

Understanding Differences in Utility Views Toward Solar

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If you are interested in increasing the deployment of solar electricity generation in your area, it's important to know a few things about the electric utility you are dealing with. Why? Because different utilities may view solar energy deployment, like rooftop or community solar installations, differently.

Three key questions you need to answer are: who owns the utility (i.e., is it investor-owned, publicly-owned, or member-owned); does the utility operate in a competitive retail energy market; and does the utility itself own generation facilities, like power plants or solar farms?

Each of these key questions is explained below, along with the implications for solar projects.

Who Owns the Utility?

The table below breaks down the key differences among investor-owned utilities, municipal utilities (and other publicly-owned utilities), and electric cooperatives. These differences in ownership will shape how a utility sets the rates that it charges to customers, and this, in turn, will determine the financial impact on the utility of customer-owned or third party-owned solar.

	Investor-Owned Utilities	Municipal and Other Publicly-Owned Utilities	Electric Cooperatives
Ownership	Owned by shareholders/investors who may or may not reside within the service territory. For profit.	Owned by a unit of local government, most commonly a municipality but potentially a county, irrigation district, etc. Not-for-profit.	Owned by members of the cooperative who are customers receiving service from the utility. Not-for-profit.
Governance and Management	Shareholders elect a Board of Directors, and the Board appoints a management team of private-sector employees.	Locally-elected officials directly oversee the utility or create a separate public entity that does so. A management team of public-sector employees is appointed by the elected officials or governing entity. ¹	Members elect a Board of Directors, and the Board appoints a management team of private-sector employees.
Motivation	Optimize return on	Meet customer energy needs	Optimize benefits for

¹ Sometimes these utilities serve customers in surrounding communities outside of the political boundaries of the elected officials. These customers may or may not be directly represented in utility governance.

	Investor-Owned Utilities	Municipal and Other Publicly-Owned Utilities	Electric Cooperatives
	investment for shareholders while providing at least a minimum level of service.	in a manner consistent with other local public policy objectives, including non-energy-related objectives, while covering debt service and maintaining low borrowing costs. In some cases, these utilities also serve as a revenue source for non-utility governmental services.	local customer-owners, usually with a singular or particular emphasis on low energy rates, while covering debt service.
Financing	Financing comes from a combination of shareholder equity and debt (from the sale of bonds or bank borrowing).	Financing comes from debt, in the form of tax-free bonds.	Financing comes from debt, usually in the form of low-interest loans obtained from the federal government or a more local lender focused on serving cooperatives.
Retail Rate-Setting and Regulation	Rates are set by a public utility commission (PUC) through a public process that allows for the participation of customers and consumer groups.	Rates are set by elected officials or their designated governing entity, with regulatory oversight in some, but not all, states by a PUC. Regulation is generally limited because publicly-owned utilities are assumed to act in the public interest.	Rates are set by the Board, with regulatory oversight in some, but not all, states by a PUC. Regulation is generally limited because member-owned cooperatives are assumed to act in the members' interest.
Basis for Retail Rates	Set at a level designed to recover the utility's actual costs (including debt service) and create the opportunity for shareholders to earn a reasonable profit in return for the risk they bear for investing in new facilities.	Set at a level designed to recover the utility's actual costs (including debt service) and earn additional revenue to maintain bond ratings and invest in new facilities.	Set at a level designed to recover the utility's actual costs (including debt service and maintenance of required debt covenants) and earn additional revenue to invest in new facilities.

Implications for Solar Projects

Although utilities vary considerably in their views toward distributed generation, meaning there will always be exceptions to the rules, a few rules of thumb can help potential solar project developers anticipate the most likely response of their utility to a solar project proposal.

