Corporate Renewable Energy Goals: What Does "100% Renewable" Really Mean?

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Summary

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," while many others have set goals to rely on substantial percentages of renewable energy. In addition to setting these goals, many companies report on how much renewable energy they currently use, and convey this information in annual sustainability reports or in publicly issued statements and news releases. As 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, and what it means when it reports progress. This Article seeks to demystify the voluntary world of corporate renewable energy claims. It reviews company statements to understand the different strategies companies employ and the actual effects their actions have on the development of new renewable energy projects and the demand for renewable electric power.

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 the 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. This growing demand is influenced by decisions to include renewable energy as an element of corporate social responsibility, often together with goals to limit greenhouse gas emissions, as well as by the price and availability of renewable energy. There are many strategies that can be used in setting and fulfilling renewable energy 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 Article 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?

I. Companies' Goals for Renewable Energy

Many companies have now joined the group RE100, committing to become "100% renewable,"[6] which means "sourcing 100% renewable electricity through-

1. RE100, *Companies*, http://there100.org/companies (last visited May 19, 2019).
2. RE100, *Home Page*, http://there100.org/ (last visited May 19, 2019).
3. Corporate Renewable Energy Buyers' Principles, *About Us*, https://buyersprinciples.org/about-us/ (last visited May 19, 2019).
4. RE100, *supra* note 1.
5. The Article does not address companies' goals to reduce their greenhouse gas emissions, or to be "carbon-neutral." It focuses specifically on "renewable energy" claims.
6. RE100, *supra* note 1.

out their entire operations."[7] According to the RE100 criteria, all companies joining RE100 must have either already "obtained 100% of their electricity 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.[8] 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."[9]

This means that one year from now, almost one-third of the electricity used in each RE100 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 electricity at the facilities claiming the 100% use (discussed in Part II).

RE100's joining criteria define "entire operations," in accordance with the Greenhouse Gas Protocol, as:

1. "[a]ll scope 2 emissions[10] relating to the company activities";
2. "[a]ny scope 1 emissions[11] 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.[12]

Companies must join RE100 at the group level, but a subsidiary can join separately if it consumes more than one terawatt hour per year and has clear separate branding.[13]

Currently, there are 179 members in RE100.[14] These companies come from a variety of sectors and include, for example, companies such as Adobe, Apple, BMW Group, Facebook, General Motors (GM), Google, Hewlett Packard Enterprise (HPE), HP Inc., Johnson & Johnson, Microsoft, and Walmart Inc.[15] Other companies that are not members of RE100 have similarly committed to rely solely on renewable electricity, often in their operations in certain countries. These include, for example, Intel,[16] Samsung,[17] and Amazon's subsidiary Amazon Web Services (AWS).[18]

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),[19] Dell (50% of global electricity by 2020),[20] and IBM (55% of global electricity by 2025).[21] Not all companies state renewable energy goals in percentages. Lenovo, for example, has a "renewable energy goal of achieving 30 [megawatts] MW of Lenovo owned or leased renewable generation capacity globally by [fiscal year] FY 2019/20."[22]

In addition to setting renewable energy goals, many companies also claim current usage of a substantial percentage of renewable energy. For example, Apple,[23] Google,[24] HP

7. RE100, RE100 Joining Criteria 1, *available at* http://media.virbcdn.com/files/45/db8335e1ef4b851c-RE100JoiningCriteria.pdf.
8. *Id.*
9. *Id.* at 2.
10. The 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 "[s]cope 2 emissions physically occur at the facility where electricity is generated." World Resources Institute & World Business Council for Sustainable Development, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard 25, *available at* https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.
11. The 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 [carbon dioxide] emission from the combustion of biomass" or greenhouse gas emissions not covered by the Kyoto Protocol. *Id.*
12. RE100, *supra* note 7, at 1-2.
13. *Id.*
14. RE100, *supra* note 1.
15. *Id.*
16. Intel, Corporate Responsibility at Intel: 2017-2018 Report 29 (2018), *available at* http://csrreportbuilder.intel.com/PDFfiles/CSR-2017_Full-Report.pdf.
17. *Samsung Electronics to Expand Use of Renewable Energy*, Samsung, June 14, 2018, https://news.samsung.com/global/samsung-electronics-to-expand-use-of-renewable-energy.
18. AWS, *AWS & Sustainability*, https://aws.amazon.com/about-aws/sustainability/ (last visited May 19, 2019).
19. Cisco, 2017 Corporate Social Responsibility Report 9 (2017), *available at* https://www.cisco.com/c/dam/assets/csr/pdf/CSR-Report-2017.pdf.
20. Dell, *Renewable Energy*, http://www.dell.com/learn/us/en/uscorp1/corp-comm/cr-earth-resource-conservation?c=us&l=en&s=corp&~ck=bt (last visited May 19, 2019).
21. *IBM Establishes Next Generation Goals Regarding Renewable Energy and Greenhouse Gas Emissions*, IBM, Jan. 14, 2019 [hereinafter *IBM Establishes Next Generation Goals*], https://www.ibm.com/ibm/environment/news/ghg_goals_2018.shtml.
22. Lenovo, Addressing Climate Change at Lenovo: Our Contribution to Transition to Low-Carbon Economy 2 (2017), *available at* https://www.lenovo.com/us/en/social_responsibility/GreenPaper-Addressing-Climate-Change-at-Lenovo.pdf.
23. Press Release, Apple Inc., Apple Now Globally Powered by 100 Percent Renewable Energy (Apr. 9, 2018), https://www.apple.com/newsroom/2018/04/apple-now-globally-powered-by-100-percent-renewable-energy/.
24. Google, *100% Renewable Is Just the Beginning*, https://sustainability.google/projects/announcement-100/ (last visited May 19, 2019).

Inc.,[25] Intel,[26] and Microsoft[27] state that within the United States they are already using 100% renewable electricity or are matching their electricity consumption with renewable energy certificates (RECs). Cisco reported that 80% of its global electricity consumption in 2017 came from renewable sources.[28] Microsoft reported that in 2017 it relied on 96% renewable electricity globally.[29] 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."[30] Facebook reports greater than 50% renewable energy use at its data centers in 2017.[31] IBM reported that in 2017, 41.4% of its "global electricity supply for IBM-managed locations was generated from renewable sources."[32]

Amazon's AWS reported that it "achieved 50% renewable energy usage" in January 2018.[33] 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.[34] Walmart stated that approximately 28% of its electricity needs globally in 2017 were supplied by renewable energy sources.[35] HPE reported that in 2017 it "source[d] 25% of [its] global electricity from renewables."[36] Johnson & Johnson stated that in 2017, approximately 25% of the total electricity consumed by the company came from renewable sources.[37] Dell stated that in 2018, "renewable energy represented 29% of [its] total electricity consumption," up from 24% in FY 2017.[38]

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.[39]

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."[40] 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."[41] Further, 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."[42] That 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 economical procurement options in the future."[43]

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 [power purchase agreements]," and that "Korea's physical environment does not lend itself to the development of large scale wind or solar facilities."[44]

