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Corporate Statements About the Use of Renewable Energy: What Does the "100% Renewable" Goal Really Mean?

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Introduction

There is a movement among companies to use more renewable energy and less energy obtained from fossil fuels. Some are pledging to go "100% renewable",[1] with companies joining such groups as RE100,[2] signing on to Corporate Renewable Energy Buyers' Principles,[3] and undertaking other initiatives. At least 150 large companies, including Apple, Facebook, and Google, among others, have set goals to rely exclusively on renewable energy.[4] Many others have set goals to rely on substantial percentages of renewable energy in portions of their operations or in certain locations. There are many strategies that can be used in setting and fulfilling such goals, with differing effects on the energy environment.

In addition to setting renewable energy goals, many companies report on how much renewable energy they currently use. This information is often conveyed in annually published sustainability reports or in publicly issued statements and news releases. Given that there is no legislative requirement for companies to use renewable energy, and that they set and meet their own goals, a question arises as to what companies mean by their statements about their renewable energy use. How should the public understand companies' goals and progress?

This report seeks to demystify the voluntary world of corporate renewable energy claims.[5] Can differences in companies' renewable energy strategies make any difference in the development and deployment of new renewable energy facilities? Is fossil fuel-based generation being displaced? Does a company that claims a certain renewable energy percentage actually use renewable energy in its operations?

Demand for Renewable Energy

Demand for renewable energy is growing. In many regions, countries, and states or provinces around the globe there is a growing consensus that the global energy system must transition to greater reliance on renewable sources. In the United States, this demand is coming, in part, from private sector companies setting and meeting voluntary renewable energy goals; and partly as the result of investments by utilities in certain states to comply with state-set mandates or customer demand for more renewable energy in their portfolio of electrical generating capacity.

Drivers of Demand

Demand for renewable energy in the corporate environment is influenced by decisions to include renewable energy as an element of corporate social responsibility, often along with goals of limiting greenhouse gas emissions. It is also influenced by the price and availability of renewable energy in locations relevant to existing and newly-planned corporate operations, and by consumer preferences and reputational drivers.

1. Social Responsibility Goals

Many companies have started including use of renewable energy as one of their social responsibility goals. For example, Adobe's Sustainability & Social Impact Report for 2017 states that "[r]enewable energy is an important part of [Adobe's] broader commitment to sustainability," and that Adobe is "committed to operating [its] sites and the digital delivery of [its] products with 100 percent renewable energy by 2035."[6] Similarly, Microsoft's Corporate Social Responsibility report for 2017 states that the company has "committed to us-

1 RE100. Companies. Available at: http://there100.org/companies (Sept. 21, 2018).
2 RE100. Available at: http://there100.org/ (Sept. 21, 2018).
3 Corporate Renewable Energy Buyers' Principles. About Us. Available at: https://buyersprinciples.org/about-us/ (Sept. 21, 2018).
4 Re100. Companies. Available at: http://there100.org/companies (Sept. 21, 2018).
5 This report does not address companies' goals to reduce their greenhouse gas emissions, or to be "carbon neutral." It focuses specifically on "renewable energy" claims.
6 Adobe. 2017 Sustainability & Social Impact Report at 2. https://wwwimages2.adobe.com/content/dam/acom/en/corporate-responsibility/pdfs/Adobe-SSI-Report-2017.pdf (Sept. 21, 2018).

ing 50 percent wind, solar, and hydropower electricity in [its] datacenters and campus by the end of 2018, to meet 60 percent early in the next decade, and to continue growing that percentage moving forward."[7] BMW Group's Sustainable Value Report 2017 states that by expanding its own renewable electricity production and using electricity from external renewable sources, the company is seeking to meet its stakeholders' expectation that it support sustainable energy production.[8] Intel's Corporate Responsibility Report for 2017 states that some of the company's goals are to "[g]row the installation and use of on-site alternative energy to three times [the company's] 2015 levels[, c]ontinue 100% green power in [the company's] U.S. operations[,] and increase renewable energy use for [its] non-U.S. operations by 2020."[9] Johnson & Johnson's 2017 Health for Humanity Report states that the company "recognize[s] [its] responsibility to contribute to the global effort of tackling climate change and moving towards a low-carbon economy."[10] Samsung's Sustainability Report for 2017 identifies that year as "a hallmark year … to reduce [Samsung's] environmental footprint as [the company] announce[s] [its] goal to expand [its] renewable energy use."[11]

2. Cost and Availability of Renewable Energy

The cost of renewable energy is decreasing in many markets, making it a more appealing option for many companies. In January 2018, Forbes reported that according to the International Renewable Energy Agency (IRENA), the cost of renewable energy is becoming compatible with that of fossil fuels and that it "should be a consistently cheaper source of electricity generation than traditional fossil fuels within just a few years," with offshore wind and concentrating solar power costing approximately $0.06-$0.10 per KWh by 2020-2022.[12] Specifically, "[e]lectricity from renewables will soon be consistently cheaper than from fossil fuels" and "[b]y 2020, all the renewable power generation technologies that are now in commercial use are expected to fall within the fossil fuel-fired cost range, with most at the lower end or undercutting fossil fuels."[13] It is important to note, however, that much of the discussion of the lower cost of renewable electricity centers on the wholesale cost - the cost of the generated electricity at the generating unit. The wholesale price is only part of the total cost electricity users pay. The total retail cost is higher, as it needs to account for the costs of integrating renewable generation resources into the grid along with conventional generation. Still, the tradeoffs between falling renewable energy generation costs and potentially higher grid management costs can produce significant benefits in some settings. Research conducted at the University of Texas at Austin, for example, found that "while installing significant amounts of solar power would increase annual grid management costs by $10 million in [the Electricity Reliability Council of Texas or ERCOT], it would reduce annual wholesale electricity costs by $900 million."[14]

Another important development is that the cost of batteries that store renewable energy is also decreasing, and "the continuing fall of the cost of batteries will increase the ability to store off-peak electricity and sell it when demand is high, which will enable renewable technologies – particularly wind and solar projects – to take an increasing share of the electricity market."[15] According to IRENA, while battery costs are "falling rapidly[, they] remain high at present with their economic applications mainly found in off-grid markets, transport and, increasingly, behind-the-meter uses."[16] However, IRENA also notes that "[a]s costs fall further,

7 Microsoft. Environmental Sustainability. https://www.microsoft.com/en-us/about/corporate-responsibility/environmental-sustainability (Sept. 21, 2018).

8 BMW Group. Sustainable Value Report 2017, at 99. Available at: https://www.bmwgroup.com/content/dam/bmw-group-websites/bmwgroup_com/ir/downloads/en/2017/BMW-Group-SustainableValueReport-2017--EN.pdf (Dec. 3, 2018).

9 Intel. Corporate Responsibility at Intel: 2017-2018 Report, at 3, 22. http://csrreportbuilder.intel.com/PDFfiles/CSR-2017_Full-Report.pdf (Sept. 21, 2018).

10 Johnson & Johnson. 2017 Health for Humanity Report. Available at: http://healthforhumanityreport.jnj.com/environmental-health/energy-use-and-carbon-emissions (Dec. 4, 2018).

11 Samsung Electronics. Samsung Electronics Sustainability Report 2018, at 20. Available at: https://www.samsung.com/us/smg/content/dam/samsung/us/aboutsamsung/2017/Sustainability_Report_2018v3.pdf (Sept. 21, 2018).

12 Dudley, Dominic. Renewable Energy Will Be Consistently Cheaper Than Fossil Fuels By 2020, Report Claims. Jan. 13, 2018. Available at: https://www.forbes.com/sites/dominicdudley/2018/01/13/renewable-energy-cost-effective-fossil-fuels-2020/#32d8dd174ff2 (Sept. 21, 2018).

13 IRENA. Renewable Power Generation Costs in 2017: Key Findings and Executive Summary, at 3. Available at: http://www.irena.org//media/Files/IRENA/Agency/Publication/2018/Jan/IRENA_2017_Power_Costs_2018_summary.pdf?la=en&hash=6A74B8D3F7931DEF00AB88BD3B339CAE180D11C3 (Sept. 21, 2018).

14 J. Rhodes, F. T. Davidson, M. Webber, T. Deetjen. The Conversation. Are solar and wind really killing coal, nuclear and grid reliability? May 11, 2017. Available at: https://theconversation.com/are-solar-and-wind-really-killing-coal-nuclear-and-grid-reliability-76741 (Nov. 29, 2018) (citing T. Deetjen, J. Garrison, J. Rhodes, M. Webber. Solar PV Integration Cost Variation Due to Array Orientation and Geographic Location in the Electric Reliability Council of Texas. Applied Energy. Volume 180, p. 607-616. October 15, 2016. Available at: https://www.sciencedirect.com/science/article/pii/S0306261916310984?via%3Dihub).

15 Scott, Mike. Half Of All Power Set To Come From Renewable Energy By 2050, While Coal Recedes To Just 11%. Jun. 22, 2018. Available at: https://www.forbes.com/sites/mikescott/2018/06/22/half-of-all-power-set-to-come-from-renewable-energy-by-2050-while-coal-recedes-to-just-11/#eb816774a1d6 (Sept. 21, 2018).

16 IRENA. Electricity Storage and Renewables: Costs and Markets to 2030, at 15. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Oct/IRENA_Electricity_Storage_Costs_2017_Summary.pdf?la=en&hash=2FDC44939920F8D2BA29CB762C607BC9E882D4E9 (Nov. 29, 2018).

batteries will provide more grid services."[17]

As the cost of renewable energy is decreasing, the amounts of produced and consumed renewable energy are steadily increasing. According to the U.S. Energy Information Administration, the total U.S. production of renewable energy increased from 9,650 trillion Btu in 2015 to 11,140 trillion Btu in 2017.[18] Total renewable energy consumption similarly increased from 9,634 trillion Btu in 2015 to 11,016 trillion Btu in 2017.[19] In just two years, from 2015 through 2017, consumption of solar energy in the U.S. almost doubled, from 426 trillion Btu to 774 trillion Btu, and in the first four months of 2018 alone, it equaled two thirds of the total consumption of solar for 2015 and far surpassed the total consumption of solar in 2013.[20] The total consumption of hydroelectric power, wind, and biomass is also growing.[21] Right now, the greatest amount of consumed renewable energy comes from biomass (4,913 trillion Btu in 2017), followed by hydroelectric power (2,770 trillion Btu in 2017), wind (2,347 trillion Btu in 2017), and solar (774 trillion Btu in 2017).[22] However, even with the increased consumption of renewable energy, "[i]n 2017, renewable energy sources accounted for about 11% of total U.S. energy consumption and about 17% of electricity generation."[23] Worldwide, renewable energy represented 12.5% of total world energy consumption and 21% of electricity generation in 2015.[24] There is substantial work to do to increase renewable generation capacity, and importantly, to develop tools to integrate intermittent generation sources into the electricity supply system and to expand transmission systems to connect areas with significant renewable generation capacity with areas of significant energy demand.

3. Public Preferences

Consumers also encourage companies to use renewable energy. Recent studies have shown that many consumers express a preference for renewable energy and for companies that use it. A study by Natural Marketing Institute and Green-e Marketplace, a program of the nonprofit Center for Resource Solutions, for example, found that "[f]our out of five U.S. consumers support clean energy and 55 percent want companies to increase their use of renewable energy."[25] The majority of the Americans surveyed also agreed that "they are more likely to purchase products bearing a seal that proves corporate sustainability commitments, like buying or using renewable energy."[26]

The 2015 Cone Communications/Ebiquity Global CSR Study similarly found that "91 percent of global consumers expect companies to do more than make a profit," such as "operate responsibly to address social and environmental issues."[27] The study also found that "63% [of Americans] are hopeful businesses will take the lead to drive social and environmental change," and that "87% said they'd purchase a product because [a] company advocated for an issue they cared about."[28] Two studies conducted by Vestas also show a strong preference for renewable energy across the globe.[29] Specifically, 85% of global respondents expressed a desire for more renewable energy in the market, 74% said they "would feel more positive if companies used wind as its primary source of energy," and 62% said they "would buy products from companies who use wind energy."[30]

Demand by Utilities for Renewable Energy Generation

Currently, 29 states, Washington, D.C., and three US territories have adopted renewable portfolio stan-

17 Id.
18 U.S. Energy Information Administration. August 2018 Monthly Energy Review, at 153. Aug. 28, 2018. Available at: https://www.eia.gov/totalenergy/data/monthly/pdf/mer.pdf (Sept. 21, 2018).
19 Id.
20 Id.
21 Id.
22 Id.
23 U.S. Energy Administration Frequently Asked Questions, May 18, 2018, at https://www.eia.gov/tools/faqs/faq.php?id=92&t=4 (October 30, 2018)
24 U.S. Energy Administration Frequently Asked Questions, October 3, 2018, at https://www.eia.gov/tools/faqs/faq.php?id=527&t=4 (October 30, 2018)
25 Green-e Marketplace and Natural Marketing Institute. A Majority of Consumers Want Businesses To Increase Use of Renewable Energy. Jun. 24, 2009. Available at: https://resource-solutions.org/press-releases/a-majority-of-consumers-want-businesses-to-increase-use-of-renewable-energy/ (Sept. 21, 2018).
26 Id.
27 Parkhurst, Maggie. Corporate Social Responsibility – How Renewable Have Expanded the Field. May 30, 2017. https://www.renewableenergyworld.com/ugc/articles/2017/05/23/corporate-social-responsibility--how-renewables-have-expanded-the-field.html (Sept. 21, 2018).
28 Cone Communications. 2017 Cone Communications CSR Study, at 6, 9. Available at: http://www.conecomm.com/research-blog/2017-csr-study (Sept. 21, 2018).
29 Johnston, Adam. 85% of Global Consumers Want More Renewable Energy. Sept. 19, 2012. Available at: https://cleantechnica.com/2012/09/19/85-of-global-consumers-want-more-renewable-energy/ (Sept. 21, 2018).
30 Id. (49% of respondents also indicated they would agree to pay more for renewable energy).

dards (RPS), which require utilities to produce a certain percentage or amount of electricity from renewable energy sources by a certain year.[31] In addition, 8 states and 1 territory have set renewable energy goals.[32] Utilities reach their renewable energy standards and goals by generating or purchasing renewable energy certificates (RECs) (for definition of the REC, see Terminology on p. 11).[33] States determine which RECs are eligible to meet their particular standards and goals by "defining the project types and geographic locations from which utilities must source RECs to use towards compliance."[34] For example, "[o]ne common special provision of state RPSs are 'solar carveout' policies that require utilities to generate or purchase RECs from in-state or in-region solar facilities."[35] According to some estimates, approximately "half of the growth in U.S. renewable energy generation since 2000 can be attributed to state renewable energy requirements."[36]

The World Resources Institute (WRI) reports that "[i]n markets where wind and solar power have become cost competitive, utilities have more economic incentives to add renewable energy," as "[r]enewable resources just offer a great low price for the next 20 years – without the risks of fossil fuel price spikes."[37] Given the change in costs, some states are even considering whether renewable portfolio standards are still necessary to provide growth to the renewable electricity market.[38] According to the National Conference of State Legislatures, "[i]n 2017, at least three states – Maryland, Montana and New Hampshire – enacted legislation to study the costs and benefits of their RPS policies."[39]

As the price of renewable energy decreases, utilities begin to offer more renewable energy to large-scale clients. This applies even to utilities that need to meet their own, mandatory, renewable energy goals. Thus, according to WRI, "over the past four years, even regulated U.S. utilities have begun to offer new, large-scale renewable energy options to customers."[40] Utilities make arrangements with companies primarily through green tariffs (for definition of green tariff, see Terminology on p. 11). Green tariffs are currently available in 15 states in the US, including Colorado, Georgia, Kentucky, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Mexico, North Carolina, Utah, Virginia, Washington, Wisconsin, and Wyoming.[41] Several states also offer one-on-one renewable energy arrangements between companies and utilities, but no formal green tariffs programs. These states are Alabama, Arizona, Iowa, Oklahoma, and Tennessee.[42]

Utilities will want to be able to supply renewable power at a retail cost at the meter comparable to or at a premium to existing utility offerings of electricity generated from the full range of generation sources. As the percentage of renewable generation capacity on the grid increases, utilities, energy retailers and grid management authorities may incur additional costs to ensure stability and reliability of delivered electricity.

