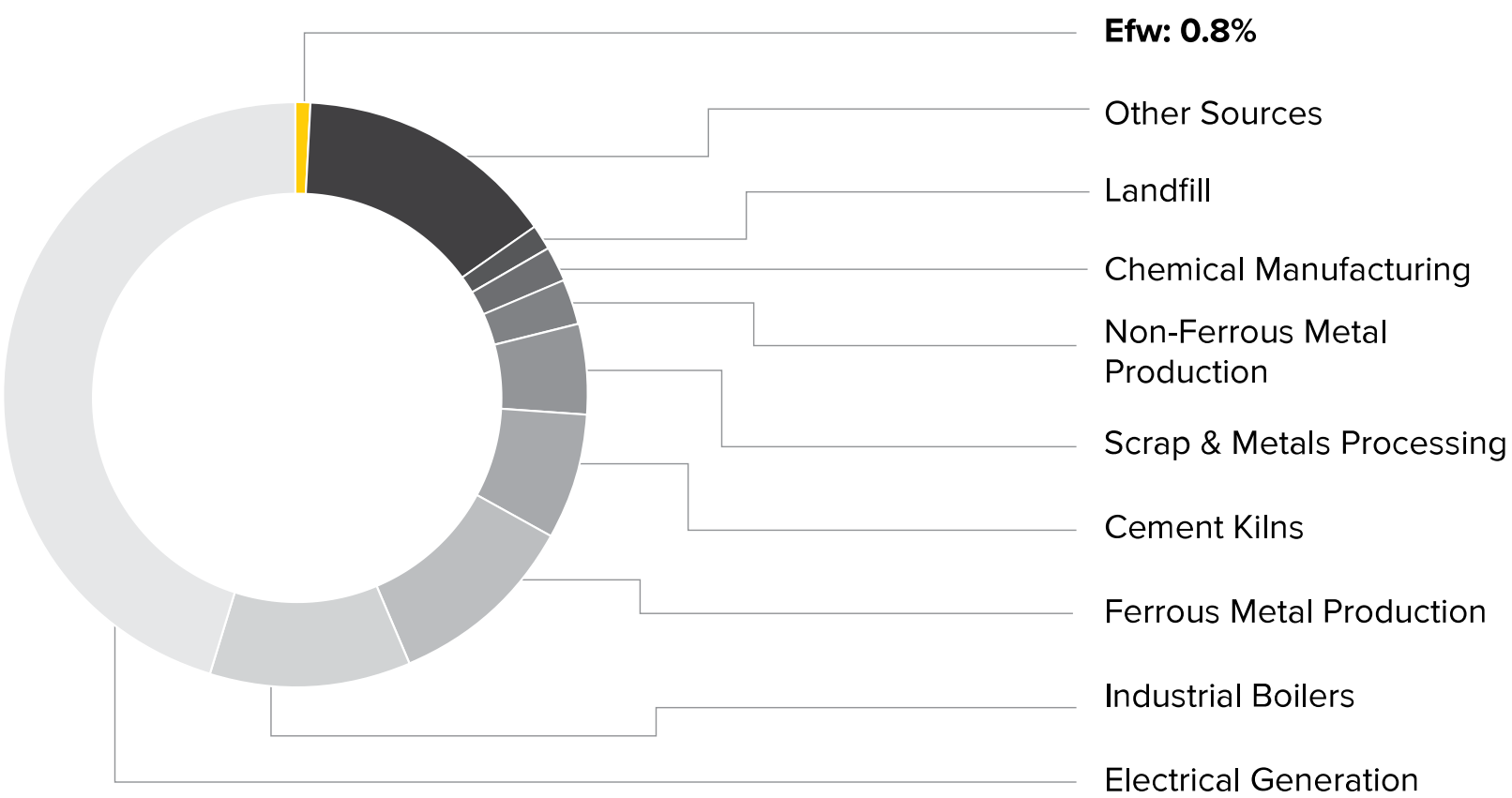
Human Health Impacts of Air Emissions Associated with Waste combustion: Is There a Risk?

Some of our stakeholders and community members have expressed concern about the environmental and human health impacts of air emissions associated with waste combustion. A comprehensive 2017 review of available literature on air quality health risk assessments and health surveillance programs surrounding EfW facilities was done for the city of Portland, Oregon. The review "determined that there was ***not a predictive or actual increase in health issues***, including for those in vulnerable or sensitive 'at-risk' populations such as children or the elderly."

U.S. 2014 Mercury Emissions by Source (Fig. 3)



Below, we take a closer look at some of the more common pollutants from EfW air emissions.

- **Mercury Emissions.** EfW facilities emit a fraction of the mercury emissions from coal plants, representing just 0.8 percent of man-made sources in 2014, or roughly half that emitted from landfills (Figure 3).
- **Dioxin Emissions.** Municipal waste combustors are no longer a leading source of dioxin emissions as they once were in the past, thanks to modern advancements in boiler design and air pollution control equipment. According to recent peer-reviewed research by Columbia University scientists, the total dioxin emissions of all U.S. EfW plants in 2012 represented less than one-tenth of one percent of total sources of dioxin.
- **Nanoparticulate Emissions.** Nanoparticulates agglomerate into larger particles within minutes of emission, increasing in size and correspondingly decreasing in number. The vast majority of particulate matter, including nanoparticulate, is removed via the air pollution control (APC) equipment installed at all EfW facilities. Recent published studies have concluded that EfW's emissions were negligible relative to typical exposures in urban environments and highways.

For more information, read Covanta's white paper, Energy-from-Waste & Health Risk.

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Environmental Sustainability

Improving Our Performance

At Covanta, we know that maintaining our environmental performance—and exceeding, where possible, the expectations of our stakeholders—is critical to protecting our planet, our people and the prosperity of our business. We are committed to a goal of sustaining past emissions performance gains while maintaining 100 percent compliance with all discharge limits, including stack tests and the requirements of our continuous emission monitoring systems (CEMS). Our challenge is not only to meet these goals, but to meet them efficiently and consistently in the pursuit of continuous improvement.

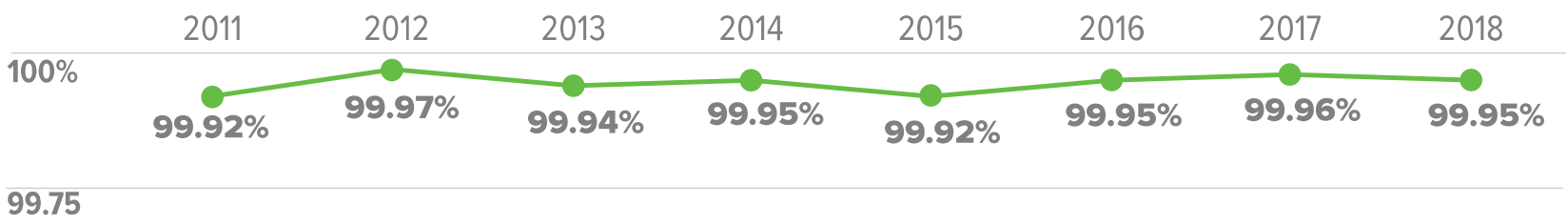
Operations Manager Lee Miller

We manage our environmental performance through a collaborative effort of our Operations and Environmental departments. Responsible for the day-to-day functioning of our facilities, the Operations department is ultimately responsible for operating our facilities in accordance with our permits and other requirements. The Environmental department is responsible for each facility's understanding and compliance with all permit conditions. We manage compliance through a combination of our Environmental Management Information System (EMIS), technical standards, environmental procedures and a vertically integrated team of environmental professionals located at both the facilities and corporate headquarters. EMIS allows us to track timely completion of compliance requirements and manage associated compliance data. Our environmental performance is reviewed monthly with senior management.

Air emissions from EfW facilities are heavily regulated by both the U.S. EPA and state environmental agencies. Emissions from EfW facilities are determined both through routine stack tests (performed at least once a year) and through continuous emissions monitoring systems (CEMS). CEMS monitor flue gases continuously for carbon monoxide (CO), nitrogen oxides (NO_X), sulfur dioxide (SO_2), opacity, and carbon dioxide and/or oxygen. Facility operators monitor these parameters and adjust as needed to ensure proper operation and compliance. For example, monitoring CO levels continuously allows operators to respond to changes in the waste (e.g. wetter than normal waste that may have been collected during a rainstorm) to ensure complete and efficient combustion.

Other regulated pollutants are checked through a rigorous stack testing program performed by a regulator-approved third-party. The operating parameters under which the stack test is conducted (e.g. activated carbon addition rate, steam flow rate) set the standard for the facility's operation until the next stack test is completed. Operating the combustion process and air pollution control equipment in accordance with these standards ensures compliance. These tests are scheduled well in advance of their performance, and contrary to myth, facility operators do not remove plastics from the waste stream or alter operations in any way to improve emissions performance during the test.

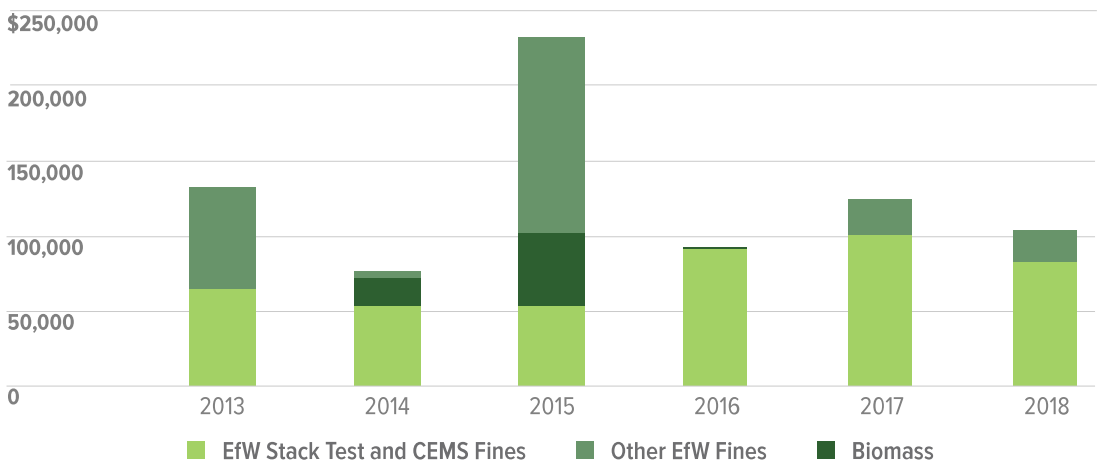
EfW Continuous Emission Monitoring System Compliance Performance



Our North American EfW facilities' performance, as measured by CEMS, averaged 99.95 percent compliance in 2017 and 2018. Our stack test compliance rate in 2017 and 2018 was 100 percent. Our Covanta Environmental Solutions wastewater operations, which pre-treat water prior to discharging to a publicly owned treatment works (POTW), achieved a 99.8 percent compliance rate with pre-treatment permit limits in 2018.

Occasionally, we are subject to proceedings and orders that pertain to environmental permitting and other regulatory requirements, potentially resulting in fines or penalties. Our total environmental-related fines and penalties at our facilities were $124,366 and $103,922 in 2017 and 2018, respectively.

Environmental Fines



Our Performance in 2017–2018

We have successfully maintained emissions reductions at our facilities overall: since the announcement of our first sustainability program in 2007, emissions are down by up to 69%. Today, we are finding ways to sustain our levels of emissions performance more efficiently, by optimizing our operations. In 2018 we saw the lowest number of emission exceedance events in company history, and no stack test failures in 2017 or 2018.

To us, environmental excellence means that every Covanta facility meets or exceeds our strict standards for environmental performance, which we measure and track through continuous emissions monitoring systems, stack tests and discharge limits.

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Environmental Excellence – Staying Vigilant

We will reach our goal of environmental excellence when every Covanta facility reaches 100% compliance with all discharge limits and meets or exceeds our strict standards for environmental performance.

We address facilities with the most room for improvement by enrolling them in our Environmental Improvement Plan (EIP), which takes a similar approach to our Safety Improvement Plans. The EIP requires the facility to identify the root causes of their exceedances and to create a customized solution that will be a path towards improved performance. Quarterly conference calls and/or face-to-face meetings maintain progress throughout the year while also encouraging communication between various subject matter experts, facility personnel and corporate personnel. A facility in the EIP plan will remain there until there is evidence that it has improved its performance. Covanta has been increasing the number of facilities in the EIP plan (three in 2016, five in 2017, six in 2018 and ten in 2019) on the premise that any facility with exceedances has room for improvement. Instead of a worrisome trend, this increase reflects a continued dedication to improve environmental performance across the fleet.

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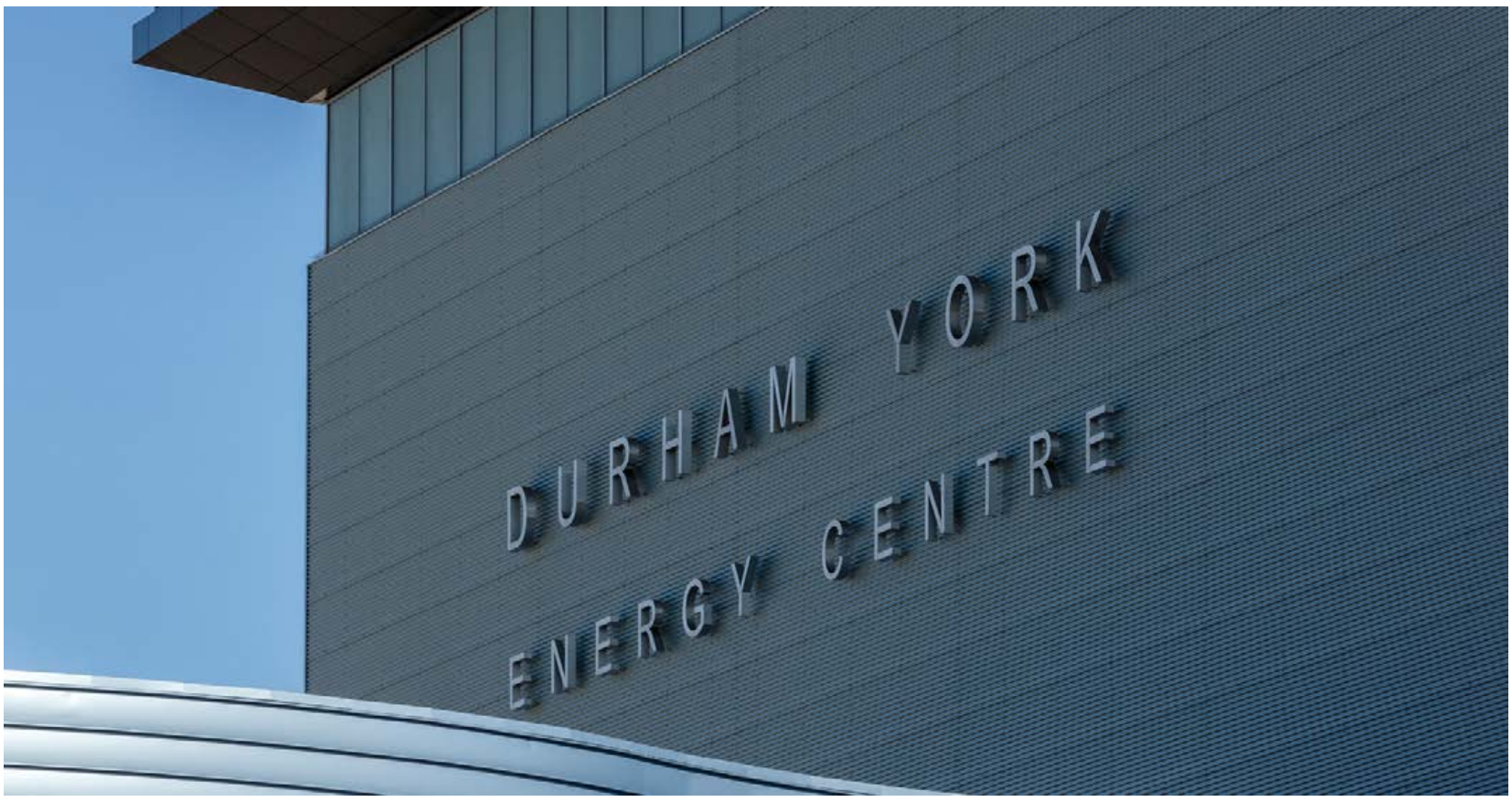
Achieving Rigorous Environmental Certification at Covanta Durham York

In 2018, Covanta Durham York in Ontario, Canada, achieved *ISO 14001:2015 Environmental Management System (EMS) certification*, an international standard that recognizes companies that have adopted environmentally responsible practices in their business processes.



