



The Growing Demand for Renewable Energy Among Major U.S. and Global Manufacturers

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Introduction

The industrial sector (manufacturing, mining, construction and agriculture) is the largest energy user in the U.S., consuming about one-third of all U.S. energy demand and spending about \$230 billion a year on energy alone.^{1,2} By 2025, this share is expected to exceed 36 percent of all U.S. energy consumption.³ Manufacturing accounts for the vast majority of industrial energy use, consuming 74 percent of industrial energy—equal to 24 percent of all energy consumed in the U.S.⁴ Meanwhile, renewable energy, notably wind and solar, is now more affordable than it has ever been. To meet their energy needs and access power that is both cheap and clean, many manufacturers are setting corporate renewable energy and climate targets and advocating for state policies that expand options to invest in renewable energy at scale.

Policymakers and the public are currently focused on how to make U.S. manufacturing more competitive, a topic amplified during the 2016 election, to keep factories in America and retain a manufacturing competitive edge on the global stage. In 2016, voters in both parties saw manufacturing as a critical part of the American economy, and are worried about the loss of manufacturing jobs, and favor a national strategy to help manufacturing. Seventy-one percent of Trump voters and 57 percent of Clinton voters see manufacturing as a critical part of the U.S. economy and both Trump (89 percent) and Clinton voters (83 percent) support a manufacturing strategy, according to a post-2016 election poll.⁵

To assess the relationship between manufacturing competitiveness and renewable energy, our firm reviewed the actions and statements of individual manufacturers to explore how corporate investments in energy, particularly renewable energy, are connected to these efforts to remain competitive.

We reviewed 160 of the largest manufacturing companies in America to explore renewable energy investments, public commitments, and public policy at the state level. The manufacturers in our analysis include the largest companies by revenue in the manufacturing sectors of the (1) U.S. Fortune 500, (2) Global Fortune 500,⁶ and (3) the largest private companies in the U.S. (see Appendix A for detailed methodology and Appendix B for complete list of companies in our analysis). Our analysis examines manufacturers with factories in the following sectors: aerospace and defense; apparel; chemicals; energy; food, beverages, and tobacco; health care; household products; industrials; materials; motor vehicles and parts; and technology.

¹ U.S. Energy Information Administration, Apr. 2015, “Annual Energy Outlook 2015” (https://www.eia.gov/forecasts/aeo/section_deliveredenergy.cfm).

² U.S. Department of Energy (DOE), 2015, “Better Plants Progress Update” (<http://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/2015%20Better%20Plants%20Progress%20Update.pdf>).

³ U.S. DOE, Jun. 2015, “Report to Congress: Barriers to Industrial Energy Efficiency” (http://www.energy.gov/sites/prod/files/2015/06/f23/EXEC-2014-005846_6%20Report_signed_v2.pdf).

⁴ *Id.*

⁵ The Alliance for American Manufacturing, Nov. 2016, “National Survey Results” (http://aamweb.s3.amazonaws.com/uploads/resources/2016-Post-Election-Bipartisan-Survey-Memo_Mellman_NorthStar.pdf).

⁶ Note that these companies in our analysis only include those with a U.S. footprint.



Key Findings and Recommendations

Our analysis finds that enabling access to renewable energy sources is a critical factor for a state's attractiveness to these manufacturers and other large buyers of renewable energy. Key findings from our analysis of 160 of the largest manufacturing companies include:

- Many manufacturers have established ambitious renewable energy targets.
 - Forty companies or 25 percent established a renewable energy target and 18 companies or 11 percent established a 100 percent renewable energy target.
 - The ten states with the most facilities for manufacturers that have a 100 percent renewable energy target include: California, Texas, Ohio, Missouri, Illinois, Michigan, Oregon, Pennsylvania, Tennessee, and North Carolina. Several of these states limit corporate access to renewable energy.
 - For those companies that are committed to 100 percent renewable energy, a handful—Mars, P&G, and Unilever—have taken the leadership step of including both their electricity usage and thermal energy usage in that target.
- The vast majority of manufacturers have established goals to curb their greenhouse gas (GHG) emissions, a driver for corporate renewable energy procurement. Some of these goals are aligned with the climate goals articulated by the science community.
 - 132 companies or 83 percent established GHG reduction targets. Of these, 44 manufacturers established absolute targets only; 51 manufacturers established emissions intensity targets only; and 37 manufacturers established both absolute emissions and emissions intensity targets.
 - Twenty-three manufacturers established science-based emissions targets and 16 manufacturers have committed to set science-based targets in the future.⁷
- Manufacturers increasingly rely on renewable energy to power their operations because it is cheap and clean.
 - Manufacturing companies seek ways to manage energy costs in order to remain competitive and recognize the opportunity for renewable energy projects to directly reduce energy expenses.
 - Wind and solar are the U.S.'s cheapest generation sources. Today's wind costs are one-third what they were in 2009, falling from \$140/MWh to \$47/MWh in just seven years.⁸ The cost of utility-scale solar has declined more dramatically, falling 85 percent since 2009 to today's range of \$46-61/MWh.⁹
- Manufacturers increasingly rely on renewable energy to power their operations and achieve their corporate commitments. These companies are motivated to invest in renewable energy to:
 - Reduce energy costs;
 - Diversify energy supply;

⁷ "Science-based targets" refer to company targets that are determined based on the evidence that global GHG emissions need to be reduced by up to 70% by 2050 to limit global warming to 2°C and avoid devastating and irreparable climate change (www.sciencebasedtargets.org/).

⁸ Greentech Media, Jan. 27, 2017, "Wind and Solar Are Our Cheapest Electricity Generation Sources. Now What Do We Do?" (www.greentechmedia.com/articles/read/wind-and-solar-are-our-cheapest-electricity-generation-sources.-now-what-do).

⁹ *Id.*



- Stabilize energy pricing and reduce risks of price volatility;
 - Address demand from investors and customers;
 - Reduce risks from climate change to operations or supply chains; and
 - Demonstrate corporate leadership, innovation and competitive first-mover advantage.
- Manufacturers are a leading voice calling on state governments, that establish most electricity policies, to increase customer access to renewable energy.
 - Twenty-two manufacturers in the analysis or 14 percent have engaged in state energy policy advocacy between 2015 and 2017.
 - Companies in the manufacturing sector comprised more than half of total companies that signed onto letters regarding state energy policies between 2015 and 2017.
 - Manufacturers support state policies that enable customer choice such as utility green tariffs, third-party ownership (leasing and power purchase agreements), and clean energy transmission lines.
 - The actions of most manufacturers belie the conventional wisdom that acting on climate change and investing in renewable energy is inconsistent with manufacturing competitiveness.
 - The vast majority of manufacturers have established goals to cut carbon emissions, invest in renewable energy, and promote or defend state renewable energy policies.
 - Whether internal or external, targets are often essential to provide the focus, direction, and sense of urgency necessary to quickly capitalize on readily available energy project benefits. Corporate climate and renewable energy targets demonstrate corporate leadership, provide strategic direction, stimulate innovation, motivate internal staff, and engage stakeholders.
 - Many manufacturers would prefer to invest in renewable energy in close proximity to their facility locations. However, that is not always possible if a state does not offer customer choice policies that enable access to renewable energy.

Based on these findings we recommend that state policymakers:

- Do everything they can to help manufacturers meet their ambitious climate and renewable energy targets;
- Support customer choice policies to enable access to renewable energy, such as the use of third-party power purchase agreements (PPAs) for onsite and offsite renewable energy; and
- Foster dialogues between utilities and large customers in order to develop the next generation of utility green tariff programs.