25. HP, 2017 Sustainable Impact Report, *available at* http://www8.hp.com/h20195/v2/GetPDF.aspx/c05968415.pdf.
26. Intel, *supra* note 16, at 22; Press Release, Intel, Intel Reports on Advances and Achievements in 2015 Corporate Responsibility (May 29, 2016), https://newsroom.intel.com/news-releases/intel-reports-on-advances-and-achievements-in-2015-corporate-responsibility/.
27. Brad Smith, *Greener Datacenters for a Brighter Future: Microsoft's Commitment to Renewable Energy*, Microsoft, May 19, 2016, https://blogs.microsoft.com/on-the-issues/2016/05/19/greener-datacenters-brighter-future-microsofts-commitment-renewable-energy/#sm.000001qred3x9tcypqt8tx-mwsr2n4.
28. Cisco, *supra* note 19.
29. Microsoft, 2017 Data Factsheet: Environmental Indicators 1, *available at* http://download.microsoft.com/download/0/0/6/00604579-134B-4D0E-97C3-D525DFB7890A/Microsoft_2017_Environmental_Data_Factsheet.pdf.
30. HP, *supra* note 25, at 76.
31. Facebook, *Sustainable Data Centers*, https://sustainability.fb.com/innovation-for-our-world/sustainable-data-centers/ (last visited May 19, 2019).
32. IBM, 2017 IBM and the Environment Report 20 (2018), *available at* https://www.ibm.com/ibm/environment/annual/IBMEnvReport_2017.pdf.
33. AWS, *AWS & Sustainability Timeline*, https://aws.amazon.com/about-aws/sustainability/sustainability-timeline/ (last visited May 19, 2019).
34. Sony, *Use of Renewable Energy*, https://www.sony.net/SonyInfo/csr_report/environment/site/re_energy.html (last updated Aug. 29, 2018).
35. Walmart, 2018 Global Responsibility Report, *available at* https://corporate.walmart.com/2018grr/reducing-greenhouse-gas-emissions?chapter=scaling-more-affordable-renewable-energy.
36. HPE, Living Progress Report 2017, at 17 (2018), *available at* https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00048490enw.
37. Johnson & Johnson, 2017 Health for Humanity Report, *available at* http://healthforhumanityreport.jnj.com/_document?id=00000163-c350-ddb7-a17b-e3fcebe60001.
38. Dell, *Environment*, https://legacyofgood.dell.com/environment.htm (last visited May 19, 2019).
39. IBM, *supra* note 32, at 22-23.
40. *Id.* at 23.
41. *Id.*
42. *Id.*
43. *Id.*
44. Samsung Electronics, Sustainability Report 2018, at 21, *available at* https://www.samsung.com/us/smg/content/dam/samsung/us/aboutsamsung/2017/Sustainability%20Report%202018_180712%20re.pdf.

TERMINOLOGY

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."[45] A REC is issued whenever "one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy resource."[46] 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.[47]

An entity owning the REC "has exclusive rights to make claims about 'using' or 'being powered with' the renewable electricity associated with that REC."[48] 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.[49]

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.[50] 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.[51]

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.[52] 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.[53] 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.[54] The customer gets the associated RECs.[55]

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.[56] 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 PPA, subscriber programs, and market-based rate programs.[57] 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."[58] 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."[59] 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."[60] The wholesale market price is credited to the customer, and then the "customer buys power for its facility at the wholesale market electricity rate."[61]

In all cases, accommodations must be made to ensure the delivery of power to a commercial operation. For example, if a sleeved PPA is generating renewable power 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 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."[62]

According to the U.S. Environmental Protection Agency (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.[63] 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.[64]

In addition to green tariffs, some utilities also offer green power products.[65] In both cases, the customer receives bundled RECs and electricity.[66] 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."[67] This presents an additional option for customers to acquire renewable electricity through utilities.

II. Ways to Obtain and Account for Renewable Energy

A. Production Versus 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 RECs associated with that energy.

A company can produce renewable energy by generating it on its premises (e.g., using on-site solar panels). It can use the energy and claim the RECs. It can also produce renewable energy off-site from its operations (e.g., 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 PUCs.[68] Green tariffs allow customers to buy "bundled renewable electricity from a specific project through a special utility tariff rate"[69] and are currently available in 17 states in the United States.[70]

A company can also enter into a PPA or a 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.[71] 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,[72] and thus may be generated by renewable energy facilities outside of the grid region where a company's operations are located.[73] 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 United States, there are ways to register and keep track of RECs. Electronic tracking systems register information about each generated MWh 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.[74] These tracking systems also allow RECs to be transferred from one entity to another,[75] and in recent years, regional REC tracking systems have started to interact with each other more, allowing buyers to purchase RECs across tracking systems.[76]

When an entity wants to claim RECs it has in its possession, it needs to "retire" them.[77] The same RECs should not be claimed by two different entities, which would result in double-counting.[78] Tracking systems help ensure that the RECs, which have unique serial numbers, are only

45. U.S. Environmental Protection Agency (EPA) Green Power Partnership, *Renewable Energy Certificates (RECs)*, https://www.epa.gov/greenpower/renewable-energy-certificates-recs (last updated May 13, 2019).
46. *Id.* For a sense of scale, one 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.
47. U.S. EPA Green Power Partnership, *supra* note 45.
48. U.S. EPA, *Renewable Energy Certificate Monetization*, https://www.epa.gov/repowertoolbox/renewable-energy-certificate-monetization (last updated Feb. 5, 2019).
49. U.S. EPA Green Power Partnership, *Unbundled Renewable Energy Certificates (RECs)*, https://www.epa.gov/greenpower/unbundled-renewable-energy-certificates-recs (last updated Aug. 13, 2018).
50. Hans Royal, *What Is the Difference Between Direct and Financial PPAs for Corporate Buyers?*, Schneider Electric, Oct. 28, 2016, http://hub.resourceadvisor.com/latest-perspectives/what-is-the-difference-between-direct-and-financial-ppas-for-corporate-buyers; Schneider Electric, *PPA 101: Your Questions Answered*, http://hub.resourceadvisor.com/new-blog-stream/ppa-101 (last visited May 19, 2019).
51. Hans Royal, *What Is the Difference Between Direct and Financial PPAs for Corporate Buyers?*, Schneider Electric, Oct. 28, 2016, http://hub.resourceadvisor.com/latest-perspectives/what-is-the-difference-between-direct-and-financial-ppas-for-corporate-buyers (last visited June 10, 2019).
52. *Id.*
53. *Id.*
54. *Id.*
55. *Id.*
56. U.S. EPA Green Power Partnership, *Utility Green Tariffs*, https://www.epa.gov/greenpower/utility-green-tariffs (last updated Nov. 15, 2018).
57. Priya Barua & Celina Bonugli, World Resources Institute, Emerging Green Tariffs in U.S. Regulated Electricity Markets (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.
58. U.S. EPA Green Power Partnership, *supra* note 56.
59. Priya Barua, World Resources Institute, Implementation Guide for Utilities: Designing Renewable Energy Products to Meet Large Energy Customer Needs (2017), *available at* https://wriorg.s3.amazonaws.com/s3fs-public/Implementation_RenewableEnergy_final.pdf.
60. *Id.*
61. *Id.*
62. *Id.*
63. *Id.*
64. *Id.*
65. U.S. EPA Green Power Partnership, *supra* note 56.
66. *Id.*
67. *Id.*
68. *Id.*
69. *Id.*
70. World Resources Institute (WRI), *Tracking Renewable Energy Purchasing Options*, http://www.wri.org/our-work/project/electricity-initiative/tracking-renewable-energy-purchasing-options (last visited May 19, 2019).
71. Royal, *supra* note 50.
72. *Id.*
73. Letha Tawney et al., *5 Emerging Trends for Corporate Buyers of Renewable Energy*, WRI, Sept. 29, 2017, http://www.wri.org/blog/2017/09/5-emerging-trends-corporate-buyers-renewable-energy.
74. U.S. EPA Green Power Partnership, *Renewable Energy Tracking Systems*, https://www.epa.gov/greenpower/renewable-energy-tracking-systems (last updated Feb. 17, 2017); National Renewable Energy Laboratory, Renewable Electricity: How Do You Know You Are Using It? 1 (2015), *available at* https://www.nrel.gov/docs/fy15osti/64558.pdf.
75. U.S. EPA Green Power Partnership, *supra* note 74.
76. National Renewable Energy Laboratory, *supra* note 74, at 1.
77. U.S. EPA Green Power Partnership, Guide to Making Claims About Your Solar Power Use 3 (2017), *available at* https://www.epa.gov/sites/production/files/2017-09/documents/gpp-guidelines-for-making-solar-claims.pdf.
78. *Id.* at 5.