In doing so, the Durham York facility joins four other Covanta facilities certified to the ISO 14001 standard, including Niagara Falls, Miami-Dade, Burnaby and our Covanta Environmental Solutions e-waste facility in Philadelphia. The ISO 14001 certification process serves as a framework for businesses to create environmental management systems and standards that meet three pivotal criteria: minimizing the negative impacts of operations on the environment, complying with regulations and driving continual improvement. Through this process, Covanta Durham York completed an Environmental Compliance Assessment, developed an online environmental manual, updated standard operating procedures and identified related goals to ensure a solid environmental program that will continue to be evaluated to ensure reductions of the impact of facility operations on the environment. Similarly, Covanta's operations in Fairfax County and Alexandria/Arlington continue their own EMS programs through Virginia's Environmental Excellence Program (VEEP).

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Environmental Sustainability

Optimizing Water Use

Water is an essential natural resource and an important input to our materials management processes. As part of the environmental solutions we offer to our clients, we recycle millions of gallons of wastewater through pretreatment and discharge to POTWs every year. And as part of our commitment to environmental stewardship, we also strive to minimize freshwater use and wastewater discharge in our own operations as much as possible by recycling and reusing water. In addition to benefiting the environment, these steps frequently help us conserve costs too.

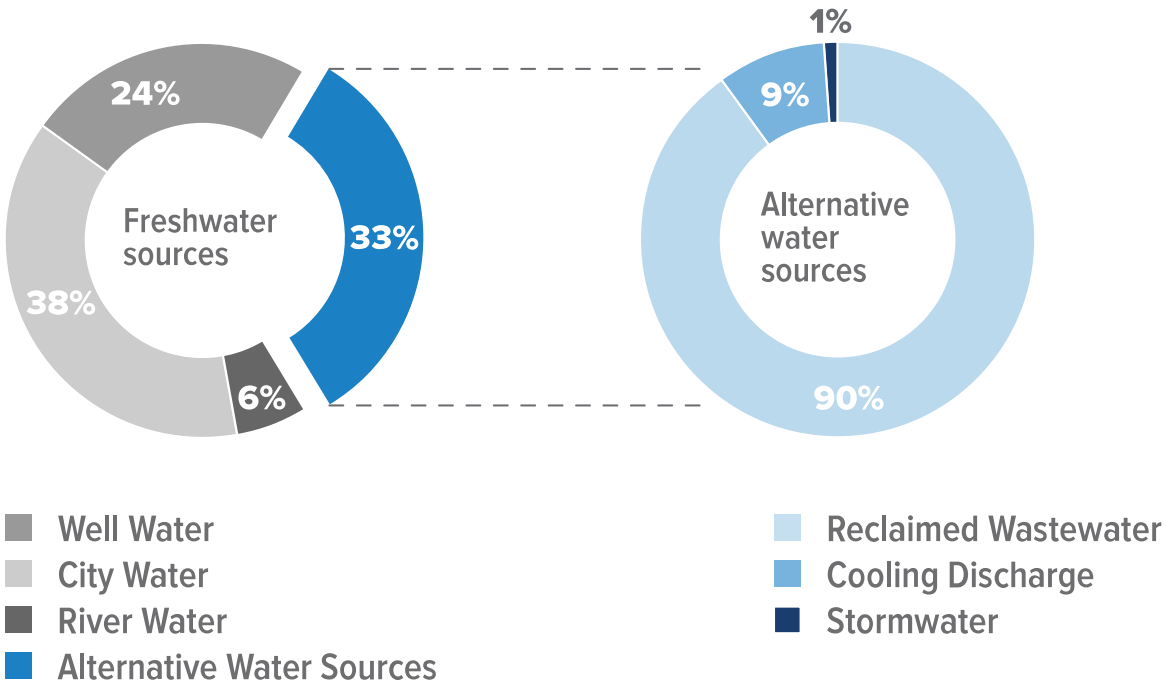
Covanta Environmental Solutions employee taking water sample.

Water Withdrawal

All thermal power plants—including our EfW facilities—use water to generate electricity. In the boiler, water is heated to generate steam, which runs the turbine to generate electricity. Most of this water is condensed and reused in the process of producing power. At some of our plants (such as the Covanta Niagara facility), we also generate steam that we export to communities and local businesses. While steam generation is a very efficient use of the waste resource, it can increase water withdrawal because the condensed water produced by the steam that is exported may not be returned to the facility to produce additional steam. At some of our facilities, water is also used in the cooling towers to condense the steam exhausted out of the turbine back into water for return to the boiler cycle. We also operate two once-through cooling plants, both of which use non-potable saline water.

The use of alternative, non-potable sources of freshwater continues to grow at our facilities. In 2018, the York County facility installed a roof rainwater collection tank, saving over three million gallons. Alternative water sources, including reclaimed wastewater (which now makes up nearly 30 percent of our freshwater consumption, up from 11 percent in 2007), made up 33 percent of our 2018 freshwater consumption.

Freshwater Source



*Does not total to 100% due to rounding

	2016	2017	2018
Total Freshwater Use (millions of gal.)	8,919	8,251	8,967
Percent Alternative (Non-potable) Water Sources	34%	32%	33%

Minimizing water consumption is also a key objective. In addition to the thermal cycle, a key use of water at our EfW facilities is for ash quenching. After the combustion process, the non-hazardous ash is quenched with water to reduce dusting. To reduce water consumption, we look for ways to use water more efficiently. For example, at our Delaware Valley facility, engineers identified an opportunity to reduce water consumption in the pugmill, an ash mixing device, by reducing process variability through a new automatic control system. With lower variation, we can lower the setpoint of water addition closer to its theoretical requirement, reducing excess water consumption. Annually, the facility expects to reduce potable water consumption by 14 million gallons.

In addition to minimizing our water consumption, we also minimize our wastewater discharge, using water internally as much as possible. A total of 19 of our facilities are zero process water discharge facilities, meaning that only sanitary wastewater is discharged to the local wastewater treatment plant.

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Community Relations

GOAL

Expand the number and quality of our community outreach programs.

PROGRESS

We've expanded the breadth of our programs, newly offering a program with veterans groups to safely and respectfully retire flags in our EfW facilities.

Covanta strives to make a positive impact wherever we can. Through our community-based programs, we work with a variety of organizations on the environmental and social issues that are top of mind for our neighbors and our facilities. Our goal is to contribute to the communities where our employees live and work. We also proudly support the local economy by providing employment opportunities.

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Community Relations

Our Approach

At Covanta, we engage with our communities to maximize our impact and to build lasting relationships with our neighbors. Partnering with and contributing to our communities enables us to not only give back, but to also listen carefully, learn new things, share information and respond to concerns. Through our engagement efforts, we improve our internal tools and operational processes which, in turn, enhance our ability to be more responsive and to create better environmental, social and economic outcomes for all.

Our community outreach is focused on four thematic areas:

- **Community Stewardship**: supporting economic opportunities and giving back to our communities through programs and sponsorships
- **Sustainable Communities**: contributing to community infrastructure in terms of energy production and green development
- **Green Education**: supporting youth education around environmental stewardship, sustainability and responsible waste management
- **Environmental Responsibility**: responding to community needs for responsible waste management through our environmental solutions

In 2018, we met our goal of eight community interactions per facility at 98 percent of our EfW locations. The one facility not meeting the goal completed seven out of eight of the required elements.

Supporting Environmental Justice

The foundation of our community engagement strategy rests on our commitment to environmental justice. As outlined in our Community Outreach and Environmental Justice Policy, Covanta is committed to engaging with and supporting the communities in which we have or will have facilities. Covanta believes in the meaningful opportunity for all people, regardless of race, ethnicity, color, income, national origin or education level, to be knowledgeable and have the right to participate in public decisions and actions which have an impact on their environment and neighborhoods

Covanta in the Communities

We are proud of our facilities and welcome stakeholders to see the great strides we are making in sustainable waste management. We make a point to participate in collaborative opportunities for community dialogue and routinely engage with our municipal clients and customers in a face-to-face setting at least once a year.

Through membership on local boards, regularly attending and speaking at town hall meetings and welcoming more than 20,000 visitors to our facilities every year for tours, we aim to cultivate a mutual respect, understanding and collaborative spirit with the people in the communities where we operate. Every opportunity we get to be more involved with the community is an opportunity for us to become a better neighbor.

"Covanta has been a champion of sustainability in Tulsa and very active in the local nonprofit, Sustainable Tulsa, serving on the board and often moderating meetings. They are a good leader for Tulsa and want to do their part to ensure clean air and water in the community."

Don Pugh, American Airlines Wheel & Brake Center, Tulsa, Oklahoma

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Establishing Community Relationships

Our operations are governed by stringent environmental, safety and health regulations that extend beyond our contractual requirements. Because we care deeply about the safety and health of surrounding communities, it's important for us to communicate the safety and security of our technologies and processes.

We establish community relationships as soon as we begin contracting with municipal clients, and we continue to develop and monitor them on an ongoing basis. Neighborhood representatives are integral to the contracting process. We work with them to set minimum performance standards for waste processing, energy efficiency, energy production, environmental management, delivery hours, odor mitigation, and other aspects of our operations.

Additionally, we have community outreach plans (COPs) in place at every facility to tailor our interaction based on the community and its needs. We have also developed an Emergency Action Plan (EAP) for each community in which we operate. All facility personnel complete an exam regarding EAP provisions when they begin working for Covanta, and they participate in annual certification.

Please see our Total Health & Safety Policy for more information.

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Community Relations

What We Do

We are proud to work with our communities to support local initiatives and to volunteer our time, expertise and resources. From community stewardship projects that create economic opportunities and provide educational resources, to programs supporting sustainable and environmentally responsible communities, every Covanta facility is involved with its surrounding community in some way.

Click to jump to a section:

Community Stewardship | Sustainable Communities | Green Education | Environmental Responsibility

We believe we have a role to play in the continued success of the communities in which we operate, whether by providing economic opportunity, helping community members in need, or helping to build and support local community organizations.

Economic Opportunity

EfW facilities provide well-paid and highly skilled jobs to local communities and support local economies. In 2019, the RENEW Institute at the University at Buffalo conducted an independent assessment of the contribution of the Niagara Falls EfW facility. The Niagara Falls facility provides steam to six companies, which, together with Covanta Niagara, employ 600 people. Availability of steam from EfW and EfW's role in more sustainable waste management were factors in Greenpac's recent $500 million investment in a brand new 100% recycled paperboard mill. The University of Buffalo study concluded that every $1 in facility output supported an additional $0.92 in output at other establishments in NYS, 95% of which were in the Niagara County and next-door Erie County. For every job at the facility, an additional four jobs were supported elsewhere in NYS, of which approximately 91% were in Erie and Niagara Counties.

Supporting Communities in Need

Covanta's facility-run volunteer programs are focused on helping community members in need, with efforts ranging from hosting clothing drives to supporting food pantries. For example, at our Morristown headquarters and other facilities, employees are volunteering their time at local soup kitchens and even working with a local school to make centerpieces for the tables as part of a school art project. In Camden and Rahway, NJ, we help bring Thanksgiving to families in need, providing baskets of turkeys and other food.

Also at Camden, our contractors have been part of the community as well, bringing in Christmas and holiday gifts for local children when they arrive. In Elizabeth, our employees are donating to the local homeless shelter, helping offset their costs during the cold winter months. It's a way for our employees to give back and work one-on-one with the communities in which they live and work.

Globally, we donated approximately $2.0 million and $1.8 million in 2017 and 2018, respectively, to local community groups and projects. We also strive to combine resource donations with volunteerism, so that for an event like a litter cleanup, we are donating not only bags and gloves, but also our time.

Building Community

Whether it be forming partnerships with local energy services organizations, supporting youth teams, donating to local charities, or volunteering in local events, we believe in being active members of the communities in which we work and live. For example, our Covanta Niagara employees partnered with Habitat for Humanity to assist with the remodeling of a vacant property in Niagara Falls. In Indianapolis, we partnered with Playball Indiana to support the Reviving Baseball in Inner Cities (RBI) program. RBI teaches baseball and softball values to youth and families in inner city Indianapolis.

In demonstration of our commitment to building community, Covanta has created a new program called Covanta Cares, an employee volunteerism initiative in which Covanta employees will be provided with paid time off so they may participate in volunteer / community service activities with a nonprofit organization of their choice. Employees will be given the equivalent number of hours as their regularly scheduled shift to use in a minimum of half-shift increments for volunteer work. Covanta Cares will begin as a pilot at one facility in each region.

As part of the approval process for the Dublin EfW facility, a community gain fund was established. This fund invests in projects that provide environmental, community, educational, and recreational services and/or facilities that will benefit the local communities. Click here for a list of projects supported to date.

We strive to have a strong community participation strategy with the communities where we operate, including contributing new solutions and ideas related to sustainable development.

Facilities as Community Infrastructure

EfW facilities represent key community infrastructure, providing local, reliable and sustainable waste management and energy services. In addition to providing day-to-day service, these facilities can help make the communities more resilient. In fact, when weather and other natural events disrupt the grid, WTE facilities can remain operational, managing both routine waste and the resulting debris from those events, regardless of whether the grid is able to receive the power it can generate. Already providing reliable power to water and wastewater treatment facilities in several communities, and even providing steam to the Army's Redstone Arsenal, there is a further potential to integrate WTE into community microgrids.

Resiliency and Microgrids

Microgrids are energy distribution systems that can operate independent of the main electrical grid. Covanta is working with several local municipalities to establish microgrids connected with our EfW facilities. For example, we are working with the Camden County Municipal Utilities Authority in New Jersey to establish a microgrid to power critical local infrastructure during an emergency where the power supply is impacted. The Onondaga County Resource Recovery facility features prominently in the Syracuse Community Microgrid. Awarded Stage 2 for detailed design, the Syracuse Community Microgrid would tie together the Onondaga County EfW facility with critical infrastructure, including a hospital, fire department and police department, a nursing home, a 911 dispatch center, places of refuge and other commercial and residential power demands in a microgrid that could be separated from the larger grid during a loss of grid power or in the case of an emergency.

Cultivating Green Spaces

An important part of Covanta's community engagement strategy relates to supporting environmental stewardship, including cleaning up local rivers, streets and parks, planting trees or participating in local household hazardous waste programs. At our Camden facility, we continue to support the Cooper's Ferry Partnership (CFP), a nonprofit organization dedicated to implementing high-quality urban redevelopment projects to revitalize the City of Camden in New Jersey. To date, CFP's work has focused on redeveloping Camden's downtown waterfront area, restoring neighborhoods and ensuring the economic growth and security of residents. Because of a lack of tree cover in many places around the city, they are increasingly focusing on green space development. This effort is intended to not only enhance scenic beauty, remove blight and encourage recreation and connectivity, but also provide related environmental benefits, such as improved air quality and flood mitigation.

"From book bag giveaways to complimentary waste disposal at community events to enthusiastic participation in Camden Collaborative Initiative working groups, Covanta is a generous and committed corporate partner in Camden."