Renewable Energy and Climate Commitments by Manufacturers

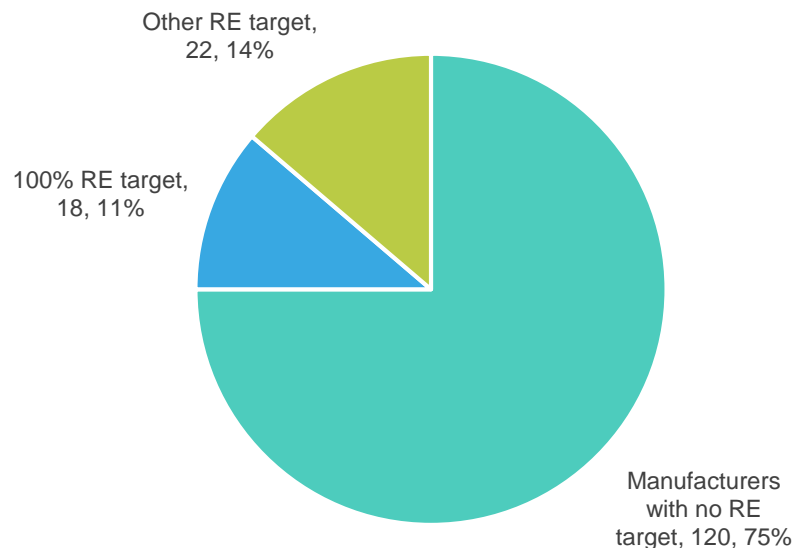
In order to gauge the importance of renewable energy to manufacturers, we examine both renewable energy targets and greenhouse gas (GHG) targets; the latter is a driver for corporate renewable energy procurement. Previous research has found that nearly half of the companies in the U.S. Fortune 500, and 63 percent of the U.S. Fortune 100, have set targets to reduce greenhouse gases (GHG), improve energy efficiency, and increase renewable energy.¹⁰ This white paper examines companies in the manufacturing sector in particular.

Renewable Energy Targets

Several large manufacturers have established public targets to power their operations with renewable sources of energy.

- Forty companies or 25 percent established a renewable energy target (Figure 1).
- Eighteen companies or 11 percent established a 100 percent renewable energy target.
- The ten states with the most facilities for manufacturers that have a 100 percent renewable energy target include: California, Texas, Ohio, Missouri, Illinois, Michigan, Oregon, Pennsylvania, Tennessee, and North Carolina. Several of these states limit corporate access to renewable energy.
- For those companies that are committed to 100 percent renewable energy, only a handful include both their electricity usage and their thermal energy usage, with notable exceptions that include Mars, P&G, and Unilever.

Figure 1. Manufacturers with Renewable Energy Targets



¹⁰ WWF, Ceres, Calvert Investments, and CDP, Apr. 2017, "Power Forward 3.0: How the largest U.S. companies are capturing business value while addressing climate change" (<https://www.worldwildlife.org/publications/power-forward-3-0-how-the-largest-us-companies-are-capturing-business-value-while-addressing-climate-change>).



Manufacturers are increasingly relying on renewable energy to power their operations and achieve their GHG targets. These companies are motivated to invest in renewable energy to:

- Reduce costs;
- Diversify energy supply;
- Stabilize energy pricing;
- Address demand from investors and customers; and
- Demonstrate corporate leadership, innovation, and competitive first-mover advantage.

Between 2008 and 2016, U.S. corporations signed more than 10 gigawatts (GW) of long-term wind and solar power contracts.¹¹ Corporate interest in renewable energy only continues to gain momentum as 102 companies have joined the RE100 (as of August 2017), an initiative made up of companies that have a goal of sourcing 100 percent of their power from renewable electricity. Notable members include manufacturers such as Anheuser-Busch InBev, BMW, General Motors, Johnson & Johnson, and P&G.

Renewable energy use continues to rise as companies demand sources of energy that are both cheap and clean. As Figure 2 demonstrates, renewable energy capacity contracted by large corporate energy users has increased steadily since 2008.

**Leadership Profile: Johnson & Johnson's
100 Percent Renewable Energy Goal**

In 2000, Johnson & Johnson established its first public, company-wide GHG emissions reduction target. After achieving this goal, the company updated its GHG target to cutting CO₂ emissions by 20 percent by 2020 (based on 2010 levels) and by 80 percent by 2050. To meet their GHG targets, the company set a target to produce or procure 20 percent of its electricity from clean or renewable sources by 2020 – with an aspiration to power all of Johnson & Johnson facilities with 100 percent renewable energy by 2050.

Since 2010, Johnson & Johnson has cut emissions by 9.6 percent and increased on-site renewable energy and clean technology capacity to 50.1 megawatts (MW). Recent projects in the U.S. include the installation of two 500 kilowatt (kW) fuel cells in California, and more than 3.2 MW of solar systems in Puerto Rico. The company has another 5.7 MW under construction.

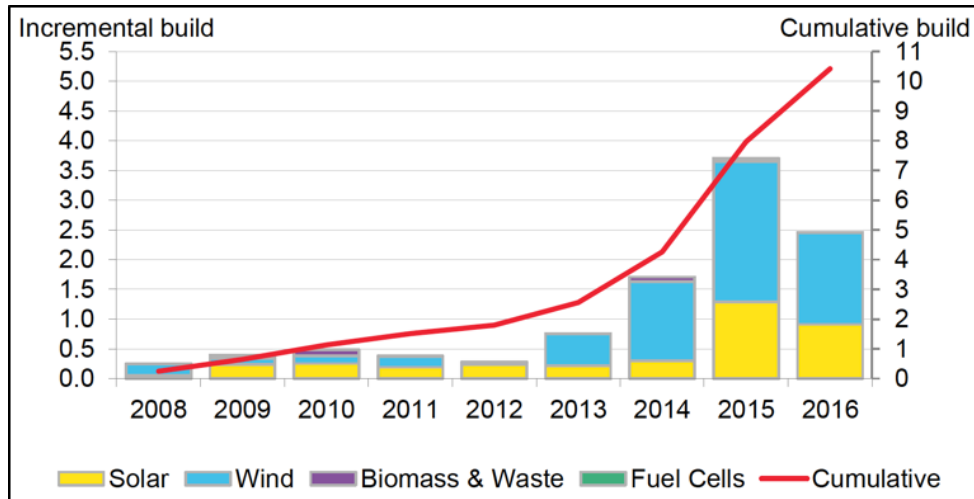
As Paulette Frank, Vice President of Environment, Health, Safety and Sustainability at Johnson & Johnson states, “Our motivation comes from our mission as a healthcare company and our values as a business... We believe that renewable energy is vital to a healthy planet and ultimately to healthy people. That is why we aspire to power all our facilities with renewable energy by 2050.”

Source: RE100, 2015, <http://there100.org/johnson-johnson>

¹¹ Business Council for Sustainable Energy (BCSE), Feb. 2017, “2017 Sustainable Energy in America Factbook” (www.bcse.org/sustainableenergyfactbook/).



Figure 2. Renewable capacity contracted by corporations by technology, 2008-2016 (MW)



Source: Bloomberg Finance 2017 Sustainable Energy in America Factbook

Some manufacturers have set ambitious GHG targets, which leads them to pursue renewable energy projects aggressively. For example, L'Oréal USA achieved its goal of 100 percent renewable electricity for its U.S. manufacturing facilities, reducing its carbon emissions by 84 percent, and exceeding its GHG target four years ahead of schedule.¹²

Other manufacturers demonstrating leadership include Mars, P&G, and Unilever, who all set 100 percent renewable energy targets that encompass both their electric and thermal energy needs. A significant amount of the final energy demand of the manufacturing industry is used to provide heat for melting, drying, and cooling for industrial processes and buildings. For many large manufacturers, for example, this thermal load (heating and cooling) from direct energy use can range between 40 percent to 80 percent of overall energy use. Addressing both electric and thermal load is a best practice in renewable energy target setting, although it is relatively unique in the manufacturing sector to date, given the large thermal load of manufacturers. Table 1 contains details on the renewable energy targets for all manufacturers in our analysis.

¹² L'Oréal USA, Apr. 20, 2017, "L'Oréal USA Announces Significant Advancements in Sustainability: Reducing Carbon Emissions, Waste & Water Usage, and Improving Packaging" (<http://www.prnewswire.com/news-releases/loreal-usa-announces-significant-advancements-in-sustainability-reducing-carbon-emissions-waste--water-usage-and-improving-packaging-300442408.html>).



Smaller manufacturers who are not in the Fortune 500 are also establishing ambitious renewable energy targets. For example, Steelcase, a manufacturer with a portfolio that includes architecture, furniture, and technology products, has established a 100 percent renewable energy target and is a member of RE100. Another RE100 member is Tetra Pak, a food processing and packaging company, that is committed to powering its operations with 100 percent renewable electricity by 2030, with an interim goal to reach 80 percent by 2020.

