Utility Rates

Designing Rates to Level the Playing Field for Clean Energy Supply

Electric utilities may apply different rates and charges to clean energy supply projects (i.e., renewable energy and combined heat and power [CHP]) than they do to customers that do not generate electricity. These charges are designed to recover reduced income or provide for special services that are required due to the unique operating profile of clean distributed generation (DG) projects. If not properly designed, these additional rates and charges can create unnecessary economic barriers to the use of renewables and CHP. Appropriate rate design is critical to allow for utility cost recovery while also providing appropriate price signals for clean energy supply.

How Can Utility Rates Affect Clean Energy?

Customer-sited clean DG projects are usually interconnected to the power grid and may purchase electricity from or sell electricity to the grid. Depending on the specific DG system design, operating conditions, and load requirements of the facility, the system may

What Are the Benefits of Developing Utility Rates to Support Clean DG?

DG is the generation of electricity at or near the energy end-user. Clean energy technologies include renewable energy sources such as solar, wind, geothermal, biomass, biogas, and low-impact hydroelectric, as well as CHP (the simultaneous generation of electric and thermal energy from a single source).

Clean DG projects yield numerous public benefits, including:

- Bringing economic development to a state.
- Reducing peak electrical demand on the grid.
- Reducing electric grid constraints.
- Reducing the environmental impact of power generation.
- Reducing fuel price volatility.
- Helping states achieve success with other clean energy initiatives.

The use of utility rates to encourage DG in targeted load pockets can:

- Yield improvements to grid system efficiency by reducing grid congestion.
- Provide additional reserve power and reduce system losses.
- Defer or displace more expensive transmission and distribution infrastructure investments.
- Improve stability from reactive power and voltage support.

provide anywhere from 0 to greater than 100 percent of electricity needs at any given moment. When the unit produces less than the full electricity requirements, power is purchased from the grid. When the unit produces more than is required, power can be sold back to the grid, depending on grid access.

The rates and conditions applied to the services associated with interconnection and the rates offered by utilities to buy back electricity from clean energy generators have a significant effect on the economic viability of clean energy projects. Figure 1 shows how utility rates can have a large impact on electricity savings from a 1.3 megawatt (MW) onsite CHP project.

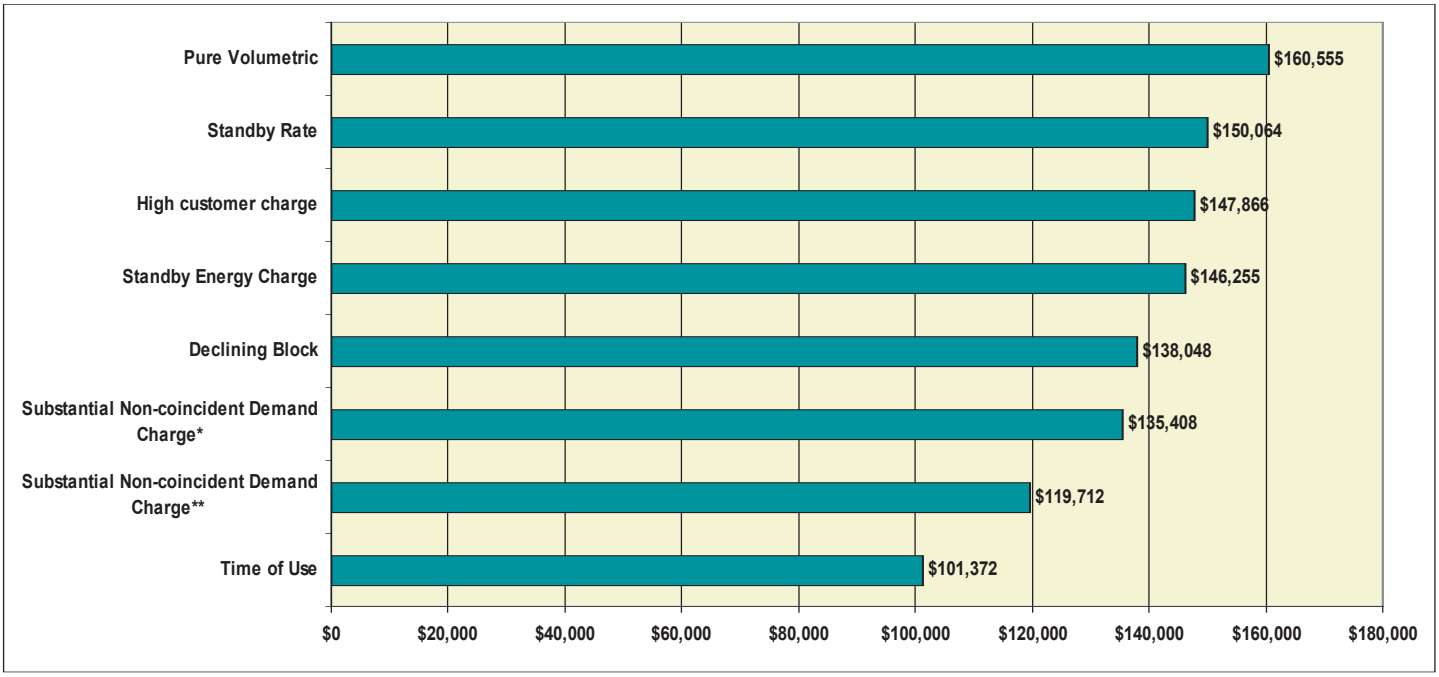
What Types of Utility Rates Affect Clean Energy?