Investor-owned utilities (IOUs) recover their costs and make profits based in part on “volumetric rates,” i.e., a price per kWh of energy sold to retail customers. The more energy they sell, the more revenue they collect. This is often called the utility throughput incentive. Distributed solar projects will reduce a utility’s sales but will also, to at least some extent, reduce the utility’s costs. Thus, a key question is whether the utility’s costs drop more than or less than its revenues. The answer to this question will shape the IOU’s view toward any solar project. In cases where net revenues decline, the solar project will cut into profits. This leads many IOUs to be reluctant to take on more solar.²

Municipal and other publicly-owned utilities also recover their costs largely through volumetric rates, but they are not seeking to make profits for shareholders.³ If a solar project will lead to a reduction in net revenues, these utilities will have to raise retail rates or somehow cut costs just to break even, but there won’t be any frustrated investors threatening to move their capital elsewhere. Therefore, all else being equal, these types of utilities are more likely to be at least agnostic toward distributed solar projects. In addition, publicly-owned utilities are more likely than other utilities to be motivated by broader public policy goals. For example, many municipalities have adopted aggressive greenhouse gas reduction goals, and their municipal utility may be expected to help meet those goals by supporting solar projects, even if doing so could increase retail rates.

The same issues concerning net revenues and recovery of costs apply to electric cooperatives. Like municipal utilities, cooperatives are not concerned about making profits but they are often the most sensitive utilities toward retail rate impacts. Members of cooperatives are generally reluctant to support initiatives that could raise retail rates or be seen to benefit certain members at the expense of others. Cooperatives have sometimes been especially reluctant to adopt net metering tariffs for this reason, wherever the governing board perceives that a decline in revenues from those net metered customers would necessitate rate increases for other customers.

Does the Utility Operate in a Competitive Retail Energy Market?

Electric utilities in the United States operate under a variety of market structures, depending upon the states in which they operate. Some states allow “retail choice,” i.e., market competition for retail energy supply to electricity customers. Other states do not.

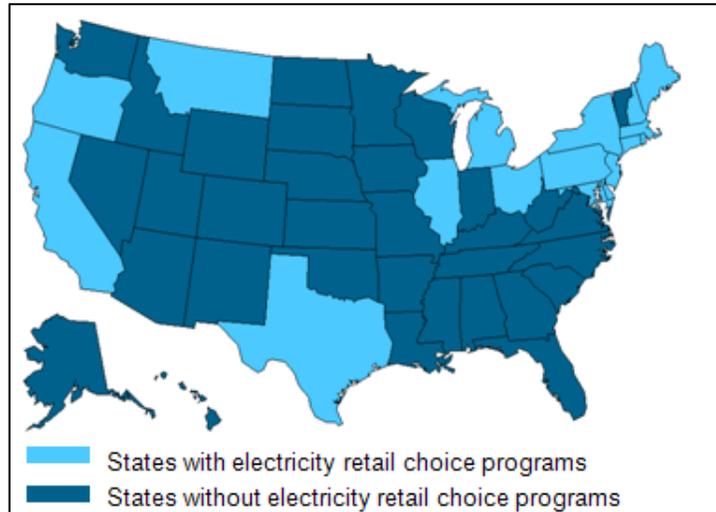
In competitive retail energy markets, customers can choose to buy energy from any retail energy supply company registered with the state, but they continue to pay their local utility for distribution services,

² In some states, regulators have adopted rate designs that “decouple” utility revenues from volumetric sales of energy. This can make the utility at least somewhat indifferent to the lost sales that result from solar projects. Reference documents explaining revenue decoupling can be found elsewhere in [Working with Utilities to Advance Solar](#).

³ Though not required to make “profits,” in some instances municipal electric utilities are required or expected to raise surplus revenues that are used by the municipality for non-electric purposes.

i.e., *delivery* of that energy over the utility’s “poles and wires”. In these markets, distribution service rates are set by the PUC or relevant utility governing board, but energy supply rates are unregulated. In states that do *not* allow retail choice, the PUC or utility governing board regulates the rates offered for both energy supply and distribution services. The status of retail choice is depicted in Figure 1.