Leadership Profile: P&G Invests in Biomass in Georgia

P&G invested in a 50 MW biomass plant to run one of the company's largest U.S. manufacturing facilities. Constellation Energy will build, own and operate the \$200 million cogeneration plant, which will supply steam to P&G paper manufacturing facility and generate power for the local utility, Georgia Power. The plant will provide 100 percent of the steam and up to 60-70 percent of the total energy used by the facility. The plant is scheduled to begin commercial operation in June 2017.

As Mary Lynn Ferguson-McHugh, Group President of P&G Global Family Care states, "At P&G, we are committed to improving the environmental sustainability of our products across all aspects of their life cycle – from manufacturing, packaging, delivery and consumer use. As this project enables us to operate one of our largest global plants with a renewable energy source, it will reduce the environmental footprint of two leading brands, Bounty and Charmin. We see this as a win for our business, consumers, partners and the environment."

Source: P&G, [2015 Press Release](#)

Leadership Profile: Dow Chemical Leads the Way on Wind Energy Investment

Dow is leading the way on building renewable energy into their operations. In 2015, Dow signed a long-term agreement to supply its Freeport, Texas facility with 200 MW of wind power annually – equal to the amount of electricity needed to power more than 55,000 homes. Dow is the first company in the U.S. to power a manufacturing site with renewable energy at this scale and will become the third largest corporate purchaser of wind energy in the U.S.

Source: Dow Chemical, 2016,
<http://storage.dow.com.edgesuite.net/dow.com/AdvancedManufacturing/US AMP 051816 Energy I o-res.pdf>



Table 1. Manufacturers with Renewable Energy Targets

Company	Renewable Energy (RE) Targets	100% RE Targets
Alphabet	Source 100% renewable energy by 2040 from 2015 consumption levels	Y
Anheuser-Busch InBev	Source all purchased electricity from renewable sources by 2025, accounting for approximately 90% of total electricity consumption worldwide	Y
Apple	Source 100% renewable energy; transition entire supply chain to 100% clean energy	Y
Avon Products	Aspirational goal of using 100% clean energy	Y
Biogen, Inc.	Source 100% renewable energy by 2020 from 2014 consumption levels	Y
BMW	Source 42% renewable energy by 2020 from 2015 consumption levels; aspirational goal of 100% renewable energy	Y
General Motors	Generate or source all electrical power for global operations with 100 percent renewable energy by 2050	Y
Hewlett Packard Enterprises	Interim goal to source 50% of total energy consumption from renewable sources by 2025, with a long-term intent of reaching 100% renewable energy in future	Y
HP	Use 100% renewable energy to power its electricity; interim goal of sourcing 40% renewable electricity by 2020	Y
Johnson & Johnson	Source 20% renewable energy by 2020 from 2015 consumption levels; 100% renewable energy by 2050 from 2015 consumption levels	Y
L'Oréal	Source 100% renewable energy	Y
Mars, Inc.	Goal that 100% of energy consumption will be fossil fuel free by 2040	Y
Microsoft	Source 100% renewable energy by 2015 from 2015 consumption levels	Y
Nestlé	Procure 100% of electricity from renewable sources within the shortest practical timescale	Y
Nike	Source 100% renewable energy by 2025	Y
P&G	Source 30% renewable energy by 2020 from 2010 consumption levels; long-term goal to power all facilities with 100% renewable energy	Y
Unilever	Consume 100% renewable energy for both scopes 1 & 2 by 2030; interim target to consume 50% renewable energy by 2020	Y
VF Corporation	Source 100% renewable energy by 2025	Y
3M	Source 25% renewable energy by 2025 from 2015 consumption levels	N
Becton Dickinson & Co.	Source 50% renewable energy by 2020 from 2008 consumption levels	N
Canon	Goal of solar power generation at operational sites	N
Cargill	Increase renewables to 18% of energy portfolio	N
Caterpillar	Meet 20% of energy needs with alternative/renewable energy sources by 2020	N
Cisco Systems	Source 25% renewable energy by 2017 from 2007 consumption levels	N
Colgate-Palmolive	Source 25% renewable energy by 2020 from 2002 consumption levels	N

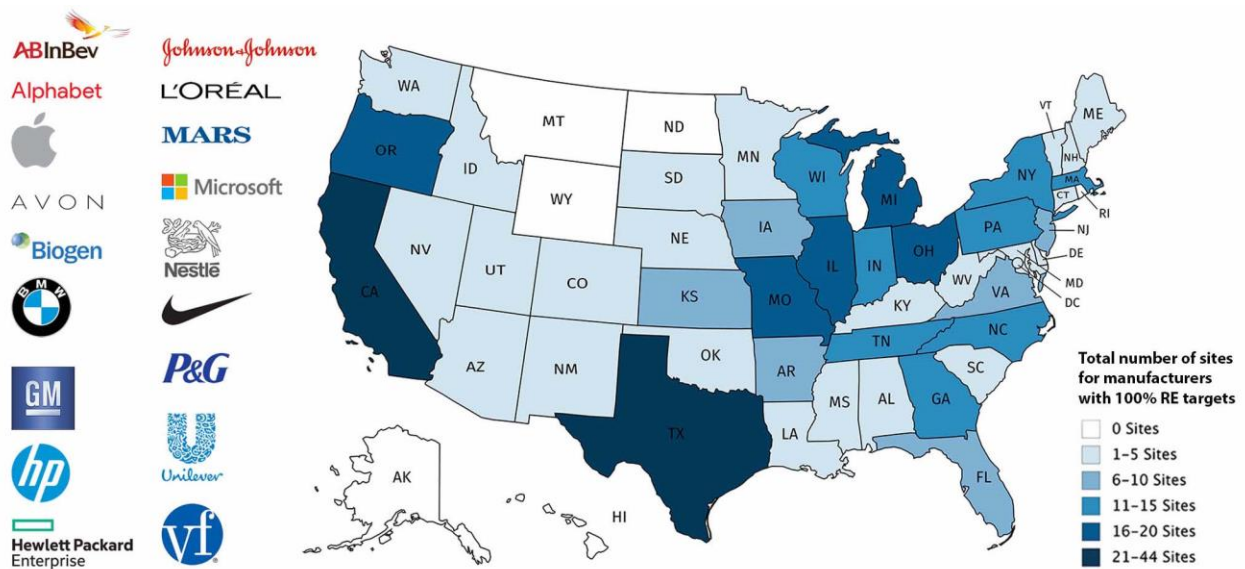


Company	Renewable Energy (RE) Targets	100% RE Targets
Dell Technologies	Source 50% of total electricity from renewables (purchased and on-site generation)	N
Dow Chemical	Use 750 MW of clean power by 2025	N
Hanesbrands	Source 40% renewable energy by 2020 from 2007 consumption levels	N
Hitachi	Raise the rate of renewable energy generation by 0.5% from 2011 levels by 2018 for business activities	N
IBM	Source 20% renewable energy by 2020	N
Intel	Source 75% renewable energy by 2020 from 2015 consumption levels; continue 100% green power in U.S. operations and increase renewable energy use for international operations 0.9% by 2020 from 2015 consumption levels	N
Kellogg Company	Increase by 50% the number of manufacturing facilities that utilize low-carbon energy between 2015 and 2020	N
Lenovo Group	Achieve 30 MW of Lenovo owned or leased renewable energy generation capacity globally by 2020	N
Oracle	Source 33% renewable energy by 2020 from 2015 consumption levels	N
Raytheon	Source 5% renewable energy for U.S. operations by 2020 from 2015 consumption levels	N
Roche Diagnostics Corporation	Increase the proportion of sustainable energy to 20% by 2020, compared to 2015 levels	N
SC Johnson and Son	By 2016, use 33% renewable energy globally	N
Sony	Source 4.70% renewable energy by 2020 from 2015 consumption levels	N
Stanley Black & Decker	Source 10% renewable energy by 2020 from 2015 consumption levels	N
Total	Source 20% renewable energy by 2035 from 2015 consumption levels	N



Eighteen of the manufacturers in our analysis established a 100 percent renewable energy target. These eighteen manufacturers alone have 367 manufacturing plants across 44 states. Figure 3 summarizes the locations of facilities for each of these eighteen manufacturers that have 100 percent renewable energy targets. The ten states with the most facilities for these manufacturers are: California, Texas, Ohio, Missouri, Illinois, Michigan, Oregon, Pennsylvania, Tennessee, and North Carolina.