Companies' Goals for Renewable Energy

Many companies have now joined the group RE100, committing to become "100% renewable,"[43] which means "sourcing 100% renewable electricity throughout their entire operations."[44] According to the RE100 Joining Criteria, all companies joining the RE100 must have either already "[o]btained 100% of their electricity

31 National Conference of State Legislatures. State Renewable Portfolio Standards and Goals. July 20, 2018. Available at: http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx (Sept. 21, 2018).
32 Id.
33 EPA Green Power Partnership. Renewable Energy Certificate (REC) Arbitrage, at 1. Sept. 2017 Available at: https://www.epa.gov/sites/production/files/2017-09/documents/gpp-rec-arbitrage.pdf (Sept. 21, 2018).
34 Id.
35 Id. at 1-2.
36 National Conference of State Legislatures. State Renewable Portfolio Standards and Goals. July 20, 2018. Available at: http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx (Sept. 21, 2018).
37 Tawney, Letha, et al. 6 Graphics Show How U.S. Utilities Are Turning Corporate Demand into Renewables Growth. May 17, 2017. Available at: https://www.wri.org/blog/2017/05/6-graphics-show-how-us-utilities-are-turning-corporate-demand-renewables-growth (Sept. 21, 2018).
38 National Conference of State Legislatures, State Renewable Portfolio Standards and Goals. July 20, 2018. Available at: http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx (Sept. 21, 2018).
39 Id.
40 Tawney, Letha, et al. 6 Graphics Show How U.S. Utilities Are Turning Corporate Demand into Renewables Growth. May 17, 2017. Available at: http://www.wri.org/blog/2017/05/6-graphics-show-how-us-utilities-are-turning-corporate-demand-renewables-growth (Sept. 21, 2018).
41 Bonugli, Celina. Tracking Renewable Energy Purchasing Options. Available at: http://www.wri.org/our-work/project/electricity-initiative/tracking-renewable-energy-purchasing-options (Sept. 21, 2018).
42 Id.
43 RE100. Companies. Available at: http://there100.org/companies (Sept. 21, 2018).
44 RE100. RE100 Joining Criteria, at 1, Available at: http://media.virbcdn.com/files/45/db8335e1ef4b851c-RE100JoiningCriteria.pdf (Sept. 21, 2018).

from renewable sources" or have "a clear strategy with timetable to go 100%" or have committed to develop "a clear roadmap for going 100% renewable" within 12 months of joining the initiative.[45] All member companies must have a renewable power strategy with credible deadlines for achieving 100% renewable energy, with the minimum requirements as follows: "100% by 2050, with interim steps of at least 30% by 2020[,] 60% by 2030[, and] 90% by 2040."[46] This means that two years from now, almost one third of the electricity used in each member company's entire operations would need to come from renewable sources. There are many approaches to claiming "renewable" energy use in operations, many of which do not involve the physical consumption of renewable generated electricity at the facilities claiming the 100% use (discussed in section IV).

RE100 Joining Criteria defines "entire operations" in accordance with the Greenhouse Gas Protocol, as:

1) "[a]ll scope 2 emissions[47] relating to the company activities";
2) "[a]ny scope 1 emissions[48] relating to the generation of electricity by the company (this excludes use of fossil fuels for transport, the production of heat, or other uses not involving electricity production)"; and
3) "[a]ll companies operating within the brand or company group, including operations that are [at least] 50% owned by the brand or company group"; franchises and part-ownership facilities (ownership less than 50%) will be assessed on a case by case basis.[49]

Companies must join RE100 at the group level, but a subsidiary can join separately if it consumes more than 1 TWh a year and has clear separate branding.[50]

Currently, there are 155 members in the RE100.[51] These companies come from a variety of sectors and include, for example, companies such as Adobe, Apple, BMW Group, Facebook, Google, GM, HP Inc., HP Enterprise, Johnson & Johnson, Microsoft, and Walmart Inc.[52] Other companies that are not members of the RE100 have similarly committed to rely solely on renewable electricity, often in their operations in certain countries. These include, for example, Intel,[53] Samsung,[54] and Amazon's subsidiary Amazon Web Services (AWS).[55]

Other companies do not explicitly promise to rely exclusively on renewable sources, but have nonetheless set numeric goals for themselves, including CISCO (85% of global electricity by 2022),[56] Dell (50% of global electricity by 2020),[57] and IBM (55% of global electricity by 2025).[58] Not all companies state renewable energy goals in percentages. Lenovo, for example, has a "renewable energy goal of achieving 30MW of Lenovo owned or leased renewable generation capacity globally by FY 2019/20."[59]

In addition to setting renewable energy goals, many companies also claim current usage of a substantial

45 Id.
46 Id. at 2.
47 Greenhouse Gas Protocol identifies Scope 2 emissions as indirect greenhouse gas emissions "from the generation of purchased electricity consumed by the company." The Guidance clarifies that "Scope 2 emission physically occur at the facility where electricity is generated." World Resources Institute and World Business Council for Sustainable Development. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, at 25. Available at: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf (Sept. 21, 2018).
48 Greenhouse Gas Protocol identifies Scope 1 emissions as direct greenhouse gas emissions, which "occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled . . . process equipment" but not "[d]irect CO2 emission from the combustion of biomass" or greenhouse gas emissions not covered by the Kyoto Protocol. Id.
49 RE100. RE100 Joining Criteria, at 1-2. Available at: http://media.virbcdn.com/files/45/db8335e1ef4b851c-RE100JoiningCriteria.pdf (Sept. 21, 2018).
50 Id.
51 RE100. Companies. Available at: http://there100.org/companies (Nov. 15, 2018).
52 Id.
53 Intel. Corporate Responsibility at Intel: 2017-2018 Report, at 29. Available at: http://csrreportbuilder.intel.com/PDFfiles/CSR-2017_Full-Report.pdf (Sept. 24, 2018).
54 Samsung. Samsung Electronics to Expand Use of Renewable Energy. Available at: https://news.samsung.com/global/samsung-electronics-to-expand-use-of-renewable-energy (Sept. 24, 2018).
55 Amazon Web Services. AWS & Sustainability. Available at: https://aws.amazon.com/about-aws/sustainability/ (Sept. 24, 2018).
56 Cisco. 2017 Corporate Social Responsibility Report, at 9. Available at: https://www.cisco.com/c/dam/assets/csr/pdf/CSR-Report-Our-Story-2017.pdf (Sept. 24, 2018).
57 Dell. Renewable Energy. Available at: http://www.dell.com/learn/us/en/uscorp1/corp-comm/cr-earth-resource-conservation?c=us&l=en&s=corp&~ck=bt (Sept. 24, 2018).
58 IBM. IBM establishes its fourth generation GHG emissions reduction goal. Available at: https://www.ibm.com/ibm/environment/news/ghg_goals_2018.shtml (January 4, 2019).
59 Lenovo, Addressing Climate Change at Lenovo: Our Contribution to Transition to Low-Carbon Economy, at 2. Available at: https://www.lenovo.com/us/en/social_responsibility/GreenPaper-Addressing-Climate-Change-at-Lenovo.pdf (Sept. 24, 2018).

percentage of renewable energy. For example, Apple,[60] Google,[61] HP Inc.,[62] Intel,[63] and Microsoft[64] state that within the U.S. they are already using 100% renewable electricity or are matching their electricity consumption with RECs. CISCO reported that 80% of its global electricity consumption in 2017 came from renewable sources.[65] Microsoft reported that in 2017, it relied on 96% renewable electricity globally.[66] HP Inc. reported that in addition to reaching its objective to use 100% renewable electricity in the United States in 2017, it also "procured and generated" enough renewable electricity globally to "equal[] 50% of [its] global total."[67] Facebook reports greater than 50% renewable energy use at its data centers in 2017.[68] IBM reported that in 2017, 41.4% of its "global electricity supply for IBM-managed locations was generated from renewable sources."[69] Amazon's AWS reported that it "achieved 50% renewable energy usage" in January 2018.[70] Sony stated in 2016 that it used 100% renewable electricity in Europe, and that "an estimated 25% of [its] entities' electricity use in the United States" is powered with renewable energy.[71] Walmart stated that approximately 28% of its electricity needs globally in 2017 were supplied by renewable energy sources.[72] HP Enterprise reported that in 2017, it "source[d] 25% of [its] global electricity from renewables."[73] Johnson & Johnson states that in 2017, approximately 25% of the total electricity consumed by the company came from renewable sources.[74] Dell stated that in 2018, "[r]enewable electricity represented 29% of [its] total electricity consumption, up from 24% in FY17."[75]

These numbers, claims, and reports are not always easy to compare with one another. Some companies explain why they set goals other than 100%. For example, IBM, whose current goal is to achieve 55% renewable electricity by 2025, noted in the 2017 IBM and the Environment Report that the following factors affect its ability to procure renewable electricity: the size of electricity demand of its many facilities (when the demand is small, it is more difficult to execute contracted purchases); ownership of the facilities (it is more difficult to contract renewable energy purchases on leased facilities); the availability of renewable energy in countries in which the company has facilities; and the type of electricity markets and availability of renewable energy.[76]

According to IBM, "the diversity of size and location of [its] data centers and the relatively low demand make it economically difficult to match renewable generation sources to consumption."[77] In addition, "a great majority of IBM's facilities with electricity demand greater than 1 MW are leased locations," across 30 countries, and "[o]ver one-third of these locations have limited or no opportunity to procure economically priced, commercial quantities of renewable electricity," making it difficult "to negotiate appropriate contract terms with providers and/or to procure renewable electricity to power [IBM's] operations."[78] Furthermore, as IBM explains, in the current market, "'green tariff' offerings of one- to three-year terms from utilities and energy service companies offer the best match to [the company's] needs, but come with high premiums in many markets." [79] That being said, "[c]ontract offerings with four- to eight-year terms for [the company's] desired quantity of electricity have emerged in the last year, and [IBM is] hopeful they will present [the company] more

60 Apple. Apple Now Globally Powered by 100 Percent Renewable Energy. Available at: https://www.apple.com/newsroom/2018/04/apple-now-globally-powered-by-100-percent-renewable-energy/ (Sept. 24, 2018).
61 Google. 100% Renewable is Just the Beginning. Available at: https://sustainability.google/projects/announcement-100/ (Sept. 24, 2018).
62 HP. 2017 Sustainable Impact Report. Available at: http://www8.hp.com/h20195/v2/GetPDF.aspx/c05968415.pdf (Sept. 24, 2018).
63 Intel. Corporate Responsibility at Intel: 2017-2018 Report, at 22. Available at: http://csrreportbuilder.intel.com/PDFfiles/CSR-2017_Full-Report.pdf (Sept. 24, 2018) and Intel. Intel Reports on Advances and Achievements in 2015 Corporate Responsibility. May 29, 2016. Available at: https://newsroom.intel.com/news-releases/intel-reports-on-advances-and-achievements-in-2015-corporate-responsibility/ (Sept. 24, 2018).
64 Smith, Brad. Greener Datacenters for a Brighter Future: Microsoft's Commitment to Renewable Energy. May 19, 2016. Available at: https://blogs.microsoft.com/on-the-issues/2016/05/19/greener-datacenters-brighter-future-microsofts-commitment-renewable-energy/#sm.000001qred3x9tcypqt8txmwsr2n4 (Sept. 24, 2018).
65 CISCO. 2017 Corporate Social Responsibility Report. Available at: https://www.cisco.com/c/dam/assets/csr/pdf/CSR-Report-2017.pdf (Sept. 24, 2018).
66 Microsoft. 2017 Data Factsheet: Environmental Indicators, at 1. Available at: http://download.microsoft.com/download/0/0/6/00604579-134B-4D0E-97C3-D525DF-B7890A/Microsoft_2017_Environmental_Data_Factsheet.pdf (Sept. 24, 2018).
67 HP. 2017 Sustainable Impact Report, at 76. Available at: http://www8.hp.com/h20195/v2/GetPDF.aspx/c05968415.pdf (Sept. 24, 2018).
68 Facebook. Clean and Renewable Energy. Available at: https://sustainability.fb.com/clean-and-renewable-energy/ (Sept. 24, 2018).
69 IBM. 2017 IBM and the Environment Report, at 20. Available at: https://www.ibm.com/ibm/environment/annual/IBMEnvReport_2017.pdf (Sept. 24, 2018).
70 AWS. AWS & Sustainability Timeline. Available at: https://aws.amazon.com/about-aws/sustainability/sustainability-timeline/ (Sept. 24, 2018).
71 Sony. Use of Renewable Energy. Available at: https://www.sony.net/SonyInfo/csr_report/environment/site/re_energy.html (Sept. 24, 2018).
72 Walmart. 2018 Global Responsibility Report. Available at https://corporate.walmart.com/2018grr/reducing-greenhouse-gas-emissions?chapter=scaling-more-affordable-renewable-energy (Dec. 4, 2018).
73 Hewlett Packard Enterprise. Living Progress Report, at 17. Available at: https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00048490enw (Sept. 24, 2018).
74 Johnson & Johnson. 2017 Health for Humanity Report. Available at: http://healthforhumanityreport.jnj.com/environmental-health/energy-use-and-carbon-emissions (Dec. 4, 2018).
75 Dell. Dell's Environmental Goals. https://legacyofgood.dell.com/environment.htm
76 IBM. IBM Environmental Report 2017, 22-23. Available at: https://www.ibm.com/ibm/environment/annual/IBMEnvReport_2017.pdf (Sept. 24, 2018).
77 Id. at 23.
78 Id.
79 Id.

economical procurement options in the future."[80]

Some companies also have difficulties obtaining attributes of renewable energy in certain geographic areas where they have their operations. For example, Samsung states that "in Korea where 65% of [the company's] electricity consumption happens, there are currently no available RECs trading systems or PPAs," and that "Korea's physical environment does not lend itself to the development of large scale wind or solar facilities."[81]

Terminology Used in This Report

Renewable Energy Certificate (REC) is "a market-based instrument that represents the property rights to the environmental, social and other non-power attributes of renewable electricity generation."[82] A REC is issued whenever "one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy resource."[83] RECs make it possible to keep track of the renewable energy in the energy market and to identify entities that can claim credit for that renewable energy without double counting.[84] An entity owning the REC "has exclusive rights to make claims about 'using' or 'being powered with' the renewable electricity associated with that REC."[85] It is important to note, however, that the fact that a company owns a REC does not guarantee that the company physically used renewable energy at its facilities. A REC can be "bundled" – acquired together with the associated electricity – or "unbundled" – acquired separately from the associated electricity.[86]

Some companies use RECs both to make claims of renewable electricity consumption for the purposes of a renewable electricity use goal and for the purposes of a CO_2 or greenhouse gas (GHG) reduction goal. An offset is a term associated with accounting for GHG emissions. One offset typically "represent[s] a metric ton of emissions avoided or reduced."[87] Offsets are measured in CO_2 or CO_2 equivalents.[88]

Power Purchase Agreement (PPA), also sometimes called a direct or a physical PPA, is an agreement, usually long-term, between a power generator and a customer (such as a corporate buyer) that allows purchasing of RECs and associated power.[89] In a direct/physical PPA, the power generator and the customer are in the same grid region, allowing for the delivery of electricity to the customer.[90]

Virtual Power Purchase Agreement (VPPA), also sometimes called a financial PPA or Contract for Differences, is an agreement, usually long-term, between a power generator and a customer (such as a corporate buyer), in which renewable power is not physically delivered to the customer, but is instead sold into the grid located near the power generator.[91] The customer purchases the electricity and the RECs at a fixed price, but the generator sells the generated electricity into the grid system for an open market price.[92] The power generator then pays the difference to the customer if the agreed-upon VPPA fixed price is less than the market price or receives money from the customer if the agreed-upon price is more than the market price.[93] The customer gets the associated RECs.[94]

Green Tariffs are "optional programs in regulated electricity markets offered by utilities and approved by state public utility commissions (PUCs) that allow larger commercial and industrial customers to buy bundled renewable electricity from a specific project through a special utility tariff rate," usually through long-term agreements.[95] Green tariff programs vary from one utility to another and have largely, to date, been offered for new electricity load. Generally speaking, there are three types of green tariff programs: a sleeved power purchase agreement (PPA), subscriber