Kris Kolluri, CEO, Cooper's Ferry Partnership

Part of cultivating green spaces is participating in community cleanups. For example, our employees at our Burnaby facility in Canada joined ABC Recycling in their "Great Canadian Shoreline Cleanup," removing trash from local creek beds and ditches. In New Jersey, Covanta Morristown and the New York Red Bulls joined forces with Jersey Cares in a day of service at Camden Street School in the City of Newark, NJ, to beautify the campus. In Wisconsin, a group of our CES Milwaukee (Milwaukee, WI) employees volunteered at a local Villard Avenue cleanup. The CES team worked alongside community leaders and other local business leaders to collect litter and spruce up the neighborhood. Covanta Bristol (Bristol, CT), the Bristol Boys & Girls Club, Home Depot and Quantum Bio Power made their community a little greener by refurbishing nine urban garden beds and building nine more at local affordable housing developments.

The third pillar of our community strategy is supporting youth and education, particularly as it relates to environmental issues, responsible waste management and sustainability.

We do this in a variety of ways, from supporting educational programs to hosting informative exhibits. For example, Covanta York (York, PA) sponsored the York County Envirothon, a hands-on environmental problem-solving competition in which 188 teams of high school–aged students complete training and testing in five natural resource categories: aquatic ecology, forestry, soils/land use, wildlife and current environmental issues. The event provides students the opportunity to explore future careers in environmental conservation and related fields. We've also supported Envirothons on Long Island and in Onondaga County. Covanta Hempstead received the 2018 Corporate Partner Award from the Prosper Program, an alternative high school for at-risk students. Hempstead was recognized for hosting expanded tours where students got to view the facility and receive professional and life lessons from the staff.

Building a Green Workforce

We are also committed to providing educational opportunities to the young people in our communities by exposing them to possibilities in "green" careers. Covanta's Green Workforce program seeks to introduce youth in Massachusetts, New Jersey and New York to career ideas to consider after graduation.

Through a partnership with the Boys & Girls Clubs in Newark and Union County, NJ, Covanta helped organize a Green Careers Development Program for students in middle school and high school. The youths embarked on several field trips during the summer, including to a pair of Covanta facilities.

Groups from both clubs traveled to Philadelphia to tour the Covanta Environmental Solutions E-Waste Recycling Facility. The students learned about the potential environmental hazards posed by the improper disposal of electronic waste, then watched how Covanta Environmental Solutions breaks down the various e-waste items it receives and saw the valuable recyclable material recovered before final disposal. The clubs also took a tour of Covanta Union to learn about the Energy-from-Waste process and how it benefits the environment.

Go Green Initiative

The Go Green Initiative (GGI) has been Covanta's premier environmental education partner for over a decade. The GGI works directly with public school districts in some of Covanta's most strategic regions and helps schools create healthy learning environments for their students. In NJ, Covanta and the GGI helped the Camden City School District (CCSD) avoid $12 million in fines for being out of compliance with state recycling laws. Additionally, the GGI helped CCSD's Brimm High School earn the highest level of recognition under the Sustainable Jersey for Schools program. Covanta will be working with the GGI to replicate this success in the Newark Public School District in the coming months.

CAUSE at the Camden Aquarium

Covanta supported the Community and Urban Science Enrichment (CAUSE) program run by the Center for Aquatic Sciences at the Adventure Aquarium in Camden, NJ. The CAUSE program provides youth in the community with "character education, life skill training, mentoring and advanced aquatic science education that leads to paid work as educators for younger kids in their community in summer and after-school activities." These student educators have a high school graduation rate of 100% in a community that averages 50%. Their college attendance rate is also approaching 100%. Our support has permitted them to develop a marine debris and plastics curriculum, which has now been implemented.

Demonstrating Energy Recovery at Mystic Aquarium

At the Mystic Aquarium in Connecticut, thousands of visitors since 2016 have visited "Covanta Cove," an interactive exhibit sponsored by Covanta. Visitors learn how ocean plastics and marine debris can be collected, recycled and turned into clean energy to power neighborhoods at Covanta's EfW facilities.

Earth Day Education

To support the next generation of environmental leaders, Covanta works with school students on creative ways to share the importance of recycling and responsible waste management. For example, in honor of Earth Day in April 2019, middle school students in Tampa, Florida, participated in a Recycling and Science Poster Contest, jointly organized by Covanta's eight EfW Florida facilities and Step Up For Students, a nonprofit that administers scholarships for Florida schoolchildren.

The contest asked students to visualize their commitment to recycling and science by depicting a theme, such as Energy-from-Waste, composting, recycling, electronic recycling and more. For its participation, the school received a $500 gift card to Staples to be used for school supplies.

Scholarship Programs

Through Step Up For Students, Covanta has funded over 140 scholarships for deserving Florida students since 2016. The funds are donated through the Florida Tax Credit Scholarship Program, which serves lower-income children in Florida by allowing them to attend the school of their choice.

Now in its tenth year, the Covanta Scholars Program recognizes the outstanding accomplishments of Covanta employees' children by providing a financial contribution toward their college education. Each year, Covanta awards two $2,500 scholarships and up to twenty $1,000 scholarships to eligible students on the basis of academic achievement, community involvement, leadership and financial need. In addition, many facilities contribute to scholarship programs at local schools and districts. For example, the Babylon Covantage EcoTech Scholarship Contest is designed to encourage students who are conducting science fair projects or advanced study projects in environmental science courses to focus on renewable energy sources, greenhouse gas reduction, development of alternative building materials or any other means to reduce global warming and environmental degradation.

The fourth pillar of our community strategy is about listening carefully to the waste and pollution concerns that are most important to our stakeholders and then implementing local solutions that help reduce the impacts from waste management. We're always proud to contribute unique solutions that support local environmental responsibility.

Prescription for Safety (Rx4Safety)

Opioid-related drug overdoses are a growing crisis in the United States. Safe disposal of expired or unwanted medications is an important step to addressing this crisis; but improper disposal, such as by flushing unused medications down the toilet, can poison waterways and damage the ecosystem.

Learn more about Pharmaceutical Waste.

Launched in 2010, Covanta's Rx4Safety program seeks to address this challenge by providing the means for safe, secure and anonymous disposal of prescription medications, over-the-counter drugs, veterinary medications and nutritional supplements through participation in community-sponsored, drug take-back events. Pharmaceuticals collected at these events are properly disposed of through thermal destruction so that they do not end up in public waterways and drinking water. Since 2010, Covanta has successfully disposed of more than 2,000 tons of unused prescription medicines, generating more than 1.3 million kWh of renewable electricity, or enough to supply 128 homes with power for a year.

"Pharmaceutical waste disposal is something we are deeply concerned about on behalf of residents across Long Island. Safe disposal methods for unwanted and expired drugs are critically needed to ensure homeowners are not flushing them or pouring them down the drain. Incineration is the only way to ensure that these substances are not getting in our drinking, coastal and marine waters. Covanta's leadership through the Rx4Safety program has been extremely meaningful to our island."

Adrienne Esposito, Executive Director, Citizens Campaign for the Environment

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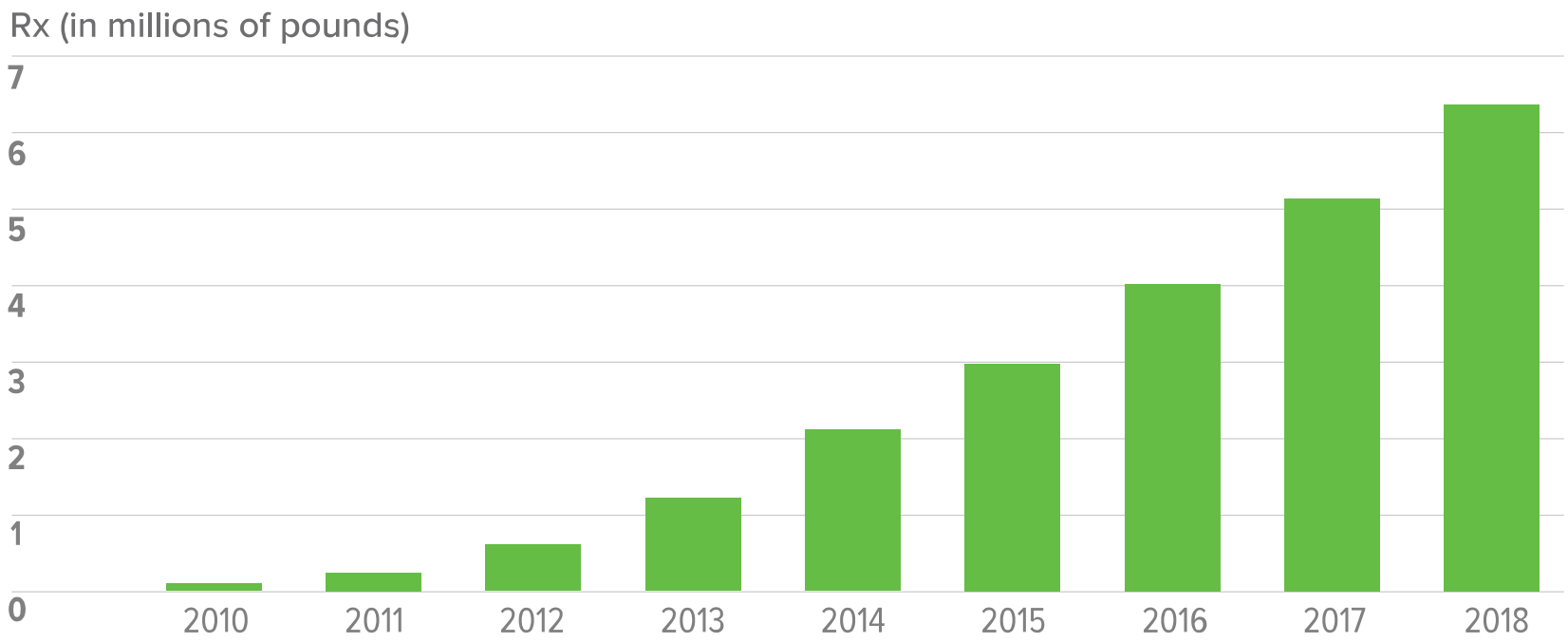

Marine Debris

Each year, 640,000 tons of fishing gear is lost or abandoned around the globe. During a hurricane season in Florida, for example, up to 300,000 traps can be displaced, along with up to 3,500 miles of rope and nets. In addition to the significant economic loss this presents for fishermen, it causes extensive marine life entanglement, damages sensitive habitats and presents navigational hazards for boaters. Abandoned fishing gear never stops fishing, resulting in harm to fisheries and local biodiversity.

Fishing for Energy—a partnership between Covanta, the National Fish and Wildlife Foundation, the NOAA Marine Debris Program and Schnitzer Steel Industries addresses this problem by offering no-cost solutions to recycle and recover energy from derelict and retired gear that would otherwise become marine debris. Over the past decade, 4 million pounds of derelict fishing gear has been collected by engaging more than 1,000 fishermen in 55 U.S. fishing communities in 12 states on the east and west coasts. Through collection events and the installation of collection bins at strategic ports, the program is preserving marine wildlife and has generated enough clean electricity to power more than 44,000 homes for one year.

Mercury Collection

Thermostats, thermometers and other household items containing mercury are considered hazardous waste. When discarded with everyday trash on its way to landfill, the interior mercury bulbs of these items often break, becoming a dangerous environmental hazard and a major public health concern. Covanta has led mercury awareness initiatives and conducted collection programs since 2000. Our EfW facilities use sophisticated air pollution control equipment that removes 95 percent of mercury. Through these efforts, we have helped divert more than 4,152 pounds of mercury from the waste stream, which is roughly equal to the amount of mercury found in 1.5 million thermostats.

We also believe that the best strategy for preventing releases of mercury and other toxins in the future is to reduce their use in consumer products in the first place. We support well-designed extended producer responsibility programs, and we're a sustaining partner of the Product Stewardship Institute, a nonprofit dedicated to minimizing the negative impacts of consumer products and packaging.

"Covanta is very dedicated to our mercury collection event. Even though the use of mercury in consumer products has been phasing out for years, it's always amazing to see how much mercury is still out there in need of responsible collection. Thanks to the generosity of Covanta, we are making progress on that every year to the great benefit and health of our local communities."

Dereth Glance, Executive Director, Onondaga County Resource Recovery Agency (OCRRA)

E-Waste Collection

We also work with community partners to support local e-waste collection events. For example, in 2018, for the fifth year in a row, Covanta participated in Newark, New Jersey, collection events in partnership with Panasonic, the City of Newark and other local partners. During a single event in the Ironbound community, approximately 7,700 pounds of material, including over 6,000 pounds of old television sets, were collected. Other items collected included computers, CD/VCR/DVD players, fax/copy machines, cameras and more. In combination with other e-waste collection events in the Newark area, Covanta has recycled 155,000 pounds of e-waste from residents since 2012.

Flag and Wreath Retirement

We are pleased to be able to provide vital services in support of organizations that remember and reverently honor the deceased men and women of our military. In accordance with U.S. law, the American flag should be "retired" when it is tattered, torn or discolored beyond repair. When that happens, it is to be retired in a dignified manner, historically through a ceremony where it is burned. Though veteran organizations have flag collection and retirement programs in place, the volume of retired flags can become unmanageable as the synthetic materials used to make the flags are unsafe and unhealthy to burn openly in a ceremony. We are pleased to have been able to safely and respectfully dispose of excess flags in our EfW facilities. Led by the many veterans working at our facilities, we

conduct retirement ceremonies in partnership with veteran groups. Since Flag Day, June 14, 2018, Covanta has disposed of 55,000 retired flags.

In partnership with Wreaths Across America, we sustainably recycle and dispose of wreaths that are laid on gravestones of military veterans at cemeteries across the United States. In the weeks following the end of the holiday season, for example, hundreds of thousands of evergreen wreaths from more than 1,640 locations are delivered and processed at nearby Covanta EfW facilities free of charge. Covanta's facilities recover energy from the organic portion of the wreaths, and the metal frame is collected for recycling. Covanta's Long Island facilities alone collect approximately 40,000 wreaths during the holiday season, generating enough energy to supply electricity to eight homes for one month. In addition, the metal recovered from the Long Island facilities amounts to over 1,000 pounds, enough to manufacture over 8,000 soup cans.

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Bringing Urban Gardens to the Community

Covanta Bristol in Connecticut, together with the Bristol Boys & Girls Club, Home Depot and Quantum Bio Power, worked to make the community a little greener in June 2018 by installing urban gardens at designated locations in town. The initiative has not only beautified the Bristol community, but has also given residents the opportunity to enjoy fresh vegetables right from their backyards. In total, nine new garden beds were built and nine existing garden beds were refurbished. With donations of plants and seeds from Covanta Bristol, more than 100 varieties of fruits and vegetables were planted.

"We are incredibly grateful to have Covanta's support for our Community Garden at our Cambridge Park Boys & Girls Club. The gardens have taught our members responsibility and have highlighted the importance of taking care of our environment. Covanta's commitment to protecting the planet with environmentally sound waste management and renewable energy solutions in our community is extremely important for our younger members to learn about and appreciate!"

Jay Maia, Cambridge Park Boys & Girls Club Unit Director

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Safety and Health

GOAL

Achieve world-class safety and health performance through disciplined continuous improvement, safety leadership at all levels, full employee engagement and an integrated, interdependent world-class safety culture.

PROGRESS

2018 was the safest year for our EfW facilities in the history of the company, with a 31 percent reduction in incidents year-over-year.

At Covanta, we are committed to *Moving Beyond Zero*. Safety is not simply about programs or metrics—it's about making sure everyone (employees and contractors) goes home safely every day. We believe in building and maintaining a robust safety culture that extends across every facility and worksite, one that is characterized by teamwork, peer support, open communication and trust. And to ensure that safety remains a top priority, the Supply Chain and Public Policy Committee of Covanta's board of directors oversees, among other topics, safety and health performance at all levels of the organization.