Figure 3. Facility Locations for Manufacturers Committed to 100 Percent Renewable Energy



Many of the facilities are located in states with barriers to corporate renewable energy procurement. According to a report from retail and information technology industry trade groups, *Corporate Clean Energy Procurement Index: State Leadership & Rankings*, among the ten states with the most facilities, four states (Michigan, Missouri, North Carolina, and Tennessee) are in the bottom 25 in the ranking of favorable regions in the U.S. for corporate customers seeking to power their operations with renewable energy.¹³

Corporate Clean Energy Procurement Index: State Leadership & Rankings

“States that limit customer choice can see higher [renewable energy] costs, making their markets less attractive. That means the structure of a state’s electricity market can directly influence where corporations choose to invest in renewable projects, and in which states they decide to expand their operational footprint.”

Source: Retail Industry Leaders Association (RILA) and Information Technology Industry Council (ITI), January 2017.

<https://www.rila.org/sustainability/RetailEnergyManagementProgram/Documents/RILAITICEIndex.pdf>

¹³ RILA and ITI, Jan. 2017, “2016 Corporate Clean Energy Procurement Index: State Leadership & Rankings” (<https://www.rila.org/sustainability/RetailEnergyManagementProgram/Documents/RILAITICEIndex.pdf>).



Greenhouse Gas Targets

In addition to setting renewable energy targets, manufacturing companies set greenhouse gas (GHG) targets, which are often drivers of corporate renewable energy procurement and precursors to establishing public renewable energy goals. The vast majority of companies in this analysis have set a GHG target. Overall:

- 132 companies or 83 percent established GHG reduction targets. Of these, 44 manufacturers established absolute targets only; 51 manufacturers established emissions intensity targets only; and 37 manufacturers established both absolute emissions and emissions intensity targets.
- Twenty-three manufacturers established science-based emissions targets and 16 manufacturers have committed to set science-based targets in the future.

Typically, companies make public GHG commitments by establishing a target to reduce emissions by a specified amount bound by a specific timeframe. These targets are generally either absolute (e.g., reduce the manufacturer's emissions by 20 percent by 2020) or intensity-based (e.g., reduce emissions per ton of product produced by 40 percent).

GHG targets usually address categories of GHG emissions, defined as Scope 1, 2, and 3 in the Greenhouse Gas Protocol, developed by World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD). Scope 1 emissions are direct emissions and occur from sources that are owned or controlled by the manufacturer. Scope 2 emissions are from the generation of purchased electricity consumed by the manufacturer. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company.¹⁴

“Science-based targets” refer to company targets that are determined based on the evidence that global GHG emissions need to be reduced by up to 70 percent by 2050 to limit global warming to 2°C and avoid devastating and irreparable climate change. Companies can submit their proposed targets for approval by the Science Based Targets Initiative, a partnership between CDP, UN Global Compact, WRI and WWF, whose mission statement is to help companies determine how much they must cut emissions to prevent the worst impacts of climate change.

Leadership Profile: L'Oréal USA's Investment in Solar and Wind

By 2020 in the U.S., L'Oréal aims to reduce its CO₂ emissions by 80 percent from a 2005 baseline. To help achieve this target, L'Oréal USA added three renewable energy projects to its existing U.S. portfolio in 2016, which now totals 17 installations:

- L'Oréal USA's **Florence plant** will host the largest commercial solar array in Kentucky, providing 1.42 MW of power through 4,140 solar panels, and reducing carbon emissions by 1,324 metric tons per year.
- L'Oréal USA's **North Little Rock plant** will have the third largest commercial solar array and the fourth largest solar project in Arkansas. The solar panel installation will provide 1.2 MW of renewable energy and reduce carbon emissions by 556 metric tons per year.
- L'Oréal USA installed 12 wind turbines to help power its **distribution center in Dallas, Texas**.

Source: L'Oréal USA, [2017 Press Release](#)

¹⁴ World Business Council for Sustainable Development and World Resources Institute, Mar. 2004, “The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard” (<http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf>).



The criteria for a target being recognized by the Initiative includes:¹⁵

- **Boundary:** The target must cover company-wide Scope 1 and Scope 2 emissions and all relevant GHGs as required in the GHG Protocol Corporate Standard.
- **Timeframe:** The target must cover a minimum of 5 years and a maximum of 15 years from the date of announcement of the target.
- **Level of ambition:** At a minimum, the target must be consistent with the level of decarbonization required to keep global temperature increase to 2°C compared to pre-industrial temperatures.
- **Scope 3:** An ambitious and measurable Scope 3 target with a clear time-frame is required when Scope 3 emissions cover a significant portion (greater than 40 percent of total scope 1, 2, and 3 emissions) of a company's overall emissions.

Currently, 210 companies across sectors and worldwide have committed to developing science-based targets. Twenty-three manufacturers in this analysis have already established science-based targets and 16 manufacturers have committed to setting science-based targets in the future. Table 2 summarizes the GHG targets for all manufacturers that established science-based targets.

For example, Kellogg Company established a science-based GHG target and states in their 2016 CDP disclosure, "As a company dependent on a consistent supply of agricultural raw materials, Kellogg is exposed to both short term risks, such as extreme weather events, and long term risks, such as changing weather patterns...Our ability to adapt to physical and regulatory changes due to climate change is at the heart of this process to gain strategic advantage in securing our ingredient and energy supply, be agile in the face of regulation, and engage with industry on these important issues."¹⁶

Leadership Profile: Unilever's Ambitious GHG Emissions Reduction Targets

Unilever seeks to be "carbon positive" in its operations by 2030. To that end, the company has established interim targets, reducing absolute emissions 85 percent from 2008 levels by 2030 and reducing emissions intensity by 50 percent per g CO₂e per consumer from 2010 levels by 2030.

To achieve their GHG targets, the company is committed to sourcing 100 percent of total energy across its operations from renewables by 2030, and to sourcing all grid purchased electricity from renewables by 2020. Marc Engel, Unilever's Chief Supply Chain Officer, states, "The consumer goods sector is vulnerable to climate change; the increasing likelihood of extreme weather events such as floods and droughts poses a threat to our supply chains and operations. Going 100 percent renewable will deliver on our consumer promise to deliver brands that are responsibly produced in a world of finite resources."

Source: RE100, 2016, <http://there100.org/unilever>, <http://there100.org/news/14243463/>, and Unilever's 2016 CDP Disclosure Form

¹⁵ Science Based Targets, accessed Jul. 7, 2017, "Frequently Asked Questions" (www.sciencebasedtargets.org/faq/).

¹⁶ Kellogg Company, 2016, "Climate Change Information Request – Kellogg Company" (www.cdp.net)



