

Expanding Renewable Energy Options for Companies Through Utility-Offered “Renewable Energy Tariffs”

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Google is always looking for ways to expand the use of renewable energy. To date, we’ve committed over \$1 billion to renewable energy project investments, signed agreements to procure over 260 megawatts (MW) of wind power near our data centers, and installed 1.7 MW of solar at our corporate headquarters. This white paper outlines a new, more scalable approach that will allow a broad range of companies like Google to buy large amounts of renewable power directly from electric utilities.

Background

We adhere to two fundamental principles in our approach to procuring renewable power:

- First, our efforts must result in “additional” renewable power generation. We’re not interested in reshuffling the output of existing projects, and where possible, we want to undertake efforts near our data centers and operations.
- Second, we want our activities to be scalable and have the highest possible impact on the industry. When possible, our efforts should directly address problems that limit the growth of renewable energy.¹

Companies currently have a variety of options for procuring renewables, such as installing renewable energy at our facilities, purchasing renewable energy certificates (RECs), and entering into power purchase agreements to procure power and RECs together.²

On-site generation

Perhaps the most direct approach for a company seeking to procure renewable energy is to install renewable power generation on-site, like we did with our 1.7 MW corporate solar array at our Mountain View headquarters.³ A company can either own and operate the system itself or, if permitted by state law, allow a third party to install and own a system on-site and buy the electricity that it generates. On-site systems typically do not produce sufficient electricity to power large facilities 24/7 and must be supplemented with power from the local utility provider.

Sometimes siting renewable projects off-site is a much better option, especially for larger electricity loads like data centers. The renewable resource may be better (e.g., more wind or sun) in locations distant from the load, allowing more cost effective power generation. It may also be more feasible to build larger power installations (e.g., wind farms) away from the load, where large parcels of land may be available for renewable project development.

Renewable energy certificates

A common way that companies seek to support renewable generation is through the purchase of RECs. RECs are a tradable commodity that represent a claim to the environmental benefits associated with renewable power generation—they are not tied to the physical delivery of electrons. RECs are sold either “bundled” with the underlying electricity generated, or “unbundled” as a separate commodity from the energy itself.

While buying and retiring RECs to cover electricity usage is relatively simple, the process does not provide assurance that the price paid for RECs is being used to support additional investment in new renewable power generation. This is especially true for unbundled RECs. At Google, we see the value of all RECs, but so far have chosen not to offset our emissions with unbundled RECs because we feel they do not provide enough additionality.⁴

Power purchase agreements

In our white paper [Google’s Green PPAs: What, How and Why?](#), we outlined our approach to using power purchase agreements (PPAs) to supply renewable energy near our data centers. Under this arrangement, Google buys power and the bundled RECs directly from a new renewable energy project in the same regional grid as one of our data centers, retires the RECs, and sells the power back to the grid at the local wholesale price. Retail electricity service to the data center is provided by the local utility.

This solution has worked well for Google because it adheres to our strict standards of additionality. While the renewable facility output is not being used directly to power a Google data center, the PPA arrangement assures that additional renewable generation sufficient to power the data center came on line in the area. So far we’ve signed two long-term PPAs for over 100 megawatts each to procure renewable power in the regional grids where our Iowa and Oklahoma data centers are located.⁵ The downsides are that these PPAs require us to actively manage purchases and sales of power on the wholesale energy markets, which can be a complex process. This puts Google in the business of managing power scheduling and contracting, when we’d rather spend our resources building products for our users.

What’s needed: A better approach

Each of the approaches described above—on-site generation, reliance on the purchase of RECs, or use of PPAs on the wholesale markets—can be cumbersome and has its limitations. First, companies still must accept the generation mix offered by the local electric utility, even if it includes relatively few renewables. In some locations the generation mix can be quite carbon intensive. Second, companies cannot request and procure renewables directly from the local utility in a transparent and straightforward manner, where they know how much renewable power they are getting (and from where). With few exceptions, utilities and the state commissions that regulate them do not provide a way for large users to request renewable power. In short, even though companies want renewable power and are willing to pay for it, the product is not being offered.

Why not? It's partly explained by the way the industry has operated historically. Utilities offer power under different rate schedules, or "tariffs," for different customer classes (e.g., industrial, commercial, and residential users). For all of these customers, the electricity comes from a mix of resources designed around the assumption that customers care primarily, if not exclusively, about low cost and reliability. To meet these goals, utilities seek the least expensive mix of generation resources such as coal, natural gas, nuclear, hydroelectric, etc. They have not typically offered power for sale to large customers under tariffs designed around a specific category of power generation.

Increasingly, companies are making public commitments to purchase renewable power. These commitments are driven by a variety of factors: to diversify energy supplies, provide more certainty on long term operating costs, achieve greenhouse gas reduction goals, and demonstrate sustainability leadership.⁶ As interest in procuring renewable energy grows, companies like Google are searching for more scalable options that address the shortcomings described above. What's needed is a new tariff structure that allows companies to request and purchase renewable energy directly from their utilities.

A renewable energy tariff

The concept of a "renewable energy tariff" is simple. Utilities would offer companies like Google the choice to buy renewable energy through a new class of service. The service would be voluntary, provided only to those companies that request it but open to all customers that want it and meet basic criteria. A key aspect of the tariff is that the costs of procuring the renewable power would be passed on to the customer that has elected this option, so the goal would be to avoid impact on other ratepayers.