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Safety and Health

Promoting a Safety Culture

Creating a world-class safety culture requires commitment from every level of the organization. Through Covanta's programs, policies and training materials, we strive to create an environment where everyone in the organization is focused on working safely and feels empowered to speak up and call a "time out" if they see something that concerns them.

Employees use the **Three Steps to Safety** in their daily work to ensure they take the time to identify potential hazards, take steps to control them and are ready for the unexpected. We are also developing and implementing a formal Safe Work Permit process for nonroutine work tasks. A team of field employees has been working on developing this process with piloting of the new permit planned for the fall of 2019 and full implementation expected in early 2020.

Three Steps to Safety

1 **IDENTIFY** Potential Hazards

2 **CONTROL** the Hazards

3 **EXPECT** the Unexpected

Evaluating the Efficacy of our Safety Culture

We know that culture drives performance, but "culture" can be a difficult thing to measure. To better understand our safety culture at Covanta, we conduct periodic perception surveys to monitor employee opinions on the status of our efforts. By reviewing these results, we help ensure that our programs and efforts are really impacting our work environments and that we are continuing to improve.

While Covanta monitors traditional safety measures such as injury statistics, we are also developing leading indicators that help us have a better real-time understanding of our safety efforts. We focus on measuring the **three Ps: Participation, Performance and Potential Opportunities for Improvement.**

We expect all employees to be active participants in our safety culture, to perform well against safety metrics and to help identify and address potential concerns. Because our focus is on ensuring quality observations and not merely "checking a box," we believe the third "P"—identifying potential opportunities for improvement—is perhaps the most important of these measures.

Taking Ownership of Safety

We have several programs in place to build our safety culture by empowering Covanta employees to take ownership of safety practices in the workplace. These include:

- **Leadership training:** all Facility Management, Supervision and Corporate employees must complete this six-part series—which is designed to develop safety leaders—within six months of hire or promotion.
- **Peer mentoring and feedback:** everyone benefits from constructive analysis that leads to greater team awareness. For example, when there is a near-miss incident, we focus on examining the behavior behind the event rather than taking punitive action.
- **Green Hard Hat program:** new employees wear green hard hats to make themselves easily identifiable to colleagues who can provide guidance regarding safe behaviors and protocols. All employees are empowered to take ownership of their personal safety and that of their peers.
- **Tailgate Meetings:** 10- to 15-minute “Tailgates” are held weekly, at the beginning of shifts. Topics may include new processes, regulatory changes or content resources developed by other Covanta employees.
- **Communicating best practices:** Covanta’s intranet site dedicates a page to safety with articles based on current events, awareness programs and employee newsletter accomplishments. Each month, facility meetings focus on a main safety topic for group discussion.
- **Injury and Serious Near Miss leadership review calls**: each month, all recordable injuries and Serious Near Misses (SNM) that occurred in the previous month are discussed on a conference call with senior management. All facilities are invited to join, learn from each other and share ideas on how to prevent the same or similar incidents from occurring again.

Recognizing Safety, Health & Environmental Excellence

Since 2011, Covanta has been awarding SHE Gold Star Awards to facilities demonstrating commitment to Safety, Health and Environment (SHE). In 2019, four facilities were honored, including SeMass, Hempstead, Huntsville and Lancaster. All four SHE Gold Star winners were injury free in 2018, and two had zero environmental events during the year. Each demonstrated a strong safety culture, made safety and environmental improvements at their facilities, and took part in community outreach efforts.

“Why is Safety Important to You?”

While Covanta employees are committed to the safety of their coworkers, contractors and themselves, each person has a personal motivation for wanting to come home safely every day. To underscore the importance of this personal motivation behind why they work safely, we often ask our employees why safety is so important to them. What is their own story or “why” that inspires them to work safely? Remembering the reasons we work safely every day and discussing these topics openly are foundational to building and reinforcing a strong safety culture at Covanta.

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Safety Spotlight: On-the-Job Training Helps Save a Child's Life

When asked why safety is important to him, Derek Sneade, a welder/mechanic at Covanta Bristol in Connecticut, is certain of his answer.

In April 2019, Derek was enjoying the day with his wife and their one-year-old daughter, Aubrey. At lunchtime, Derek's wife cut up some fresh fruit for Aubrey who happily began eating. A short time later, Derek heard his wife cry for help. He rushed into the kitchen to find Aubrey squirming but making no sounds. It was obvious to Derek what was happening—his daughter was choking.

"I didn't even think about it; the training was fresh in my mind."

Derek Sneade,
Welder/Mechanic, Covanta Bristol

Fortunately, Derek remembered the CPR training he had received at the Bristol facility. He grabbed Aubrey and positioned her on his arm to perform infant back blows. After two or three blows, the food flew out onto the floor and Aubrey began to cry loudly.

His CPR training had worked, and Derek saved his daughter's life. "I didn't even think about it, the training was fresh in my mind," Derek said. "The panic came afterwards when I stepped back to realize what had happened."

When he returned to work, Derek shared his story with his colleagues and, in particular, thanked Control Room Operator Mike Tallon (the Red Cross Instructor who conducts CPR and first aid classes at the Bristol facility) and Toby Trebilcock, safety coordinator at Covanta Bristol, for the training he had received.

All Covanta employees receive training on many topics each year. Some topics cover scenarios employees face on the job every day while others extend to their personal lives, which we hope they never to have to use. Fortunately, Derek had the knowledge he needed when confronted with a life-threatening situation.

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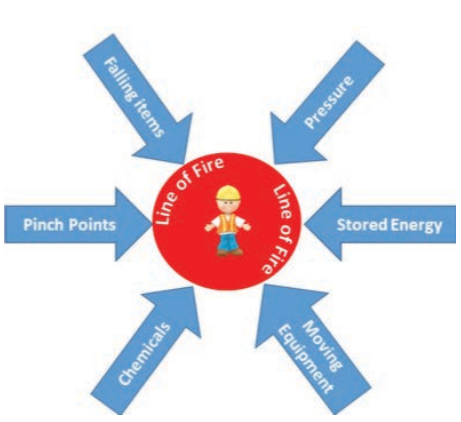
Safety and Health

Ensuring Safety in the Workplace

We are focused on Moving Beyond Zero. Good safety statistics are impressive, but our top priority is ensuring that our employees and contractors go home at the end of every day without a workplace injury. Because the success of our safety program depends on the daily efforts of our employees to understand potential hazards and operate responsibly, we do everything we can to provide them with the resources and training they need to always be safe.

At Covanta, we believe that all accidents and injuries are preventable. We are focused on identifying the root causes for each incident, including near misses. Every incident has three types of causes that must be identified and addressed: material, human and system. Material causes are the energy source or equipment involved in the incident. Human causes are those behaviors or actions that the affected person or a coworker took that put the person at risk. System causes are the organizational processes in place that allow or promote the behaviors or actions that workers take or don't take, or that influence how equipment is maintained.

We are also focused on identifying potential hazards through internal audits and reviews, including focused behavioral safety audits. One key area of focus in 2019 and 2020 is identifying and mitigating potential **line of fire hazards**, which put workers in the path of energy. This can include risks associated with materials dropped from overhead, stored energy inside a chemical hose, pinch points produced when closing or opening equipment access doors, or working around moving equipment such as fork trucks.



Voluntary Protection Program

We model our Safety Management System on the stringent provisions of the U.S. Occupational Safety and Health Administration's (OSHA) Voluntary Protection Program (VPP), which is analogous to the OHSAS 18001 standard. The VPP is a rigorous, comprehensive safety and health management system program recognizing employers and employees who demonstrate exemplary achievement in the prevention and control of occupational safety and health hazards. In practice, VPP sets performance-based criteria for a managed safety and health system. The required verification includes an application review and a rigorous onsite evaluation by a team of OSHA safety and health experts.

Thirty-three of our locations have earned the VPP STAR rank of excellence, making Covanta one of the top ten companies in the United States with a majority of operating locations recognized as STAR Worksites. Our participating facilities promote effective worksite-based safety and health performance through hazard prevention and control, worksite analysis, training, management commitment and worker involvement. Star facilities must demonstrate exemplary achievement in the prevention and control of occupational safety and health hazards as well as the development, implementation and continuous improvement of their safety and health management system.

In 2018, six facilities successfully completed VPP recertification. The OSHA VPP recertification process requires us to show continuous improvement and challenges us to strengthen the capabilities of our own employees and facilities. As part of this process, Covanta undergoes a comprehensive review by OSHA that includes interviewing our employees to understand firsthand the changes that have been made to improve systems and processes.

Stepping Up for Safety

Every day, we ask our employees to “step up” and take ownership of safety—both their own and that of their coworkers. “Safety Today and Every day is Paramount—Unleash the Power”—or “STEP-UP”—is Covanta’s internal leadership management program on safety, health and environment (SHE). In 2018, we continued to use the STEP-UP safety program to move to the next level of safety performance for employees and contractors, emphasizing effective communication and training in the workplace.

One of the primary ways we utilize the STEP-UP program is by convening monthly facility meetings that feature important discussion topics for all participants. This may include feedback and learnings from recent company events, updates on key safety and health initiatives at both the site and corporate level, and updates on site safety concerns. Meeting insights are cascaded from Covanta management to site employees. In turn, feedback during meetings flows back up through the organization. This approach ensures that these meetings are an integral part of the safety and health communications across the company.

Investing in Safety Training

Safety, health and environment (SHE) training is about preparing our employees to respond to hazardous situations while giving them the resources they need to identify those hazards before they occur. Our SHE training materials are constantly evolving to deliver fresh, engaging and relevant content that will raise awareness on specific safety topics among our employees.

For example, over the past few years, we’ve rolled out new resources for safety awareness and training, the overall goal of which is to enhance performance by bringing safety information and awareness to employees in an accessible, fun and engaging way. SHE videos developed by Covanta facility employees cover specific safety topics pertinent to operations, such as “Stop the Drop,” which is focused on preventing falling and dropped objects. To help foster a strong safety culture, we train our employees to perform safety observations with a focus on effectively providing *and* receiving feedback. On a more technical note, we also provide training on specific hazards and procedures (e.g. spill identification and reporting, electrical safety).

Our “Red-Yellow-Orange Safety Training” is another important element of our STEP-UP program. All corporate employees must receive three to nine hours of safety training, coded “red-yellow-orange,” depending on their job function. Annually, corporate supply chain (e.g., operations, maintenance and engineering) employees also receive 24 hours of SHE training. Field employees receive at least 24 hours of training per year.

Contractor Safety and Health Performance

We regularly employ thousands of contractors in our facilities for maintenance jobs and other crucial functions. Ensuring their safety and health is just as important as it is for Covanta employees. Our six-factor contractor safety program focuses on qualification, safety and health performance assessment, outreach, communication, mentoring and training.

To identity safety-conscious contractors and manage our own risk, Covanta’s procurement and strategic sourcing departments pre-qualify all contractors and monitor the contracting process. Next, we rely on a third-party system, ISNetworld, to fully qualify contractors and to standardize the process across 10 geographic regions. This includes ensuring Covanta only works with contractors designated as having safety metrics below the industry-specific index or benchmark. We also leverage the ISN platform to communicate policies and expectations to contractors, retrieve safety statistics, and monitor safety, insurance and training requirements.

Our next big focus area in this effort will be to document individual contractor employee training and qualification. This will allow us to ensure that only the most qualified contractors are working at our facilities.

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Safety and Health

Delivering on Safety Performance

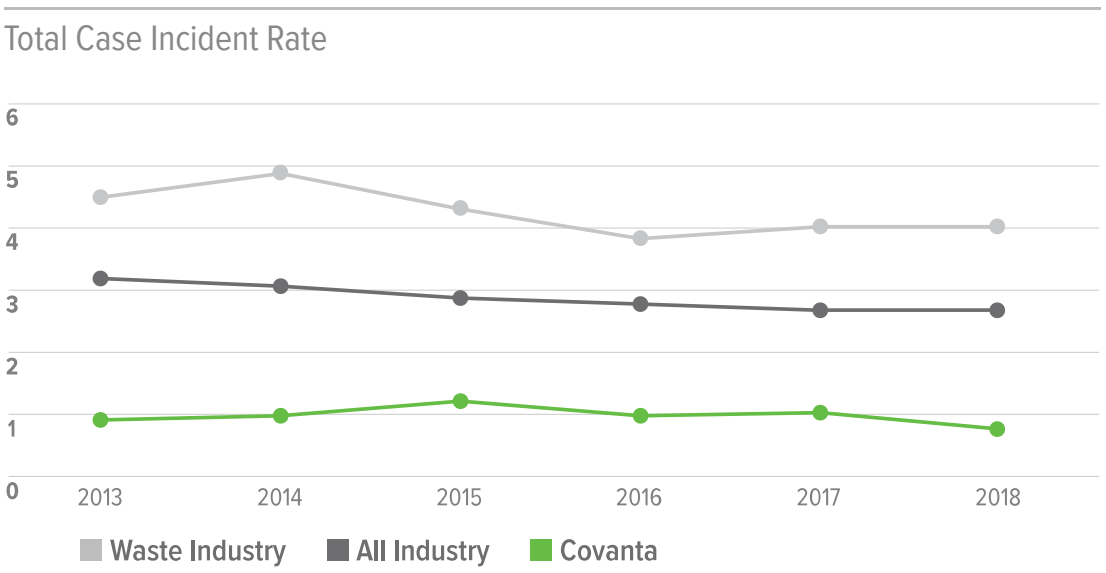
2018 was the safest year for our EfW facilities in the history of the company. Our EfW facilities saw a 31 percent reduction in incidents year-over-year, while the company's injury rates, as measured by total case incident rate (TCIR), reached a record low.

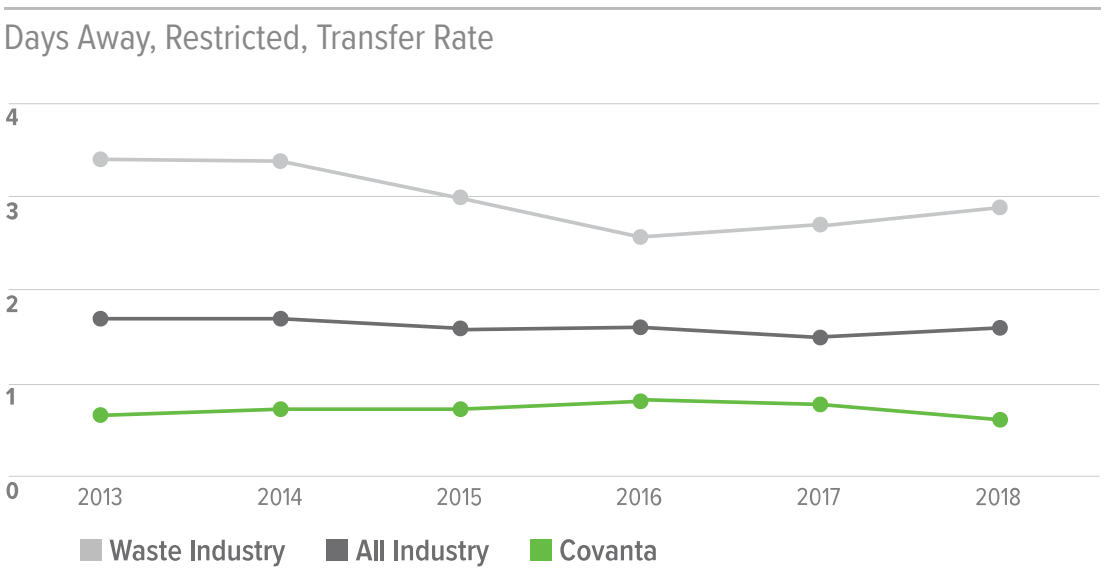
66% of Covanta facilities were injury-free in 2018.