counted once.[79] Specifically, a company cannot claim the use of renewable energy, even if it actually used renewable energy in its operations, *if it 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."[80] 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."[81] Also, "[c]ertification both ensures the quality of a green power product and validates the product's environmental attributes."[82]

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."[83] Such verification may be important to ensure that the RECs associate with an actual renewable energy project, as claimed. As a result, "[v]erification serves as a form of buyer protection against deception or fraud."[84] The Center for Resource Solutions' Green-e Energy program is the organization that certifies and verifies green energy products in the United States.[85]

B. 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 (RPS) for utilities and demand for renewable energy from the private sector might be substantially higher than in a grid where there are no RPS, few big companies need renewable energy, and there are vast amounts of renewable energy produced.

Currently, 29 states, Washington, D.C., and three U.S. territories have adopted RPS, which require utilities to produce a certain percentage or amount of electricity from renewable energy sources by a certain year.[86] In addition, eight states and one territory have set renewable energy goals.[87] Utilities reach their renewable energy standards and goals by generating or purchasing RECs.[88] 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."[89]

RECs that meet state RPS compliance requirements are often more expensive than the RECs that do not comply with RPS requirements.[90] 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.[91] 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."[92]

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."[93] The price of voluntary RECs can depend on geographic location, certification, technology, generation date, and competition with compliance-eligible RECs.[94] 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.[95] Some RECs also state the emission rate of the renewable resource.[96] Because of the price and availability, unbundled RECs dominate the voluntary market, most coming from wind projects, primarily from Kansas, Oklahoma, and Texas.[97]

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 an 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

79. U.S. EPA Green Power Partnership, *supra* note 74.
80. U.S. EPA Green Power Partnership, *Buy Certified-Verified Green Power*, https://www.epa.gov/greenpower/buy-certified-verified-green-power (last updated Dec. 21, 2017).
81. *Id.*
82. *Id.*
83. *Id.*
84. *Id.*
85. *Id.*; *see* Green-e, *Home Page*, https://www.green-e.org/ (last visited May 19, 2019).
86. National Conference of State Legislatures, *State Renewable Portfolio Standards and Goals*, http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx (last updated Feb. 1, 2019).
87. *Id.*
88. U.S. EPA Green Power Partnership, Renewable Energy Certificate (REC) Arbitrage 1 (2017), *available at* https://www.epa.gov/sites/production/files/2017-09/documents/gpp-rec-arbitrage.pdf.
89. *Id.*
90. U.S. EPA Green Power Partnership, *Green Power Pricing*, https://www.epa.gov/greenpower/green-power-pricing (last updated Apr. 15, 2019).
91. *Id.*
92. *Id.*
93. *Id.*
94. *Id.*
95. *Id.*
96. U.S. EPA Green Power Partnership, *supra* note 49.
97. U.S. EPA Green Power Partnership, *supra* note 90.

"often necessary to make the project financially feasible,"[98] 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."[99] 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.

C. Impact of RECs: Old RECs Versus New RECs

RECs also differ with regard to their age. Purchase of RECs generated a long time ago would do little to encourage the 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.[100] Similarly, some state RPS require that RECs counted toward the standards be generated the same year they are claimed.[101]

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.[102] Such purchases provide financial support to the builders of new renewable facilities.[103] 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.[104]

III. 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 toward the use of renewable energy. They might even apply the same or similar terms to mean different things.

For example, some companies might 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, toward 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,"[105] other companies do not use the word "unbundled" and just state that they purchase RECs.[106] Further, though according to EPA all the term "unbundled REC" means is that a REC is sold separately from the electricity,[107] some companies define "unbundled RECs" more specifically. IBM uses this term to identify unbundled RECs that are sold into a different grid region.[108] It notes that an "'unbundled' REC is sold to a

98. U.S. EPA Green Power Partnership, *Renewable Energy Certificate (REC) Arbitrage*, https://www.epa.gov/greenpower/renewable-energy-certificate-rec-arbitrage (last updated Sept. 8, 2017).
99. *Id.* 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.*
100. Green-e, *Frequently Asked Questions (FAQ)*, https://www.green-e.org/faq (last visited May 19, 2019).
101. *Id.*
102. Energy Sage, *How Renewable Energy Credit Prices Are Set*, https://www.energysage.com/alternative-energy-solutions/renewable-energy-credits-recs/renewable-energy-credit-prices/ (last updated May 14, 2019).
103. *Id.*
104. *Id.*
105. *See, e.g.*, RE100, *Adobe* (statement that company does not use unbundled RECs), http://there100.org/adobe (last updated Dec. 2015).
106. *See, e.g.*, Apple Inc., Environmental Responsibility Report: 2018 Progress Report, Covering Fiscal Year 2017, at 9 (2018) (buys RECs tied to "recently constructed renewable energy projects . . . from the same power grid as our facility"), *available at* https://www.apple.com/environment/pdf/Apple_Environmental_Responsibility_Report_2018.pdf.
107. U.S. EPA Green Power Partnership, *supra* note 49. 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.
108. IBM, *Position on Transparency in Renewable Electricity Reporting*:
> Unbundled RECs: In this case, as an electricity provider generates renewable electricity, its 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) 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 purchasing the unbundled RECs.