This approach has many advantages. It lets utilities do what they do best: build power plants, procure power, manage the grid, and deliver electricity to customers. It draws on their ability to employ multiple power sources to better manage the variability associated with renewables (because the sun doesn't always shine and the wind doesn't always blow). It also minimizes transaction costs by offering a generally applicable service to a wider group of customers, including those that are interested in renewables but lack the ability and resources to act independently. Initially, we propose offering the service to customers with large electricity loads such as data center operators, but it's a model that could work with any customer group that has sufficient load and is willing to commit to using such tariffs.

Renewable energy tariffs will also have many benefits for utilities and their communities. They will lead to increased economic development as companies choose to locate or expand in markets that offer more renewable energy options. Utilities will improve customer satisfaction by providing new services that are responsive to customers' needs. Finally, offering companies the option of buying renewable power will lead to greater investment in local and regional renewable energy projects, which can provide jobs and opportunity in a utility's service area and ultimately reduce the cost of renewable energy for everyone.

Of course, renewable energy tariffs are not without their challenges. Since utilities are regulated at the state level, each state utility commission must approve the new tariff structure. All stakeholders—utilities, state utility commissions, and customers—will need to work together to develop new rate structures and guidelines that provide the proper framework and incentives. And once approved, utilities and/or customers must still find large scale, cost-effective, additional renewable energy projects to provide power under the tariff. This can be challenging in regions with few cost-effective renewable resources and may require arrangements for bringing in renewables from elsewhere.

Proposed structure

The specifics of a renewable energy tariff should be left to the unique characteristics of the states, utilities, and customers involved. That said, given our experience as a large electricity customer, we believe a successful renewable energy tariff should follow these general parameters:

- **Eligibility.** The tariff should specify classes of customers that are eligible, with the expectation that, initially at least, it would apply to large commercial and industrial customers. The goal is to target large and growing electricity loads and match their demand with utility-scale solutions. Signing up for service under the renewable energy tariff should be a voluntary option for customers.
- **Integrated service.** The tariff should provide an integrated service that includes: (1) electricity generated by dedicated renewable facilities, and (2) if needed, a supplemental “shaping” service from other (likely non-renewable) generation to fill in the gaps of variable renewable resources and ensure that customers receive continuous and reliable service. Thus, the tariff will eliminate many of the complexities of intermittent renewable energy production for customers.
- **Renewable generation resources.** The tariff should give customers the option to designate and/or approve the renewable energy resource they wish to procure, in order to meet their individual requirements for additionality. To provide the greatest flexibility, generation should be supplied through one or more facilities that are either: (1) owned by the customer or by the utility, or (2) contracted by the customer or by the utility under a power purchase agreement.
- **Green attributes.** All associated green energy attributes (e.g., RECs) should be transferred to the customer bundled with the power so that the customer can assure the REC is retired. The renewable energy tariff should result in additional power generation.
- **Pricing.** Costs associated with the procurement and delivery of renewable energy should be passed on to participating customers at a rate reflecting the actual cost of service. Pricing should be transparent and any additional costs or fees should be specified at the outset so that the customer can make an informed choice about whether or not to participate.

Conclusion

We believe that a renewable energy tariff will provide a powerful tool for accelerating the growth of renewable energy. It offers a solid and workable framework for both utilities and their large customers seeking to procure renewables. Some utilities are already experimenting with similar tariff structures, and we applaud those efforts.⁷

The option of a renewable energy tariff is good for companies like Google, for our users, for the utilities and the communities where companies like ours choose to locate or expand, and for the renewable energy industry. We look forward to continuing to work with utilities, state utility commissions, companies that wish to procure more renewables, and other stakeholders to make this solution a reality.

1. For more discussion on these principles, see our white paper: *Google's PPAs: How, What and Why?* available at www.google.com/green/energy/use/#purchasing.
2. For a good discussion of the various options for purchasing renewable energy, see the U.S. Environmental Protection Agency's *Guide to Purchasing Green Power*, available at www.epa.gov/greenpower.
3. For more information: <http://www.google.com/green/energy/use/#piloting>.
4. See *Google's Green PPAs: What, How and Why?* for further discussion on why we choose not to use unbundled RECs to meet our renewable energy goals. Note also that some utilities offer "green pricing" programs, which allow customers to support a greater level of utility investment in renewable energy by paying a premium on their electric bills. As with buying unbundled RECs, it is difficult to ascertain whether the premiums paid under these programs result in additional investment in renewable power generation.
5. We also signed an agreement with the Grand River Dam Authority (GRDA) to supply Google's Mayes County, Oklahoma data center with 48MW of wind energy from a wind project in west central Oklahoma.
6. Over 60% of Global Fortune 500 companies have renewable energy or greenhouse gas reduction targets. See *Power Forward: Why the World's Largest Companies Are Investing in Renewable Energy*, prepared by David Gardiner and Associates for Ceres, WWF and Calvert Investments, available at: <http://worldwildlife.org/publications/power-forward-why-the-world-s-largest-companies-are-investing-in-renewable-energy>.
7. These include Dominion Energy in Virginia and Sierra Pacific Power in Nevada, both of which have introduced versions of a large customer renewable energy tariff recently.