80 Id.
81 Samsung. Sustainability Report 2018, at 21. Available at: https://www.samsung.com/us/smg/content/dam/samsung/us/aboutsamsung/2017/Sustainability_Report_2018v3.pdf (Sept. 24, 2018).
82 EPA. Renewable Energy Certificates (RECs). Available at: https://www.epa.gov/greenpower/renewable-energy-certificates-recs (Sept. 21, 2018).
83 Id. For a sense of scale, 1 MW of power delivery provides enough electricity for the instantaneous demand of approximately 750-1,000 homes. California ISO. California ISO Glossary. Available at: http://www.energy.ca.gov/glossary/ISO_GLOSSARY.PDF (Sept. 21, 2018).
84 EPA. Renewable Energy Certificates (RECs). Available at: https://www.epa.gov/greenpower/renewable-energy-certificates-recs (Sept. 21, 2018).
85 EPA. Renewable Energy Certificate Monetization. Available at: https://www.epa.gov/repowertoolbox/renewable-energy-certificate-monetization (Sept. 21, 2018).
86 EPA. Unbundled Renewable Energy Certificates (RECs). Available at: https://www.epa.gov/greenpower/unbundled-renewable-energy-certificates-recs (Sept. 21, 2018).
87 EPA. Renewable Energy Certificates (RECs). Available at: https://www.epa.gov/greenpower/renewable-energy-certificates-recs (Sept. 21, 2018). While one REC represents "attributes of 1 MWh renewable electricity generation," one offset typically "represent[s] a metric ton of emissions avoided or reduced."
88 For a full discussion of RECs and offsets, see EPA. Offsets and RECs: What's the Difference? Available at: https://www.epa.gov/sites/production/files/2018-03/documents/gpp_guide_recs_offsets.pdf (Sept. 21, 2018).
89 Royal, Hans. What is the Difference between Direct and Financial PPAs for Corporate Buyers? Available at: http://hub.resourceadvisor.com/latest-perspectives/what-is-the-difference-between-direct-and-financial-ppas-for-corporate-buyers (Dec. 7, 2018); http://hub.resourceadvisor.com/new-blog-stream/ppa-101 (Dec. 7, 2018)
90 Id.
91 Id.
92 Id.
93 Id.
94 Id.
95 EPA. Utility Green Tariffs. Available at: https://www.epa.gov/greenpower/utility-green-tariffs (Sept. 21, 2018).

programs, and market-based rate programs.[96] In the case of a sleeved PPA, a "utility essentially passes a physical [PPA] that it has signed with a renewable energy project along to the consumer."[97] Subscriber programs are programs where a "utility aggregates smaller customers to make a single, larger project more cost effective," allowing customers to "subscribe to a portion of a larger renewable energy project."[98] Under market-based rate programs, "the corporate customer signs a PPA for the energy and RECs from a dedicated renewable energy facility, and the utility sells all the renewable energy output into the wholesale market at the point closest to where it was generated."[99] The wholesale market price is credited to the customer, and then the "customer buys power for its facility at the wholesale market electricity rate."[100] In all cases, accommodations must be made to ensure the delivery of power to a commercial operation. For example, if a sleeved PPA renewable power is generating below the company's consumption, there is an associated cost to buy power on the spot market to fill the sleeve. Regardless of the type of the green tariff program, though, all utilities "avoid shifting program costs and risks to non-participating utility customers and only charge participating organizations for the cost of the renewable electricity."[101] According to EPA, some of the advantages associated with green tariffs include direct arrangements between a utility and an organization, price predictability and potential cost savings, ability to purchase renewable electricity from a project located in the same grid as the organization's operations, and ability to point to a specific, often local, renewable energy project as the source of electricity.[102] EPA also notes that challenges associated with green tariffs include the fact that green tariffs are currently offered in a limited number of states, may require long-term arrangements, and are generally available only to large-scale electricity customers.[103]

In addition to green tariffs, some utilities also offer green power products.[104] In both cases, the customer receives bundled RECs and electricity.[105] However, unlike green tariffs, green power products generally require shorter-term commitments and offer "'off-the-shelf' renewable electricity product, which often is a mix of renewable energy resources."[106] This presents an additional option for customers to acquire renewable electricity through utilities.

Ways to Obtain and Account for Renewable Energy

Production vs. Purchase

Generally speaking, a company can obtain renewable energy by *producing it* or by *purchasing it*. In both cases, in order to claim credit for that amount of renewable energy, a company would need to keep the Renewable Energy Certificates (RECs) associated with that energy.

A company can produce renewable energy by generating it on its premises (for example, using onsite solar panels). It can use the energy and claim the RECs. It can also produce renewable energy offsite from its operations (for example, on company-operated wind farms), use and/or sell the energy, and keep the associated RECs.

A company can also purchase renewable energy from utilities, from power generators, and from third parties (sometimes referred to as energy retailers).

Utilities offer green tariffs – optional programs approved by state public utility commissions.[107] Green tariffs allow customers to buy "bundled renewable electricity from a specific project through a special utility

96 Priya Barua and Celina Bonugli. WRI. Emerging Green Tariffs in U.S. Regulated Electricity Markets. Oct. 2018. Available at: https://wriorg.s3.amazonaws.com/s3fs-public/emerging-green-tariffs-in-us-regulated-electricity-markets_1.pdf?_ga=2.122243469.724025233.1545404712-1551726102.1529440498 (Dec. 21, 2018).
97 EPA. Utility Green Tariffs. Available at: https://www.epa.gov/greenpower/utility-green-tariffs (Sept. 21, 2018).
98 Barua, Priya. WRI. Implementation Guide for Utilities: Designing Renewable Energy Products to Meet Large Energy Customer Needs. Jun. 2017. Available at: https://www.wri.org/publication/implementation-guide-green-tariffs (Dec. 21, 2018).
99 Id.
100 Id.
101 Id.
102 Id.
103 Id.
104 EPA. Utility Green Tariffs. Available at: https://www.epa.gov/greenpower/utility-green-tariffs (Sept. 21, 2018).
105 Id.
106 Id.
107 EPA Green Power Partnership. Utility Green Tariffs. Available at: https://www.epa.gov/greenpower/utility-green-tariffs (Sept. 24, 2018).

tariff rate"[108] and are currently available in 15 states in the US.[109]

A company can also enter into a power purchase agreement (PPA) or a virtual power purchase agreement (VPPA). PPAs and VPPAs are contracts between a consumer and a power generator.

Under a PPA, a consumer contracts to receive the power generated from renewable sources. In order for the PPA to work, the power-generating facility and the company's operational facility need to be located in the same grid region.[110] In cases where the renewable power supplied by the PPA is intermittent, the customer would need to make additional arrangements to ensure continuous supply of electricity.

Meanwhile, under VPPAs, the electricity itself is not delivered to the purchaser[111] and thus may be generated by renewable energy facilities outside of the grid region where a company's operations are located.[112] Instead, the generating facility sells that electricity into the grid. Companies who enter PPAs and VPPAs can structure them in such a way that they keep the RECs associated with the generation of the renewable energy.

Lastly, companies can purchase unbundled RECs from third parties, without entering into agreements to buy electricity.

In the US, there are ways to register and keep track of RECs. Electronic tracking systems register information about each generated megawatt hour of renewable energy, issue RECs to the generating entities, and assign a unique serial number to each MWh to ensure it is only counted once.[113] These tracking systems also allow RECs to be transferred from one entity to another,[114] and in recent years, regional REC tracking systems have started to interact with each other more, allowing buyers to purchase RECs across tracking systems.[115]

When an entity wants to claim RECs it has in its possession, it needs to "retire" them.[116] The same RECs should not be claimed by two different entities, which would result in double-counting.[117] Tracking systems help ensure that the RECs, which have unique serial numbers, are only counted once.[118] Specifically, one cannot claim the use of renewable energy, even if it actually used renewable energy in its operations, *if one does not have the RECs*.

Given that the voluntary market where companies purchase RECs has little regulatory oversight, EPA recommends that companies "buy[] green power products that are third-party certified and verified."[119] This is especially important where companies are buying unbundled RECs from third party brokers. As EPA explains, "[g]reen power products certified by an independent third-party offer consumers a higher level of certainty about the integrity of their purchase."[120] Also, "[c]ertification both ensures the quality of a green power product and validates the product's environmental attributes."[121] Verification has associated costs, but some have started trading RECs on a blockchain-powered system, which reduces the need to verify transactions.[122]

Certification by third parties usually requires that suppliers verify that "the amount of green power sold to customers is equal to the amount of green power obtained through supply contracts" and the "audit verifies that the green power behind the product was produced and placed on the utility grid and helps verify the product's environmental benefit."[123] Such verification may be important to ensure that the RECs associate with

108 Id.
109 WRI. Tracking Renewable Energy Purchasing Options. Available at: http://www.wri.org/our-work/project/electricity-initiative/tracking-renewable-energy-purchasing-options (Sept. 24, 2018).
110 Royal, Hans. What is the Difference between Direct and Financial PPAs for Corporate Buyers? Available at: http://hub.resourceadvisor.com/latest-perspectives/what-is-the-difference-between-direct-and-financial-ppas-for-corporate-buyers (Dec. 7, 2018).
111 Id.
112 Tawney, Letha, et al. 5 Emerging Trends for Corporate Buyers of Renewable Energy. Sept. 29, 2017. Available at: http://www.wri.org/blog/2017/09/5-emerging-trends-corporate-buyers-renewable-energy (Sept. 24, 2018).
113 EPA Green Power Partnership. Renewable Energy Tracking System. Available at: https://www.epa.gov/greenpower/renewable-energy-tracking-systems (Sept. 24, 2018); and National Renewable Energy Laboratory. Renewable Electricity: How Do You Know You Are Using It?, at 1. Available at: https://www.nrel.gov/docs/fy15osti/64558.pdf (Sept. 24, 2018)
114 EPA Green Power Partnership. Renewable Energy Tracking System. Available at: https://www.epa.gov/greenpower/renewable-energy-tracking-systems (Sept. 24, 2018).
115 National Renewable Energy Laboratory. Renewable Electricity: How Do You Know You Are Using It?, at 1. Available at: https://www.nrel.gov/docs/fy15osti/64558.pdf (Sept. 24, 2018).
116 EPA Green Power Partnership. Guide to Making Claims About Your Solar Power Use, at 3. Available at: https://www.epa.gov/sites/production/files/2017-09/documents/gpp-guidelines-for-making-solar-claims.pdf (Sept. 24, 2018).
117 Id. at 5.
118 EPA Green Power Partnership. Renewable Energy Tracking Systems. Available at: https://www.epa.gov/greenpower/renewable-energy-tracking-systems (Sept. 24, 2018).
119 EPA Green Power Partnership. Buy Certified-Verified Green Power. Available at: https://www.epa.gov/greenpower/buy-certified-verified-green-power (Sept. 24, 2018).
120 Id.
121 Id.
122 Melissa Goh. CNBC. November 7, 2018. Blockchain tech is taking on renewable energy trading in Singapore. Available at: https://www.cnbc.com/2018/11/07/blockchain-tech-is-taking-on-renewable-energy-trading-in-one-country.html.
123 Id.

an actual renewable energy project, as claimed. As a result, "[v]erification serves as a form of buyer protection against deception or fraud."[124] The Center for Resource Solutions' Green-e Energy program is the organization that certifies and verifies green products in the United States.[125]

The Price of a REC

The price of a REC differs in different parts of the country, depending on supply and demand. For example, the price of a REC in a grid where there are renewable portfolio standards for utilities and demand for renewable energy from the private sector might be substantially higher than in a grid where there are no renewable portfolio standards, few big companies needing renewable energy, and vast amounts of renewable energy produced.

RECs that meet state RPS compliance requirements are often more expensive than the RECs that do not comply with RPS requirements.[126] A price of a REC depends on supply and demand, and "state RPS policies often create markets for eligible RECs with established procurement levels, timetables, [and] geographic boundaries, and penalize non-compliance," which can result in a scarcity of compliant RECs, driving higher REC prices in some locations.[127] According to EPA, "[c]ompliance-eligible RECs (excluding solar RECs) have reached $60 per megawatt-hour (MWh) in some states in the last few years," and prices of solar RECs in states with solar carve-out policies "are generally higher than other compliance-eligible RECs in that state."[128]

Meanwhile, RECs used to meet voluntary goals do not have these requirements and tend to be less expensive. According to EPA, wholesale prices of voluntary RECs "have been on a fairly steady decline in the last several years, from $1.2/MWh in 2010 to less than $0.35/MWh in 2016."[129] The price of voluntary RECs can depend on geographic location, certification, technology, generation date, and competition with compliance-eligible RECs.[130] Unbundled RECs tend to have a low price, are easy to buy, and can be chosen based on particular qualities, such as geography, resource, and time period, for example.[131] Some RECs also state the emission rate of the renewable resource.[132] Because of the price and availability, unbundled RECs dominate the voluntary market, most coming from wind projects, primarily from Kansas, Oklahoma, and Texas.[133]

Some companies replace or "swap" more expensive RECs with cheaper RECs from another source. For example, a company may have solar panels on its premises that generate electricity, which powers the company's operations. However, due to certain circumstances, for example, if these premises are located in a RPS mandatory market, the RECs associated with that solar power are much more expensive than RECs the company can purchase from a faraway wind farm. For financial reasons, a company may choose to "swap" the expensive solar RECs it generates for the cheaper wind RECs. This is called REC Arbitrage and is "often necessary to make the project financially feasible,"[134] capture the full economic benefits offered by the RPS structure and associated REC markets, and capture some or all of the environmental benefits enabled by the project.

In terms of reporting, it is important for companies to remember that when they swap RECs, their "claims about renewable electricity use must align with the attributes of the replacement REC it owns, and not with the RECs associated with the project."[135] In other words, if a consumer swapped the RECs it generated from the solar panel installed on its premises for RECs from a faraway wind farm, it should state that it is using wind power, not solar, and adjust the environmental benefits in accordance with the benefits of the arbitraged RECs.

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124 Id.
125 Id.; see Green-e. Available at. https://www.green-e.org/ (Sept. 24, 2018).
126 EPA Green Power Partnership. Green Power Pricing. Available at: https://www.epa.gov/greenpower/green-power-pricing (Sept. 26, 2018).
127 Id.
128 Id.
129 Id.
130 Id.
131 Id.
132 EPA. Unbundled Renewable Energy Certificates (RECs). Available at: https://www.epa.gov/greenpower/unbundled-renewable-energy-certificates-recs (Nov. 30, 2018).
133 EPA Green Power Partnership. Green Power Pricing. Available at: https://www.epa.gov/greenpower/green-power-pricing (Sept. 26, 2018).
134 EPA Green Power Partnership. Renewable Energy Certificate (REC) Arbitrage. Available at: https://www.epa.gov/greenpower/renewable-energy-certificate-rec-arbitrage (Sept. 26, 2018).
135 EPA Green Power Partnership. Renewable Energy Certificate (REC) Arbitrage. Available at: https://www.epa.gov/greenpower/renewable-energy-certificate-rec-arbitrage (Sept. 26, 2018). EPA also notes that parties "undertaking a greenhouse gas (GHG) inventory that have engaged in a REC arbitrage should calculate their emissions using the replacement RECs, not the original project RECs." Id.

Impact of RECs: Old RECs vs New RECs

RECs also differ with regard to their age. Purchase of RECs generated a long time ago would do little to encourage renewable energy market, because those facilities are already built and the power was already generated. In fact, in order for a sale to be Green-e Energy Certified, it needs to occur within 21 months of the generation of the REC.[136] Similarly, some state RPSs require that RECs counted towards RPS standards be generated the same year they are claimed.[137]

Meanwhile, a purchase of RECs that will be generated in the future, those sold by new renewable energy facilities or facilities that have not been built yet, helps encourage generation of new renewable energy.[138] Such purchases provide financial support to the builders of new renewable facilities.[139] The only downside is that the purchaser of such RECs will not be able to claim the RECs until they are generated, and if the generating facility never gets built or is destroyed before the RECs are generated, the investment is lost.[140]

What Do Company Renewable Energy Claims Mean?