Figure 1: Status of Electricity Retail Choice Programs⁴



Implications for Solar Projects

Utilities in retail choice markets are, in theory, indifferent about which company supplies energy to each customer. It would thus be tempting to think these utilities are indifferent about whether a customer owns or leases solar panels, or buys energy from a retail energy supply company. However, most of these utilities still depend heavily or entirely on volumetric rates to recover their costs for distribution service. When a customer installs solar, the utility delivers less energy and collects less revenue, but its costs for delivery service—which are based largely on the costs of poles and wires—might not decline at all. For that reason, utilities that only offer distribution services will see a decline in short-term net revenues when customers install solar, unless some form of revenue decoupling is in place. As explained above, a decline in net revenues can make a utility reluctant to support customers’ solar projects.

Does the Utility Own Generation Facilities?

Knowing whether a utility owns generation facilities may also help you understand its views toward solar. When a utility owns generation facilities, customer-owned and third-party-owned solar will reduce the need (and opportunity) for the utility to earn money by operating those generators and selling energy.

⁴ Source: U.S. Energy Information Administration. Even in those states that have programs, retail choice may not be available statewide or to all types of customers.

In most cases, utilities in retail choice markets are prevented by state law from owning generation. But even in places that do not allow retail choice, many utilities (especially smaller ones) do not own generation facilities. Those utilities instead purchase energy from wholesale suppliers and re-sell it to their customers at retail rates. The distinction is that those utilities maintain full control over the energy supply rate design and prices charged to customers, whereas utilities in retail choice markets do not.

Implications for Solar Projects

Utilities that do not own generation facilities, whether they are in a retail choice market or not, will be concerned about the potential impact of customer-sited solar projects on net revenues, unless they have a revenue decoupling mechanism in place. Utilities that do own generation plants may be even more reluctant to support customer-sited solar projects than utilities that don't, because they are trying to recover costs (and in the case of IOUs, earn profits) from their investment in those generation facilities by selling energy. In markets where utilities are allowed to own generation, even if a utility doesn't *currently* own generation, it may view distributed solar as precluding or reducing the opportunity to profit in the future from owning generation facilities.

Additional Considerations

Federal rules require all utilities to interconnect and offer to purchase energy from qualifying solar facilities with a rated capacity of 20 MW or less.⁵ Utilities can't prevent customers from installing such facilities, but they do have latitude on the interconnection requirements and on the prices they pay for purchased energy.⁶ In addition to the federal purchase obligation, many states require utilities to offer net metering or a subsidized price for solar energy, to buy specified amounts of solar energy, or to purchase specified amounts of renewable energy more generally. Utilities can be expected to fulfill all of their legal obligations, and this will sometimes make them eager to support customers' solar projects.

Conclusion

If you want to develop or promote a solar project, it helps to first understand what motivates your utility. Once you know its ownership structure, what kind of market it operates in, and whether or not it owns its own generation facilities, you will have a better handle on how likely the utility is to support solar. At the very least, knowing this information will help you understand whether there are areas of common interest upon which you can build a collaborative working relationship. A working understanding of these issues may also allow solar project developers and promoters to anticipate their utility's concerns and design projects that emphasize mutual benefits.

⁵ Refer to 18 Code of Federal Regulations, Part 292, Subpart C. Exceptions to this purchase obligation exist but are quite limited. Facilities larger than 20 MW are treated differently depending on market structures.

⁶ Under federal rules, utilities are not required to offer rates for purchased energy in excess of their "avoided costs." Avoided costs are defined as "the incremental costs to the utility of electric energy or capacity or both which, but for the purchase from the [qualifying solar facility], such utility would generate itself or purchase from another source." Utilities and state regulators vary considerably in how they interpret and calculate avoided costs, leading to widely varying offer rates for purchased power that can make or break a solar project. Actual avoided costs may also differ substantially between utilities operating under different market structures. Avoided cost issues are addressed in detail in other reference documents in [Working with Utilities to Advance Solar](#) toolkit.