(emphasis added), https://www.ibm.com/ibm/environment/climate/renewable_transparency.shtml (last visited May 19, 2019).

consumer of conventional electricity . . . who is located in a *different grid region*."[109] 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.[110] 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 RE100's approach, which puts no limitations on where the RECs come from.[111]

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"[112] 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 [kWh] of clean, renewable energy a year, which more than fully *matches* the energy used by the [nearby] data center [in Mesa, Arizona]."[113] 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."[114] Importantly, according to RE100, this renewable electricity can be produced on or off the grid.[115]

In contrast, when IBM talks about "matched" consumption and offsets, it appears to refer to renewable energy necessarily produced in the grid region of the company's operations.[116] 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 [greenhouse gas] emissions associated with conventional generation in this specific grid region.[117]

IV. Company Reports Compared

Companies provide different types of information with regard to their progress toward 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.

A. *Microsoft*

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 data centers come from renewable energy sources by the end of 2018 and to top 60% early in the next decade.[118] 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.[119] 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.[120]

The factsheet also states that in 2017, all of the electricity Microsoft consumed in North America, 4,611,239 MWh, came from renewable sources.[121] 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).[122] 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

109. *Id.* (emphasis added).
110. *Id.* (emphasis added).
111. RE100, *Going 100%*, http://there100.org/going-100 (last visited May 19, 2019).
112. *Id.*
113. Apple Inc., *supra* note 106 (emphasis added).
114. GM, 2017 Sustainability Report 133 (2018) (emphasis added), *available at* https://www.gmsustainability.com/act/operations/progress.html.
115. RE100, *supra* note 111.
116. IBM, *supra* note 108 (emphasis added).
117. *Id.*
118. Smith, *supra* note 27; Shelley McKinley, *A Year Later, We Are Still In*, Microsoft, June 1, 2018, https://blogs.microsoft.com/green/2018/06/01/a-year-later-we-are-still-in/.
119. Microsoft, *supra* note 29, at 4.
120. *Id.* at 1.
121. *Id.* at 4-5.
122. *Id.* at 1.

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."[123] However, unbundled RECs currently account for most (83%) of the company's total renewable energy use.

B. IBM

In 2018, IBM established a goal to "[p]rocure 55 percent of the electricity [it] consumes globally from renewable supplies by 2025."[124] 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."[125] 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."[126]

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."[127] 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 past 17 years.[128]

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."[129] 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 allows that given variability of output from wind and solar, it "must rely on electricity generated from conventional sources (i.e., fossil fuels) to ensure business continuity."[130]

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 [carbon dioxide] 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."[131] 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."[132]

C. 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.[133] Apple reports that this includes powering "retail stores, offices, data centers and co-located facilities in 43 countries," including the United States.[134] 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."[135] Eventually, Apple aims to "cover [its] entire electricity load with Apple-created projects."[136]

Apple counts its own generation, contracts to obtain energy,[137] and purchases of unbundled RECs toward 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."[138]

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."[139] It also provides information about individual

123. Smith, *supra* note 27.
124. *IBM Establishes Next Generation Goals*, *supra* note 21.
125. IBM, *supra* note 32, at 5.
126. *Id.* at 3, 5.
127. *Id.* at 20.
128. *Id.* at 21.
129. *Id.* at 20.
130. *Id.*
131. *Id.*
132. *Id.*
133. Press Release, Apple Inc., *supra* note 23.
134. *Id.*
135. Apple Inc., *supra* note 106, at 9.
136. *Id.*
137. In 2016, this included PPAs and contracts with suppliers (utilities). RE100, RE100 Progress and Insights Report 49 (2018), *available at* http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf.
138. Apple Inc., *supra* note 106, at 9.
139. *Id.*

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 four megawatts of baseload biogas fuel cells."[140]

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."[141] Apple uses renewable energy options "in the broader geographic region" for less than 0.5% of its load, occurring in "difficult renewable energy markets."[142] With regard to materiality, Apple reports that it seeks to "create new clean energy that adds to the energy sources already delivering to the grid."[143] 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."[144]

D. Google

Google set a goal in 2012 "to reach 100% renewable energy for [its] operations,"[145] and according to its *Environmental Report 2018*, 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," noting that "a small portion of [its] utility energy purchases include renewable sources as part of the utility's grid mix."[146] 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."[147]

Google's 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 [gigawatts] 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."[148]

The company "take[s] care never to buy 'unbundled' or 'naked' RECs or [guarantees of origin] GoOs, in which a renewable attribute is sold on an open market, independently of underlying physical energy."[149] 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."[150]

Google also states that it is "committed to adding clean power to the grid."[151] To the extent possible, Google "seek[s] renewable energy projects that will operate on the same grids as [the company's] data centers."[152]

E. Adobe

Adobe set a goal to "operat[e] its sites and the digital delivery of [its] products with 100 percent renewable energy by 2035."[153] 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."[154] 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."[155]

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."[156] Adobe "instead moved toward our goal of 100% bundled renewable energy ONLY."[157]

140. *Id.* at 34.
141. *Id.* at 11.
142. *Id.*
143. *Id.*
144. *Id.* WREGIS is the Western Renewable Energy Generation Information System, 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.
145. Google, Environmental Report: 2017 Progress Update 12 (2017), *available at* https://storage.googleapis.com/gweb-sustainability.appspot.com/pdf/Google_2017-Environmental-Report.pdf.
146. Google, Environmental Report 2018, at 24, 26 (2018), *available at* https://storage.googleapis.com/gweb-sustainability.appspot.com/pdf/Google_2018-Environmental-Report.pdf.
147. *Id.* at 24.
148. *Id.*
149. Google, Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond (2016), *available at* https://static.googleusercontent.com/media/www.google.com/en//green/pdf/achieving-100-renewable-energy-purchasing-goal.pdf. GoOs are "guarantee-of-origin" certificates serving the same function as RECs in European markets.
150. *Id.*
151. Google, *supra* note 146, at 8, 26, 27.
152. Google, *supra* note 149.
153. Adobe, 2017 Sustainability & Social Impact Report 2 (2018) (goal for owned and managed sites, and co-located data centers), *available at* https://wwwimages2.adobe.com/content/dam/acom/en/corporate-responsibility/pdfs/Adobe-SSI-Report-2017.pdf.
154. *Id.*
155. Vince Digneo, *Adobe's Bangalore Office Among First in India to Be Powered 100% by Renewable Energy*, Adobe, Sept. 14, 2017, https://theblog.adobe.com/adobes-bangalore-office-among-first-in-india-to-be-powered-100-by-renewable-energy/.
156. Adobe, Climate Change 2017 Information Request 11, *available at* https://wwwimages2.adobe.com/content/dam/acom/en/corporate-responsibility/pdfs/CDPProgrammeResponse2017.pdf.
157. *Id.* at 20.