Table 2 Manufacturers with Science-Based Targets

Company	Absolute Emissions Target	Emissions Intensity Target
Alphabet	<p>Scope 1+2 (market-based) + Scope 3 (upstream and downstream): Reduce absolute emissions 100% from 2015 levels by 2015.</p> <p>Scope 1+2 (market-based): Reduce absolute emissions 100% from 2015 levels by 2025. Will triple purchases of renewables by 2025.</p>	<p>Scope 1+2 (market-based): Reduce emissions intensity 50% per metric tonnes CO₂e/unit FTE employee from 2011 levels by 2025.</p>
BASF	None	<p>Scope 1+2 (location-based): Reduce emissions intensity 40% per metric tons CO₂e per metric tonne of product from 2002 levels by 2020.</p>
Biogen, Inc.	<p>Scope 1+2 (market-based) + 3 (upstream and downstream): Reduce absolute emissions 100% from 2014 levels by 2020.</p> <p>Scope 1+2+3: 35% reduction of absolute emissions across entire value chain from 2013 levels.</p>	<p>Scope 1+2 (location-based): Reduce emissions intensity 80% per metric tonnes CO₂e/unit revenue from 2006 levels by 2020.</p>
Colgate-Palmolive	<p>Scope 1+2 (market-based): Reduce absolute emissions 25% from 2002 levels by 2020.</p> <p>Scope 1+2 (market-based): Reduce absolute emissions 50% from 2002 levels by 2050.</p>	<p>Scope 1+2 (location-based): Reduce emissions intensity 20% per metric tonnes CO₂e/metric tonne of product from 2005 levels by 2015 (<i>note that emissions intensity target is not science-based</i>).</p>
General Mills	<p>Scope 1: Reduce absolute emissions from all "like-for-like" Scope 1 activities under operational control (per the GHG Protocol) 28% from 2010 levels by 2025.</p> <p>Scope 2 (location-based): Reduce absolute emissions from all "like-for-like" Scope 2 activities under operational control (per the GHG Protocol) 28% from 2010 levels by 2025.</p> <p>All Scope 3: Reduce absolute emissions from all "like-for-like" Scope 3 activities (per the GHG Protocol) 28% from 2010 levels by 2025.</p>	<p>Scope 1+2 (location-based): Reduce emissions intensity from wholly owned/controlled global manufacturing 20% per metric tonnes CO₂e/metric tonne of product from 2005 levels by 2015.</p> <p>Scope 3: Downstream transportation and distribution: Reduce emissions intensity from outbound U.S. logistics 35% per percent fuel reduction/metric tonne of product from 2009 levels by 2015.</p>



Company	Absolute Emissions Target	Emissions Intensity Target
Hewlett Packard Enterprises	Scope 1+2 (market-based): Reduce absolute emissions 20% from 2010 levels by 2020.	Scope 3 (purchased goods and service + upstream and downstream transportation and distribution): Reduce emissions intensity from HP Co. 1st Tier production suppliers and 1st tier transportation/logistics providers 20% per metric tonnes CO ₂ e/unit revenue from 2010 levels by 2020. Scope 3: Use of sold products: Reduce emissions intensity from the use of high-volume product lines 40% per metric tonnes CO ₂ e/unit of service provided from 2010 levels by 2020.
HP	Scope 1+2: Reduce absolute emissions 25% from 2015 levels by 2025.	Reduce the GHG emissions intensity of HP's product portfolio by 25% by 2020, compared to 2010.
IBM	Scope 1+2 (market-based): Reduce absolute emissions 35% from base year 2005 by 2020.	None
Johnson & Johnson	Scope 1+2 (market-based): Reduce absolute emissions 20% from 2010 levels by 2020. Scope 1+2 (market-based): Reduce absolute emissions 80% from 2010 levels by 2050.	None
Kellogg Company	Scope 1+2 (location-based): Reduce absolute emissions 65% from 2015 levels by 2050. Scope 3: Purchased goods & services: Reduce absolute emissions 50% from 2015 levels by 2050.	Scope 1+2 (location-based): Reduce emissions intensity 15% per metric tonnes CO ₂ e/metric tonne of product from 2015 levels by 2020.
L'Oréal	Scope 1 + Scope 2 (net emissions): Reduce absolute emissions by 60% from 2005 levels by 2020. Scope 1 + Scope 2 (net emissions [operations + Admin sites + research centres] + downstream transportation & distribution): Reduce absolute emissions by 100% from 2015 levels by 2020 and continuing through 2040.	Scope 3: Downstream transportation and distribution: Reduce emissions intensity by 20% CO ₂ per kilometer and per finished good transported from 2011 levels by 2020 (<i>note that emissions intensity target is not science-based</i>).
Mars, Inc.	Scope 1+2 (market-based): Reduce absolute emissions 25% from 2007 levels by 2015. Scope 1+2 (market-based): Reduce absolute emissions 100% from 2007 levels by 2040.	None
Microsoft	Scope 1 + Scope 2 (market-based) + Scope 3 (upstream business air travel only): Reduce absolute emissions 100% from 2014 levels by 2015. Scope 1+2 (market-based): Reduce absolute emissions 25% from 2013 levels by 2020. Scope 1+2 (market-based): Reduce absolute emissions 50% from 2013 levels by 2036.	None



Company	Absolute Emissions Target	Emissions Intensity Target
Nestlé	Scope 1+2 (market-based): Reduce absolute emissions 5% from 2014 levels by 2020. Scope 1+2 (market-based)+3: Reduce absolute emissions 50% from 2010 levels by 2050. Scope 3: Reduce absolute emissions 8% from 2014 levels by 2020.	Scope 1+2 (market-based): Reduce emissions intensity 35% per metric tonnes CO ₂ e per metric tonne of product from 2010 levels by 2020.
PepsiCo	Scope 1+2+3: Reduce absolute emissions across value chain at least 20% from 2015 levels by 2030.	None
Pfizer	Scope 1+2 (location-based): Reduce absolute emissions from internal operations (manufacturing, commercial sites, R&D), fleet, and aviation 20% from 2012 levels by 2020.	None
Philip Morris International	Scope 1+2 (market-based): Reduce absolute emissions from manufacturing facilities 30% from 2010 levels by 2020. Scope 1+2 (market-based): Reduce absolute emissions 60% from 2010 levels by 2040.	Scope 1+2 (market-based) + 3 (upstream and downstream): Reduce emissions intensity 30% per metric tonnes CO ₂ e/million cigarettes equivalent from 2010 levels by 2020.
P&G	Scope 1+2 (market-based): Reduce absolute emissions 30% from 2010 levels by 2020.	None
Siemens AG	Scope 1+2 (market-based): Reduce absolute emissions 100% from 2014 levels by 2030. Scope 2 (market-based): Remain carbon neutral through 2050.	Scope 1: Reduce emissions intensity 24.6% per grams CO ₂ e per kilometer from 2014 levels by 2020 (<i>note that emissions intensity target is not science-based</i>).
Sony	Scope 1+2 (market-based): Reduce absolute emissions 30% from base year 2000 by 2015. Scope 1+2 (market-based): Reduce emissions 5% from base year 2015 by 2020.	None
Thyssenkrupp	Scope 1+2 (location-based): Reduce absolute emissions by 4% from 2013 levels by 2020. Scope 3: Fuel- and energy-related activities (not included in Scopes 1 or 2): Reduce absolute emission by 4% from 2013 levels by 2020.	None
Total	Scope 1: Reduce absolute emissions 15% from base year 2008 by 2015. Scope 1: Reduce absolute emissions 80% from base year 2010 by 2020 (14% of emissions in scope).	Scope 1: Reduce emissions intensity 10% from base year 2010 by 2020.



Company	Absolute Emissions Target	Emissions Intensity Target
Unilever	Scope 1+2 (market-based): Reduce absolute emissions 100% from 2008 levels by 2030. Scope 2 (market-based): Reduce absolute emissions 85% from 2008 levels by 2020. Scope 3: Waste generated in operations: Reduce absolute emissions 97% from 2008 levels by 2020. Scope 1+2 (market-based): Reduce absolute emissions 100% from 2008 levels by 2040.	Scope 1+2 (location-based)+3 (downstream): Reduce emissions intensity 50% per g CO ₂ e per consumer use from 2010 levels by 2030.



Renewable Energy Policy Advocacy by Manufacturers

States that enable investment in clean domestic energy production are most likely to attract America's largest job-creating businesses. Limiting access to renewable energy can be a major barrier for manufacturers when deciding where to locate or expand their facilities. As manufacturers set more ambitious goals to buy renewable energy, these large energy users increasingly seek to contract directly for renewable energy to meet their goals and to protect against future energy price increases.

Manufacturers are engaged in state renewable energy policy advocacy across the country to reduce barriers to investment and support customer choice policies to enable access to renewable energy. Twenty-two manufacturers in the analysis or 14 percent have engaged in state energy policy advocacy between 2015 and 2017. These companies engage in advocacy on several policy issues, including regulatory policies (such as utility green tariff) and legislative policies (such as third-party ownership). Further, companies in the manufacturing sector comprised more than half of total companies that signed onto letters regarding state energy policies between 2015 and 2017.