Progress from 2017 to 2018

- **+15%** improvement in our OSHA recordable safety metrics
- **+24%** improvement in Total Case Incidence Rate (TCIR).
- **+21%** improvement in Days Away, Restricted, Transfer Rate (DART)

Covanta performs well above its peer group with regard to safety and health performance. Covanta's injury rates, as measured by TCIR, are well below the U.S. "All Industry" average and the average for the "Waste Industry," as defined by the U.S. Bureau of Labor Statistics. Covanta rates were significantly below the waste industry and national industry averages in 2017. (Note, a significant driver of the high rate of injuries for the waste sector relates to the waste collection business.)





A 2017 fatality of one of our heavy equipment operators led us to do a thorough reevaluation of our heavy equipment operations. This included hiring third-party experts to review our heavy equipment operations and work practices. Based on the results of this evaluation, we modified the seats in our heavy equipment to incorporate safety belt systems utilizing bright webbing to both provide superior protection relative to customary lap belts and to provide a better means of verification of compliance with our seat belt policy. More detail of our response to this incident can be found in our previous Sustainability Report.

Leveraging Data to Improve Performance

In 2018, we launched ProcessMAP, a comprehensive workplace safety and health software solution that has streamlined and centralized our previously distinct databases related to areas such as incident management, behavior-based safety, industrial hygiene management and safety auditing. The consolidated system now provides real-time reporting and a more efficient data tracking process, which allows Covanta to better manage associated risks and improve overall safety performance. For example, we can now derive actionable insights from every incident, identify underlying root-causes and take steps to prevent future impacts.

ProcessMAP is being used by employees at Covanta sites to complete:

- Routine safety inspections, such as monthly fire extinguisher checks
- Near miss and potential hazard reporting
- Focused behavioral safety observations on lockout/tagout jobs, line of fire tasks, etc.
- Action items tracking
- Workplace air and noise monitoring results

This information can easily be completed and uploaded to a computer, iPad or mobile phone. More than 10,000 entries were added to the system within the first six months of 2019 alone.

Continuously Improving Safety

We are continually reevaluating our safety programs across our operations and making improvements to our facilities and equipment. We conduct internal “Snap Shot” audits, safety observations and other reviews to monitor our programs and identify areas for improvement. In 2017, we hired third-party experts to review the entirety of our safety programs and culture across the company. Following that review, we implemented a detailed action plan to address their suggestions for improvement. These have included an increased focus on operational discipline, improvements in our investigation process, an effort to improve our management of change process and a general effort to simplify safety procedures and make them more user friendly. We have also implemented related training for employees to help facilitate these changes.

To ensure that we align our resources and attention with those areas that present heightened safety and health risks, we continue to develop comprehensive, actionable Safety Improvement Plans (SIPs) for at-risk facilities that need additional support in advancing safety performance or building a stronger safety culture. Each month, these facilities update senior management on their progress concerning

action items laid out in their SIPs. When facilities improve their safety performance, they can leave the SIP program by mentoring another facility. As of 2019, there are eight plants with SIPs that are being formally reviewed by management on a quarterly basis.

Another area for continuous safety improvement for Covanta has been in evaluating the procedures for our tipping areas (that is, the space where trucks dump waste to be processed). Several locations are now piloting radio-frequency identification (RFID) systems (which use electromagnetic fields to identify and track objects) to aid in tipping floor safety by alerting heavy equipment operators of pedestrians in the area. Additional measures are being implemented to minimize foot traffic in these areas, manage and route truck traffic, and encourage improved hauler safety practices.

Integrating Safety Consistently

We continue to expand our network of facilities through acquisitions and organic growth initiatives to serve a wider range of customers. As we grow, we remain focused on ensuring that our safety culture and procedures are firmly established at each facility. For acquisitions, we work closely with our new employees to help them become fully integrated into our safety program. Corporate, regional and sister site plant personnel help new employees get up to speed with Covanta initiatives and programs. It's critical that all employees are committed to Moving Beyond Zero.

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Implementing Safety Improvements in Fairfax

In 2018, Covanta's Fairfax County Resource Recovery Facility in Lorton, Virginia, resumed operations with enhanced safety infrastructure and protocols after being closed for nearly a year following a 2017 fire that damaged its waste storage area.

Covanta Fairfax during reconstruction

Although the investigation into the cause of the fire was inconclusive, the proliferation of lithium-ion batteries remains a potential cause. Covanta wasted no time in conducting a thorough facility review and installing upgraded systems and equipment to improve safety and reduce the likelihood and potential impacts of fires in the future.

Examples of the infrastructure improvements we implemented include installing infrared/thermal imaging cameras, motor-operated roof hatches, a noncombustible roof system and upgraded sprinkler systems at the facility. We also improved notification protocols and automatic dispatch for emergency response. If sensors detect a fire, water cannons will immediately deploy and an emergency call will be placed. We have also implemented new operational changes, such as no longer allowing waste to remain on the tipping floor overnight and creating wider barriers between where garbage trucks dump waste and where it is stored before processing.

After our investment in these changes and upgrades, the Fairfax facility is now poised to be safer than ever and is serving as a model for other Covanta properties. Although any renovations are always done according to a facility's own individual risk profile, our successes in enhancing safety at the Fairfax facility demonstrate how we are working to continuously improve safety and consistently incorporate fire prevention considerations across our operations.

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Workforce Engagement

GOAL

Create and maintain an inclusive, respectful and equitable environment that leverages the unique talents, perspectives and experiences of our diverse workforce.

PROGRESS

Three-year effort to bring diversity and inclusion educational awareness training to the entire company completed in 2019.

Our dedicated workforce drives our business and our success. We build high-performing teams and position the company for success by attracting and hiring diverse individuals, developing and retaining the best talent, and fostering inclusion of all employees. By investing in our people, we encourage innovation, reduce costs through continuous improvement and grow revenues by developing new businesses and services.

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Workforce Engagement

Building a Great Place to Work

Covanta's commitment to developing sustainable solutions for society and the environment attracts ambitious employees who want to make a positive difference in the world. To create an open and supportive workplace environment where they can thrive, we offer employees engagement opportunities, recognition for excellence and competitive compensation and benefits.

Covanta Coffee Chat with CEO Steve Jones

Connecting with our Employees

Carefully listening to our employees and finding effective methods to gather their input and feedback are an important part of Covanta's culture. On a regular basis throughout the year, we identify meaningful ways to connect with our employees and to gather their input and suggestions. For example, we:

- Maintain an intranet site, ***Covanta Connect***, to share information, provide learning tools and post employee resources;
- Publish a monthly internal employee newsletter, ***Direct Current***, to share stories, announcements, awards and employee spotlights;
- Feature **electronic bulletin boards** at convenient locations in facilities to share informative content and video messages from senior leaders; and
- Host monthly departmental discussions (for example, the Supply Chain team) to provide updates and answer questions.

Finally, we maintain open and collaborative relationships with our union partners. Covanta respects our employees' rights to freedom of association and collective bargaining. As of the end of 2018, seven percent of our approximately 4,000 employees were covered by collective bargaining agreements.

Promoting Employee Growth and Recognition

All full- and part-time Covanta employees participate in annual performance reviews with their managers to jointly determine professional strengths and development opportunities.

Employees review and submit individual accomplishments, receive and provide feedback, and discuss individual and organizational goals with their managers. Based on the discussion outcomes, employees may undertake targeted training to address competency gaps, such as learning new workplace processes, strengthening communication skills or improving interpersonal and management skills.

Caring for our Employees

When employees join the Covanta family, they quickly discover that they not only belong to a collaborative team working on exciting and challenging tasks, but also have access to an array of comprehensive employee support tools and benefits, such as:

- Health and welfare benefits, including medical, prescription drug, vision, dental and savings plans;
- Tax-advantaged accounts to help pay for qualified health care expenses, including Flexible Savings Account and Health Savings Account options;
- A 401(k) retirement plan including company contributions and company matching contributions;

- Free financial coaching;
- Adoption assistance;
- Programs and resources for employee well-being and assistance; and
- Annual Incentive Program that awards bonuses based on company, facility and individual performance to all full-time employees who are not part of collective bargaining agreements.

In addition to company paid holidays and paid time off, Covanta allows flexible schedules in the summer months by allowing eligible employees to work a longer day for up to four days per week (subject to the unique and complex schedules of our facilities), in return for a half-day off that week.

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Lifting Up Covanta Employees

Covanta's ILIFT (Innovation, Leadership, Initiative, Flexibility and Teamwork) Employee Recognition Program helps to create a culture of appreciation at Covanta.

Using social media elements, the platform lets individuals see the various recognitions earned by co-workers, make comments and offer their own accolades in realtime. ILIFT operates on a point-based system, enabling participants to earn points, which can be redeemed for prizes, for each type of recognition received. The points may be accumulated over time and cashed in for rewards of increased value. Participants can even display their ILIFT awards using a "trophy case" feature in which badges and honors that pertain to goals, recognition, years of service and life events may be shared.

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Workforce Engagement

Investing in Training and Development

Covanta employees are eager to learn new skills and develop new professional capacities. To prepare our teams for the future and ensure they have all the tools they need to succeed in their roles along the way, we offer numerous opportunities for individual development and mentorship.

Training Programs

Covanta offers a variety of programs designed to advance employees' skills. Evaluations are completed after core leadership training programs to measure effectiveness across five categories, including job impact/business results, which continues to be one of our top scoring categories. During a recent survey of all past program participants and their managers, more than 80 percent saw improved job performance as a result of the training.

Key training programs include:

- ***The Essentials of Supervisory Success*** and ***Powering Your Leadership,*** which equip Covanta managers with the skills they need to increase their personal effectiveness. To date, more than 450 first-line managers and mid-level leaders have taken these courses.
- **Operator and maintenance qualification programs,** which ensure that our employees are equipped to perform their jobs safely and efficiently by providing guidance on topics such as electrical qualification, boiler operations and power generation fundamentals.
- **Education assistance programs,** which provide financial support to employees who would like to broaden their knowledge base, develop further professional skills and take external classes to prepare for other positions within Covanta.
- **Six Sigma Green Belt certification program,** which provides employees with the opportunity to learn continuous improvement tools while working on a project to improve our operations or business practices. To date, 15 employees have received their Green Belt certification.

Covanta's business is highly technical and requires well-trained and skilled operators and maintenance personnel. As such, we have a rigorous program to ensure that our employees have the right skills, qualifications and training to complete their jobs.

A key component of our training and qualification program is American Society of Mechanical Engineers (ASME) Certification. We employ over 400 Operators at 35 facilities with a certification to operate facilities that combust municipal solid waste and recover energy from that process. The certification process is progressive in nature, providing opportunities to advance in one's career. In 2019 alone, there have been over 350 instances where operators have completed the requirements to advance or be promoted.

Technical training is provided through several mechanisms to allow for flexibility and facility-level specific training:

- Self-paced training courses: This material is designed to provide applicable fundamental and theory-based training.
- Facility-specific system study guides: This content is site specific and based on the technology found at the assigned facility. These guides are designed to aid the operator in gaining a greater understanding of the systems, components and technology at his or her facility.
- Additional requirements: Any additional certifications, licensing, training or experience required for the operator to satisfactorily perform the duties and responsibilities of his or her position.

Tracking the completion of training to ensure that our operators are meeting the requirements of their positions is managed through our Learning Management System (LMS). Our LMS provides a single-point solution that assigns, offers and tracks the status of our qualification and training programs. All assignments are organized in a manner that intuitively displays expectations and status, allowing

managers and corporate/regional personnel to quickly ascertain individual and collective performance across the enterprise. On demand reports as well as regularly scheduled automated reports improve the visibility and management of the qualification program.

Our reporting capabilities reflect the current status of an organization, predict current trajectory and identify improvement opportunities. In addition, our well-defined process (control plans) coupled with identified Key Performance Indicators (KPIs) provide us with detailed data analysis, allowing us to better understand the state of our program regarding its strengths and potential areas for improvement.

2019 Interns with CEO Steve Jones

Developing a Strong Talent Pipeline

We value the diversity in our workforce as reflected by age and levels of experience. According to U.S. Census data, 40 percent of the workforce is expected to be comprised of millennial and Gen Y employees by 2020. In addition, a significant portion of Covanta's workforce is at, or approaching, retirement age. In anticipation of these trends and the need to equip our future leaders with the skills they will need to be successful, Covanta offers several professional development programs for young professionals:

- Our **Undergraduate Internship Program** invites talented individuals to gain knowledge and experience about the waste management industry while supplementing their studies. During the summer of 2019, Covanta welcomed 64 interns from 36 universities, filling roles at 21 Covanta and CES locations.

- The **Early Career Development Program**, launched in 2018, enables recent college graduates with less than three years of relevant work experience to gain knowledge about Covanta's diverse business functions. Eight young professionals (25 percent female and 25 percent from diverse ethnic groups) participated in the inaugural class. We plan to continue to expand and diversify this program by leveraging the Undergraduate Internship Program.

- Our companywide **Mentoring Program**, first launched in 2017, is a year-long opportunity for employees from diverse cross-sections of the company to develop the skills to succeed in a dynamic work environment. Believing in the unique power that these mentoring relationships can provide, we launched a second iteration of the program in March 2019 that connected 50 mentee/mentor pairs, up from 40 pairs in the first program.

Educational Assistance Training Program

Covanta provides an educational assistance program to financially assist and encourage employees to broaden their knowledge, skills and effectiveness while also helping prepare them for other positions within the Company to which they may reasonably aspire. The program is available to regular full-time employees who are actively at work and have completed six months of continuous service with the Company.

Performance Review Process

Covanta has established a year-round Performance Management process in which managers and employees work together to establish performance goals, communicate expectations, identify development plans and provide ongoing feedback on a consistent basis. It is a valuable tool used to visit and revisit performance strengths and development needs throughout the year, while also ensuring performance and organizational goals are aligned. The process includes mid-year and year-end performance review meetings to review performance and develop new goals and plans as needed.