Under conventional electric utility ratemaking, electricity suppliers are paid largely according to the amount of electricity they sell or distribute. If customers purchase less electricity due to onsite generation projects, the utility has less income to cover its fixed costs. Many utilities have received regulatory approval for a variety of rate designs and charges to offset reduced margins that can result from onsite generation. Some states, however, are beginning to explore whether these rates and charges are creating unwarranted barriers to the use of clean energy supply, because applying them overlooks the system-wide benefits that onsite power may provide.

Some of the rate issues that states are addressing include:

- *Exit fees.* Exit (or stranded asset recovery) fees have typically appeared in states that have restructured their electric utility. To avoid potential rate increases due to load loss, utilities may be authorized to assess exit fees on departing loads to recover the fixed costs of capital assets without shifting these costs onto remaining customers. However, many factors affect utility rates and revenues (e.g., customer growth, climate, fuel prices, overall economic conditions). It does not naturally follow that any reduction in load will necessarily result in increases in cost—an issue states are beginning to examine.
- *Standby and related rates.* Facilities that use renewables or CHP usually need to have standby power accessible when the system is unavailable. For these facilities, electric utilities often assess standby charges to cover the additional costs of the generating, transmission, or distribution capacity required to supply intermittent service. The utility's concern is that the facility will require power at a time when electricity is scarce or at a premium cost, and that it must be prepared to serve energy loads during such extreme conditions. Nevertheless, the probability that all interconnected small-scale distributed generators will need power at the same time is relatively low. Consequently, states are exploring alternatives to standby rates that may more accurately reflect realistic system operating conditions.

Figure 1. Effect of Rate Structure on Electricity Savings for a 1.3 MW CHP Project



* No Ratchet **Ratcheted

Source: Energy and Environmental Analysis, Inc.2005

- *Buyback rates.* Renewable and CHP projects may have electricity to sell back to the grid, either intermittently or continuously. The payment received for this power can be a critical component of project economics. The price that the utility is willing to pay can vary widely and is affected by federal requirements (e.g., Public Utilities Regulatory Policy Act standards) and other state policies. For example, net metering regulations allow small generators a guaranteed price at the utility's retail cost, a price that is generally considered to be reasonable for small (<1 MW) generators.
- *Gas rates for CHP facilities.* Some states, including New York, California and Connecticut, have established special favorable natural gas rates for CHP facilities. For example, New York has required that gas rates for DG facilities be frozen until at least 2007 to provide economic certainty to developers. California offers a significant discount in its transmission and distribution rate to cogeneration facilities. Connecticut will waive the natural gas delivery charges for customer-sited DG.

What Can States Do?

States are employing new strategies to avoid undue barriers and to provide a reasonable rate structure that balances appropriate cost recovery for utilities with the societal benefits of renewable and CHP projects. Some of these approaches include the following:

- States are evaluating new rate designs to "decouple" utility profits from sales volume. Alternative rate structures, such as performance-based rates, would remove the disincentive for utilities to support clean DG projects.
- States are attempting to ensure that rates are based on accurate measurement of the costs and benefits of clean DG. For example, California has funded a study that investigates the effects of DG on the performance of an electric power transmission and distribution system. This report presents a methodology to quantify the potential benefits of these projects (Evans 2005).
- States may wish to explore ways to ensure that the benefits of clean DG that can accrue to the electricity grid (e.g., increased system capacity, potential deferral of transmission and distribution investment, reduced system losses, improved stability from reactive power and voltage support) are reflected in rates.

Which States Have Implemented Utility Rates That Support Clean Energy?

As of December 2006, several states had made changes to utility rate structures. These changes promote CHP and renewables as part of larger efforts to support cost-effective clean energy supply as an alternative to expansion of the electric grid.