Given that there are no mandatory standards for renewable energy use by the private sector, it should not be surprising that different companies use different terminology when they describe their progress. Companies may choose to subscribe to a particular group and apply its methodology, or they may develop their own approaches. However, the lack of uniform terminology can make it difficult to understand what different companies mean by their claims.

Two companies can have very different approaches to what they count towards the use of renewable energy. They might even apply the same or similar terms to mean different things.

For example, some companies count toward their goals RECs for the renewable energy that their facilities could have consumed (generated on the same grid or grid region), but not rely on unbundled RECs generated in regions far away from their facilities. Meanwhile, other companies might count all the RECs, regardless of whether they were bundled or unbundled, near or far from their operations, towards their use of renewable energy. While such distinctions might not matter to some, customers and the public should know what a company means when it says it used renewable energy – and specifically, whether it helped stimulate the development of any new renewable energy projects, and to what extent.

Simply put, even while making the same claim of 30% renewable energy use, one company might mean that it self-generated a significant amount of renewable energy and/or that it helped to bring new renewable energy projects to fruition, while another company may simply have bought unbundled RECs from long-established wind farms, purchases of which made little, if any, impact on development of the renewable energy market.

Companies also use different terminology to describe their practices. For example, while some companies distinguish "unbundled RECs,"[141] other companies do not use the word "unbundled" and just state that they purchase RECs.[142] Furthermore, while according to EPA, all the term "unbundled REC" means is that a REC is sold separately from the electricity, [143] some companies define "unbundled RECs" more specifically. IBM uses this term to identify unbundled RECs that are sold into a different grid region.[144] It notes that an "'unbundled'

136 Green-e. FAQ. Available at: https://www.green-e.org/faq (Sept. 26, 2018).
137 Id.
138 Energy Sage. How Renewable Energy Credit Prices are Set. Jan. 22, 2018. Available at: https://www.energysage.com/alternative-energy-solutions/renewable-energy-credits-recs/renewable-energy-credit-prices/ (Sept. 26, 2018).
139 Id.
140 Id.
141 See, e.g., Adobe; RE100. Adobe. Dec. 2015. Available at: http://there100.org/adobe (Sept. 26, 2018) (statement that company does not use unbundled RECs).
142 See, e.g., Apple. Environmental Responsibility Report, at 9. Available at: https://www.apple.com/environment/pdf/Apple_Environmental_Responsibility_Report_2018.pdf (Sept. 26, 2018) (buys RECs tied to "recently constructed renewable energy projects…from the same power grid as our facility").
143 EPA Green Power Partnership. Unbundled Renewable Energy Certificates (RECs). https://www.epa.gov/greenpower/unbundled-renewable-energy-certificates-recs (Sept. 26, 2018). EPA's definition of unbundled RECs has no mentioning of grids or grid regions. Technically, an unbundled REC can be sold to a customer in any grid, as long as the REC is sold by itself, separately from the associated electricity.
144 IBM. Position on Transparency in Renewable Electricity Reporting. Available at: https://www.ibm.com/ibm/environment/climate/renewable_transparency.shtml (Sept. 26, 2018) (. "Unbundled RECs: In this case, as renewable electricity is generated, the RECs are separated or "unbundled" from the renewable electricity with which they are affiliated. The electricity is sold into the grid region in which it is generated, but the "unbundled" REC is sold to a consumer of conventional electricity (i.e., fossil fuels)

REC is sold to a consumer of conventional electricity . . . who is located in a *different grid region.*"[145] This definition emphasizes that purchase of RECs in a different grid region does not support renewable energy in the customer's grid region. IBM also states that "[t]here is a difference between *purchasing RECs* and *actually using* renewable electricity," and that IBM did not purchase any unbundled RECs in 2017.[146] What this appears to mean is that IBM finds it appropriate to count as "used" only renewable energy (and associated RECs) generated in the grid regions of the company's operations, not RECs purchased far away from the company's facilities. This is different from the RE100's approach, which puts no limitations on where the RECs come from.[147]

Companies also appear to differ with regard to what exactly they mean by "match[ing]" their consumption or use of energy with renewable energy. The group RE100 (and presumably companies that are part of the group) uses the term "match" to refer to a substitution "of the electricity used across [a company's] global operations with electricity produced from renewable sources"[148] or more specifically, of the MWh obtained from fossil fuels for MWh obtained from renewable energy sources. For example, Apple states that its Bonnybrooke solar array project produces "over 147 million kilowatt-hours of clean, renewable energy a year, which more than fully *matches* the energy used by the [near-by] data center [in Mesa, AZ]."[149] Similarly, GM, another RE100 member, states that "100 percent of the electricity used at Flint Metal Center and Flint Engine operations is *matched* with wind power, which helps defray the cost of renewable energy for other consumers."[150] Importantly, according to RE100, this renewable electricity can be produced on or off the grid.[151] In contrast, when IBM talks about "matched" consumption and offsets, it appears to refer to renewable energy produced necessarily in the grid region of the company's operations.[152] IBM's definitions of these terms are presented below:

> Physical or matched consumption: In this case, renewable electricity is *generated in the grid region where the consuming facility is located* and *at the same time* that the facility is consuming electricity. The electricity can be physically delivered or it can be matched to the facility's consumption.
>
> Matched offsets: In this case, renewable electricity is *generated in the same grid region where the consuming facility is located*, but it occurs at a time when the facility is not able to consume it or when the amount of renewable electricity generated exceeds or lags the demand from the facility. In this case, the RECs are separated from the renewable electricity and bundled with the electricity generated from conventional sources (i.e., fossil fuels) that is actually consumed by the facility. The purpose is to offset the GHG emissions associated with conventional generation in this specific grid region.[153]

Company Reports Compared

Companies provide different types of information with regard to their progress towards reaching their renewable energy goals. However, the information they provide publicly often provides little insight into how they obtain renewable energy, how much renewable energy they generate themselves, how much they purchase through contracts, and how much they purchase in the form of unbundled RECs. We examined corporate reports and other publicly available data for major international companies in the technology and data sectors as well as some large manufacturers and retailers in order to understand the variations in approach.

Microsoft

who is located in a different grid region in order for the purchaser of these unbundled RECs to offset the emissions associated with the conventionally generated electricity that it actually consumed. There is no physical connection between the facility generating the renewable electricity and the facility using the unbundled REC." Id. (emphasis added).

145 Id. (emphasis added).

146 Id. (emphasis added).

147 RE100. Going 100%. http://there100.org/going-100 (Sept. 26, 2018).

148 RE100. Going 100%. Available at: http://there100.org/going-100 (Sept. 26, 2018).

149 Apple. Environmental Responsibility Report, at 56. Available at: https://www.apple.com/environment/pdf/Apple_Environmental_Responsibility_Report_2018.pdf (Sept. 26, 2018) (emphasis added).

150 GM. 2017 Sustainability Report. Available at: https://www.gmsustainability.com/act/operations/progress.html (Sept. 26, 2018) (emphasis added).

151 RE100. Going 100%. Available at: http://there100.org/going-100 (Sept. 26, 2018).

152 IBM. Position on Transparency in Renewable Electricity Reporting. Available at: https://www.ibm.com/ibm/environment/climate/renewable_transparency.shtml (Sept. 26, 2018) (emphasis added).

153 Id.

Microsoft makes publicly available some detail on how and where its renewable energy comes from. A member of RE100 with a goal ultimately to rely entirely on renewable energy, Microsoft set a goal to have 50% of the electricity used by the company's datacenters come from renewable energy sources by the end of 2018 and to top 60% early in the next decade.[154] According to Microsoft's 2017 Data Factsheet, the company's electricity consumption in 2017 was 6,344,479 MWh globally and 4,611,239 MWh in North America.[155] The company states that it used 6,104,758 MWh of renewable energy globally (counting on-site renewable energy generation, PPAs, and purchased RECs), which represents 96% of the company's overall electricity use.[156] The Factsheet also states that in 2017, all of the electricity Microsoft consumed in North America, 4,611,239 MWh, came from renewable sources.[157] In addition, Microsoft provides a breakdown of how much of its renewable energy use globally comes from RECs (5,119,876 MWh), PPAs (984,464 MWh), and on-site generation (418 MWh).[158] Given the above-stated total amount of renewable energy used, it is easy to calculate that the RECs Microsoft bought in 2017 account for 83% of the company's total renewable energy use, PPAs account for 16% of the company's total renewable energy use, and on-site generation accounts for 0.007% of the company's total renewable energy use.

Microsoft also shares information on how it prioritizes the types of sources it uses. For example, it states that it only purchases RECs when it cannot obtain renewable energy through other means: "When we're not able to eliminate our energy use or directly power our operations with green energy, we purchase renewable energy certificates to reduce carbon emissions."[159]However, unbundled RECs currently account for most (83%) of the company's total renewable energy use.

IBM

In 2018, IBM established a goal to "[p]rocure 55 percent of the electricity [it] consumes globally from renewable supplies by 2025."[160] In its Environmental Report for 2017, IBM explained that in 2017, "[it] contracted with its utility suppliers to purchase approximately 779,000 MWh of renewable electricity, representing 22.9 percent of [the company's] global electricity consumption at IBM-managed locations," which exceeded "IBM's goal [at the time] to procure 20 percent of the electricity it consumes from renewable sources by 2020."[161] In addition, when IBM includes the amount of renewable energy it receives from the grid mix, "41.4 percent of the electricity consumed in IBM's managed locations was sourced from renewable assets."[162] IBM's Report also states that "[t]he percentages of the electricity [the company] consumed, both contracted and grid-supplied purchases that came from renewable sources were: Europe 67 percent, Latin America 63 percent, North America 28 percent, and Asia Pacific 18 percent."[163] IBM has a chart that shows use of renewable electricity as a percentage of global electricity consumption with regard to both contracted purchases and grid-supplied renewable electricity for the last seventeen years.[164]

With regard to its strategy, IBM states that it aims to "procure renewable electricity that is generated in the grid regions where IBM's facilities are located."[165] The company also, when possible, "match[es] [its] purchases to the physical consumption of [its] facilities so that [the company is] consuming the electricity at the same time that the renewable electricity is being generated," but that given variability of output from wind and solar, the company "must rely on electricity generated from conventional sources (i.e., fossil fuels) to

154 Smith, Brad. Greener Datacenters for a Brighter Future: Microsoft's Commitment to Renewable Energy. May 16, 2016. Available at: https://blogs.microsoft.com/on-the-issues/2016/05/19/greener-datacenters-brighter-future-microsofts-commitment-renewable-energy/#sm.000001qred3x9tcypqt8txmwsr2n4 (Sept. 26, 2018); McKinley, Shelley. A Year Later, We Are Still In. Jun. 1, 2018) Available at: https://blogs.microsoft.com/green/2018/06/01/a-year-later-we-are-still-in/ (Sept. 26, 2018).

155 Microsoft. 2017 Data Factsheet: Environmental Indicators, at 4. Available at: http://download.microsoft.com/download/0/0/6/00604579-134B-4D0E-97C3-D525DF-B7890A/Microsoft_2017_Environmental_Data_Factsheet.pdf (Sept. 26, 2018).

156 Id. at 1.

157 Id. at 4-5.

158 Id. at 1.

159 Smith, Brad. Greener Datacenters for a Brighter Future: Microsoft's Commitment to Renewable Energy. May 19, 2016. Available at: https://blogs.microsoft.com/on-the-issues/2016/05/19/greener-datacenters-brighter-future-microsofts-commitment-renewable-energy/#sm.000001qred3x9tcypqt8txmwsr2n4 (Sept. 26, 2018).

160 IBM. IBM establishes its fourth generation GHG emissions reduction goal. Available at: https://www.ibm.com/ibm/environment/news/ghg_goals_2018.shtml (January 10, 2019).

161 IBM, IBM Environmental Report 2017, at 5. Available at: https://www.ibm.com/ibm/environment/annual/IBMEnvReport_2017.pdf (Sept. 27, 2018).

162 Id. at 3, 5.

163 Id. at 20.

164 Id. at 21.

165 Id. at 20.

ensure business continuity."[166] IBM explains that when the company's "consumption exceeds the output from renewable sources, [it] may use 'bundled' Renewable Energy Certificates (RECs) to offset the CO_2 emissions associated with the electricity [it] consume[s] from conventional sources," and that it does not use unbundled RECs, "supplied from renewable generation projects in grid regions outside of [the company's] energy consuming locations," because by doing so, "IBM would not actually be using the renewable electricity that the purchase of unbundled RECs helped to fund."[167] In addition, as IBM points out, purchase of unbundled RECs "obfuscates the need for hard public policy decisions and investments across the energy value chain that must be made to genuinely increase the quantity and availability of renewable electricity delivered to the grid."[168]

Apple

Apple set a goal of using 100% renewable energy and announced in April 2018 that its own global facilities are now powered by 100% renewable energy.[169] Apple reports that this includes powering "retail stores, offices, data centers and co-located facilities in 43 countries," including the United States.[170] According to Apple's Environmental Responsibility Report, as of January 2018, "approximately 66 percent of the renewable energy Apple procures comes from projects that Apple created," which includes directly owned renewable energy generation projects, such as wind farms and solar arrays, and renewable energy contracts, "supporting new, local projects."[171] Eventually, Apple aims to "cover [its] entire electricity load with Apple-created projects."[172]

Apple counts its own generation, contracts to obtain energy,[173] and purchases of unbundled RECs towards its renewable energy goals, and the Report does not specify the percentage of renewable energy that comes from each method, including unbundled RECs. However, Apple states that it does not buy unbundled RECs if there are other options. When Apple-created projects are not enough to achieve the company's needs, Apple buys renewable energy from "newer projects in nearby markets, or through available utility green energy programs," and if those options are not available, it buys "strong renewable energy credits (RECs) tied to recently constructed renewable energy projects."[174] Apple notes that when it procures RECs, it requires that those RECs are "Green-e Energy certified, where available, and come from the same power grid – and preferably in the same state or country – as the Apple facility they support."[175] It also provides information about individual locations and projects. For example, the Report notes that Apple Park, the new headquarters of Apple, is powered 100% by renewable energy, and 75% is "generated onsite by a 17-megawatt rooftop solar installation and 4 megawatts of baseload biogas fuel cells."[176]

With regard to its strategy of procuring renewable energy, Apple follows three principles: displacement, materiality, and accountability. With regard to displacement, Apple reports that it "seek[s] to displace more-polluting forms of energy in the same electric grid region as [the company's] facilities . . . by having Apple-created projects deliver into the grid an amount of renewable energy equal to the amount of energy [the company's] facilities use from that grid."[177] Apple uses renewable energy options "in the broader geographic region" for less than 0.5 percent of its load, occurring in "difficult renewable energy markets."[178] With regard to materiality, Apple reports that it seeks to "create new clean energy that adds to the energy sources already

166 Id. at 20.
167 Id. at 20.
168 Id. at 20.
169 Apple. Apple Now Globally Powered by 100 Percent Renewable Energy. Apr. 9, 2018. Available at: https://www.apple.com/newsroom/2018/04/apple-now-globally-powered-by-100-percent-renewable-energy/ (Sept. 27, 2018).
170 Id.
171 Apple. Environmental Responsibility Report, at 9. Available at: https://www.apple.com/environment/pdf/Apple_Environmental_Responsibility_Report_2018.pdf (Sept. 27, 2018).
172 Id. at 9.
173 In 2016, this included PPAs and contracts with suppliers (utilities).RE100. RE100 Progress and Insights Report, January 2018, at 49. Available at: http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf (Sept. 27, 2018).
174 Apple. Environmental Responsibility Report, at 9. Available at: https://www.apple.com/environment/pdf/Apple_Environmental_Responsibility_Report_2018.pdf (Sept. 27, 2018).
175 Id.
176 Id. at 34.
177 Id. at 11.
178 Id.

delivering to the grid."[179] As for accountability, Apple reports that it measures and tracks its "energy supply resources, and use[s] third-party registries such as WREGIS and NC-RETS, certification programs such as Green-e Energy, and contractual provisions to ensure that only Apple takes credit for the renewable energy it generates or procures."[180]

Google

Google set a goal in 2012 "to reach 100% renewable energy for [its] operations,"[181] and according to its 2018 Environmental Report, the company achieved this target in 2017 "primarily by buying renewable electricity directly from new wind and solar farms via long-term power purchase agreements (PPAs) on the grids where [the company] has operations, as well as by buying renewable power through utilities via renewable energy purchasing models that [the company] helped create," and that "a small portion of [its] utility energy purchases include renewable sources as part of the utility's grid mix."[182] As the report explained, even though reaching the goal involves the use of some power from fossil fuel resources, the company will "purchas[e] enough wind and solar energy to match every megawatt-hour (MWh) of electricity [its] data center and office operations consume annually."[183] The Report does not state what percentage of PPAs and other arrangements the company uses to achieve its goal. It does state, however, that it is "the world's largest corporate purchaser of renewable energy," that it "signed 26 agreements to purchase a total of nearly 3 GW of renewable energy that is new to the grid," and that "[s]ince 2010, [it has] committed to invest nearly $2.5 billion in renewable energy projects with a total combined capacity of 3.7 GW."[184]

The company "take[s] care never to buy 'unbundled' or 'naked' RECs or GoOs, in which a renewable attribute is sold on an open market, independently of underlying physical energy.[185] Google explains that "[b]y purchasing physical energy bundled with these certifications, [the company] provide[s] all or nearly all of a [renewable energy] project's cash flow over time, whereas buying 'unbundled' RECs or GoOs provides only a small portion of a project's cash flow."[186]

Google also states that it is "committed to adding clean power to the grid."[187] To the extent possible, Google "seek[s] renewable energy projects that will operate on the same grids as [the company's] data centers.[188]

Adobe

Adobe set a goal to "operat[e] its sites and the digital delivery of [its] products with 100 percent renewable energy by 2035."[189] According to Adobe's 2017 CDP Report, the company seeks to "collaborate and push utilities whose grids [it is] on to implement grid-scale [renewable energy] strategies enabling a low-carbon economy."[190] Adobe now focuses "on direct and open access renewable energy – this means that the energy [the company] purchase[s] is adding directly to the local power grid."[191]

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179 Id.