Key state renewable energy policies to enable increased access to renewable energy for manufacturers include:

- A **utility green tariff** is a special rate structure offered by utilities to large customers, allowing for the construction of new renewables on the local electric grid. Examples of recent green tariff programs include Xcel Energy's Renewable*Connect program in Minnesota, Rocky Mountain Power's Schedule 34 program in Utah, Puget Sound Energy's program in Washington, and Duke Energy's Green Source Rider program in North Carolina.¹⁷
- A **third-party power purchase agreement (PPA)** is an arrangement where a non-utility owner of a distributed generation (DG) system sited on the premises of a retail electric customer sells the

Leadership Profile: Manufacturers Across Missouri Back the Grain Belt Express Clean Line Application

In 2016, a group of companies with retail and manufacturing facilities across Missouri including General Motors, Unilever, P&G, Kellogg Company, and Nestlé, joined in supporting the Grain Belt Express project, a clean energy overhead transmission line. In a letter to the Missouri Public Service Commission, the companies noted that the "Grain Belt Express Clean Line is an opportunity to provide our companies with a link to low-cost renewable energy at a scale that is meaningful."

These companies, which collectively employ more than 10,000 Missourians and own dozens of facilities across the state, each have corporate sustainability goals and are a part of a broader trend of companies around the country using their purchasing power to call for more renewable energy. The companies stated in its letter, "Access to renewable energy is increasingly important to our decisions about where to expand and to site new facilities."

The Missouri Industrial Energy Consumers (MIEC), an association of some of Missouri's largest energy consumers, also commended the Grain Belt Express project. "Low energy prices allow Missouri businesses to thrive and access to renewable energy is essential to many of our members' sustainability goals," said Diana Vuylsteke, who represents the MIEC on issues pertaining to energy. "It is imperative that we take advantage of free-market solutions like the Grain Belt Express to meet our energy needs."

Source: *Clean Line Energy Partners, 2016*, http://www.cleanlineenergy.com/sites/cleanline/media/news/06_30_2016_Grain_Belt_Express_Clean_Line_Filing_Release.pdf

¹⁷ World Resources Institute, May 2017, "Emerging Green Tariffs in U.S. Regulated Electricity Markets" (http://www.wri.org/sites/default/files/Emerging_Green_Tariffs_in_US_Reg_Elec_Markets_May_2017_0.pdf).



Leadership Profile: GM Invests in Wind Energy in Texas

General Motors is committed to generating or sourcing all electrical power for its global operations with 100 percent renewable energy by 2050. In September of 2017, GM announced a 200 megawatt wind purchase which will power all of GM's Ohio and Indiana manufacturing facilities. Once the turbines come online by the end of 2018, renewable energy will power 20 percent of GM's global electricity use.

"We're helping provide solutions to green the grid through these new renewable energy deals and sharing best practices with other companies so they too can reduce risk and energy costs," said Rob Threlkeld, GM global manager of renewable energy. "With a pragmatic strategy, companies can turn ambitious renewable energy goals into action and scale quickly."

As CEO Mary Barra [said](#), "Establishing a 100 percent renewable energy goal helps us better serve society by reducing environmental impact. This pursuit of renewable energy benefits our customers and communities through cleaner air while strengthening our business through lower and more stable energy costs."

Source: GM, [2017 Press Release](#)

electricity generated by the system to the retail electric customer. Many states allow for third-party PPAs, including regulated states such as Nevada, Utah, and Arizona. During the 2017 legislative session, states like Minnesota, Missouri, North Carolina, and Virginia proposed third-party financing legislation.

- A **third-party lease** is an arrangement where a non-utility owner of a DG system sited on the premises of a retail electric customer leases the system to the retail electric customer. Currently, third-party leases are options in markets like South Carolina, and most recently in North Carolina.
- **Clean energy transmission** lines bring low-cost renewable energy to customers and are essential to scale up and maximize renewable energy on the grid. Clean energy transmission lines and infrastructure are essential for companies to achieve their renewable energy targets.

As of August 2017, 19 manufacturers in this analysis¹⁸ belong to the Corporate Renewable Energy Buyers' Principles, which was developed by a group of large energy buyers to spur progress on renewable energy and to add their perspective to the future of the U.S. energy and electricity system.¹⁹ The fourth principle states, "Where possible, we would like to procure renewable energy from projects near our operations and/or on the regional energy grids that supply our facilities so our efforts benefit local economies and communities as well as enhance the resilience and security of the local grid." Companies want to purchase renewable energy near their factories, but it is not always possible if the state does not enable customer choice and access to renewable energy. While renewable energy procurement to date by large manufacturers is almost exclusively located in Texas²⁰, many manufacturers would prefer to invest in renewable energy closer to their facility locations.

Manufacturers may choose to advocate for state policies depending on what types of renewable energy arrangements would fit best with their company structure and resources. Table 3 shows examples of recent state policy engagement by manufacturers.

¹⁸ 3M, Avery Dennison, Cisco Systems, DuPont, General Motors, Hewlett Packard Enterprises, HP, Intel, Johnson & Johnson, Kellogg Company, Lockheed Martin, Mars, Inc., Microsoft, Nestlé, PepsiCo Inc., P&G, Sealed Air Corporation, Unilever, VF Corporation.

¹⁹ Corporate Renewable Energy Buyers' Principles, www.buyersprinciples.org/about-us/

²⁰ Of the companies with 100 percent renewable energy targets, 610 MW, or 86 percent, of all their current renewable energy capacity comes from Texas.



Table 3. Recent Examples of Manufacturers Engaged in State Renewable Energy Policy Advocacy

Policy	Manufacturing Companies Engaged on Policy Issue	State(s)	Letter
Third-party PPAs	Cargill, General Mills, Google, Hewlett Packard Enterprises, Honeywell, Ingersoll Rand, Johnson Controls, L'Oréal USA, Lafarge, Mars, Inc., Microsoft, Nestlé, New Belgium, Siemens, Unilever, United Technologies, Unilever, VF Corporation, Volvo, Whirlpool	NC, MO, VA	<ul style="list-style-type: none"> • Letter to North Carolina House of Representatives supporting third-party sales on onsite solar (Mar. 2015) • Letter to Virginia State Corporation Commission supporting PPAs and Green Source Rider (Nov. 2016) • Letter to State House and Senate supporting PPAs in Missouri (Feb. 2017)
Third-party Leasing	Cargill, Google, Mars, Inc., New Belgium, Seventh Generation, Sierra Nevada, Unilever, VF Corporation	NC	<ul style="list-style-type: none"> • Letter to NC Gen. Assembly with support for the third-party leasing program in House Bill 589, Competitive Energy Solutions for NC, and identifies Green Source Rider as needing improvement (Jun. 2017)
Green Source Rider	Cargill, Hewlett Packard Enterprises, Mars, Inc., Microsoft, New Belgium, Seventh Generation, Sierra Nevada, Mars, Inc., Nestlé, Nevada, Unilever, VF Corporation	NC, VA	<ul style="list-style-type: none"> • Letter to Virginia State Corporation Commission supporting PPAs and Green Source Rider (Nov. 2016) • Letter to NC Gen. Assembly with support for the third-party leasing program in House Bill 589, Competitive Energy Solutions for NC, and identifies Green Source Rider as needing improvement (Jun. 2017)
Clean Energy Transmission	General Mills, GM, Ingersoll Rand, Kellogg Company, Nestlé, Owens Corning, P&G, Unilever	MO, TN	<ul style="list-style-type: none"> • Letter to Missouri PSC supporting Clean Line's Grain Belt Express; sent individual letter to MO PSC (Jun. 2016) • Letter to TVA supporting Clean Line's Plains and Eastern transmission line (Jun. 2016)
General Support for Clean Energy	Ingersoll Rand, Mars, Inc., New Belgium, Novozymes, Seventh Generation, Sierra Nevada, Unilever, United Technologies, VF Corporation	NC	<ul style="list-style-type: none"> • Welcome letter to NC House and Senate generally supporting clean energy policy (Mar. 2017)
Renewable Energy Portfolio Standards (REPS) / Energy Efficiency Portfolio Standards (EERS)	General Mills, Google, Honeywell, Ingersoll Rand, Johnson Controls, L'Oréal USA, Mars, Inc., Lafarge, Nestlé, New Belgium, Prestage Farms, Seventh Generation, Siemens, Smithfield Foods, Unilever, United Technologies, Whirlpool, VF Corporation	MI, NC, NV	<ul style="list-style-type: none"> • Letter to NC Senate and House opposing HB 332, which would freeze REPS; sent individual letters to NC Senate and House opposing HB 332 (Jun. 2015) • Letter to Governor Rick Snyder, Members of the Senate Energy and Technology Committee, and Members of the House Energy Policy Committee supporting RE and EE standards. (Oct. 2015) • Letter to NV Senate supporting AB 206, which would increase the state's RPS to 50% by 2030 (May 2017).