In 2017, 1% of the company's electricity came from on-site generation of renewable electricity, and 4% came from PPAs and green tariffs.[158] Adobe uses on-site renewable energy "when it makes business sense or when the technology implementation moves [the company] and the market forward."[159] Adobe states that it uses off-site 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)."[160]

F. Facebook

Facebook initially committed to using 50% renewable energy for all its operations by 2018 and 100% long-term.[161] In 2017, it passed its goal of reaching 50% renewable energy and the company states that "[in] 2020, we will have committed to enough new renewable energy resources to equal 100 percent of the energy used by every data center built by Facebook, and always in the same state or power grid as the data center itself."[162]

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 on-site 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.[163]

Facebook states that it seeks to "increase renewable options," and "work[s] with an extensive network of other companies to scale corporate procurement of clean energy across industries."[164] Specifically, Facebook "team[s] up with utilities, state regulators, and other customers to determine the best clean energy solutions for our facilities and a cleaner grid overall," to add more renewable energy and to "enable green tariffs that other companies can use as well."[165]

G. AWS

AWS states a commitment to achieve 100% renewable energy usage for its global infrastructure.[166] 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.[167] 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 six solar farm projects and three wind farms and notes three new wind farms under development, stating that "[o]nce completed, these wind farms, combined with AWS's previous renewable energy projects, are expected to generate more than 2,700,000 MWh of renewable energy annually—equivalent to the annual electricity consumption of over 262,000 US homes"; but it does not explain how much energy the company consumes or what percentage of the company's renewable energy and overall energy use these projects represent.[168] AWS also states that as of March 2019, it "hosts solar energy systems on 47 fulfillment facility rooftops worldwide, with the capacity to generate over 85 megawatts (MW) of power,"[169] but again does not specify what percentage of the company's overall energy use that 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.

H. HP Inc.

HP Inc. seeks to "[u]se 100% renewable electricity in [its] global operations, with a goal of 40% by 2020."[170] 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."[171] 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%),[172] and renewable energy generated on-site (0.2%)."[173]

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.[174] While most of HP Inc.'s renewable energy comes from unbundled RECs and GoOs, the company provides no information about whether it prioritizes certain methods of obtaining renewable energy over others.

158. *Id.* at 22-23.
159. *Id.* at 2.
160. *Id.*
161. Facebook, *supra* note 31.
162. *Id.*
163. RE100, *supra* note 137, at 25. RE100, RE100 Progress and Insights Annual Report Annex 1 (2018) [hereinafter RE100 Annex 1], *available at* http://media.virbcdn.com/files/ab/4030404ffa7b9000-Annex1-RE100ProgressandInsightsAnnualReportNovember2018.pdf.
164. Facebook, *supra* note 31.
165. *Id.*
166. AWS, *supra* note 18.
167. AWS, *supra* note 33.
168. AWS, *supra* note 18.
169. AWS, *Sustainability Question Bank* (refer to "What are some examples of Amazon's environmental sustainability initiatives?"), https://www.amazon.com/sustainabilityquestionbank#?category=all&question=f93fc548-13da-3cc7-6336-a7f548477a0b (last visited May 19, 2019).
170. HP, *supra* note 25, at 25.
171. *Id.* at 18.
172. In 2016, these were contracts with suppliers (utilities). RE100, *supra* note 137, at 49.
173. HP, *supra* note 25, at 76.
174. *Id.*

I. HPE

HPE has a goal to "source 50% renewable electricity in [its] operations by 2025 and to source 100% renewable electricity in the long term."[175] HPE's *Living Progress Report 2017* states that in 2017, the company "source[d] 25% of [its] global electricity from renewables."[176] 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."[177] HPE's *Living Progress Data Summary 2017* explains that the company's progress toward 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.[178]

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.[179] 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 liquefied petroleum gas.[180] 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 Africa, Europe, and the Middle East, 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, with 309 MWh coming from renewable sources.[181]

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."[182] However, there appears no mention of prioritizing projects in the grids where HPE has operations.

175. HPE, *supra* note 36, at 17.
176. *Id.*
177. *Id.*
178. HPE, Living Progress Data Summary 2017, at 4 (2018), *available at* https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00048488enw.
179. *Id.* at 7.
180. *Id.*
181. *Id.*
182. HPE, *supra* note 36, at 17.

J. Dell

Dell has a goal to "[s]ource 50% of [its] total electricity from renewables (both purchased and on-site generation)."[183] Dell's *2020 Legacy of Good Plan Annual Update* states that in 2018, "renewable energy represented 29% of [the company's] total electricity consumption."[184] Specifically, Dell reports that in 2018, total[185] 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.[186] 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).

K. 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."[187] Lenovo's social responsibility report for 2017 states that in FY 2016/2017, the company reached 5.5 MW of renewable energy generation capacity.[188] Specifically, the company has a photovoltaic (PV) 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.[189]

Lenovo's report states that for FY 2016/2017, the company's purchased energy, including electricity, equalled 290,112.63 MWh.[190] Its purchases of renewable energy for 2016/2017 were 22,000 MWh of international RECs, 16,250 MWh of RECs, 7,300 MWh of GoOs, and 1,607 MWh of solar energy.[191]

Lenovo's strategy includes (1) identifying and implementing energy-efficiency projects; (2) using renewable energy sources; and (3) buying RECs and carbon offsets "if actual direct energy reduction or use of renewable energy sources is not technically or financially feasible."[192] Lenovo also aims to "install renewable energy generation sources at or near its sites where technically and economically feasible."[193]

183. Dell, *supra* note 38.
184. *Id.*
185. The data include all of Dell's technologies, except for VMware.
186. Dell, *By the Numbers*, https://legacyofgood.dell.com/by-the-numbers.htm (last visited May 19, 2019).
187. Lenovo Group Limited, 2016/17 Sustainability Report 91, *available at* https://www.lenovo.com/us/en/social_responsibility/FY2017-lenovo-sustainability-report.pdf.
188. *Id.* at 24.
189. *Id.* at 91.
190. *Id.* at 23.
191. *Id.* at 24.
192. Lenovo, *supra* note 22, at 1.
193. Lenovo, *Combating Climate Change: Operations*, https://www.lenovo.com/us/en/social_responsibility/climate/operations/ (last visited May 19, 2019).

L. Sony

Sony set a goal to use enough renewable energy to reduce cumulative CO_2 emissions by 300,000 tons by 2020.[194] 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.[195] With regard to electricity used at Sony in 2017, "electricity generated by renewable energy accounted for approximately 5%."[196] 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.[197]

With regard to Japan, in 2017, Sony used Green Power Certificates[198] equal to 17,640 MWh of electricity, which was equivalent to reducing 9,808 tons of CO_2 emissions.[199] Other renewable energy credits were equivalent to reducing 38,552 tons of CO_2 emissions.[200] Sony also signed an agreement to purchase hydroelectric power equivalent to reducing 1,193 tons of CO_2 emissions.[201] 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.[202]

In the United States and Canada, Sony bought RECs to cover more than 30,705 MWh of electricity in 2017.[203] This was sufficient to meet an estimated 25% of the company's entities' electricity use in the United States.[204] Sony Pictures Entertainment also had a solar power generation system that produced approximately 256 MWh of electricity in 2017.[205] 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."[206]

M. 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."[207] 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 [gigawatt hours] GWh energy with renewable sources."[208] 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."[209]

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."[210] In 2018, Samsung planned to install approximately 42,000 square meters of solar panels in its headquarters in Korea, and the company plans to continue adding solar arrays and geothermal power generation facilities to its campuses in 2019 and 2020.[211]