180 Id. WREGIS is the Western Renewable Energy Generation Information, a tracking system for the region covered by the Western Energy Coordinating Council; NC-RETS is the North Carolina Renewable Energy Tracking System recognized by the North Carolina Utilities Commission.

181 Google. Environmental Report 2017, at 12. Available at: https://storage.googleapis.com/gweb-sustainability.appspot.com/pdf/Google_2017-Environmental-Report.pdf (Nov. 30, 2018).

182 Google. Environmental Report 2018, at 24, 26. Available at: https://storage.googleapis.com/gweb-sustainability.appspot.com/pdf/Google_2018-Environmental-Report.pdf (Sept. 27, 2018).

183 Id. at 24.

184 Id. at 24.

185 Google. Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond. Available at: https://static.googleusercontent.com/media/www.google.com/en//green/pdf/achieving-100-renewable-energy-purchasing-goal.pdf (Sept. 27, 2018). GoOs are "guarantee-of-origin" certificates serving the same function as RECs in European markets.

186 Id.

187 Google. Environmental Report 2018, at 8, 26, 27. Available at: https://storage.googleapis.com/gweb-sustainability.appspot.com/pdf/Google_2018-Environmental-Report.pdf (Sept. 27, 2018).

188 Google. Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond. Available at: https://static.googleusercontent.com/media/www.google.com/en//green/pdf/achieving-100-renewable-energy-purchasing-goal.pdf (Sept. 27, 2018).

189 Adobe. 2017 Sustainability & Social Impact Report, at 2. Available at: https://wwwimages2.adobe.com/content/dam/acom/en/corporate-responsibility/pdfs/Adobe-SSI-Report-2017.pdf (Sept. 27, 2018) (goal for owned and managed sites, and co-located data centers).

190 Id.

191 Digneo, Vince. Adobe's Bangalore Office Among First in India to be Powered 100% by Renewable Energy. Sept. 14, 2017. Available at: https://theblog.adobe.com/adobes-bangalore-office-among-first-in-india-to-be-powered-100-by-renewable-energy/ (Sept. 27, 2018).

In 2015 Adobe decided to no longer use unbundled RECs, as doing so "did little to nothing to grow grid-scale [renewable energy], it carries a weak economic case for [renewable energy], and we know we can do better."[192] Adobe "instead moved toward our goal of 100% bundled renewable energy ONLY."[193]

In 2017, 1% of the company's electricity came from onsite generation of renewable electricity, and 4% came from PPAs and green tariffs.[194] Adobe uses on-site renewable energy "when it makes business sense or when the technology implementation moves [the company] and the market forward."[195] Adobe states that it uses offsite renewable energy by entering PPAs "as a means to stabilize operational costs and power not just Adobe sites with clean energy, but make [renewable energy] more widely available in the communities where [employees] live and work (true additionality)."[196]

Facebook

Facebook initially committed to using 50% renewable energy for all its operations by 2018 and 100% long term.[197] In 2017, it passed its goal of reaching 50% renewable energy and aims now "to be at 100% renewable energy in [its] company-wide energy mix by the end of 2020."[198]

The company does not provide much information about the methods it uses to reach its goal nor what methods account for what percentage of the goal. It also does not state whether or not it uses unbundled RECs. According to the RE100 Report, in 2016, Facebook obtained its renewable energy exclusively through onsite generation of solar power and contracts with suppliers (utilities), but the RE100 report for 2017 shows use of unbundled RECs among the company's strategies.[199]

Facebook states that it seeks to "increase the development of renewable energy resources," and "work[s] extensively with other companies, renewable developers, and utilities to design optimal solutions in the different locations where we operate."[200] Specifically, Facebook seeks "to add renewable energy to the utility's resource mix and to implement new renewable energy tariffs – tariffs that are accessible not just to Facebook, but to other companies as well."[201]

AWS

AWS states a commitment to achieve 100% renewable energy usage for its global infrastructure.[202] On its website, the company states that "[i]n January 2018, [it] achieved 50% renewable energy usage," but it does not explain how it reached this milestone or what methods of obtaining renewable energy it used.[203] There appear to be no overall numbers about renewable energy use or a breakdown by percentage for methods.

AWS does cite its use of renewable energy from 6 solar farm projects and 3 wind farms, noting that those "renewable energy projects are expected to deliver over 2 million MWh of energy annually onto the electric grid powering AWS data centers located in the AWS US East (Ohio) and AWS US East (N. Virginia) Region;" but it does not explain how much energy those data centers consume or what percentage of the company's renewable energy and overall energy use these projects represent.[204] AWS also states that as of August 2018, it "hosts solar energy systems on 19 fulfillment facility rooftops across the U.S., with the capacity

192 Adobe. Climate Change 2017 Information Request, at 11. Available at: https://wwwimages2.adobe.com/content/dam/acom/en/corporate-responsibility/pdfs/CDPProgrammeResponse2017.pdf (Sept. 27, 2018).
193 Id. at 20.
194 Adobe. Climate Change 2017 Information Request, at 22-23. Available at: https://wwwimages2.adobe.com/content/dam/acom/en/corporate-responsibility/pdfs/CDP-ProgrammeResponse2017.pdf (Sept. 27, 2018).
195 Id. at 2.
196 Id.
197 Facebook. Clean and Renewable Energy. Available at: https://sustainability.fb.com/clean-and-renewable-energy/ (Sept. 27, 2018).
198 Id.
199 RE100. RE100 Progress and Insights Report, January 2018, Report at 25. Available at: http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf
(Dec. 11, 2018). RE100. RE100 Progress and Insights Annual Report, November 2018, Annex 1, available at
http://media.virbcdn.com/files/ab/4030404ffa7b9000-Annex1-RE100ProgressandInsightsAnnualReportNovember2018.pdf (Dec. 17, 2018).
200 Facebook. Clean and Renewable Energy. Available at: https://sustainability.fb.com/clean-and-renewable-energy/ (Sept. 27, 2018).
201 Id.
202 AWS. AWS & Sustainability. Available at: https://aws.amazon.com/about-aws/sustainability/ (Sept. 27, 2018).
203 https://aws.amazon.com/about-aws/sustainability/sustainability-timeline/
204 AWS. AWS & Sustainability. Available at: https://aws.amazon.com/about-aws/sustainability/ (Sept. 27, 2018).

to generate over 47 megawatts (MW) of power,"[205] but again does not specify what percentage of the company's overall energy use it represents. There also appears to be no information about whether AWS aims to add more renewable energy to the grids where it operates and whether it prefers some methods of obtaining renewable energy over others.

HP Inc.

HP Inc. seeks to "[u]se 100% renewable electricity in [its] global operations, with a goal of 40% by 2020."[206] According to HP's 2017 Sustainable Impact Report, "[r]enewable electricity purchased and generated on-site, combined with renewable electricity certificates and guarantees of origin, accounted for 50% of [the company's] total consumption."[207] The company reports that in 2017, it "procured and generated 353,366 MWh of renewable electricity globally, 237% more than in 2016 . . . exceeding our 2020 goal of 40%" and that "[s]ources included RECs and guarantees of origin (79.5%), direct purchases (20.3%),[208] and renewable energy generated on-site (0.2%)."[209] HP states that these sources allowed the company to reach its objective to use 100% renewable electricity in the United States, while helping to advance the global market for renewables.[210] While most of HP Inc.'s renewable energy comes from unbundled RECs and guarantees of origin, the company provides no information about whether it prioritizes certain methods of obtaining renewable energy over others.

HP Enterprise

HP Enterprise (HPE) has a goal to "source 50% renewable electricity in [its] operations by 2025 and to source 100% renewable electricity in the long term."[211] HPE's Living Progress Report 2017 states that in 2017, the company "source[d] 25% of [its] global electricity from renewables."[212] This includes the company's "operations in Austria, Ireland, Italy, Spain, Sweden, and the UK, which source 100% of their electricity requirements from renewable resources."[213] HPE's Living Progress Data Summary 2017 explains that the company's progress towards its renewable electricity goal was possible due to "a significant contribution from purchasing renewable energy credits, increasing [the company's] utility supplied green contracts, and investing in power purchase agreements," as well as the effects of consolidating its real estate globally.[214]

Specifically, with regard to the company's indirect energy use in 2017, while 619,824 MWh of electricity came from non-renewable energy sources, 198,869 MWh of electricity came from renewable energy sources, of which 131,841 MWh came from RECs and 67,028 MWh came from purchases of utility-provided renewable energy.[215] With regard to the company's direct energy use in operations, 2,521 MWh of electricity came from renewable sources generated on-site, and only 384 MWh of electricity came from diesel, gas, oil and LPG.[216] HPE's renewable electricity came primarily from RECs (65.5% of the total renewable energy), followed by purchases from utilities(33%) and on-site generation (1.3%). HPE also provides a breakdown by region. It states that in 2017, in the Americas, purchased and on-site electricity was 523,765 MWh, with 136,424 MWh coming from renewable sources; in Europe Middle East, and Africa, purchased and on-site electricity equaled 101,835 MWh, with 64,657 MWh coming from renewable sources; and in Asia Pacific and Japan, it was 195,998 MWh,

205 AWS. Sustainability Question Bank. Available at: https://www.amazon.com/sustainabilityquestionbank#?category=all&question=f93fc548-13da-3cc7-6336-a7f548477a0b (Sept. 27, 2018).
206 HP. 2017 Sustainable Impact Report, at 25. Available at: http://www8.hp.com/h20195/v2/GetPDF.aspx/c05968415.pdf (Sept. 27, 2018).
207 Id. at 18.
208 In 2016, these were contracts with suppliers (utilities).RE100. RE100 Progress and Insights Report, January 2018, at 49. Available at: http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf (Sept. 27, 2018).
209 HP. 2017 Sustainable Impact Report, at 76. Available at: http://www8.hp.com/h20195/v2/GetPDF.aspx/c05968415.pdf (Sept. 27, 2018).
210 Id.
211 Hewlett Packard Enterprise. Living Progress Report 2017, at 17. Available at: https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00048490enw (Sept. 28, 2018).
212 Id.
213 Id.
214 Hewlett Packard Enterprise. Living Progress Data Summary 2017, at 4. Available at: https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00048488enw (Sept. 28, 2018).
215 Id. at 7.
216 Id.

with 309 MWh coming from renewable sources.[217]

HPE pays attention to developing new renewable power projects. It explains that "[i]n 2017, [it] formed a business partnership with Schneider Electric to scan the global market for additional opportunities in renewable energy, particularly those in which [its] influence can bring new renewables to the grid."[218] However, there appears no mention of prioritizing projects in the grids where HPE has operations.

Dell

Dell has a goal to "[s]ource 50% of [its] total electricity from renewables (both purchased and on-site generation)."[219] Dell's 2020 Legacy of Good Plan Annual Update states that in 2018, "renewable energy represented 29% of [the company's] total electricity consumption."[220] Specifically, Dell reports that in 2018, total[221] electricity purchased or generated on-site for all Dell's facilities equals 1,108 million kWh, of which 321 million kWh comes from renewable sources.[222] Dell provides no specifics as to what percentage of renewable energy it generates on-site and what percentage is purchased, or what methods it uses to purchase renewable energy (whether, for example, it buys unbundled RECs).

Lenovo

Lenovo states no percentage goal for renewable electricity procurement. It aims to "achiev[e] 30 MW of owned or leased renewable energy generation capacity globally by 2020."[223] Lenovo's Social Responsibility Report for 2017 states that in fiscal year 2016/2017, the company reached 5.5 MW of renewable energy generation capacity.[224] Specifically, the company has a photovoltaic solar panel installation at the Lenovo-Compal facility in Hefei, China, which provides 3.9 MW; Lenovo also has other renewable energy installations, including solar hot water generation facilities and solar electric generation plants.[225]

Lenovo's Report states that for the 2016/2017 fiscal year, the company's purchased energy, including electricity, equalled 290,112.63 MWh.[226] Its purchases of renewable energy for 2016/2017 were: 22,000 MWh of international RECs, 16,250 MWh of RECs, 7,300 MWh of Guarantees of Origin, and 1,607 MWh of solar energy.[227]

Lenovo's strategy includes: first, identifying and implementing energy efficiency projects; second, using renewable energy sources; and third, buying RECs and carbon offsets "if actual direct energy reduction or use of renewable energy sources is not technically or financially feasible."[228] Lenovo also aims to "install renewable energy generation sources at or near its sites where technically and economically feasible."[229]

Sony

Sony set a goal to use enough renewable energy to reduce cumulative CO_2 emissions by 300,000 tons by 2020.[230] Sony reports that in 2017, "the total amount of CO_2 emissions reduced by using renewable energy at Sony worldwide was approximately 78,000 tons" and the cumulative total reduced since 2016 is 154,000 tons.[231] With regard to electricity used at Sony in 2017, "electricity generated by renewable energy accounted

217 Id.
218 Hewlett Packard Enterprise. Living Progress Report 2017, at 17. Available at: https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00048490enw (Sept. 28, 2018).
219 Dell. 2020 Legacy of Good Plan. Available at: https://legacyofgood.dell.com/environment.htm (Sept. 28, 2018).
220 Id.
221 This data includes all of Dell's technologies, except for VMware.
222 Dell. By the Numbers. Available at: https://legacyofgood.dell.com/by-the-numbers.htm (Sept. 28, 2018).
223 Lenovo. 2016/17 Sustainability Report, at 91. Available at: https://www.lenovo.com/us/en/social_responsibility/FY2017-lenovo-sustainability-report.pdf (Sept. 28, 2018).
224 Id. at 24.
225 Id. at 91.
226 Id. at 23.
227 Id. at 24.
228 Lenovo. Addressing Climate Change at Lenovo: Our Contribution to Transition to Low-Carbon Economy, at 1. Available at: https://www.lenovo.com/us/en/social_responsibility/GreenPaper-Addressing-Climate-Change-at-Lenovo.pdf (Sept. 28, 2018).
229 Lenovo. Combatting Climate Change: Operations. Available at: https://www.lenovo.com/us/en/social_responsibility/climate/operations/#Energy (Sept. 28, 2018).
230 Sony. Use of Renewable Energy. Available at: https://www.sony.net/SonyInfo/csr_report/environment/site/re_energy.html (Sept. 28, 2018).
231 Id.

for approximately 5%."[232] Sony reports that it uses Green Energy Certificates and solar power systems to achieve its goal, but does not specify what percentage of the total renewable energy each method represents.[233]

With regard to Japan, in 2017, Sony used Green Power Certificates[234] equal to 17,640 MWh of electricity, which was equivalent to reducing 9,808 tons of CO2 emissions.[235] Other renewable energy credits were equivalent to reducing 38,552 tons of CO2 emissions.[236] Sony also signed an agreement to purchase hydroelectric power equivalent to reducing 1,193 tons of CO2 emissions.[237] In Europe, Sony reports that it used approximately 55,402 MWh of renewable electricity in 2017, obtained from both RECs and direct purchases of electricity generated from renewable sources, though percentages for each are not specified.[238] In the US and Canada, Sony bought RECs to cover more than 30,705 MWh of electricity in 2017.[239] This was sufficient to meet an estimated 25% of the company's entities' electricity use in the US.[240] Sony Pictures Entertainment also had a solar power generation system that produced approximately 256 MWh of electricity in 2017.[241] While Sony does not provide percentages for each method it uses to obtain renewable energy (self-generation, direct purchase, and unbundled certificates), the majority of renewable energy Sony obtains appears to come from unbundled certificates.

