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Pathways for Off-Site Corporate PV Procurement

Corporations are using large-scale solar photovoltaics (PV) to meet their renewable energy and financial goals for electricity procurement. Corporate procurement of utility-scale solar has grown from <1% of annual installed utility-scale capacity in 2014 to 9% in 2016 (Shiao et al. 2017), and was 17% of utility-scale procurements in early 2017 (Perea et al. 2016).

Corporates have contracted for more than 2,300 MW of off-site solar, with most of the activity occurring in 2015 (1,136 MW) and 2016 (604 MW) (Figure 1). Multiple methods for solar procurement exist, but the primary forms are financial power purchase agreements (PPAs) (43%) and green tariffs and bilateral arrangements with utilities (36%). The full report (Heeter et al. 2017) discusses these purchasing options as well as wholesale market participation and direct access purchasing options across the country.

Large corporations are leading the way with off-site PV contracts. To date, IT companies have dominated (Apple, 509 MW; Amazon, 284 MW; Switch 179 MW); however, health care companies, retail, and governments also make the top 10 (Figure 2).

States in traditionally regulated as well as restructured markets see high levels of solar contracts (Figure 3). California leads the way, with around 600 MW of off-site solar PPAs, primarily virtual PPAs. Nevada follows, with about 460 MW of off-site solar, primarily through NV Energy's green tariff. Dominion Energy Virginia's Market Based Rate and the ability for projects in Virginia to sell into PJM has enabled nearly 400 MW of off-site solar.

To expand these pathways for increased solar procurement, states, utilities, and others could focus on providing options in areas where solar is most cost-competitive. Figure 4 shows the levelized cost of energy (LCOE) of utility-scale solar using a one axis tracker, compared to corporate procurement of renewable energy, by state.

Of the states with the greatest solar potential (on an LCOE basis), California and Nevada have seen the most corporate PV purchasing, primarily through financial PPAs (California) and green tariffs (Nevada), but purchasing options are just emerging or do not exist in other areas of the country that have strong solar potential.