N. Intel

Intel aims to "[g]row the installation and use of on-site alternative energy to three times [the company'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."[212] In 2017, the company maintained "100% green power purchase" for the United States and increased its use of renewable energy in Europe from 0% in 2015 to 100% (together accounting for 73% of its global energy use).[213]

Intel purchases renewable energy from utility suppliers, purchases Green-e-certified RECs, and generates renewable energy on-site and off-site.[214] While Intel does not specify what percentage of each method it uses to meet its goals, it 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.[215] Intel also states that it "aims[s] to stimulate the market to make

194. Sony, *supra* note 34.
195. *Id.*
196. *Id.*
197. *Id.*
198. Sony explains:

> 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.
199. *Id.*
200. *Id.*
201. *Id.*
202. *Id.*
203. *Id.*
204. *Id.*
205. *Id.*
206. *Id.*
207. *Samsung Electronics to Expand Use of Renewable Energy*, *supra* note 17.
208. Samsung Electronics, *supra* note 44, at 59.
209. *Id.* at 21.
210. *Id.* at 59.
211. *Id.* at 21.
212. Intel, *supra* note 16, at 29.
213. *Id.*
214. *Id.*
215. *Id.*

[renewable] options less expensive and more accessible over the long term."[216]

O. BMW Group

BMW Group has a goal to "purchase its electricity worldwide exclusively from renewable energy sources from 2020 onwards."[217] BMW Group's *Sustainable Value Report 2017* states that in 2017 the "[s]hare of renewable energy purchased from third parties" equaled 81%.[218] This was an increase from 63% in 2016.[219] The company's "site in Austria has been supplied with 100% green electricity since 2016."[220] 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."[221]

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.[222] 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."[223] 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 GoOs[224]—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 CO_2 emissions comes from manufacturing of the company's products by its suppliers.[225] BMW Group notes that it asks its suppliers to reach agreements on increasing the share of consumed renewable energy.[226] 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.[227] This was an increase from 1.6% in 2016.[228]

P. GM

GM seeks to "become 100 percent renewable by 2050."[229] It is the only automaker in North America and one of only three automakers that has joined RE100.[230] 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 will power 20 percent of GM's global electricity use."[231]

GM explains that it uses physical and virtual PPAs and on-site renewable energy projects, without specifying the percentage of each method that contributes to the company's current progress.[232] 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.[233] These PPAs provide capacity of 200 MW, doubling GM's existing 199.8 MW of sourced renewable energy capacity.[234]

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."[235]

Q. Cisco

Cisco has a goal to "[u]se electricity generated from renewable sources for at least 85% of [its] global electricity by 2022."[236] According to Cisco's *2017 Corporate Social Responsibility Report*, in 2017, 80% of electricity used by the company was generated from renewable sources.[237] 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.[238]

Cisco's report states that 100% 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.[239] 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."[240] It is unclear how much came from unbundled RECs.

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216. *Id.* at 26, 29.
217. 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.
218. *Id.* at 9.
219. *Id.*
220. *Id.* at 99.
221. *Id.*
222. *Id.*
223. *Id.*
224. *Id.*
225. *Id.*
226. *Id.*
227. *Id.* at 100.
228. *Id.*
229. GM, *supra* note 114, at 133.
230. *Id.*
231. Press Release, GM, GM's Vision Drives Value for the Company, Communities, and Future Mobility (June 12, 2018), https://www.generalmotors.green/product/public/us/en/GMGreen/home.detail.html/content/Pages/news/us/en/2018/jun/0612-sustainability.html; GM, *Operational Commitments*, https://www.gmsustainability.com/measure/operations.html (last visited May 19, 2019); GM, *supra* note 114.
232. GM, *supra* note 114.
233. *Id.*
234. *Id.*
235. Marie Reynolds, *David Tulauskas, GM: Going 100% Renewable "Improves the Bottom-Line and Gives Energy Cost Certainty,"* Climate Group, Sept. 15, 2016, https://www.theclimategroup.org/news/david-tulauskas-gm-going-100-renewable-improves-bottom-line-and-gives-energy-cost-certainty.
236. Cisco, *supra* note 19, at 4.
237. *Id.* at 22.
238. *Id.* at 97, 103.
239. *Id.* at 106.
240. *Id.*

Cisco states that it locates facilities "where low-carbon grid electricity is available" and buys renewable energy from utilities and green power providers.[241] 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."[242] In 2017, it implemented 103 energy-efficiency and renewable energy projects.[243]

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)."[244] While Cisco does not explain what it means by "offsite power opportunities," given that it lists this category separately from RECs, it likely includes VPPAs. 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."[245] 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."[246]

R. *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."[247] This target is part of the company's Health for Humanity 2020 Goals framework.[248] 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.[249]

Johnson & Johnson uses renewable energy sources installed on-site and procures renewable energy and the associated certificates from off-site systems.[250] 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."[251] 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.[252] This significantly increased the company's renewable electricity consumption.[253] 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."[254]

S. *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."[255] 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.[256] However, it reaches this number using a different methodology than RE100 currently supports. Walmart meets 9% of its electricity needs through a combination of company-supported renewable projects and PPAs, and an additional 19% taking into account the amount of renewable energy supplied by the grid in regions and areas where the company has facilities.[257] For RE100 purposes, however, the latest RE100 report does not count grid mix toward the goal.[258]

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."[259] 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.[260] 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."[261] Walmart reports that by the end of FY 2018, in the United States, the company "had 364 onsite solar installations supplying energy to 353 sites, across 16 States and Puerto Rico."[262]

With regard to purchasing power generated by renewable sources, Walmart identifies PPAs as "a highly effective model for leveraging [its] scale and buying power to accelerate renewables."[263] As of FY 2018, it had 11 large PPAs in place in several countries, accounting for 91%

241. *Id.* at 101.
242. *Id.*
243. *Id.* at 98.
244. *Id.* at 105.
245. *Id.*
246. *Id.*
247. Johnson & Johnson, *supra* note 37.
248. *Id.*
249. *Id.*
250. *Id.*
251. *Id.*
252. *Id.*
253. *Id.*
254. *Id.*
255. Walmart, *supra* note 35.
256. *Id.*
257. Personal Communication with Global Sustainability Office, Walmart (Dec. 21, 2018).
258. RE100 Annex 1, *supra* note 163. The Annex lists Walmart's overall renewable energy progress at 9% for 2017, rather than 28%, reflecting this narrower reporting.
259. Walmart, *supra* note 35.
260. *Id.*
261. *Id.*
262. *Id.*
263. *Id.*

of its project renewable portfolio.[264] Walmart also enters contracts with utilities. Specifically, it entered a long-term agreement with the utility Alabama Power, allowing the utility to build a 72-MW 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."[265]

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 Northwest, Costa Rica, and others with substantial renewables). Walmart does not purchase unbundled RECs as part of its renewable energy strategy,[266] although the RE100 progress report lists unbundled RECs as among its strategies.[267] 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."[268]

T. Comparisons

The corporate reporting examples above show great differences in what information companies provide about their progress toward 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 toward 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 company 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.

V. 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 (WRI) 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 (GRI) 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.