Conclusion and Recommendations

Manufacturing companies are increasingly setting renewable energy targets in order to reduce costs, diversify energy supply, stabilize energy pricing, address demand from investors and customers; and demonstrate corporate leadership, innovation and competitive first-mover advantage.

Therefore, enabling access to renewable energy sources is a critical factor for a state's attractiveness to these manufacturers and other large buyers of renewable energy. States should consider policies to support this growing sector, such as power purchase agreements (PPAs) that allow any electric customer to purchase electricity directly from a renewable energy supplier. Such policies would make it easier for large customers to have greater choice in their options to procure cost-effective renewable energy.

We recommend that policymakers:

- Do everything they can to help manufacturers meet their ambitious climate and renewable energy targets;
- Support customer energy choice policies, such as the use of third-party PPAs for onsite and offsite renewable energy; and
- Foster dialogues between utilities and large customers in order to develop the next generation of utility green tariff programs.



Appendix A: Methodology

David Gardiner and Associates (DGA) reviewed 160 manufacturing companies with a U.S. footprint to explore renewable energy investments, public commitments, and policy advocacy in the manufacturing sector. The manufacturers in this analysis included top ten companies in the manufacturing sectors of (1) the U.S. Fortune 500 (<http://fortune.com/fortune500/list>), (2) the Global Fortune 500 (<http://fortune.com/global500/>, note that these companies include those with a U.S. footprint), and (3) a list of the largest private companies in the U.S. (<https://www.forbes.com/largest-private-companies/list/#tab:rank>). The manufacturing subsectors that this paper examines include aerospace and defense; apparel; chemicals; energy; food, beverages, and tobacco; health care; household products; industrials; materials; motor vehicles and parts; and technology. DGA began with the three lists of the largest companies and cross-checked the companies with the North American Industry Classification System (NAICS) to ensure they are classified as part of the manufacturing sector. Note that some sectors did not have 10 companies that were eligible for inclusion in the dataset (e.g., not enough companies were classified by NAICS as manufacturing).

DGA also reviewed state policy engagement by manufacturers. We analyzed corporate engagement (determined by whether a company signed onto a letter expressing support or opposition to a specific policy issue) in nine states with recent legislation related to customer choice in renewable energy procurement.

The findings in this report are based primarily on 2016 CDP disclosures. Where CDP disclosures were not available, this analysis relies on corporate sustainability reports and websites.



Appendix B: Manufacturing Companies in this Analysis

3M	Dana Holding Corp.	Kimberly-Clark
ABB, Inc.	Deere & Co.	Koch Industries
Abbott Laboratories	Dell Technologies	The Kraft Heinz Company
Air Products & Chemicals	Dow Chemical	L'Oréal
Airbus Group	DuPont	L3 Technologies
Alcoa	Eastman Chemical	Lear
Alphabet (Google)	Ecolab, Inc.	Lenovo Group
Altria Group	Eli Lilly & Co.	LG Electronics
Amgen	Emerson Electric	Lockheed Martin
Anheuser-Busch InBev	Estee Lauder	Lukoil
Apple	Exxon Mobil	Lyondellbasell
Arcelormittal Holdings, Inc.	Ford Motor	Marathon Petroleum Corp.
Archer Daniels Midland	Freeport-McMoRan	Mars, Inc.
Arconic	Fujitsu	Masco
Autoliv	Gazprom	Medtronic
Avery Dennison	General Dynamics	Merck & Co.
Avon Products	General Electric	Microsoft
Bae Systems	General Mills	Mitsubishi Chemical Holdings
Ball Corp.	General Motors	Mitsubishi Electric
BASF	Glaxosmithkline	Mitsubishi Heavy Industries
Bayer	Goodyear Tire & Rubber	Mohawk Industries
Becton Dickinson & Co.	Halliburton	Momentive
Biogen, Inc.	Hanesbrands	Mondelez International
BMW	Heraeus Materials	Monsanto Co.
Boeing	Hewlett Packard	Nestlé
BorgWarner	Hitachi	Newell Brands
BP	Honda Motor	Nike
Bristol-Myers Squibb	Honeywell International, Inc.	Nissan Motor
Bunge	HP	Northrop Grumman
Canon	Huntington Ingall Industries	Nucor Corp.
Cargill	Huntsman	Oracle
Caterpillar	Hyundai Heavy Industries	Owens-Illinois
Chevron	Hyundai Motor	PACCAR, Inc.
Cisco Systems	IBM	Panasonic
Clorox	Illinois Tool Works	PBF Energy
The Coca-Cola Company	Intel	Pegatron
Colgate-Palmolive	International Paper	PepsiCo, Inc.
ConAgra Foods, Inc.	JBS	Petrobras
Conocophillips	Johnson & Johnson	Pfizer
Crown Holdings	Johnson Controls	Philip Morris International
Cummins, Inc.	Kellogg Company	Phillips 66
Daimler	Kia Motors	Posco



PPG Industries
Praxair, Inc.
P&G
PVH Corp.
Ralph Lauren
Raytheon
Robert Bosch Corp.
Roche Diagnostics Corp.
Royal Dutch Shell
Saint-Gobain Corp.
Samsung
Sanofi

SC Johnson and Son
Sealed Air Corp.
Sherwin-Williams
Siemens AG
Sony
Stanley Black & Decker
Steel Dynamics
Stryker Corp.
Tenneco
Tesla
Tesoro
Textron

Thyssenkrupp
Total
Toyota Motor Corp.
Unilever
United States Steel
United Technologies
Valero Energy
VF Corp.
Whirlpool Corp.
Wilmar International



Appendix C: Sources for Companies' Energy and Climate Targets

Company	Source for Target
3M	CDP 2016 Climate Disclosure
ABB, Inc.	CDP 2016 Climate Disclosure
Abbott Laboratories	CDP 2016 Climate Disclosure
Air Products & Chemicals	No targets
Airbus Group	CDP 2016 Climate Disclosure
Alcoa	CDP 2016 Climate Disclosure
Alphabet	CDP 2016 Climate Disclosure
Altria Group	CDP 2016 Climate Disclosure
Amgen	CDP 2016 Climate Disclosure
Anheuser-Busch InBev	CDP 2016 Climate Disclosure; http://there100.org/news/14249347
Apple	CDP 2016 Climate Disclosure; https://www.apple.com/environment/pdf/Apple_Supplier_Clean_Energy_Program_Update_April_2017.pdf
Arcelormittal Holdings, Inc.	http://annualreview2016.arcelormittal.com/action-2020/sustainability-review/energy-and-carbon
Archer Daniels Midland	CDP 2016 Climate Disclosure
Arconic	http://www.arconic.com/global/en/who-we-are/pdf/sustainability-reports/2015-Sustainability-Highlights-Report.pdf
Autoliv	No targets
Avery Dennison	CDP 2016 Climate Disclosure
Avon Products	CDP 2016 Climate Disclosure; http://www.avoncompany.com/corporate-responsibility/environmental-sustainability/operations/
Bae Systems	CDP 2016 Climate Disclosure
Ball Corporation	CDP 2016 Climate Disclosure
BASF	CDP 2016 Climate Disclosure
Bayer	CDP 2016 Climate Disclosure
Becton Dickinson & Co.	CDP 2016 Climate Disclosure
Biogen, Inc.	CDP 2016 Climate Disclosure, http://sciencebasedtargets.org/companies-taking-action/
BMW	CDP 2016 Climate Disclosure
Boeing	CDP 2016 Climate Disclosure
BorgWarner	CDP 2016 Climate Disclosure
BP	No targets. https://www.cdp.net/sites/2016/83/2083/Climate%20Change%202016/Pages/DisclosureView.aspx
Bristol-Myers Squibb	CDP 2016 Climate Disclosure
Bunge	CDP 2015 Climate Disclosure
Canon	CDP 2016 Climate Disclosure
Cargill	CDP 2016 Climate Disclosure
Caterpillar	http://reports.caterpillar.com/sr/goalsAndProgress/operations.php
Chevron	No targets
Cisco Systems	CDP 2016 Climate Disclosure
Clorox	CDP 2016 Climate Disclosure
The Coca-Cola Company	CDP 2016 Climate Disclosure
Colgate-Palmolive	CDP 2016 Climate Disclosure
ConAgra Foods, Inc.	CDP 2016 Climate Disclosure