- California and New York have established revised standby rate structures that ensure fair and reasonable treatment of clean DG. Other states have adopted exit fee exemptions for existing loads that leave a utility's distribution system. Illinois, Massachusetts, and New York allow certain levels of exemption from these fees for loads that are replaced by clean DG, specifically CHP and renewables.
- In 2004, the Oregon Public Utilities Commission (PUC) approved a settlement regarding Portland General Electric Company's (PGE) tariffs for partial requirements customers. The load served by the onsite generation is treated in the same manner as any other load on the system, which, under Oregon rules, is obligated to have (or contract for) its share of contingency reserves. The onsite generation is, in effect, both contributing to and deriving benefits from the system's overall reserve margin. Under the new rates, the partial requirements customer must pay or contract for contingency reserves equal to 7.0 percent (3.5 percent each for spinning and supplemental reserves) of the "reserve capacity" (i.e., either the nameplate capacity of the onsite unit or the amount of load it does not want to lose in case of an unscheduled outage; if the customer is able to shed load at the time its unit goes down, then it will be able to reduce the amount of contingency reserves it must carry). A similar pricing package has been adopted by PacifiCorp.
- More than 30 states have net metering regulations that provide small generators a guaranteed purchase price for their excess generation at the distribution utility's retail cost.
- Three states have established special gas rates for electric generators, including CHP projects. California has special gas tariffs for all electric generators. In 2003, the New York Public Service Commission ordered natural gas companies to create a rate class specifically for DG users and certify that they had removed rate-related barriers to DG. In 2005, the Connecticut Energy Independence Act included a provision that the natural gas delivery charges for customer-sited DG be waived and those costs recovered by the electric distribution company.

Elements of a Successful Policy

Based on the experiences of states that have implemented utility rates to support CHP and renewable energy, a number of best practices have emerged. These best practices include:

- Ensure that state PUC commissioners and staff have current and accurate information regarding the rate issues for CHP and renewables and their potential benefits for the generation system.
- Open a generic PUC docket to explore actual costs and system benefits of onsite clean energy supply and rate reasonableness, if this cannot be addressed under an existing open docket.
  - State energy offices, energy R&D offices, and economic development offices can be important sources of objective data on actual costs and benefits of onsite generation.
  - Energy users can help provide data to ensure utility rate reasonableness when examining costs and system benefits of existing and planned onsite clean energy supply projects.
- Establish a working group of interested stakeholders to consider design issues and develop recommendations for favorable rates. Key stakeholders include:
  - PUCs.
  - Electric utilities and competitive electric service providers.
  - Developers of CHP and renewable energy systems, and trade associations that represent these interests.
  - Regional Transmission Organizations (RTOs) or Independent System Operators (ISOs).
  - State Energy Offices, Energy R&D Agencies, and Economic Development Authorities.
  - Current renewable energy and CHP users.
- Identify if existing or pending renewable portfolio standards or other policies, which might be significant drivers to new onsite clean DG, generate a need for rate evaluations.
- Whenever new rates are adopted, monitor utility compliance, pace of new clean energy installations, and impact on rate payers. Unanticipated or adverse ratepayer impacts can be addressed through implementing or adjusting cost caps or other appropriate means.

EPA Assistance Available

The EPA CHP Partnership is a voluntary program that seeks to reduce the environmental impact of power generation by promoting the use of cost-effective CHP. The Partnership assists state policy-makers and regulators in evaluating opportunities to encourage CHP through the implementation of policies and programs. See *www.epa.gov/chp.*

Additional Resources

EPA has created *The Clean Energy-Environment Guide to Action*. The Guide provides an overview of clean energy supply technology options and, in addition to utility rates, presents a range of policies that states have adopted to encourage continued growth of clean energy technologies and energy efficiency (e.g., interconnection standards, system benefits charges, output-based regulations). The Guide is available at *www.epa.gov/cleanenergy/stateandlocal/guidetoaction.htm.*

The Regulatory Requirements Database for Small Generators is an online database of regulatory information for small generators. It includes information on standby rates and exit fees, as well as environmental permitting and other regulatory information. See *www.eea-inc.com/rrdb/DGRegProject/index.html.*

California has funded a study, Optimal Portfolio Methodology for Assessing Distributed Energy Resources Benefits for the Energynet (Evans 2005) that addresses the question of whether DG, demand response and localized reactive power sources can be rigorously shown to enhance the performance of an electric power transmission and distribution system. This report presents a methodology to determine the characteristics of distributed energy resource projects that enhance the performance of a power delivery network and quantify the potential benefits of these projects. See *www.energy.ca.gov/2005publications/CEC-500-2005-061/CEC-500-2005-061-D.PDF.*

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