264. *Id.*
265. *Id.*
266. Personal Communication with Global Sustainability Office, *supra* note 257.
267. RE100 Annex 1, *supra* note 163.
268. Walmart, Walmart's Approach to Renewable Energy, *available at* https://cdn.corporate.walmart.com/eb/80/4c32210b44ccbae634ddedd18a27/walmarts-approach-to-renewable-energy.pdf.

A. *RE100, Renewable Energy Buyers Alliance, 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."[269] 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."[270] 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."[271]

RE100 allows members to count electricity that was self-produced at the company's facilities or purchased.[272] 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, on-site or off-site, connected to the local grid or entirely off-grid."[273] RE100 also states that "[a] company may consume its own renewable electricity or decide to make production-only claims."[274] 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."[275]

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 toward its renewable energy goal, as the RE100 website states that in order "[t]o count the 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."[276]

With regard to purchase of electricity, RE100 explains that a company can achieve that through direct purchases from generators on-site or off-site, through retail purchases from suppliers and utilities, and through unbundled certificates, such as RECs.[277] RE100 allows companies to count unbundled RECs toward 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."[278] Adobe, Amazon, Cisco, Dell, Facebook, GM, Google, HP Inc., HPE, Intel, Microsoft, and Samsung, whose renewable energy goals and progress are described above, have all signed the Corporate Renewable Energy Buyers' Principles.[279]

The principles are an initiative of the Renewable Energy Buyers Alliance (REBA), an alliance of clean energy buyers, energy developers, and service providers that facilitates collaboration and helps energy buyers procure more renewable energy.[280] REBA currently has more than 200 large energy buyers and more than 150 renewable energy developers.[281] According to REBA's Corporate Renewable Deals Tracker, which tracks renewable energy contracts, REBA members made 76 contracts in 2018 alone, including PPAs, green tariff and other green power purchases, and project ownership.[282] This was an increase from 31 contracts in 2017.[283]

B. *GRI Standard 302 on Energy*

GRI Standard 302 on Energy (GRI 302) serves as a guide that organizations can use to voluntarily report about their energy use.[284] 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, neither the guide nor the associated form mentions 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.

269. RE100, *supra* note 111 (emphasis added).
270. RE100, RE100 Technical Criteria 4 (2018) (emphasis added), *available at* http://media.virbcdn.com/files/73/4c55f6034585b02f-RE100TechnicalCriteria.pdf.
271. *Id.* at 5 (emphasis added).
272. *Id.* at 1.
273. *Id.* at 3.
274. *Id.* at 1.
275. *Id.* at 3.
276. RE100, *FAQs*, http://there100.org/faqs (last visited May 19, 2019).
277. RE100, *supra* note 270, at 1.
278. Corporate Renewable Energy Buyers' Principles, *The Principles*, https://buyersprinciples.org/principles/ (last visited May 19, 2019). As of June 2018, 78 companies had signed on to the principles.
279. Corporate Renewable Energy Buyers' Principles, *supra* note 3.
280. REBA, *Our Vision*, https://rebuyers.org/about/ (last visited May 19, 2019).
281. *Id.*
282. REBA, Corporate Renewable Deals 2015-2019YTD (2019), *available at* https://rebuyers.org/wp-content/uploads/2019/03/reba-deal-tracker.pdf.
283. *Id.*
284. GRI, *GRI 302: Energy 2016*, https://www.globalreporting.org/standards/gri-standards-download-center/gri-302-energy-2016/ (last visited May 19, 2019).

C. CDP

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."[285] CDP disclosure forms are another type of forms commonly used by big companies that set voluntary renewable energy goals. CDP's *Climate Change 2018 Questionnaire*, 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.[286]

D. Greenpeace's "Clicking Clean" Report

Greenpeace compiles the *Clicking Clean* report, analyzing the use of renewable energy by the information technology sector since 2009.[287] It presents information about the types of energy on which companies rely, including renewable energy, natural gas, coal, and nuclear, showing the percentage for each.[288] It also rates companies' performance in such areas as "energy transparency," "renewable energy commitment & siting policy," "energy efficiency & mitigation," "renewable procurement," and "advocacy," and provides an overall grade for each company's performance.[289]

In addition, Greenpeace provides narrative descriptions of why each company assessed received a particular grade for each category.[290] Greenpeace explains that in order to evaluate companies, it uses both information provided by companies directly and publicly available information.[291] It also provides the methodology of how it evaluates information and grades companies.[292] Importantly, *Clicking Clean* 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."[293]

VI. 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 toward 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.

A. 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 United States the top 10 states where it is easier to purchase renewable energy are Iowa, Illinois, New Jersey, California, Texas, Massachusetts, New York, Ohio, Rhode Island, and Connecticut.[294] The indicators included availability of utility purchasing options, third-party purchasing options, and on-site-direct deployment options.[295]

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."[296] Similarly, "GM's ability to access renewable energy is key to our decisions about where to expand new facilities," according to Rob Threlkeld, GM global manager of renewable energy.[297]

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.[298] After that, PUCs in each state approved new green tariffs, and Facebook built a new data center in one of them, New Mexico.[299] 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

285. CDP, *Home Page*, https://www.cdp.net/en (last visited May 19, 2019).
286. CDP, CDP Climate Change 2018 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.
287. Greenpeace, Clicking Clean: Who Is Winning the Race to Build a Green Internet? 5 (2017), *available at* www.clickclean.org/downloads/ClickClean2016%20HiRes.pdf.
288. *Id.* at 8.
289. *Id.*
290. *Id.* at 46-85.
291. *Id.* at 42.
292. *Id.* at 42-45.
293. *Id.* at 39.
294. Clean Edge, Corporate Clean Energy Procurement Index, *available at* http://cleanedge.com/reports/Corporate-Clean-Energy-Procurement-Index; Celina Bonugli, *States Use Renewable Energy to Win Corporate Business*, WRI, Feb. 3, 2017, http://www.wri.org/blog/2017/02/states-use-renewable-energy-win-corporate-business.
295. Clean Edge, *supra* note 294.
296. Cisco, *supra* note 19, at 101.
297. Kevin O'Rourke, *Report: Transmission Needed to Meet Corporate America's Growing Demand for Renewable Power*, Wind Solar Alliance, Jan. 16, 2018, http://windenergyfoundation.org/2018/01/16/report-transmission-needed-to-meet-corporate-americas-growing-demand-for-renewable-power/.
298. Letha Tawney et al., *Green Tariffs Take Off in the US, Expand Access to Renewable Energy*, WRI, Oct. 27, 2016, https://www.wri.org/blog/2016/10/green-tariffs-take-us-expand-access-renewable-energy.
299. *Id.*

(an approach that is not available to companies not looking to expand).