Sony does not state it seeks to develop new renewable energy projects in the grids where it operates. When Sony explains its renewable electricity purchases in Europe, it states that it buys RECs "if direct purchase of renewable electricity was not possible."[242]

Samsung

Samsung's goal is to "source renewable energy for 100% of the energy used for all of its factories, office buildings, and operational facilities in the United States, Europe and China by 2020."[243] In Korea and elsewhere it has either not set percentage goals, or has set more modest goals. In its Sustainability Report for 2017, Samsung reports that it "replaced a total of 228.5 GWh energy with renewable sources."[244] However, the company does not explain what percentage of this amount it acquired through which method. It states that "in Korea where 65% of our electricity consumption happens, there are currently no available RECs trading systems or PPAs."[245]

Samsung tries to add renewable power to the grid regions where it operates. It states that it "made it mandatory for [its] newly constructed facilities to use renewable energy at a predetermined ratio" and that it is "also shifting towards using renewable energy at [its] worksites including solar power."[246] This year, Samsung plans to install approximately 42,000m² of solar panels in its headquarters in Korea and will continue to add solar arrays and geothermal power generation facilities to its campuses in 2019 and 2020.[247]

Intel

Intel aims to "[g]row the installation and use of on-site alternative energy to three times [the compa-

232 Id.
233 Id.
234 Sony explains that "The Green Power Certification System was jointly developed in 2001 by Sony and power utilities. The scheme issues green certificates that represent the environmental value of electricity, heat and other renewable energy generated by power plants across Japan. Entities can purchase and trade these green powers and green heat certificates. They are considered equivalent to purchasing renewable energy, even if generated at a distant place." Id.
235 Id.
236 Id.
237 Id.
238 Id.
239 Id.
240 Id.
241 Id.
242 Id.
243 Samsung. Samsung Electronics to Expand Use of Renewable Energy. Available at: https://news.samsung.com/global/samsung-electronics-to-expand-use-of-renewable-energy (Sept. 28, 2018).
244 Samsung Electronics Sustainability Report 2018, at 59. Available at: https://www.samsung.com/us/smg/content/dam/samsung/us/aboutsamsung/2017/Sustainability%20Report%202018_180712%20re.pdf (Sept. 28, 2018).
245 Id. at 21.
246 Id. at 59.
247 Id. at 21

ny's] 2015 levels, continue [to rely on] 100% green power in [its] U.S. operations, and increase renewable energy use for [the company's] non-U.S. operations by 2020."[248] In 2017, the company maintained "100% green power purchase" for the U.S. and increased its use of renewable energy in Europe from 0% in 2015 to 100% (together accounting for 73% of its global energy use).[249] Intel purchases renewable energy from utility suppliers, purchases Green-e certified RECs, and generates renewable energy on-site and off-site.[250] While Intel does not specify what percentage of each method it uses to meet its goals, Intel states that it has 88 on-site projects with total installed capacity of about 35,000 kW, including distributed energy generation systems installed in 39 buildings across 15 countries and states.[251] Intel states that it "aims[s] to stimulate the market to make [renewable] options less expensive and more accessible over the long term."[252]

BMW Group

BMW Group has a goal to "purchase its electricity worldwide exclusively from renewable energy sources from 2020 onwards."[253] BMW Group's Sustainable Value Report for 2017 states that in 2017, "[s]hare of renewable energy purchased from third parties" equaled 81%.[254] This was an increase from 63% in 2016.[255] The company's "site in Austria has been supplied with 100% green electricity since 2016."[256] In addition, as of 2017, it also started supplying "the plants in Germany and the UK fully with renewable electricity," which means that now all of the company's "production locations in Europe draw their electricity exclusively from renewable sources."[257]

BMW Group states that it is expanding its own production of renewable electricity at its own locations, including solar panels, and purchases electricity from external renewable sources.[258] When producing its own renewable energy is "not entirely possible due to prevailing technical and economic conditions, [the company] purchase[s] electricity from local renewable sources if feasible."[259] However, it does not appear to explain what methods it used to purchase electricity from renewable sources and to what extent. It states that one of the methods is purchases of guarantees of origin (GoOs)[260] – a European certificate of renewable energy.

BMW Group also supports the use of renewable energy in its supply chain, acknowledging that a large share of CO2 emissions comes from manufacturing of the company's products by its suppliers.[261] BMW Group notes that it asks its suppliers to reach agreements on increasing the share of consumed renewable energy.[262] As a result of these agreements, the company was "able to increase the amount of renewable energy in [the company's suppliers'] overall energy consumption to an average of 2%" in its supply chain.[263] This was an increase from 1.6% in 2016.[264]

GM

GM seeks to "become 100 percent renewable by 2050."[265] It is the only automaker in North America and one of only three automakers that has joined RE100.[266] GM's 2017 Sustainability Report's press release states that GM uses 371 MW of energy from renewable sources and "[b]y the end of 2018, renewable energy

248 Intel. Corporate Responsibility at Intel 2017-2018 Report, at 29. Available at: http://csrreportbuilder.intel.com/PDFfiles/CSR-2017_Full-Report.pdf (Sept. 28, 2018).
249 Id.
250 Id.
251 Id.
252 Intel. Corporate Responsibility at Intel 2017-2018, at 29, 26.
253 BMW Group. Sustainable Value Report 2017, at 99. Available at: https://www.bmwgroup.com/content/dam/bmw-group-websites/bmwgroup_com/ir/downloads/en/2017/BMW-Group-SustainableValueReport-2017--EN.pdf (Dec. 3, 2018).
254 Id. at 9.
255 Id.
256 Id. at 99.
257 Id.
258 Id.
259 Id.
260 Id.
261 Id.
262 Id.
263 Id. at 100.
264 Id.
265 General Motors. Make Progress Toward Our Renewable Energy Commitment. Available at: https://www.gmsustainability.com/act/operations/progress.html (Sept. 28, 2018).
266 Id.

will power 20 percent of GM's global electricity use."[267] GM explains that it uses physical and virtual PPAs and onsite renewable energy projects, without specifying the percentage of each method that contributes to the company's current progress.[268] It does not mention unbundled RECs. With regard to PPAs, GM states that it was able to achieve 20% renewable electricity, in part, because of its PPAs that supply all of the electricity to the company's Ohio and Indiana manufacturing facilities.[269] These PPAs provide capacity of 200 MW, doubling GM's existing 199.8 MW of sourced renewable energy capacity.[270]

GM appears to prefer obtaining renewable energy through self-generation, PPAs, and green tariffs rather than RECs, as its Director of Sustainability, David Tulauskas, stated that "[i]n areas where renewable energy options are scarce, we may need to explore options for purchasing renewable energy credits."[271]

Cisco

Cisco has a goal to "[u]se electricity generated from renewable sources for at least 85% of [its] global electricity by 2022."[272] According to Cisco's 2017 Corporate Social Responsibility Report, in 2017, 80% of electricity used by the company was generated from renewable sources.[273] Cisco states that it relies on on-site renewable projects, utility green power programs, PPAs, and RECs, but provides no information about what percentage of each method it used to achieve these results.[274] Cisco's Report states that 100 percent of the electricity used at the company's facilities in the United States, Denmark, France, Germany, Ireland, Italy, Luxembourg, Switzerland, and the United Kingdom comes from renewable power sources.[275] In 2017, Cisco bought "1178 GWh of Green-e Certified RECs and green power in the US, 93 GWh of green power in Europe, and 121 GWh of international RECs (I-RECs) in India."[276] It is unclear how much came from unbundled RECs.

Cisco states that it locates facilities "where low-carbon grid electricity is available" and buys renewable energy from utilities and green power providers.[277] Cisco identifies as a challenge the goal to keep emissions from increasing as the company grows in emerging markets "such as India, where low- and no-carbon electricity is less readily available."[278] In 2017, it implemented 103 energy efficiency and renewable energy projects.[279]

Cisco's "renewables strategy is to identify and evaluate potential projects in the following order: onsite power opportunities, green power contracts with utilities, offsite power opportunities, and Renewable Energy Certificates (RECs)."[280] While Cisco does not explain what it means by "offsite power opportunities," given that it lists this category separately from RECs, it likely includes virtual PPAs. Cisco explains that it "prefer[s] onsite power projects where possible, but offsite power is often the better option due to factors such as location, budget, and space constraints."[281] With regard to unbundled RECs, Cisco notes that "[w]hile [the company] do[es] utilize unbundled RECs today to help meet [its] renewable energy goal, [it] continue[s] to engage utilities and renewable energy providers to expand both [its] onsite and offsite renewable energy activities."[282]

267 General Motors. GM's Vision Drives Value for the Company, Communities and Future Mobility. Jun. 12, 2018. Available at: https://www.generalmotors.green/product/public/us/en/GMGreen/home.detail.html/content/Pages/news/us/en/2018/jun/0612-sustainability.html (Sept. 28, 2018); General Motors. Operational Commitments. Available at: https://www.gmsustainability.com/measure/operations.html (Sept. 28, 2018); General Motors. Make Progress Toward Our Renewable Energy Commitment. Available at: https://www.gmsustainability.com/act/operations/progress.html (Sept. 28, 2018).

268 General Motors. Make Progress Toward Our Renewable Energy Commitment. Available at: https://www.gmsustainability.com/act/operations/progress.html (Sept. 28, 2018).

269 Id.

270 Id.

271 Reynolds, Marie. David Tulauskas, GM: Going 100% Renewable "Improves the Bottom-Line and Gives Energy Cost Certainty. Sept. 15, 2016. Available at: https://www.theclimategroup.org/news/david-tulauskas-gm-going-100-renewable-improves-bottom-line-and-gives-energy-cost-certainty (Sept. 28, 2018).

272 Cisco. 2017 Corporate Social Responsibility Report, at 4. Available at: https://www.cisco.com/c/dam/assets/csr/pdf/CSR-Report-2017.pdf (Sept. 28, 2018).

273 Id. at 22.

274 Id. at 97, 103.

275 Id. at 106.

276 Id.

277 Id. at 101.

278 Id.

279 Id. at 98.

280 Id. at 105.

281 Id.

282 Id.

Johnson & Johnson

Johnson & Johnson aims to "[p]roduce/procure 35% of electricity from renewable sources by 2020" and "to power all facilities with renewable energy by 2050."[283] This target is part of the company's Health for Humanity 2020 Goals framework.[284] According to the company's 2017 Health for Humanity Report, in 2017, approximately 25% of the total electricity consumed by the company came from renewable sources.[285]

Johnson & Johnson uses renewable energy sources installed on-site and procures renewable energy and the associated certificates from off-site systems.[286] The company reports that by the end of 2017, its "installed on-site clean energy technology capacity was 54.7 megawatts (MWs)," including "renewable sources like solar PV, wind, and geothermal and clean sources like co-generation and fuel cells."[287] With regard to procured renewable energy, Johnson & Johnson states that in 2016, it signed a long-term PPA for the output from a 100 MW wind farm in Texas and started receiving benefits of that wind power in January 2017.[288] This significantly increased the company's renewable electricity consumption.[289] Johnson & Johnson adds that it is exploring additional PPAs globally "to support the development of renewable energy in other countries and further strengthen [the company's] renewable energy portfolio."[290]

Walmart Inc.

Walmart Inc. (formerly Wal-Mart Stores, Inc.) is committed to "meeting [its consumption] needs with 100 percent renewable energy," with a goal "to power 50 percent of [its] operations with renewable electricity by 2025 – both through systems installed at [its] facilities and through purchases from external providers."[291] According to Walmart's 2018 Global Responsibility Report, as of 2017, approximately 28% of the company's electricity needs globally were supplied by renewable energy sources.[292] However, as described below, it reaches this number using a different methodology than RE100 currently supports. Walmart meets 9 percent of its electricity needs through a combination of company-supported renewable projects and PPAs, and an additional 19 percent taking into account the amount of renewable energy supplied by the grid in regions and areas where the company has facilities.[293] For RE100 purposes, however, the latest RE100 report does not count grid mix toward the goal.[294]

The company currently has "more than 500 onsite and offsite projects in operation or under development . . . supplying over 2.9 billion kWh of renewable energy to [the company's] facilities."[295] Walmart also reports that it is "rank[ed] first for total number of sites using on-site solar and second for total on-site solar power usage" by EPA Green Power Partnership and the Solar Energy Industries Association.[296] With regard to self-generation, Walmart "ha[s] over 480 renewable energy systems installed in [its] stores, clubs and distribution centers worldwide," which "make up 9 percent of [the company's] total renewable energy portfolio."[297] Walmart reports that by the end of FY2018, in the U.S., the company "had 364 onsite solar installations supplying energy to 353 sites, across 16 States and Puerto Rico."[298]

With regard to purchasing power generated by renewable sources, Walmart identifies PPAs as "a highly

283 Johnson & Johnson. 2017 Health for Humanity Report. Available at: http://healthforhumanityreport.jnj.com/environmental-health/energy-use-and-carbon-emissions (Dec. 4, 2018).
284 Id.
285 Id.
286 Id.
287 Id.
288 Id.
289 Id.
290 Id.
291 Walmart. 2018 Global Responsibility Report. Available at https://corporate.walmart.com/2018grr/reducing-greenhouse-gas-emissions?chapter=scaling-more-affordable-renewable-energy (Dec. 4, 2018).
292 Id.
293 Walmart, Global Sustainability Office, personal communication (Dec. 21, 2018).
294 RE100, Progress Report (2018) Annex 1. Available at http://media.virbcdn.com/files/ab/4030404ffa7b9000-Annex1-RE100ProgressandInsightsAnnualReportNovember2018.pdf (Dec. 11, 2018). The Annex lists Walmart's overall renewable energy progress at 9% for 2017, rather than 28%, reflecting this narrower reporting.
295 Walmart. 2018 Global Responsibility Report. Available at https://corporate.walmart.com/2018grr/reducing-greenhouse-gas-emissions?chapter=scaling-more-affordable-renewable-energy (Dec. 4, 2018).
296 Id.
297 Id.
298 Id.

effective model for leveraging [its] scale and buying power to accelerate renewables."[299] As of FY2018, it had 11 large PPAs in place in several countries, comprising 91% of its project renewable portfolio.[300] Walmart also enters contracts with utilities. Specifically, it entered a long-term agreement with the utility Alabama Power, allowing the utility to build a 72MW solar facility, and contracting for power "equivalent to 40 percent of the electricity needs for all of [Walmart's] stores and distribution centers in Alabama Power's service territory."[301]

Walmart's renewable energy goals pre-dated the RE100 methodology, so the company has counted the grid mix its facilities receive from utilities in areas where renewables are part of the utility's generation portfolio (believing that this represents its actual usage, particularly in areas such as the Pacific NW, Costa Rica, and others with substantial renewables). Walmart does not purchase unbundled RECs as part of its renewable energy strategy,[302] although the RE100 Progress Report lists unbundled RECs as among its strategies.[303] Walmart's renewable energy policy statement specifically states that unbundled RECs do not sufficiently offer assurance that the purchase is actually driving "new renewable projects, as opposed to shifting around ownership of existing renewable electrons."[304]

Comparisons

The corporate reporting examples above show great differences in what information companies provide about their progress towards their renewable energy goals. Comparisons are hindered by lack of consistency and detail regarding the methods companies use to obtain and account for renewable energy. Many public-facing reports do not show percentages of the overall renewable energy use each method represents, and hence obscure the extent to which companies' strategies contribute to the development of new renewable energy and renewable energy markets.