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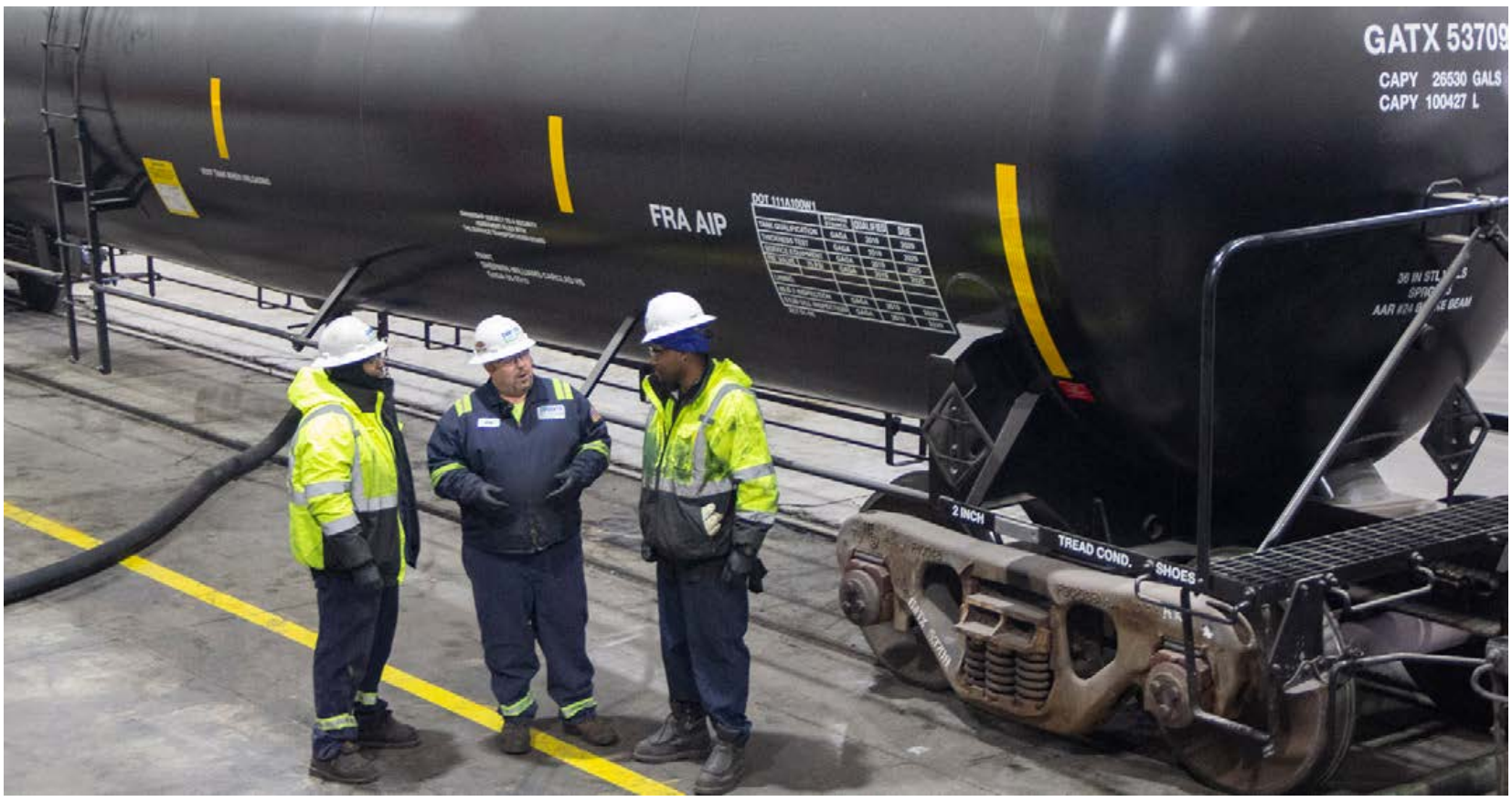
Workforce Engagement

Promoting Diversity and Inclusion

At Covanta, our vision is to create a culture of acceptance and individuality where all employees feel valued, respected and empowered to achieve their full potential. To ensure we remain an industry leader and an employer of choice, Covanta strives to create an environment that values all employee contributions and provides equal opportunities for professional development.



Employees at Covanta Indianapolis

Leading with Diversity and Inclusion

We aim to reflect in our employees the ethnic diversity of the communities where our facilities are located. We also focus on efforts to attract qualified female candidates to our organization. We track our progress internally against these and other diversity and inclusion (D&I) objectives using several measures, including recruitment targets and mentoring program participation. At the management level (director and higher), a diverse slate of candidates is sought and encouraged for every job opening. This is leading to definitive changes in our hiring process and the composition of our executive ranks.

2018 Workforce Diversity

	Women	**Men**
Gender Diversity	11%	89%
	Minority	**Non-Minority**
Ethnic Diversity	28%	72%

Because we know that making continued progress on D&I will require full support from the top of the organization, in 2017 we launched the Diversity and Inclusion Leadership Council, which comprises executive leaders from across Covanta's functional areas. The Council has responsibility for D&I initiatives and meets quarterly to discuss advancement-related strategies and ensure alignment with key business objectives. Specifically, the Council's purpose is to:

- Promote an inclusive environment in which all employees feel respected;
- Increase D&I awareness and education;
- Facilitate improved communication among and between employees and external partners;
- Assist with achieving excellence in operations and client service; and
- Promote innovation and creativity to enhance growth and the achievement of business objectives.

Building D&I Awareness

By supporting expanded awareness of D&I issues throughout the organization, we are steadily embedding a D&I mindset into the fabric of the company. To enhance employees' cultural competencies across various D&I topics, in 2019 we completed in-person, half-day awareness training for approximately 90 percent of our workforce, an effort that was initiated in 2016. The goal of the training, presented in a workshop format, is to build a respectful D&I culture that recognizes the importance and unique contributions of every employee to

Covanta's success. The sessions include small group conversations in which employees provide valuable feedback to plant managers and share ideas on how to improve employee engagement around D&I objectives.

We shared feedback from the sessions with our D&I Leadership Council and other senior leaders to support corporate strategic planning in the future. Plans are now underway to continue to expand our learning and refine our ways of working based on these insights. Looking ahead, we will be focusing on developing inclusive leaders and understanding and mitigating unconscious bias.

RISE, Women's Employee Resource Group

Employee Resource Groups

In November 2018, Covanta's first three Employee Resource Groups (ERGs) were launched, each made up of employees with shared characteristics or life experiences:

- Women of Covanta: RISE
- Early Career Connections
- Veterans of Covanta

These three ERGs actively gather and engage people around their shared missions to create a more inclusive work environment for everyone. Any employee who shares the mission and goals of the group is invited to join. The ERGs frequently interact with senior leadership and the D&I Leadership Council to share their perspectives and act as liaisons with various diverse organizations.

In addition to providing a platform for sharing and connecting, the goal of the ERGs is to underscore Covanta's D&I mission by supporting recruitment activities, reinforcing employee onboarding, fostering community outreach partnerships and providing professional development opportunities. ERGs are influential in improving workplace culture and raising issues or obstacles that may impact certain employee groups.

Supporting our Veterans

Covanta has historically employed many veterans, as we seek professionals that possess not only exceptional technical knowledge, but also exemplary qualities such as teamwork, dedication and integrity. We are proud that as of 2018, approximately 12 percent of our U.S. workforce is made up of military veterans.

In 2018, we expanded our veterans outreach efforts by participating in a variety of recruiting events geared specifically to veterans, including hosting career fairs at our facilities. We also rely on an internal group of corporate and field-based employees who are veterans and can assist hiring managers in translating military titles and responsibilities into related business roles. These “talent ambassadors” have helped Covanta develop veterans’ programs for recruiting, onboarding, recognition and charitable contributions. As a result of these efforts, we hired more than 60 veterans in 2017 and 2018 and have added over 290 veterans to our workforce since 2013.

We’re committed to our veterans both inside and outside of the workplace. In Massachusetts, our SeMass facility hosted our annual charity golf tournament in support of the Cape Cod Military Support Foundation. The foundation supports military members stationed at the Joint Base Cape Cod and U.S. Coast Guard’s Southeastern New England station in Woods Hole.

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Covanta's CEO Pledge to Advance Diversity and Inclusion

In 2019, Covanta CEO Stephen Jones joined CEO Action for Diversity & Inclusion, the largest CEO-driven business commitment to advance D&I within the workplace.

The initiative includes nearly 700 leaders from U.S. companies and academic institutions that have pledged to cultivate a workplace where diverse perspectives are welcomed, where employees feel encouraged to discuss D&I and where best practices can be shared across organizations.

"At Covanta, we believe that people are our most valuable asset, and the diversity and inclusion of our workforce is key to our success. By embracing diversity, we are fostering a work community that opens minds and opportunities—one that helps Covanta grow stronger as a company. I'm proud to sign on to the CEO Action for Diversity & Inclusion pledge as we continue work towards a complete culture of acceptance, tolerance and individuality so we can all learn and grow together."

Stephen Jones
Covanta President and CEO

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About This Report

This is Covanta's fifth comprehensive sustainability report, covering our global operations through the end of the 2018 calendar year. Additional relevant information is also provided about activities in 2019. Our reporting objective is to be comprehensive and transparent in our disclosures regarding Covanta's sustainability management approaches, strategies, activities and performance. This report has been prepared in accordance with the GRI Sustainability Reporting Standards: Core option.

- The Progress on Goals section highlights our performance toward our goals.
- The Performance Tables provide economic, operational, environmental and workforce data. The scope of data coverage is described in footnotes to each table.
- The GRI Content Index provides detailed information on our adherence to the GRI Sustainability Reporting Standards.
- The SASB Table provides reporting information in accordance with meeting the Sustainability Accounting Standards Board (SASB) disclosure requirements.
- View Awards and Recognitions received by Covanta for Environmental, Safety and Business performance.
- Visit the Report Archive to download our past sustainability, progress and other relevant reports in PDF format.

Awards

SEAL AWARDS	**2018 SEAL (Sustainability, Environmental Achievement & Leadership)** Award for the Rx4Safety program.
A PROGRAM OF NJBIZ BUSINESS OF THE YEAR 2018 FINALIST	**2018 Corporate Citizen of the Year** by NJBIZ Magazine for making a positive impact in communities across New Jersey.
CLEAN200™	**Top quartile on the 2018 Carbon Clean 200™ (Clean200)**, a list of the top 200 publicly traded companies worldwide based on their share of clean energy revenue.
Rx4Safety™	**2019 Environmental Leadership Champion** by the Commerce and Industry Association of New Jersey (CIANJ) and COMMERCE Magazine for the Rx4Safety program.
SUSTAINABILITY AWARD 2019	**2019 Sustainability Award** from The Business Intelligence Group for the Rx4Safety Program.
ISS QualityScore ENVIRONMENTAL 1 Highest Rating By INSTITUTIONAL SHAREHOLDER SERVICES	Institutional Shareholder Services (ISS) **Quality Score – Environmental of 1 (highest rating)**

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About Covanta

Covanta's mission is to provide sustainable waste and energy solutions to ensure that no waste is ever wasted.

Covanta extracts value from waste and plays a critical role in the sustainability of the national waste management ecosystem. In addition to providing innovative waste reduction, reuse and recycling opportunities, we divert post-recycled waste from landfills through the process of energy recovery. Our comprehensive portfolio of solutions helps a wide range of commercial and industrial waste clients and municipal partners minimize business risk while meeting their zero waste, zero waste to landfill, circular economy and other sustainability goals.

Covanta's core business is the conversion of non-hazardous municipal solid waste to energy (known as energy-from-waste or EfW) in specialized power plants designed to meet all federal, state and local regulatory standards. We also offer tailored materials management solutions, including recycling and depackaging of plastic and packaged goods, wastewater treatment, reverse distribution, on-site clean-up services, transportation and logistics, and healthcare solutions.

Covanta's sustainable waste management solutions provide environmental benefits that are an important part of mitigating contributions to climate change. Because its fuel source (waste) is consistently replenished, and because all energy recovered preserves valuable natural resources and avoids secondary impacts from mining and the combustion of those resources, EfW is designated as renewable energy in 30 states, the District of Columbia, Puerto Rico, U.S. federal law, Europe and China. EfW also avoids greenhouse gases that would be emitted from waste otherwise sent to landfills and reduces waste to an inert ash from which ferrous and non-ferrous metals can be extracted for recycling.

For a full description of Covanta's business, including how we integrate sustainability into our business strategy, please refer to our 2018 10-K.

Click here for an interactive map of all our operations.

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About This Report

Cautionary Note Regarding Forward-Looking Statements

Certain statements in this online Corporate Sustainability Report may constitute “forward-looking” statements as defined in Section 27A of the Securities Act of 1933 (the “Securities Act”), Section 21E of the Securities Exchange Act of 1934 (the “Exchange Act”), the Private Securities Litigation Reform Act of 1995 (the “PSLRA”) or in releases made by the Securities and Exchange Commission (“SEC”), all as may be amended from time to time. Such forward-looking statements involve known and unknown risks, uncertainties, and other important factors that could cause the actual results, performance or achievements of Covanta and its subsidiaries, or general industry or broader economic performance in global markets in which Covanta operates or competes, to differ materially from any future results, performance or achievements expressed or implied by such forward-looking statements. Statements that are not historical fact are forward-looking statements. Forward-looking statements can be identified by, among other things, the use of forward-looking language, such as the words “plan,” “believe,” “expect,” “anticipate,” “intend,” “estimate,” “project,” “may,” “will,” “would,” “could,” “should,” “seeks,” or “scheduled to,” or other similar words, or the negative of these terms or other variations of these terms or comparable language, or by discussion of strategy or intentions. These cautionary statements are being made pursuant to the Securities Act, the Exchange Act and the PSLRA with the intention of obtaining the benefits of the “safe harbor” provisions of such laws. Covanta cautions investors that any forward-looking statements made by Covanta are not guarantees or indicative of future performance. Important assumptions and other important factors that could cause actual results to differ materially from those forward-looking statements with respect to Covanta include, but are not limited to, the risk that Covanta may not successfully grow its business as expected or close its announced or planned acquisitions or projects in development and those factors, risks and uncertainties that are described in periodic securities filings by Covanta with the SEC. Although Covanta believes that its plans, intentions and expectations reflected in or suggested by such forward-looking statements are reasonable, actual results could differ materially from a projection or assumption in any forward-looking statements. Covanta’s future financial condition and results of operations, as well as any forward-looking statements, are subject to change and to inherent risks and uncertainties. The forward-looking statements contained in this report are made only as of the date hereof and Covanta does not have or undertake any obligation to update or revise any forward-looking statements whether as a result of new information, subsequent events or otherwise, unless otherwise required by law.

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GRI Index

GRI 102: General Disclosures 2016

DISCLOSURE	DESCRIPTION	CROSS-REFERENCE OR ANSWER
ORGANIZATIONAL PROFILE		
102-1	Name of the organization	Covanta Holding Corporation
102-2	Activities, brands, products and services	Materials Management 2018 10-K, pp. 5-6
102-3	Location of headquarters	445 South Street, Morristown, NJ 07960
102-4	Location of operations	United States, Canada, Ireland, Italy and China 2018 10-K, p. 5
102-5	Ownership and legal form	Covanta is wholly owned by Covanta Holding Corporation, which is listed and publicly traded on the New York Stock Exchange under the ticker symbol CVA.
102-6	Markets served	Materials Management 2018 10-K, pp. 5, 8-16
102-7	Scale of the organization	Performance Tables / Operations Data 2018 10-K, pp. 5, 8-17, 20
102-8	Information on employees and other workers	Performance Tables / Workforce Data The vast majority (over 90%) of the organization's activities, as measured by full-time equivalents, are performed by Covanta employees. We consider contractors that perform periodic work at our facilities, particularly for maintenance, to be outside of our regular activities. There are no significant variations in employment numbers.
102-9	Supply chain	2018 10-K. pp. 9-12
102-10	Significant changes to the organization and its supply chain	2018 10-K, pp. 5-6
102-11	Precautionary Principle or approach	Community Relations / Our Approach
102-12	External initiatives	Covanta does not currently subscribe to or endorse any externally developed sustainability charters or principles.
102-13	Membership of associations	These industry groups include the Energy Recovery Council, Business Council for Sustainable Energy, Environmental Research and Education Foundation, Biomass Power Association and the Ontario Waste Management Association. Covanta plays a leadership role or actively contributes to these engagements, with our executives serving on the boards or as association members. We collaborate and interact with select organizations, including the Go Green Initiative and the Ocean Conservancy Trash Free Seas Alliance, to strengthen our policies, activities and performance. Through our Community Outreach and Environmental Justice Policy, we work to understand and resolve issues and concerns of our local community members.
STRATEGY		
102-14	Statement from senior decision-maker	Our Blueprint for Sustainability / A Message from our CEO

ETHICS AND INTEGRITY		
102-16	Values, principles, standards, and norms of behavior	Our Blueprint for Sustainability
102-17	Mechanisms for advice and concerns about ethics	If any employee has questions about the application of the Policy of Business Conduct or concerns about potential instances of non-compliance, they are encouraged to bring their concerns forward to the attention of their supervisor or members of senior management. Employees can also: 1) Call Covanta's third-party hotline, THE NETWORK, at 1-800-241-5689 or internationally, at +1 770-409-5006. 2) Write Covanta's Board of Directors at: Chair, Audit Committee of the Board of Directors Covanta Holding Corporation P.O. Box 7 Cassville Station Jackson, NJ 08527 Information reported to The Network or Covanta's Audit Committee will be handled on a confidential and anonymous basis, if desired, and referred to Covanta's management for appropriate response. Covanta prohibits retaliation against an employee who has filed, in good faith, a complaint or expressed a concern under this policy or under any law, or for assisting in a complaint investigation.
GOVERNANCE		
102-18	Governance structure	Governance Documents
STAKEHOLDER ENGAGEMENT		
102-40	List of stakeholder groups	Our Blueprint for Sustainability / Listening to our Stakeholders
102-41	Collective bargaining agreements	Performance Tables / Workforce Data Performance Tables / Employee Data As of December 31, 2018, approximately 8% of our employees are covered by collective bargaining agreements with various expiration dates through 2021.
102-42	Identifying and selecting stakeholders	Our Blueprint for Sustainability / Listening to our Stakeholders
102-43	Approach to stakeholder engagement	Our Blueprint for Sustainability / Listening to our Stakeholders
102-44	Key topics and concerns raised	Our Blueprint for Sustainability / Listening to our Stakeholders
REPORTING PRACTICE		
102-45	Entities included in the consolidated financial statements	2018 10-K, p. 5
102-46	Defining report content and topic boundaries	Our Blueprint for Sustainability / Materiality Analysis
102-47	List of material topics	Our Blueprint for Sustainability / Materiality Analysis
102-48	Restatements of information	Performance Tables / Operations Data We have revised our Waste Processed performance data to reflect an update in our accounting procedures. Previously reported figures were inaccurate due to a calculation error.
102-49	Changes in reporting	None.
102-50	Reporting period	January 1, 2017, through December 31, 2018
102-51	Date of most recent report	About This Report

102-52	Reporting cycle	Biennial
102-53	Contact point for questions regarding the report	Contact
102-54	Claims of reporting in accordance with the GRI Standards	About This Report
102-55	GRI content index	About This Report
102-56	External assurance	We currently do not assure our sustainability report; we may consider seeking external assurance for specific indicators in the future.
ELECTRIC UTILITY SECTOR SUPPLEMENT		
G4-EU1	Installed capacity, broken down by primary energy source and by regulatory regime	2018 10-K, pp. 11-12
G4-EU2	Net energy output broken down by primary energy source and by regulatory regime	Performance Tables / Operations Data
G4-EU5	Allocation of CO2e emissions allowances or equivalent, broken down by carbon trading framework	Environmental Sustainability / Reducing Greenhouse Gases

* Covanta's 2018 Sustainability Report applies the 2016 version of the GRI Standards; "2016" refers to the Standards issue date, not the date of information presented in this report.