B. Trend Toward Investments in Projects, PPAs, and Green Tariff Purchases

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."[300] 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 off-site 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."[301] In the most recent report, covering 2017, PPAs account for 16% of renewable electricity sourcing by RE100 companies (and account for 20% of the renewable electricity purchased by these companies in the United States).[302]

Possibly owing to a larger number of companies supplying detailed data, the percentage use of unbundled RECs (also called energy attribute certificates, or EACs) increased from 40.4% in 2016 to 46% in 2017.[303] RE100 notes that unbundled RECs are a particularly important sourcing strategy for companies procuring electricity in certain energy markets (accounting for 96% 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."[304] Nevertheless, the general trend in the past two years has had unbundled RECs representing less than one-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."[305]

VII. Existing Challenges

A. 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 toward high renewable energy goals. For example, if a company is located in an 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 versus use), but both use the RECs. If there were different types of instruments to prove generation and use of renewable energy, such as if there were a production REC and a use REC for each MWh of generated electricity, the problem of high prices of RECs might be helped.

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.[306]

For companies that are unable to purchase expensive local RECs, cheaper unbundled RECs from faraway 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.

B. 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 (WEF'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."[307] The reason is that many companies are "acting on their publicly announced

300. RE100, *supra* note 137, at 26.
301. *Id.* at 2.
302. RE100, RE100 Progress and Insights Annual Report 9-10 (2018), *available at* http://media.virbcdn.com/files/fd/868ace70d5d2f590-RE-100ProgressandInsightsAnnualReportNovember2018.pdf.
303. *Id.*
304. *Id.* at 10.
305. RE100, *supra* note 137, at 2.
306. David Roberts, *Batteries Have a Dirty Secret*, VOX, July 21, 2018, https://www.vox.com/energy-and-environment/2018/4/27/17283830/batteries-energy-storage-carbon-emissions.
307. O'Rourke, *supra* note 297; WEF, Transmission Upgrades & Expansion: Keys to Meeting Large Customer Demand for Renewable Energy (2018), *available at* http://windenergyfoundation.org/wp-content/uploads/2018/01/WEF-Corporate-Demand-and-Transmission-January-2018.pdf.

Table 1
Evolving Sourcing Strategies[a]

Sourcing Strategy	2017 (MWh)	2017 (%)	2016 (%)	2015 (%)
Contract with suppliers (green electricity tariffs/products) [b]	19,200,806	35	41	34.8
Unbundled EAC purchase[c]	24,947,048	46	40.4	59.6
Direct procurement from off-site grid-connected generators[d]	8,951,954	16	13.1	3.3
Generation from installations owned by the company[e]	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%**

Data for 2017 based on 111 companies that supplied in-depth procurement information through the RE100 reporting spreadsheet. Data for 2016 and 2015 based on 74 reporting companies. The MWhs reported for 2017 include nearly 50% more renewable energy consumption than the 2016 reports because of these additional reporters as well as because of company progress.

[a] Data for 2017 and 2016 from RE100, RE100 PROGRESS AND INSIGHTS ANNUAL REPORT Annex 2, at 9 tbl. G (2018), *available at* http://media.virbcdn.com/files/1d/169b80963ba27ad0-Annex2-RE100ProgressandInsightsAnnualReportNovember2018.pdf. Data for 2015 from RE100, RE100 PROGRESS AND INSIGHTS REPORT 26 (2018), *available at* http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf.

[b] 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." RE100 PROGRESS AND INSIGHTS REPORT 58 (2018), *available at* http://media.virbcdn.com/files/97/8b2d4ee2c961f080-RE100ProgressandInsightsReport2018.pdf. 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 (2018), *available at* http://media.virbcdn.com/files/ef/f8e97377fa5493be-RE100LeadershipPaper.pdf.

[c] These are RECs.

[d] These are PPAs.

[e] 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 Annex 10 tbl. 1 (2018), *available at* http://media.virbcdn.com/files/1d/169b80963ba27ad0-Annex2-RE100ProgressandInsightsAnnualReportNovember2018.pdf.

renewable energy goals[,] as new utility-scale wind and solar energy projects are now often the lowest cost power available."[308] 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."[309]

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."[310] As a result, the report recommended corporate buyers "[p]articipate in regional and inter-regional 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."[311]

The good thing is that companies appear to take notice of this issue and can be proactive. Threlkeld, global manager of renewable energy at GM, 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."[312] If companies and policymakers identify this issue and discuss it with transmission planners and regulators, they may be able to implement more rapid solutions.

C. The Intermittent Nature of Wind and Solar Generation Requires Planning

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 37% (range of 25%-45%) and solar PV an average of 26% (range of 15%-35%) as of 2018.[313] The capacity factors are rising with newer technology, and improving storage technologies will likely increase these numbers. In order to ensure 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.[314] 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.

VIII. Guides on How Companies Should State Their Renewable Energy Practices

There are several voluntary guides, created both by the government and by nongovernmental groups, that 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*[315] provides information on explaining solar power activities. It primarily focuses on on-site 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.[316] However, it also contains more intricate ones, such as "[a]void implied claims."[317] This means that if a company installs on-site 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.[318] 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.[319]

RE100's guide *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."[320] 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.[321] If all the RE100 members conveyed information about their renewable energy purchases using the above categories, with the addition of a

308. O'Rourke, *supra* note 297.
309. *Id.*
310. *Id.*
311. *Id.*
312. *Id.*
313. U.S. Energy Information Administration, *Table 6.7.B. Capacity Factors for Utility Scale Generators Not Primarily Using Fossil Fuels, January 2013-March 2019*, https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_b (last released May 24, 2019).
314. *See* Kathleen Barrón, *Data Show Renewables Alone Don't Always Equate to Carbon-Free*, Envtl. F., Jan./Feb. 2019 (Google study of impacts of its renewable energy contracts at data centers).
315. U.S. EPA Green Power Partnership, *supra* note 74.
316. *Id.* at 3, 4, 5.
317. *Id.* at 4.
318. *Id.*
319. *Id.* at 4-5. The guide cites the Federal Trade Commission's Guides for the Use of Environmental Marketing Claims, 77 Fed. Reg. 62122 (Oct. 11, 2012), *available at* https://www.ftc.gov/sites/default/files/documents/federal_register_notices/guides-use-environmental-marketing-claims-green-guides/greenguidesfrn.pdf. 16 C.F.R. §260.15 (Renewable Energy).
320. Jared Braslawsky et al., RE100, Making Credible Renewable Electricity Usage Claims 11 (2016), *available at* http://media.virbcdn.com/files/d2/f9ea6f41ca833f44-RE100CREDIBLECLAIMS.pdf.
321. *Id.*

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 Renewable Energy Markets*.[322] 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."[323] 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.[324] The guide explains that "[i]impacts 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."[325] 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.[326]

Such information would be extremely useful to have when reading about companies' renewable energy goals and progress. Information about percentages or numbers alone does not provide the full picture, given the variety of methods in which renewable energy can be obtained and the variety of possible impacts these methods might have on the renewable energy market.

IX. 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 shows 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 are learning as they 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.

322. Letha Tawney et al., Describing Purchaser Impact in U.S. Voluntary Renewable Energy Markets (2018), *available at* https://www.epa.gov/sites/production/files/2018-06/documents/gpp_describing_purchaser_impact.pdf.
323. *Id.* at 2.
324. *Id.*
325. *Id.* at 10.
326. *Id.* at 18-21.