In short, while a specific percentage of renewable energy use is informative, the implications of that number are not always clear. A company could have stated that it used 50% renewable energy in its operations. But if it bought old unbundled RECs from existing renewable energy facilities in markets that had a very low price and the purchase of which had no positive impact on new renewable energy investment, then the impact may be far less than investments in renewable energy that displaces fossil fuels in markets where the company operates.

Review of the reports shows that some companies clearly try to invest in new renewable energy projects and/or bundled RECs, instead of purchasing unbundled RECs. Some companies have specifically decided not to use unbundled RECs in meeting their renewable energy goals. Some companies – especially those constructing new facilities and data centers with substantial energy demands – have endeavored to create more renewable energy in the grid regions where their facilities are located. This is easier to do where an energy utility is likely to need new capacity to serve the new facilities.

There are both benefits and drawbacks from counting unbundled RECs towards a company's voluntary renewable energy goal. Some of the benefits of counting unbundled RECs are that doing so allows companies that are unable to build or purchase energy from new renewable projects to show support for renewable energy and encourage others to do so. Another is that unbundled RECs can be much cheaper for the company than bundled RECs. The drawbacks include the fact that purchases of unbundled RECs may not have the same impact on the renewable energy market as self-generation of renewable energy or investment in renewable projects that otherwise would not be built.

If all the methods are treated equally (or silently) in reporting, with no explanations provided about their differences, it might send an ambiguous message to interested parties about the importance of those various methods and the extent of the benefits/improvements actually achieved. A better approach is a com-

299 Id.
300 Id.
301 Id.
302 Walmart, Global Sustainability Office, personal communication (Dec. 21, 2018).
303 RE100, Progress Report (2018) Annex 1. Available at http://media.virbcdn.com/files/ab/4030404ffa7b9000-Annex1-RE100ProgressandInsightsAnnualReportNovember2018.pdf (Dec. 11, 2018).
304 Walmart, Walmart's Approach to Renewable Energy. Available at https://cdn.corporate.walmart.com/eb/80/4c32210b44ccbae634ddedd18a27/walmarts-approach-to-renewable-energy.pdf (Dec. 21, 2018).

pany stating the amount of renewable energy it generates, acquires through PPAs, green tariffs/products, and VPPAs, actually uses during its operations, and/or claims by applying bundled or unbundled RECs to match its use of non-renewable energy sources. Percentage goals are good, but alone are not sufficient as a marker of progress and transformation of the global energy mix.

Existing Voluntary Standards and Organizations

A number of organizations have attempted to encourage goal setting and at least some transparency in reporting on renewable energy use.

Companies can follow a number of voluntary standards when they report on their use of renewable energy. RE100 provides a forum for announcing corporate renewable energy goals and disclosing progress. The voluntary Corporate Renewable Energy Buyers' Principles, developed by companies along with the World Resources Institute and World Wildlife Fund, also offer an approach that encourages greater transparency as well as support for addition of new renewable energy capacity through corporate procurement strategies.

The Global Reporting Initiative Standard 302 on Energy, which was developed by the Global Sustainability Standards Board, and CDP (formerly Carbon Disclosure Project), are also often relied on by companies with regard to use of renewable energy.

Greenpeace publishes a report comparing companies across the information technology sector, using its own methodologies and scorecard.

RE100 and Corporate Renewable Energy Buyers Principles

As explained on the RE100 website, companies who join RE100 commit to "*match* 100% of the electricity used across their global operations with electricity produced from renewable sources – biomass (including biogas), geothermal, solar, water and wind – either sourced from the market or self-produced."[305] Matching here means obtaining as much electricity from renewable energy sources as is actually consumed by company operations from whatever sources. For example, as the RE100's Technical Criteria guidelines explain, "[i]n a contract for electricity procurement[,] the supplier (a utility, or other power developer or market entity) *matches* the electricity consumed by the company and delivered through the grid with renewable electricity produced or purchased from a variety of sources and projects."[306] Similarly, with regard to unbundled RECs, "[c]companies may purchase unbundled certificates . . . separately from electricity to match with their electricity consumption from non-renewable sources."[307]

RE100 allows members to count electricity that was self-produced at the company's facilities or purchased.[308] With regard to the electricity self-produced at the company's facilities, RE100 explains that this "includes renewable electricity produced from installations that are owned by the company, onsite or offsite, connected to the local grid or entirely off-grid."[309] RE100 also states that "[a] company may consume its own renewable electricity or decide to make production-only claims."[310] There is no explanation in the Technical Criteria guide of what a "production-only claim" would mean; the guide merely states that "[c]ompanies shall disclose the amount of renewable electricity generated, consumed, and certificates produced," and that "[f]or consumption, companies must retain the certificates from their own generation."[311] This would appear to mean that if a company produced a certain amount of electricity from a faraway wind farm, but did not obtain or retain the RECs associated with that power, it cannot claim that it "consumed" that electricity, but it would be able to state that it "produced" it. It does not appear that the company would be able to count this produced electricity towards its renewable energy goal, as the RE100 website states that in order "[t]o count the

305 RE100. Going 100%. Available at: http://there100.org/going-100 (Sept. 28, 2018)(emphasis added).
306 RE100. RE100 Technical Criteria, at 4. Available at: http://media.virbcdn.com/files/73/4c55f6034585b02f-RE100TechnicalCriteria.pdf (Sept. 28, 2018)(emphasis added).
307 Id. at 5 (emphasis added).
308 Id. at 1.
309 Id. at 3.
310 Id. at 1.
311 Id. at 3.

renewable electricity [a company] produce[s] towards [its] RE100 target, [it] must retire the renewable electricity attribute certificates, such as RECs, associated with the production equivalent to the amount claimed to avoid double-counting."[312]

With regard to purchase of electricity, RE100 explains that a company can achieve that through direct purchases from generators onsite or offsite, through retail purchases from suppliers and utilities, and through unbundled certificates, such as RECs.[313] RE100 allows companies to count unbundled RECs towards the 100% goal.

Meanwhile, the Corporate Renewable Energy Buyers' Principles, which some of the members of RE100 have signed, proclaim that signatories "are increasingly interested in access to bundled energy and REC products" and that "[u]bundled RECs do not deliver the same value and impact as directly procured renewable energy from a specific project or facility."[314] Adobe, Amazon, Cisco, Dell, Facebook, GM, Google, HP Enterprise, HP Inc., Intel, Microsoft, and Samsung, whose renewable energy goals and progress are described above have all signed the Corporate Renewable Energy Buyers Principles.[315]

Corporate Renewable Energy Buyers' Principles[316] :

1. ***Greater choice in procurement options***
   It is important to have choice when selecting energy suppliers and products to meet our business and public goals.
2. ***More access to cost competitive option***
   We know renewable energy can already achieve cost parity, or better, compared with traditional energy rates. When purchasing renewable energy directly, we would like to be able to buy renewable energy that accurately reflects the comprehensive costs and benefits to the system. Many of us are willing to explore alternative contract arrangements (e.g., entering into long term supply arrangements with utilities and other suppliers to provide revenue certainty) that can bring down the cost of capital.
3. ***Longer- and variable-term contracts***
   A significant part of the value to us from renewable energy is the ability to lock in energy price certainty and avoid fuel price volatility. Many companies would like to have options for entering into contracts over various time periods.
4. ***Access to new projects that reduce emissions beyond business as usual***
   We would like our efforts to result in new renewable power generation. Pursuant to our desire to promote new projects, ensure our purchases add new capacity to the system, and that we buy the most cost-competitive renewable energy products, we seek the following:

   - **Access to bundled renewable energy products— energy and Renewable Energy Credits (RECs).** We are increasingly interested in access to bundled energy and REC products. Unbundled RECs do not deliver the same value and impact as directly procured renewable energy from a specific project or facility.
   - **Ability to prevent double counting within the energy consumer community.** In order to claim the benefits of our renewable energy purchases to satisfy our public goals and reduce our carbon footprint, current US rules require that we retain ownership of the RECs or that they are retired on our behalf. Some companies find this single-instrument system creates competition between energy generators and energy users that can slow the growth of voluntary corporate renewable purchases. We welcome discussion to explore market mechanisms that enable greater voluntary growth of renewable energy while maintaining accounting integrity. What is most critical to us is that we have the ability to add more renewable energy to the system and claim the consumption of the relevant renewable energy and GHG emission benefits while preventing another energy user from claiming consumption of the same renewable energy.
   - **Renewable energy delivery from sources that are within reasonable proximity to our facilities.** 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

312 RE100. FAQs. Available at: http://there100.org/faqs (Sept. 28, 2018).
313 RE100. RE100 Technical Criteria, at 1. Available at: http://media.virbcdn.com/files/73/4c55f6034585b02f-RE100TechnicalCriteria.pdf (Sept. 28, 2018).
314 Corporate Renewable Energy Buyers' Principles. The Principles. Available at: https://buyersprinciples.org/principles/ (Sept. 28, 2018). As of June 2018, 78 companies had signed on to the principles.
315 Corporate Renewable Energy Buyers' Principles. About Us. Available at: https://buyersprinciples.org/about-us/ (Sept. 28, 2018).
316 Corporate Renewable Energy Buyers' Principles. The Principles. Available at: https://buyersprinciples.org/principles/ (October 25, 2018).

well as enhance the resilience and security of the local grid.

5. ***Increased access to third-party financing vehicles as well as standardized and simplified processes, contracts and financing for renewable energy projects***
   To access renewable energy at the competitive prices and scale we need to meet our goals, many companies are financing and/or procuring renewable energy through third-party providers using power purchase agreements (PPAs) and/or lease arrangements. Increasing access to these types of effective and affordable financing tools is critical. Initially, for some companies, these processes can be complex and costly since they are outside of their core business functions. Simplifying and standardizing policies, permitting, incentives and other processes for direct procurement are high priorities for many companies.
6. ***Opportunities to work with utilities and regulators to expand our choices for buying renewable energy***
   Procuring renewable energy in partnership with our local utilities may be a more efficient and cost-effective option. We welcome the opportunity to work with local utilities to design and develop innovative programs and products that meet our needs as well as those of our energy suppliers. In such collaborations, we would seek renewable energy products and programs that address the above principles and that
   - **Fairly share the costs and benefits of renewable energy procurement.** We seek to purchase renewable energy that reflects the net costs and benefits to the system, including the actual cost of procurement and benefits, such as, but not limited to, avoided energy and capacity benefits, without impacting other rate payers.
   - **Apply to new and existing load.** To meet our public goals, we need renewable energy for both new and existing operations.

GRI (GRI 302 Energy)

Global Reporting Initiative Standard 302 on Energy (GRI 302) serves as a guide that organizations can use to voluntarily report about their energy use.[317] Many companies use GRI forms and include them on their websites. GRI 302 relates to energy consumption and explains how to report consumption of energy, including renewable, that was generated and purchased. However, the guide or the associated form do not mention bundled or unbundled RECs or various methods of purchasing renewable energy. Consequently, GRI forms would not provide much information about the impacts companies have on the renewable energy market as they reach certain percentages of renewable energy use.

CDP (formerly Carbon Disclosure Project)

CDP is a "not-for-profit charity that runs the global disclosure systems for investors, companies, cities, states and regions to manage their environmental impacts."[318] CDP disclosure forms are another type of forms commonly used by big companies that set voluntary renewable energy goals. CDP's Climate Change Questionnaire for 2018, which explains how companies should fill out CDP forms, mentions "consumption of purchased or acquired electricity" and "consumption of self-generated non-fuel renewable energy," but does not distinguish unbundled or bundled RECs with regard to use of renewable energy.[319]

Greenpeace's "Clicking Clean" Report

Greenpeace compiles the Clicking Clean report, analyzing the use of renewable energy by the IT sector since 2009.[320] It presents information about the types of energy on which companies rely, including renewable energy, natural gas, coal, and nuclear, showing percentage for each.[321] It also rates companies' performance in such areas as "energy transparency," "renewable energy commitment & siting policy," "energy efficiency &

317 Global Reporting Initiative. GRI 302: Energy 2016. Available at: https://www.globalreporting.org/standards/gri-standards-download-center/gri-302-energy-2016/ (Sept. 28, 2018)(

318 CDP. Available at: https://www.cdp.net/en (Sept. 28, 2018).

319 CDP. CDP Climate Change Questionnaire 2018. Available at: https://guidance.cdp.net/en/guidance?cid=2&ctype=theme&idtype=ThemeID&incchild=1&microsite=0&otype=Questionnaire&tags=TAG-646%2CTAG-605%2CTAG-600 (Sept. 28, 2018).

320 Greenpeace USA. Clicking Clean: Who Is Winning the Race to Build a Green Internet? 2017, at 5. Available at: file:///C:/Users/yazykova/Downloads/ClickClean2016%20HiRes%20(5).pdf (Oct. 25, 2018).

321 Id. at 8.

mitigation," "renewable procurement," and "advocacy," and provides an overall grade for each company's performance.[322] In addition, Greenpeace provides narrative descriptions of why each company assessed received a particular grade for each category.[323] Greenpeace explains that in order to evaluate companies, it uses both information provided by companies directly and publicly available information.[324] It also provides the methodology of how it evaluates information and grades companies.[325] Importantly, the Cleaning Click does mention reliance on unbundled RECs as one of the most common shortcuts to achieve 100% renewable claims and states that reliance on unbundled RECs "does little to increase renewable energy investment."[326]

Trends

Even though many companies do not seem to distinguish between different types of RECs, there appears to be a trend in seeking to locate newly constructed facilities closer to sources of renewable energy, and a trend away from purchasing unbundled RECs and towards investing in renewable energy projects and green tariffs/products. In general, these approaches are more available to companies that are increasing electricity demand at new or existing locations through expansion or consolidation of operations, and those that have substantial available cash.

These trends are likely to have a positive impact on the renewable energy market overall, as they are likely to result in increased purchases of renewable power.

Location of Facilities

Due to the nature of renewable energy generation, sources are available more readily and plentifully in some areas than others. The Corporate Clean Energy Procurement Index, created by Clean Edge on behalf of the Retail Industry Leaders Association and Information Technology Industry Council, found that in the U.S. the top ten states where it is easier to purchase renewable energy are: Iowa, Illinois, New Jersey, California, Texas, Massachusetts, New York, Ohio, Rhode Island, and Connecticut.[327] The indicators included availability of utility purchasing options, third-party purchasing options, and onsite-direct deployment options.[328]

Some companies now build their facilities close to sources of renewable energy. For example, Cisco states that it locates facilities "where low-carbon grid electricity is available."[329] Similarly, "GM's ability to access renewable energy is key to our decisions about where to expand new facilities," according to Rob Threlkeld, Global Manager of Renewable Energy, General Motors.[330]

Facebook states that it tries to locate its facilities near access to grid-supplied renewable energy. When choosing a new location, it reportedly approached Rocky Mountain Power of Utah and Public Service Company of New Mexico, and asked both utilities to propose a renewable energy purchasing program.[331] After that, PUCs in each state approved new green tariffs, and Facebook built a new data center in one of them, New Mexico.[332] Facebook's actions resulted in two new green tariff programs, now available to any company.

Those companies that wish to open new locations or to expand operations in existing locations while using renewable energy can consider where renewable energy is available when deciding where to open or expand operations (an approach that is not available to companies not looking to expand).