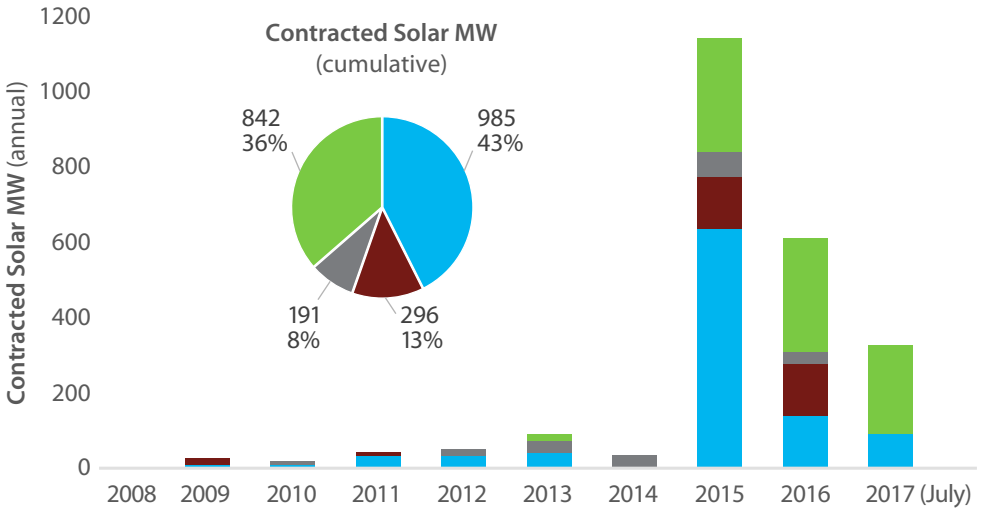

Figure 1. Corporate off-site solar contracts

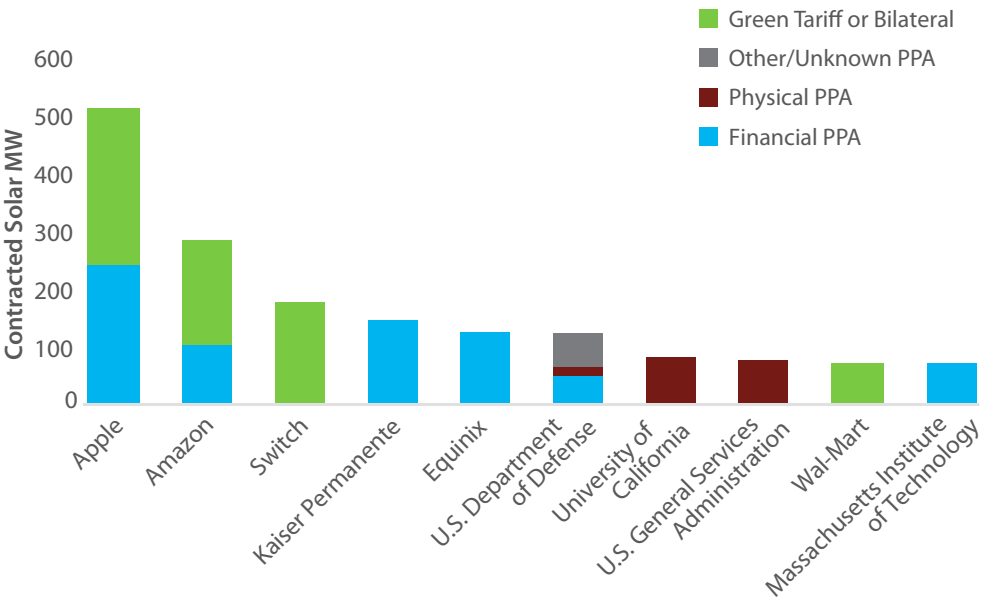

Figure 2. Top corporate purchasers of off-site solar

Note: Not all companies retain the renewable energy credits from their purchase; where renewable energy credits are not retained, no renewable or greenhouse gas reduction claim can be made by the company for that purchase.

References

Fu, Ran, Donald Chung, Travis Lowder, David Feldman, Kristen Ardani, and Robert Margolis. 2016. *U.S. Solar Photovoltaic System Cost Benchmark: Q1 2016*. NREL/TP-6A20-66532. Golden, CO: National Renewable Energy Laboratory. *http://www.nrel.gov/docs/fy16osti/66532.pdf*.

Heeter, Jenny, Jeffrey J. Cook, and Lori Bird. 2017. *Charting the Emergence of Corporate Procurement of Utility-Scale Solar*. NREL/TP-6A20-69080. Golden, CO: National Renewable Energy Laboratory. *http://nrel.gov/docs/fy17osti/69080.pdf*.

Shiao, M.J., Cory Honeyman, Nicole Litvak, Jade Jones, Scott Moskowitz, Colin Smith, Manan Parikh, Austin Perea, Ben Gallagher, Allison Mond, Benjamin Attia, and Tha Zin. 2017. *Q4 2016 Solar Executive Briefing*. Boston: GTM Research.