GRI 103: Topics and Topic Boundaries 2016*

MATERIAL TOPIC	MANAGEMENT APPROACH CROSS-REFERENCE	RELEVANT EXTERNAL ENTITIES
ECONOMIC		
GRI 201: Economic Performance 2016	2018 10-K, p. 9	Communities Customers Investors Regulators
GRI 202: Market Presence 2016	Community / What We Do	Communities Customers
GRI 203: Indirect Economic Impacts 2016	Community / What We Do	Communities
GRI 204: Procurement Practices 2016	Our Blueprint for Sustainability / Our Policies	Communities Customers Investors Regulators
ENVIRONMENTAL		
GRI 301: Materials 2016	2018 10-K, pp. 12-13	Communities Customers Investors
GRI 305: Emissions 2016	2018 10-K, pp. 16-20 Environmental Sustainability / Reducing Greenhouse Gases Environmental Sustainability / Minimizing Air Emissions	Communities Regulators
SOCIAL		
GRI 413: Local Communities 2016	Community / Our Approach	Communities Regulators
GRI 416: Customer Health and Safety 2016	Community / Our Approach	Communities Customers Regulators

*Covanta's 2018 Sustainability Report applies the 2016 version of the GRI Standards; "2016" refers to the Standards issue date, not the date of information presented in this report.

GRI 200-400 Topic-Specific Disclosures 2016* and 2018*

GRI TOPIC	DISCLOSURE	DISCLOSURE DESCRIPTION	DISCLOSURE CROSS-REFERENCE,

			EXPLANATION OR OMISSION
ECONOMIC			
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	2018 10-K, p. 9 We report North America and totals, but not by specific country (e.g., Italy, Ireland, the United Kingdom). Performance Tables / Economic Data Community / What We Do
	201-2	Financial implications and other risks and opportunities due to climate change	2018 10-K, p. 9 Environmental Sustainability / Reducing Greenhouse Gases
GRI 202: Market Presence 2016	202-2	Proportion of senior management hired from the local community	Covanta strives to hire senior management from the local community. Many of our facility managers have come up through the ranks at the facility, helping to ensure long-term ties to the community. With regard to recent hiring at facilities outside the United States, all of the senior management at the newly opened Durham York Energy Centre in Ontario, Canada, are from Canada. All staff, except for the facility manager, working at the Dublin Waste-to-Energy Project are local to the area and indeed 40% of all staff live within 6 miles of the facility. The facility manager was required to have 10 years of Waste-to-Energy experience by our operating license, experience not readily available in Ireland.
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	Community / What We Do
	203-2	Significant indirect economic impacts	Community / What We Do
GRI 204: Procurement Practices 2016	204-1	Proportion of spending on local suppliers	A portion of Covanta's nationwide supply chain budget is also assigned to local suppliers. More information can be found in the Partners and Suppliers section of our website. Covanta Partners and Suppliers
GRI 205: Anti-corruption 2016**	205-2	Communication and training about anti-corruption policies and procedures	100%. All of our employees (management and non-management) are expected to read and comply with our Policy of Business Conduct. The policy covers topics such as financial reporting, corruption, copyrights, and environmental safety and health.
ENVIRONMENTAL			
GRI 301: Materials 2016	301-1	Materials used by weight or volume	2018 10-K, p. 11 Performance Tables / Operations Data
GRI 302: Energy 2016**	302-1	Energy consumption within the organization	Performance Tables / Operations Data
GRI 303: Water and Effluents 2018**	303-3	Water withdrawal	Performance Tables / Environmental Data Environmental Sustainability / Optimizing Water Use
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	Performance Tables / Environmental Data
	305-2	Energy indirect (Scope 2) GHG emissions	Performance Tables/ Environmental Data
	305-3	Other indirect (Scope 3)	Performance Tables / Environmental Data

			Environmental Sustainability / Reducing Greenhouse Gases
	305-4	GHG emissions intensity	Performance Tables / Environmental Data
	305-5	Reduction of GHG emissions	Performance Tables / Environmental Data Environmental Sustainability / Reducing Greenhouse Gases
	305-7	NOx, SOx and other significant air emissions	Performance Tables / Environmental Data Environment / Minimizing Air Emissions
GRI 306: Effluents and Waste 2016**	306-2	Waste by type and disposal method	Performance Tables / Environmental Data
GRI 307: Environmental Compliance 2016**	307-1	Non-compliance with environmental laws and regulations	Environment / Improving Our Environmental Performance
GRI 308: Supplier Environmental Assessment 2016**	308-1	New suppliers screened using environmental criteria	Nearly 100% of new suppliers were screened using environmental criteria in 2018.
SOCIAL			
GRI 401: Employment 2016**	401-1	New employee hires and employee turnover	Performance Tables / Workforce Data Performance Tables / Employee Turnover and New Hires
	401-2	Full-time benefits not provided to temporary / part-time employees	Workforce Engagement / Building a Great Place to Work Benefits
GRI 403: Occupational Health and Safety 2018**	403-1	Occupational health and safety management system	Safety and Health / Ensuring Safety in the Workplace
	403-4	Worker participation, consultation and communication on occupational health and safety	At our operating facilities, formal joint management–worker health and safety committees are run by our hourly employees. In all cases, these teams provide feedback to, and collaborate with, facility and regional safety leads, as well as the Covanta safety management team.
	403-9	Work-related injuries	Safety and Health / Delivering on Safety Performance Performance Tables / Workforce Data
GRI 404: Training and Education 2016**	404-1	Average hours of training per year per employee	Workforce Engagement / Investing in Training and Development
	404-2	Programs for upgrading employee skills and transition assistance programs	Workforce Engagement / Investing in Training and Development
	404-3	Percentage of employees receiving regular performance and career development reviews	Workforce Engagement / Investing in Training and Development
GRI 405: Diversity and Equal Opportunity 2016**	405-1	Diversity of governance bodies and employees	Workforce Engagement / Promoting Diversity and Inclusion Performance Tables / Workforce Data
GRI 407: Freedom of Association and Collective Bargaining 2016**	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining might be at risk	Covanta does not have operations in which employees' rights to exercise freedom of association or collective bargaining are at risk.
GRI 411: Rights of Indigenous Peoples 2016**	411-1	Incidents of violations involving rights of indigenous peoples	None. The vast majority of Covanta's facilities are not cited among indigenous regions. There are no known incidents of violations involving

			rights of indigenous peoples and actions taken.
GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	Community / Our Approach
GRI 414: Supplier Social Assessment 2016**	414-1	New suppliers that were screened using social criteria	Nearly 100% of new suppliers were screened using social criteria in 2018.
GRI 415: Public Policy 2016**	415-1	Political contributions	Covanta Political Contribution Policy and Disclosure Covanta reports all political contributions as required by law. In addition, Covanta reports its annual political contributions to the Public Policy Committee of its Board of Directors and provides a summary report of its annual political contribution on its corporate investor relations website.
GRI 416: Customer Health and Safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	Our primary services are sustainable waste management and electrical generation at our energy-from-waste (EfW) plants. The emissions of EfW facilities are closely regulated through federal and state permit requirements and limits. All EfW facilities operate well below these limits, and we continue to improve our performance, as indicated in our section on environment performance within this report. Health impacts associated with emissions from EfW facilities have been studied extensively. For example, one major study from the UK Health Protection Agency concluded that the negative health impacts associated with well-regulated EfW facilities are likely to be very small, if even detectable. More information on these studies is provided in Environmental Sustainability / Minimizing Air Emissions.
GRI 418: Customer Privacy 2016**	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	None. There have been no complaints regarding breaches of customer privacy and losses of customer data.
GRI 419: Socioeconomic Compliance 2016**	419-1	Noncompliance with laws and regulations in the social and economic area	The total amount of safety-related fines and penalties at our North American facilities were $39,000 and $110 in CY 2017 and CY 2018, respectively. No other fines, penalties or nonmonetary sanctions were received for the social and economic area in the period from 2017-2018.

* With the exception of GRI 303 and 403 that apply the 2018 version of the GRI Standards, Covanta's 2019 Sustainability Report applies the 2016 version of the GRI Standards; "2016" refers to the Standards issue date, not the date of information presented in this report.

**We have reported additional disclosures not related to material topics.

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Performance Tables

Economic Data[1]

(data for Covanta Holding Corp., including all global operations, in millions, except per share amounts, USD)[2]	2018	2017	2016	2015	2014
OPERATING REVENUE					
Waste and service revenue	1,327	1,231	1,187	1,104	1,032
Energy revenue	343	334	370	421	460
Recycled metals revenue	95	82	61	61	93
Other operating revenue	103	105	81	59	97
Total operating revenue	1,868	1,752	1,699	1,645	1,682
OPERATING EXPENSE					
Total operating expense	1,805	1,651	1,590	1,536	1,528
INCOME TAX					
Income tax expense (benefit)	(29)	(191)	22	(84)	15
NET INCOME					
Net (loss) income attributable to Covanta Holding	152	57	(4)	68	(2)
Cash flow provided by operating activities	238	242	264	226	333
NON-GAAP FINANCIAL MEASURES					
Adjusted EBITDA	457	408	410	428	474
Free Cash Flow	100	132	176	152	244
DIVIDENDS					
Annualized Cash Dividends per Share	$1.00	$1.00	$1.00	$1.00	$0.86
COMMUNITY INVESTMENT					
Total donations	1.8	2.0	1.9	1.7	2.2

[1] For complete information, please refer to Covanta's Form 10-K filings.
[2] For the years ended December 31

Workforce Data

	2018	2017	2016	2015	2014
EMPLOYEES					
Total employees	3,911	3,719	3,582	3,539	3,224
Salaried	1,230	1,193	1,157	1,142	1,033
Hourly[3]	2,683	2,526	2,425	2,397	2,191
GLOBAL HEAD COUNT					
North America	3,834	3,649	3,537	3,511	3,202
United States	3,676	3,520	3,454	3,431	3,122
Canada	158	129	83	80	80
Asia	15	14	15	21	21
Europe	62	56	30	7	1
SAFETY AND HEALTH[4]					
DART (Days Away/ Restricted/ Transfer Rate)	0.61	0.77	0.81	0.73	0.72
TCIR (Total Case Incident Rate)	0.81	1.06	1.00	1.26	1.02
Fatality Rate	0	0.02	0.02	0	0
Number of sites in OSHA VPP program	33	35	37	38	41
Contractor DART[5]	1.19	0.90	0.89	0.70	0.78
Contractor TCIR[5]	1.80	1.40	1.48	1.22	1.31
DIVERSITY					
Women (% of total workforce)	11%	11%	10%	10%	9%
Minorities (% of total workforce)	28%	26%	26%	25%	28%

2018 Employee Data

	Total	Female	Male

Employees	3,911	438	3,472
Part-time	34	14	20
Full-time	3,877	424	3,452
Contractors	0	–	–
COLLECTIVE BARGAINING			
Employees	298	16	282
Percent of workforce	8%	1%	7%
EMPLOYEE GEOGRAPHY			
Americas	3,676	387	3,289
Mid-Atlantic	533	23	510
West Central	329	22	307
Northeast	524	27	497
NY/ NJ	457	28	429
South	713	29	684
Covanta Field Services	117	1	116
Corporate Headquarters	584	178	406
Covanta Environmental Solutions	419	79	340
Asia	15	7	8
Canada	158	37	120
Europe	62	7	55

2018 Diversity by EEO Category

RACE/ETHNIC COMPOSITION OF OUR EMPLOYEES									
	American Indian	**Black**	**White**	**Hispanic**	**Asian**	**Pacific Islander**	**Two or more races**	**N/A**	**Total**
Executives	0	3	58	2	2	0	0	4	69
Directors	0	8	223	8	12	0	5	8	264
Managers	0	9	237	19	24	0	2	20	311
Professionals/ administrative	3	50	437	42	37	4	9	34	616
Hourly[3]	12	329	1,695	307	104	59	49	96	2,651

AGE COMPOSITION OF OUR EMPLOYEES									
	Executives	**Directors**	**Managers**	**Professionals/ administrative**	**Hourly[3]**	**Total**			
Under 30 years old	0	0	8	66	433	507			
30-50 years old	17	97	165	340	1,244	1,863			
Over 50 years old	52	167	138	338	846	1,541			
Total	69	264	311	744	2,523	3,911			
GENDER COMPOSITION OF OUR EMPLOYEES									
Female	13	26	85	240	74	438			
Male	56	238	226	504	2,448	3,472			
Total	69	264	311	744	2,523	3,911			

2018 Governance Body Diversity

GENDER COMPOSITION WITHIN OUR BOARD OF DIRECTORS	
Female	3
Male	9
AGE COMPOSITION OF OUR BOARD OF DIRECTORS	
Under 30 years old	0
30-50 years old	0
Over 50 years old	12

2018 Employee Statistics

2018 EMPLOYEE TURNOVER STATISTICS								
	Salaried	**Hourly[3]**	**Total**	**Average Service (years)**	**# of Voluntary Separations**	**# of Involuntary Separations**	**Total # of Separations**	**Total Rate (%)**
Total	159	445	604	6	432	172	604	15%
Female	33	28	61	7	47	14	61	2%

Male	126	416	542	6	384	158	542	14%
Gender N/A	1	1	1	6	1	0	1	0%
Age less than 30	14	119	133	2	106	27	133	3%
Age 30-50	65	199	264	4	196	68	264	7%
Age over 50	80	127	207	13	130	77	207	5%
United States	154	427	581	7	412	169	581	15%
Asia	0	0	0	0	0	0	0	0%
Canada	4	8	12	1	10	2	12	0%
Europe	1	10	11	1	10	1	11	0%

2018 NEW HIRE STATISTICS								
	Salaried	**Hourly[3]**	**Total**					
Total	158	614	772					
Female	32	48	80					
Male	126	565	691					
Age less than 30	19	189	208					
Age 30-50	74	315	389					
Age over 50	65	110	175					
United States	148	571	719					
Asia	1	0	1					
Canada	4	31	35					
Europe	5	12	17					

2018 Employee Safety, Health and Environmental (SHE) Training[5]

EFW FACILITY PERONNEL	
	Average Training Hours
Environmental	12
Safety and Health	24
CORPORATE SUPPLY CHAIN PERSONNEL	
Combined Safety, Health and Environmental	16
COVANTA ENVIRONMENTAL SOLUTIONS PERSONNEL	
Safety, Health and Transportation	5.5
Environmental	4.5

[3] Hourly = Technicians/ sales workers/ admin support workers/ craft workers/ operatives/ laborers/ helpers.
[4] Safety and Health data is for U.S. and Canada only.
[5] Contractor safety performance rates reflect the overall safety performance of the contractors employed by Covanta, not their specific performance on Covanta's sites.