Trend Away from Buying Unbundled RECs and Towards Investments in Projects, PPAs, and Green Tariff Purchases

322 Id.
323 Id. at 46-85.
324 Id. at 42.
325 Id. at 42-45.
326 Id. at 39.
327 Clean Edge. Corporate Clean Energy Procurement Index. Available at: http://cleanedge.com/reports/Corporate-Clean-Energy-Procurement-Index (Sept. 28, 2018); Bonugli, Celina. States Use Renewable Energy to Win Corporate Business. Feb. 3, 2017. Available at: http://www.wri.org/blog/2017/02/states-use-renewable-energy-win-corporate-business (Sept. 28, 2018).
328 Clean Edge. Corporate Clean Energy Procurement Index. Available at: http://cleanedge.com/reports/Corporate-Clean-Energy-Procurement-Index (Sept. 28, 2018).
329 Cisco. 2017 Corporate Social Responsibility Report, at 101. Available at: https://www.cisco.com/c/dam/assets/csr/pdf/CSR-Report-2017.pdf (Sept. 28, 2018).
330 O'Rourke, Kevin. Report; Transmission Needed to Meet Corporate America's Growing Demand for Renewable Power. Available at: http://windenergyfoundation.org/2018/01/16/report-transmission-needed-to-meet-corporate-americas-growing-demand-for-renewable-power/ (Sept. 28, 2018).
331 Tawney, Letha, et al. Green Tariffs Take Off in the US, Expand Access to Renewable Energy. Oct. 27, 2016. Available at: https://www.wri.org/blog/2016/10/green-tariffs-take-us-expand-access-renewable-energy (Sept. 28, 2018).
332 Id.

According to RE100's Annual Report covering activities through 2016, "strategies that are more directly resulting in additional capacity connected to the grid are on the increase."[333] RE100 companies are now buying more renewable electricity through PPAs, green tariffs/products, and self-generation. In 2016, "[r]enewable power consumption [of] companies grew, with the proportion of procurement from offsite grid-connected generators (power purchase agreements - PPAs) increasing more than fourfold in one year, from 3% to 13%" and "[p]urchase from on-site installations owned by a supplier has increased x15."[334] In the most recent report, covering 2017, PPAs account for 16 percent of renewable electricity sourcing by RE100 companies (and account for 20 percent of the renewable electricity purchased by these companies in the U.S.).[335] Possibly owing to a larger number of companies supplying detailed data, the percentage use of unbundled RECs (also called Energy Attribute Certificates, EACs) increased from 40.4 percent in 2016 to 46 percent in 2017.[336] RE100 notes that unbundled RECs are a particularly important sourcing strategy for companies procuring electricity in certain energy markets (accounting for 96 percent of renewable energy sourcing in China, for example). It also observes that "[u]nbundled EACs are also particularly convenient in regions where companies' consumption is smaller.[337] Nevertheless, the general trend in the last two years has had unbundled RECs representing less than half of RE100 companies' renewable energy sourcing (see table).

When asked, "88% of responding members cite the economic case as an important driver for their RE100 commitment."[338]

333 RE100. RE100 Progress and Insights Report, January 2018, at 26. Available at: http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf (Sept. 28, 2018).
334 Id. at 2.
335 RE100. RE100 Progress and Insights Annual Report, November 2018, at 9-10, available at http://media.virbcdn.com/files/fd/868ace70d5d2f590-RE100ProgressandInsightsAnnualReportNovember2018.pdf (Dec. 14, 2018).
336 Id.
337 Id. at 10.
338 RE100. RE100 Progress and Insights Report, January 2018, at 2.

EVOLVING SOURCING STRATEGIES[339]				
Sourcing strategy	**2017 (MWh)**	**2017 (%)**	**2016 (%)**	**2015 (%)**
Contract with suppliers (green electricity tariffs/products)[340]	19,200,806	35	41	34.8
Unbundled energy attribute certificate purchase[341]	24,947,048	46	40.4	59.6
Direct procurement from offsite grid-connected generators[342]	8,951,954	16	13.1	3.3
Generation from installations owned by the company[343]	350,935	1	3	<1
Other options	138,293	<1	1.5	1.5
Purchase from on-site installations owned by a supplier	287,329	1	<1	<1
Direct line to an off-site generator with no grid transfers	444,359	1	<1	<1
Total	**54,320,724**	**100%**	**100%**	**100%**
2017 data based on 111 companies that supplied in-depth procurement information through the RE100 reporting spreadsheet. 2016-2015 data based on 74 reporting companies. The MWhs reported for 2017 include nearly 50 percent more renewable energy consumption than the 2016 reports because of these additional reporters as well as because of company progress.				

Existing Challenges

Prices of Local RECs Can be High

Given that prices of renewable energy can be high in certain geographic areas, and that not every company can afford to move or is planning to open new locations where renewable energy is cheaper, some companies are at a disadvantage in setting and progressing towards high renewable energy goals. For example, if a company is located in a RPS state, surrounded by other big companies with high demands for renewable energy, and there is limited capacity to develop new renewable energy projects in the grid, there is not much flexibility.

This situation is exacerbated by the fact that REC prices in RPS states are higher because there is demand from utilities. Right now, utilities need the RECs to prove that they produced a certain amount or percentage of renewable energy, and companies need the RECs to prove that they used the renewable energy. Purposes are different (production vs use), but both use the RECs. If there were different types of instruments to prove generation and use of renewable energy, the problem of high prices of RECs might be helped.

339 Data for 2017 and 2016 from table G on p. 9 of Annex 2 to the RE100 Progress and Insights Annual Report, November 2018, available at http://media.virbcdn.com/files/1d/169b80963ba27ad0-Annex2-RE100ProgressandInsightsAnnualReportNovember2018.pdf (Dec. 14, 2018). 2015 data from RE100. RE100 Progress and Insights Report, January 2018, at 26. Available at: http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf (Dec. 14, 2018).

340 RE100 defines a contract with suppliers as "a contract for electricity procurement where the supplier (a utility, or other power developer or market entity) matches the electricity consumed by the company and delivered through the grid, with renewable electricity produced or purchased from a variety of sources and projects, or a specified project or set of projects." Id, at 58. Green tariffs would be included in this category, as "[g]reen tariffs involve the customer engaging with their utility to receive the green power product." RE100. Business Leadership in the Transition to Renewable Electricity. Available at: http://media.virbcdn.com/files/ef/f8e97377fa5493be-RE100LeadershipPaper.pdf (Nov. 30, 2018).

341 These are RECs.

342 These are PPAs.

343 Methodology changed between 2016 and 2017 reporting years, to exclude self-generated power sold back to the grid. RE100. RE100 Progress and Insights Annual Report, November 2018, at 10 (Table I), available at http://media.virbcdn.com/files/1d/169b80963ba27ad0-Annex2-RE100ProgressandInsightsAnnualReportNovember2018.pdf (Dec. 14, 2018).

This problem of high REC prices is also connected to the fact that renewable energy is more easily generated in some geographic areas rather than others, and it is not currently possible to physically transmit the energy from some areas where it is easily generated to other areas where it is not. Some grids are too far away, and some grids are simply not connected to each other. Better grid interconnections are needed. Batteries that store energy can be an option for big demands, as the cost of those batteries decreases. However, this technology is still being developed and oftentimes the stored energy does not come from renewable sources.[344] For companies that are unable to purchase expensive local RECs, cheaper unbundled RECs from far away areas might be the only way to show progress in meeting voluntary goals or standards such as RE100. After all, if one company claims it is 100% renewable, regardless of how it is achieved, a competitor company may want or need to pursue that goal as well.

Current Infrastructure May Be Incapable of Allowing Companies to Set and/or Achieve Their Current Goals

Given the current state of our grid infrastructure, grid managers may be constrained in their ability to quickly accommodate some renewable energy goals companies are creating for themselves. Corporate demands have risen significantly, and the infrastructure has had little time to adjust.

According to the Wind Energy Foundation's report, *Transmission Upgrades & Expansion: Keys to Meeting Large Customer Demand for Renewable Energy*, companies are buying so much wind and solar power, that the increased demand "may exceed the capacity of existing and planned transmission lines."[345] The reason is that many companies are "acting on their publicly announced renewable energy goals[,] as new utility-scale wind and solar energy projects are now often the lowest cost power available."[346] According to the Report, "existing and planned transmission facilities may not be sufficient to deliver the amount of renewable energy companies have already committed to buying."[347]

WEF estimates that "planned transmission build-outs would meet only 42 percent of corporate renewable energy demand in a high-procurement scenario, or 78 percent of the demand in a low-procurement scenario."[348] As a result, the Report recommended corporate buyers "[p]articipate in regional and interregional transmission planning conversations to ensure future transmission infrastructure meets customer demand for renewable energy," "[e]ncourage transmission planners and state Public Service Commissions to increase access to affordable, renewable energy by approving upgrades and expansion to transmission lines"; and "[u]rge the Federal Energy Regulatory Commission to continue to work to improve the interregional planning process, consistent with Order 1000."[349]

The good thing is that companies appear to take notice of this issue and can be proactive. Rob Threlkeld, Global Manager of Renewable Energy at General Motors, stated that it is "essential that transmission planners take the growing corporate demand for renewables into account in the planning process" and that "[e]xpanding and upgrading transmission is critical in helping GM access low-cost renewable energy and meet our commitments."[350] If companies and policymakers identify this issue and discuss it with transmission planners and regulators, they may be able to implement more rapid solutions.

344 "Batteries have a dirty little secret"; David Roberts, VOX, updated July 21, 2018, available at https://www.vox.com/energy-and-environment/2018/4/27/17283830/batteries-energy-storage-carbon-emissions (January 7, 2019).

345 O'Rourke, Kevin. Report; Transmission Needed to Meet Corporate America's Growing Demand for Renewable Power. Available at: http://windenergyfoundation.org/2018/01/16/report-transmission-needed-to-meet-corporate-americas-growing-demand-for-renewable-power/ (Sept. 28, 2018); Wind Energy Foundation. Transmission Upgrades & Expansion: Keys to Meeting Large Customer Demand for Renewable Energy. Available at: http://windenergyfoundation.org/wp-content/uploads/2018/01/WEF-Corporate-Demand-and-Transmission-January-2018.pdf (Sept. 28, 2018).

346 O'Rourke, Kevin. Report: Transmission Needed to Meet Corporate America's Growing Demand for Renewable Power. Available at: : http://windenergyfoundation.org/2018/01/16/report-transmission-needed-to-meet-corporate-americas-growing-demand-for-renewable-power/ (Sept. 28, 2018).

347 Id.

348 Id.

349 Id.

350 Id.

The Intermittent Nature of Wind and Solar Generation Requires Planning to Support Use of Renewables at Relevant Times

Wind and solar generating assets deliver energy when the wind is blowing or the sun is shining, with existing wind facilities having an average annual capacity factor of 35% (range of 25-45%) and solar an average of 25% (range of 16-35%).[351] The capacity factors are rising with newer technology, and improving battery technologies will likely increase these numbers. In order to insure reliable power on the grid, however, sufficient generation capacity must be available on the grid to "fill-in" the electricity supply as wind and solar generation from particular generators fluctuates.[352] This necessitates the maintenance and financing of sufficient generation capacity and grid interconnects, as well as appropriate capacity planning and dispatching to support the reliability of the system across the full range of operating scenarios.

Guides on How Companies Should State Their Renewable Energy Practices

There are several voluntary guides, created both by the government and by non-governmental groups, which advise companies about how to make voluntary claims about their renewable energy use.

EPA Green Power Partnership's Guide to Making Claims About Your Solar Power Use[353] provides information on explaining solar power activities. It primarily focuses on onsite projects. This Guide provides a list of best practices on how companies should make claims about their on-site renewable projects. Some of the practices listed are more basic: "[b]e specific and clearly define RECs and who owns them in any public communication," "[i]f you do not own the RECs associated with your solar system, do not make claims about using solar electricity," and "formally retire the RECs" when claiming solar use.[354] However, it also contains more intricate ones, such as "[a]void implied claims."[355] This means that if a company installs onsite solar, but does not own the RECs for the generated power, it should not make claims that consumers or stakeholders might interpret as "using" solar.[356] For example, without retaining the RECs, it should not call the electricity renewable or state that it "hosts" a renewable energy facility without making clear who is using the renewable energy RECs.[357]

RE100's Guide on Making Credible Renewable Electricity Usage Claims states that claims about renewable energy "should be specific enough to ensure reasonable understanding of the materiality of the [renewable energy] purchase."[358] It emphasizes that "lack of specificity can lead to confusion" and that when a company makes a public claim, it should take into account the purchasing option it employed, the boundary of the consumption, the type(s) of renewable energy used, the amount or percentage of renewable energy purchased, the period of consumption covered by the purchase, the length of the company's commitment, and any certifications used.[359] If all the RE100 members conveyed information about their renewable energy purchases using the above categories, with the addition of a clear delineation of the number of unbundled and bundled RECs, this could substantially improve public understanding of renewable energy claims.

Lastly, in 2018, WRI produced a very helpful guide called Describing Purchaser Impact in U.S. Voluntary

351 Energy Information Administration, Capacity Factors for Utility Scale Generators Not Primarily Using Fossil Fuels, at https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_b

352 See Kathleen Barron, Data Show Renewables Alone Don't Always Equate to Carbon-Free, The Environmental Forum (Jan/Feb 2019) (Google study of impacts of its renewable energy contracts at data centers).

353 EPA Green Power Partnership. Guide to Making Claims About Your Solar Power Use. Available at: https://www.epa.gov/sites/production/files/2017-09/documents/gpp-guidelines-for-making-solar-claims.pdf (Sept. 28, 2018).

354 Id. at 3, 4, and 5.

355 Id. at 4.

356 Id.

357 Id. at 4-5. The Guide cites the Federal Trade Commission 2012. Guides for the Use of Environmental Marketing Claims. https://www.ftc.gov/policy/federal-register-notices/guides-use-environmental-marketing-claims-green-guides. 16 C.F.R. § 260.15 (Renewable Energy).

358 RE100. Making Credible Renewable Electricity Usage Claims, at 11. Available at: http://media.virbcdn.com/files/d2/f9ea6f41ca833f44-RE100CREDIBLECLAIMS.pdf (Sept. 28, 2018).

359 Id.

Renewable Energy Markets.[360] This guide focuses on the impacts of renewable energy projects. It states that there are two key elements when it comes to clear communications about renewable energy claims: "what you did" and "how you did it."[361] These two elements address both the scale, scope, term, and impact of the purchase, and the role of the procurement in the energy outcome, meaning financial and risk positions, policy changes, or other aspect of participating in the market transformation.[362] The guide explains that "[i]mpacts can be demonstrated and described in numerous ways," and the "multitude of ways that consumers buy and use [renewable energy] have very different impacts on transforming the electricity grid."[363] The guide then provides a number of examples about ways a company can describe how it obtained renewable energy and what positive impact it had on the renewable energy market.[364]

Conclusion

As many companies commit to relying exclusively or to a larger extent on renewable energy, members of the public should examine what specifically a company means by its goal –as well as what it means when it reports progress. The review of company statements above show just how important it is to understand the different strategies a company employs and the actual effects its actions have on the development of new renewable energy projects and the demand for renewable electric power.

The current record reflects the differences among companies, the voluntary nature of the drivers of demand, and the fact that companies and interested parties are learning as we go. The changes made by companies in their energy use and changes in their renewable energy purchase methods are commendable and present a profound reason for optimism, and an equally important need for clarity.

Bold numbers play an important role – and they are easy for the public, policymakers, and employees to remember. But attention to the specifics is equally important. An achievable goal that stimulates real investment in renewable energy and displacement of fossil fuel demand may be far more important than a high goal that reflects only a company's available cash and the ready availability of unbundled RECs. As companies move forward, competing for who sets higher standards when it comes to renewable energy, perhaps, the real competition among them should be for the level of impact they create in the energy grid by their renewable energy strategies, rather than their goal numbers alone.

360 Tawney, Letha, et al. Describing Purchaser Impact in U.S. Voluntary Renewable Energy Market. Available at: https://www.epa.gov/sites/production/files/2018-06/documents/gpp_describing_purchaser_impact.pdf (Sept. 28, 2018).
361 Id. at 2.
362 Id.
363 Id. at 10.
364 Id. at 18-21.

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