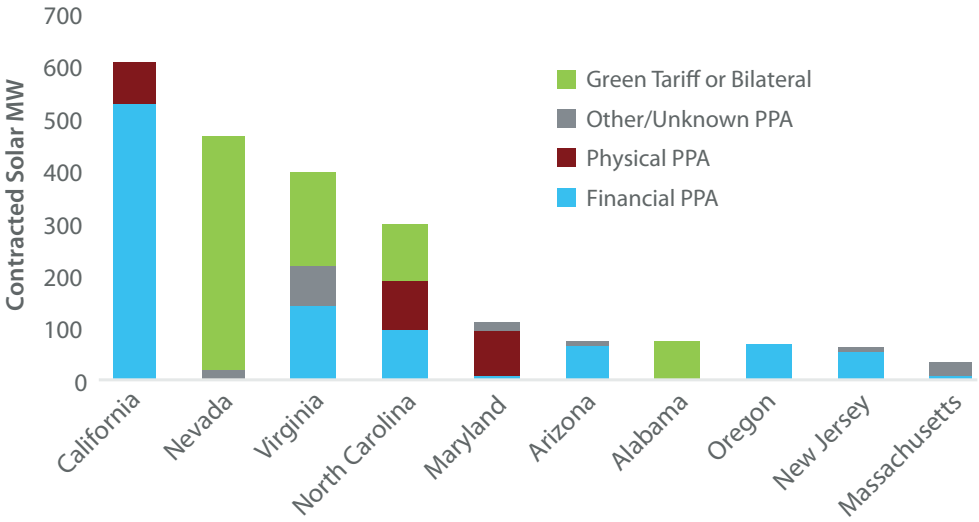

Figure 3. Top states for corporate purchasing of off-site solar

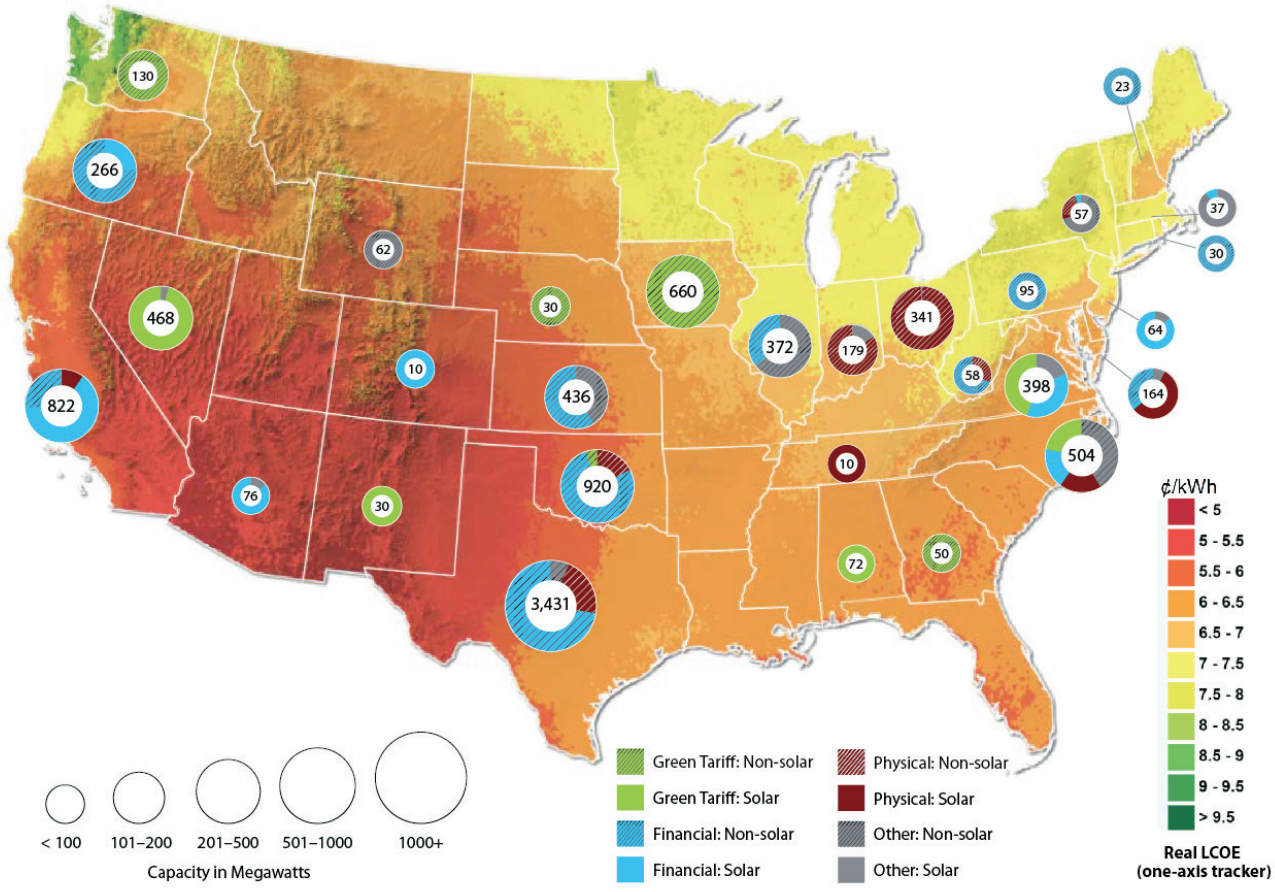

Figure 4. Corporate RE purchasing by state (MW) compared to utility-scale solar levelized cost of energy (LCOE)
LCOE source: Fu et al. (2016). Note: Non-solar technologies include wind and biomass

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