Operations Data

	2018	2017	2016	2015	2014
FACILITIES (OWNED, EQUITY INVESTMENTS IN, AND/ OR OPERATED)					
Number of EfW operations	45	43	43	46	46
Total electrical generation capacity (MW)	1,714	1,574	1,557	1,541	1,587
Total capacity (MW)	117	117	89	89	89
Total capacity (TPD)	63,294	58,938	58,249	59,288	60,908
Number of material processing facilities	20	19	15	12	1
Number of transfer stations	16	17	17	18	18
Number of landfills	4	4	4	4	4
Number of electronic waste recycling facilities	1	1	1	1	1
WASTE PROCESSED					
Total waste processed (million tons)	21.2	19.5	20.4	21.6	20.8
Municipal waste processed (thousand tons)	20,574	18,976	19,992	21,247	20,711
Commercial and industrial waste (thousand tons)	1,571	1,475	1,357	1,288	881
Waste recycled (thousand tons)	933.0	842.1	789.2	744.2	568.3
Waste processed as EfW (million tons)	20.6	19.0	20.0	21.2	20.7
Waste incinerated, no energy recovery (thousand tons)	0.056	0.068	0	0	0
Waste sent to landfill[6] (thousand tons)	140	139	97	109	10
Total hazardous waste processed (thousand tons)	0.0	0.0	0.0	0.0	0.0
EfW ash sent to landfill (million tons)	4.7	4.4	4.6	4.6	4.5
Metals recycled (tons)	500,253	460,598	513,439	497,109	489,320

E-waste recycled (million lbs.)[7]	14.5	16.5	15.0	13.8	14.1
ENERGY GENERATION					
Net electricity exported to the grid (million MW hours)	9.5	8.7	9.1	9.8	9.8
Steam exported (billion lbs.)	9.8	9.1	9.1	12.0	12.6
Total energy, million MWh electrical equivalent	10.3	9.5	9.9	10.8	10.9
RECs, value recognized ($M)	12.1	12.9	11.5	22.0	22.0
ENERGY USE					
Total energy consumption (GJ)	206,876,643	194,119,485	200,601,105	220,642,869	226,573,051
Waste (GJ)	206,470,028	193,729,772	200,005,559	220,339,467	226,245,299
Fossil fuel (GJ)	4,202,198	3,769,015	3,839,415	7,398,593	9,107,429
Biogenic fuel (GJ)	109,295,348	100,745,938	102,103,215	117,619,014	124,709,973
Fossil fuel (% of total energy input)	2.0%	1.9%	1.9%	3.4%	4.0%
Fleet fuel consumption (GJ)[8]	135,349	149,735	–	–	–
Natural gas as fleet fuel (%)	0%	0%	0%	0%	0%
Renewable fuel as fleet fuel (%)	0%	0%	0%	0%	0%

[6] Not including ash from WTE facilities, reported separately.
[7] Reflects total e-waste received for processing. Earlier reports attempted to estimate tons recycled, which impacted comparability between years.
[8] Represents fleet operations, insignificant prior to 2017, predominately associated with Covanta Environmental Solutions (CES).

Environmental Data

Monetary fines and compliance frequency	2018	2017	2016	2015	2014
EfW CEM fines	$83,172	$101,138	$68,061	$49,200	$53,857
EfW Stack test fines	$-	$-	$22,600	$5,200	$-
Other environmental fines, including biomass and other facilities	$20,750	$4,400	$1,000	$177,800	$22,686
Percent compliance–stack tests (EfW facilities)	100%	100%	99%	99%	100%
Percent compliance–CEMs (EfW facilities)	100%	100%	100%	100%	100%

	Federal Standard	2018	2017	2016	2015	2014
WATER						
Total potable water use (Mgal.)	–	6,020	5,648	5,903	5,919	6,341
Reclaimed water use (Mgal.)	–	2,649	2,331	2,749	2,672	1,892
Saline/other non-potable water use (Mgal.)	–	58,276	1,052	1,089	1,030	1,013
Alternative freshwater use as % of total freshwater use	–	32.9%	31.5%	33.8%	33.1%	25.4%
NET EFW LIFE CYCLE GHG BENEFIT (THOUSAND TONS CO_2E REDUCED, NET BASIS)						
Equity-share basis	–	11,100	9,997	10,600	11,100	11,300
Operational control basis	–	18,200	16,860	17,800	18,800	18,200
GHG EMISSIONS (THOUSAND TONS CO_2E) (EQUITY SHARE BASIS)						
Total Scope 1, 2, and 3 GHG emissions	–	4,481	4,142	4,548	4,865	5,066
Scope 1	–	4,329	3,997	4,402	4,744	4,912
Scope 2	–	23	25	28	8	23
Scope 3	–	129	120	118	112	131
Biogenic CO_2	–	6,289	5,781	5,928	7,099	8,052
GHG emission intensity (tons CO_2e/ $ revenue)	–	0.0021	0.0023	0.0026	0.0026	0.0028
GHG emissions covered under an emissions-limiting regulation (%)	–	4.0%	1.6%	1.4%	2.2%	3.7%
AIR EMISSIONS						
Total landfill gas generated (MMBtu)	–	58,236	68,687	76,234	60,863	–
Percentage flared (%)[9]	–	77%	84%	84%	84%	–
Percentage used for energy (%)	–	0%	0%	0%	0%	–
Lead (µg/ dscm)	400	10.7	11.5	12.1	12.3	11.2
Cadmium (µg/ dscm)	35	1.2	1.2	1.2	1.3	1.3
Mercury (µg/ dscm)	50	2.3	1.8	2.7	2.5	5.9
Total dioxins and furans (ng/ dscm)	30	2.2	2.0	3.4	2.4	2.4
Particulate matter (mg/ dscm)	25	2.7	2.4	2.8	3.0	2.6
Hydrogen chloride (ppm)	29	7.0	7.0	6.8	6.7	7.2
Carbon monoxide (ppm)	100	32.0	30.3	29.1	29.3	29.3
Sulfur oxides (ppm)	29	7.5	7.0	7.5	8.0	8.2
Nitrogen oxides (ppm)	205	132.1	134.3	136.4	138.1	140.4

[9] Percentage flared based on LFG collection efficiency methodology in U.S. EPA Mandatory Reporting Rule, equation HH-3.

Non-GAAP Reconciliation (Adjusted EBITDA and Free Cash Flow)[10,11] ($ in Millions)

	2018	2017	2016	2015	2014
Net Income (Loss) Attributable to Covanta Holding Corporation	**$152**	**$57**	**$(4)**	**$68**	**$(2)**
Operating loss related to insurance subsidiaries	–	–	–	–	2
Depreciation and amortization expense	218	215	207	198	211
Interest expense, net	145	147	138	134	147
Income tax expense (benefit)	(29)	(191)	22	(84)	15
Impairment charges	86	2	20	43	64
Loss on extinguishment of debt	15	84	–	2	2
Loss (gain) on asset sales	(217)	6	(44)	–	–
Property insurance recoveries (net)	(18)	(2)	–	–	–
Net income (loss) attributable to noncontrolling interests in subsidiaries	–	–	–	1	1
OTHER ADJUSTMENTS					
Debt service billings in excess of revenue recognized	(1)	5	4	1	2
Business development and transaction costs	3	5	2	3	–
Severance and reorganization costs	5	1	3	4	9
Capital type expenditures at service-fee operated facilities[10]	37	55	39	31	–
Non-cash compensation expense	24	18	16	18	17
Adjustments to reflect Adjusted EBITDA from unconsolidated investments	23	–	–	–	–
Other	14	6	7	9	6
Subtotal other adjustments	**105**	**90**	**71**	**66**	**34**
Total adjustments	**305**	**351**	**414**	**360**	**476**
Adjusted EBITDA	**$457**	**$408**	**$410**	**$428**	**$474**
Cash paid for interest, net of capitalized interest	(136)	(132)	(135)	(131)	(119)
Cash paid for taxes	(2)	–	(6)	(2)	(11)
Equity in net income from unconsolidated investments	(6)	(1)	(4)	(13)	(10)
Adjustments to reflect Adjusted EBITDA from unconsolidated investments	(23)	–	–	–	–
Dividends from unconsolidated investments	13	2	2	5	11
Capital-type expenditures at service-fee operated facilities[12]	(37)	(55)	(39)	(31)	–
Working capital/ other	(28)	20	36	(30)	(12)
Cash flow provided by operating activities[13]	**$238**	**$242**	**$264**	**$226**	**$333**
Plus: Changes in restricted funds–operating[14]	4	$1	$22	$28	$11
Plus: Cash flow provided by operating activities from insurance subsidiaries	–	–	–	–	1
Less: Maintenance capital expenditures	(142)	(111)	(110)	(102)	(101)
Free Cash Flow	**$100**	**$132**	**$176**	**$152**	**$244**

[10] For complete information, please refer to Covanta's Form 10-K filings.
[11] For the years ended December 31.
[12] Adjustment for impact of adoption of FASB ASC 853 — Service Concession Arrangements
[13] Prior years were revised to reflect adoption of FASB ASU 2016-18 Statement of Cash Flows (Topic 230) —Restricted Cash adopted 1/1/2018 and FASB 2016-09 Compensation — Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting adopted 1/1/2017.
[14] Adjustment for impact of adoption of FASB ASU 2016-18 Statement of Cash Flows (Topic 230) — Restricted Cash

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SASB Index

SASB Waste Management Standard 2018*

CODE	ACCOUNTING METRIC	CROSS-REFERENCE, OMISSION, AND EXPLANATION
GREENHOUSE GAS EMISSIONS		
SASB IF-WM-110a.1	(1) Gross global Scope 1 emissions, percentage covered under: (2) emissions-limiting regulations, and (3) emissions-reporting regulations	Performance Tables / Environmental Data Environmental Sustainability / Reducing Greenhouse Gases
SASB IF-WM-110a.2	(1) Total landfill gas generated, and (2) percentage flared (3) percentage used for energy	Performance Tables / Environmental Data
SASB IF-WM-110a.3	Discussion of long-term and short-term strategy or plan to manage Scope 1 and lifecycle emissions, emissions reduction targets, and an analysis of performance against those targets	Environmental Sustainability / Reducing Greenhouse Gases Environmental Sustainability / Minimizing Air Emissions
FLEET FUEL MANAGEMENT		
SASB IF-WM-110b.1	(1) Fleet fuel consumed, and (2) percentage natural gas (3) percentage renewable	Performance Tables / Operations Data
SASB IF-WM-110b.2	Percentage of alternative fuel vehicles in fleet	0% of our fleet is made up of alternative fuel vehicles.
AIR QUALITY		
SASB IF-WM-120a.1	Air emissions of the following pollutants: (1) NO_x (excluding N_2O), (2) SO_x, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)	Performance Tables / Environmental Data
SASB IF-WM-120a.2	Number of facilities in or near areas of dense population	Covanta operates 63 facilities, including Energy from Waste, Transfer Stations and Material Processing Facilities, in or near areas of dense population.
SASB IF-WM-120a.3	Number of incidents of non-compliance associated with air emissions	Performance Tables / Environmental Data
MANAGEMENT OF LEACHATE & HAZARDOUS WASTE		
SASB IF-WM-150a.1	(1) Total Toxic Release Inventory (TRI) releases, and (2) percentage released to water	Covanta is not subject to TRI regulations, and is therefore not required to report TRI releases.
SASB IF-WM-150a.2	Number of corrective actions implemented for landfill releases	Number of corrective actions: 0
SASB IF-WM-150a.3	Number of incidents of non-compliance associated with environmental impacts	Environmental Sustainability / Improving Our Performance
LABOR PRACTICES		
SASB IF-WM-310a.1	Percentage of active workforce covered under collective bargaining agreements	Performance Tables / Employee Data As of December 31, 2018, approximately 8% of our employees are covered by collective bargaining agreements with various expiration dates through 2021.
SASB IF-WM-310a.2	(1) Number of work stoppages, and (2) total days idle	Number of work stoppages: 0 Total number of days idle: 0
WORKFORCE HEALTH & SAFETY		
SASB IF-WM-320a.1	(1) Total recordable incident rate (TRIR), (2) fatality rate, and	Performance Tables / Workforce Data

	(3) near miss frequency rate (NMFR) for: (a) direct employees (b) contract employees	
SASB IF-WM-320a.2	Safety Measurement System BASIC percentiles** for: (1) Unsafe Driving, (2) Hours-of-Service Compliance (3) Driver Fitness (4) Controlled Substances / Alcohol (5) Vehicle Maintenance (6) Hazardous Materials Compliance	Well below Intervention Thresholds*** shown in parenthesis: (1) Unsafe Driving: 10% (60%) (2) Hours-of-Service Compliance: 7.25% (60%) (3) Driver Fitness: 0% (75%) (4) Controlled Substances / Alcohol: 0% (75%) (5) Vehicle Maintenance: 17.75% (75%) (6) Hazardous Materials Compliance: 0% (80%)
SASB IF-WM-320a.3	Number of road accidents and incidents	Number of road accidents and incidents: 5
RECYCLING & RESOURCE RECOVERY		
SASB IF-WM-420a.1	(1) Amount of waste incinerated, and (2) percentage hazardous (3) percentage used for energy recovery	Performance Tables / Operations Data
SASB IF-WM-420a.2	Percentage of customers receiving: (1) recycling (2) composting services	This is not applicable as Covanta does not serve retail customers.
SASB IF-WM-420a.3	Amount of material: (1) recycled (2) composted (3) processed as waste-to-energy	Performance Tables / Operations Data
SASB IF-WM-420a.4	Amount of electronic waste collected, percentage recovered through recycling	Performance Tables / Operations Data
ACTIVITY METRICS		
SASB IF-WM-000.A	Number of customers by category: (1) municipal (2) commercial (3) industrial (4) residential (5) other	Municipal: 632 Commercial: 725 Industrial: 3,050 Residential: 0 Other: n/a
SASB IF-WM-000.B	Vehicle fleet size	Vehicle fleet size: 180
SASB IF-WM-000.C	Number of: (1) landfills (2) transfer stations (3) recycling centers (4) composting centers (5) incinerators (6) all other facilities	2018 10-K, p. 32
SASB IF-WM-000.D	Total amount of materials managed, by customer category: (1) municipal (2) commercial (3) industrial (4) residential (5) other	Performance Data / Operations Data

*Covanta's 2019 Sustainability Report applies the 2018 version of the SASB Standards; "2018" refers to the Standards issue date, not the date of information presented in this report.

** BASIC Percentile data based on a 24 month period

*** Intervention Thresholds are percentages at which the Federal Motor Carrier Safety Administration (FMCSA) will intervene to help motor carriers comply with safety regulations