Company	Source for Target
Conocophillips	CDP 2016 Climate Disclosure
Crown Holdings	CDP 2016 Climate Disclosure
Cummins, Inc.	CDP 2016 Climate Disclosure
Daimler	https://www.daimler.com/documents/sustainability/other/daimler-sustainability-report-2016.pdf
Dana Holding Corporation	No targets
Deere & Co.	CDP 2016 Climate Disclosure
Dell Technologies	http://legacyofgood.dell.com/environment.htm
Dow Chemical	CDP 2016 Climate Disclosure
DuPont	CDP 2016 Climate Disclosure
Eastman Chemical	CDP 2016 Climate Disclosure
Ecolab, Inc.	CDP 2016 Climate Disclosure
Eli Lilly & Co.	CDP 2016 Climate Disclosure
Emerson Electric	No targets
Estee Lauder	CDP 2016 Climate Disclosure
Exxon Mobil	No targets
Ford Motor	CDP 2016 Climate Disclosure
Freeport-McMoRan	No targets
Fujitsu	CDP 2016 Climate Disclosure
Gazprom	CDP 2016 Climate Disclosure
General Dynamics	No targets
General Electric	CDP 2016 Climate Disclosure
General Mills	CDP 2016 Climate Disclosure
General Motors	CDP 2016 Climate Disclosure; https://www.gm.com/mol/gm-commits-to-renewable-energy-.html
Glaxosmithkline	CDP 2015 Climate Disclosure
Goodyear Tire & Rubber	CDP 2016 Climate Disclosure
Halliburton	CDP 2016 Climate Disclosure
Hanesbrands	CDP 2016 Climate Disclosure
Heraeus Materials	No targets
Hewlett Packard Enterprise	CDP 2016 Climate Disclosure; http://there100.org/companies
HP	http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05507473 ; http://there100.org/companies
Hitachi	CDP 2016 Climate Disclosure
Honda Motor	CDP 2016 Climate Disclosure
Honeywell International, Inc.	CDP 2016 Climate Disclosure
Huntington Ingall Industries	No targets
Huntsman	No targets
Hyundai Heavy Industries	CDP 2016 Climate Disclosure
Hyundai Motor	https://csr.hyundai.com/upfile/report/sar/Sustainability_Report_en_2016.pdf
IBM	CDP 2016 Climate Disclosure
Illinois Tool Works	No targets
Intel	CDP 2016 Climate Disclosure
International Paper	CDP 2016 Climate Disclosure
JBS	CDP 2016 Climate Disclosure
Johnson & Johnson	CDP 2016 Climate Disclosure
Johnson Controls, Inc.	CDP 2016 Climate Disclosure
Kia Motors	http://pr.kia.com/file/downloadBlb.do?fil_sn=F200009474
Kimberly-Clark	CDP 2016 Climate Disclosure



Company	Source for Target
Koch Industries	No targets
L'Oréal	CDP 2016 Climate Disclosure
L3 Technologies	No targets
Lear	No targets
Lenovo Group	CDP 2016 Climate Disclosure; http://Inv.gy/2imuxun
LG Electronics	CDP 2016 Climate Disclosure
Lockheed Martin	CDP 2016 Climate Disclosure
Lukoil	http://www.lukoil.ru/FileSystem/PressCenter/115850.pdf
Lyondellbasell	https://www.lyondellbasell.com/en/sustainability/environment/emissions/
Marathon Petroleum Corporation	No targets
Mars, Inc.	CDP 2016 Climate Disclosure; http://there100.org/mars
Masco	CDP 2016 Climate Disclosure
Medtronic	CDP 2016 Climate Disclosure
Merck & Co.	CDP 2016 Climate Disclosure
Microsoft	CDP 2016 Climate Disclosure
Mitsubishi Chemical Holdings	CDP 2016 Climate Disclosure
Mitsubishi Electric	CDP 2016 Climate Disclosure
Mitsubishi Heavy Industries	CDP 2016 Climate Disclosure
Mohawk Industries	http://www.mohawksustainability.com/goals/goals.html
Momentive	No targets
Mondelez International	CDP 2016 Climate Disclosure
Monsanto Co.	CDP 2016 Climate Disclosure
Nestlé	CDP 2016 Climate Disclosure
Newell Brands	CDP 2016 Climate Disclosure
Nike	CDP 2016 Climate Disclosure
Nissan Motor	http://www.nissan-global.com/EN/DOCUMENT/PDF/SR/2016/SR16_E_P016.pdf
Northrop Grumman	CDP 2016 Climate Disclosure
Nucor Corporation	No targets
Oracle	CDP 2016 Climate Disclosure
Owens-Illinois	CDP 2016 Climate Disclosure
PACCAR, Inc.	No targets
Panasonic	CDP 2016 Climate Disclosure
PBF Energy	No targets
Pegatron	http://static.globalreporting.org/report-pdfs/2016/110d062e48071a110fe0ffae1e002b92.pdf
PepsiCo, Inc.	http://sciencebasedtargets.org/companies-taking-action/
Petrobras	CDP 2016 Climate Disclosure
Pfizer	CDP 2016 Climate Disclosure
Philip Morris International	CDP 2016 Climate Disclosure
Phillips 66	No targets
Posco	http://www.posco.com/homepage/docs/eng5/jsp/sustain/environment/environment_03_02.jsp
PPG Industries	CDP 2016 Climate Disclosure
Praxair, Inc.	CDP 2016 Climate Disclosure
P&G	CDP 2016 Climate Disclosure
PVH Corporation	CDP 2016 Climate Disclosure
Ralph Lauren	No targets



Company	Source for Target
Raytheon	CDP 2016 Climate Disclosure
Robert Bosch Corporation	https://assets.bosch.com/media/global/sustainability/reporting_and_data/2016/bosch-sustainability-report-2016.pdf
Roche Diagnostics Corporation	http://static.roche.com/annual-report-2016/_downloads/roche_full_annual_report16.pdf
Royal Dutch Shell	CDP 2016 Climate Disclosure
Saint-Gobain Corporation	https://www.saint-gobain-northamerica.com/company/corporate-social-responsibility/sustainability
Samsung	CDP 2016 Climate Disclosure
Sanofi	http://en.sanofi.com/csr/planet/progress/energy_carbon_footprint/energy_carbon_footprint.aspx
SC Johnson and Son	http://www.scjohnson.com/Libraries/Download_Documents/2016_SC_Johnson_Sustainability_Report-EN.sflb.ashx
Sealed Air Corporation	CDP 2016 Climate Disclosure
Sherwin-Williams	CDP 2016 Climate Disclosure
Siemens AG	CDP 2016 Climate Disclosure
Sony	CDP 2016 Climate Disclosure
Stanley Black & Decker	CDP 2016 Climate Disclosure
Steel Dynamics	No targets
Stryker Corporation	CDP 2016 Climate Disclosure
Tenneco	CDP 2016 Climate Disclosure
Tesla	No targets
Tesoro	No targets
Textron	CDP 2016 Climate Disclosure
The Kellogg Company	CDP 2016 Climate Disclosure
The Kraft Heinz Company	CDP 2016 Climate Disclosure
Thyssenkrupp	CDP 2016 Climate Disclosure
Total	CDP 2016 Climate Disclosure
Toyota Motor Corporation	CDP 2016 Climate Disclosure
Unilever	CDP 2016 Climate Disclosure
United States Steel	No targets
United Technologies	CDP 2016 Climate Disclosure
Valero Energy	No targets
VF Corporation	CDP 2016 Climate Disclosure
Whirlpool Corp.	CDP 2016 Climate Disclosure
Wilmar International	CDP 2016 Climate Disclosure