

Appendix E: Revision of Utility Distribution Franchise Regulations to Allow Non-Utility CHP to Serve Neighboring Load

E.1 Overview

The focus of this Appendix is utility distribution franchise regulations that prohibit non-utility CHP systems from serving neighboring electric and thermal demands.²⁴¹ Specifically, a discussion of whether a non-utility CHP system serving its own load and other nearby electric and thermal loads is exempt from being defined as a public utility subject to regulatory oversight; and if CHP is exempt, the conditions that must be considered by which contiguous loads can be served.

Allowing CHP systems, including CHP in microgrids,²⁴² to sell power and/or thermal energy to neighboring retail customers may provide certain additional benefits beyond those of using the CHP system for on-site power and thermal use only:

- Grid operators:
 - Reduce congestion on the T&D system, improve electrical flows and grid operating efficiency, resulting in reduced operating costs^{243, 244}
 - Increase energy security for the microgrid and consequently, may increase the security of portions of the grid as a whole.²⁴⁵
- CHP end-user:
 - Enable more appropriate sizing of the generator or the use of multiple/mixed generation units to meet electric and thermal loads
 - Allow the CHP operator to negotiate rates with potential customers, creating mutual energy cost savings.²⁴⁶
- Microgrid operators:
 - Promote efficiency by consolidating demand loads, allowing for better balancing of loads and resources (CHP, demand side management, renewable resources, and storage)²⁴⁷
 - Potentially enhance the resiliency of the microgrid to respond to outages on the interconnected system outages²⁴⁸
 - Reduce capital costs of all systems through economies of scale and integrated usage.²⁴⁹

²⁴¹ There are other considerations to prohibiting non-utility generators, including CHP, from serving neighboring electric and thermal demands. This appendix is not an exhaustive discussion, but rather focuses on the impacts to CHP of revising distribution franchise .

²⁴² A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity relative to the grid. Microgrids can connect and disconnect from the grid to enable operation in both grid-connected or island-mode. For more information, see <http://energy.gov/sites/prod/files/Microgrid%20Workshop%20Report%20August%202011.pdf> and <http://law.pace.edu/energy/presentations/rob-thornton-capturing-benefit-microgrids-district-energy-communities>.

²⁴³ The Effect of Private Wire Laws on Development of Combined Heat and Power Facilities, Pursuant to Section 1308 of The Energy Independence and Security Act of 2007, p. 58. Jan. 12, 2009.

²⁴⁴ Viawan F. "Voltage Control and Voltage Stability of Power Distribution Systems in the Presence of Distributed Generation." PhD Thesis. Chalmers University of Technology. Göteborg, Sweden. 2008.


²⁴⁵ Ibid, p. 3.

²⁴⁶ These opportunities would occur in electric and thermal sales to customers on adjacent properties and customers separated from the CHP facility by a public street.

²⁴⁷ http://ssi.ucsd.edu/index.php?option=com_content&view=article&id=416:smart-power-generation-at-ucsd-november-1-2010&catid=8:newsflash&Itemid=20.

²⁴⁸ Microgrids: An Assessment of the Values, Opportunities, and Barriers to Deployment in New York State. Final Report 10-35. September 2010. <http://nechpi.org/wp-content/uploads/2012/07/NYS-Microgrids-Roadmap.pdf>.

²⁴⁹ Ibid.

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- Microgrid customers:²⁵⁰
 - Ensure energy supply for critical loads
 - Control power quality and reliability at the local level
 - Promote customer participation through demand-side management and community involvement in electricity supply.

Vertical Integrated Utility Context

Traditionally, most electrical service is served by vertically integrated utilities (generation, transmission and distribution under single ownership) as a regulated monopoly franchise.²⁵¹ As a monopoly supplier with the exclusive right and obligation to serve for their service territory, no competition is allowed and in exchange the utility is regulated by the state utility commission. The relationship is considered to be protected in that utilities receive a fair rate of return for their investment in serving the customers, and regulators achieve ratepayer protection and the goal of ensuring a safe and reliable supply of electricity. Whether in restructured or non-restructured (distribution of electricity is decoupled from generation and transmission) states, customers serving their own load represent franchise erosion—the loss of a customer and attendant electricity sales.

Service to Multiple End-Users on Neighboring Property

An on-site CHP system primarily serves the facility's electric and thermal demands. Serving multiple loads on contiguous properties begs whether the facility is functioning in much the same manner as the franchise utility and therefore should be subject to regulation. Non-restructured and restructured states have addressed service to neighboring loads in different ways, dependent to an extent on whether retail choice is allowed in the state:²⁵²

- Retail choice states generally allow service to neighboring properties.
- Non- retail choice states generally do not allow service to neighboring properties and those few states that do, allow service under limited conditions.

The factors considered for service range from the relationship between the producer and the end-user, the number of customers served, and/or the contiguous relationship of the properties involved.

Private Wires versus Utility Distribution Wires

For the past 20 years, states with restructured electricity markets have allowed non-utility electric generators of to compete in generation and retail sales. However, the electric distribution grid, the wires that carry the electricity to end-users, remains a natural monopoly.

Each state has rules governing the use of utility lines or private wires to deliver power to serve neighboring loads. Section 1308 of the Energy Independence and Security Act of 2007 directed the U.S. Department of Energy to undertake a study of the laws affecting the siting of privately-owned distribution wires on or across public rights of way and to consider the impact of those laws on the development of CHP facilities, as well as to determine whether a change in those laws would impact utility operations, costs or reliability, or impact utility customers. The study also considered whether changing the laws would result in duplicative facilities and, if so, whether that would be desirable.²⁵³ The study defined private wires as “wires that are not owned by an electric utility and that are designed to provide electric service directly from a non-utility generator to one or more end-use customers on terms negotiated between the parties without regulatory oversight or involvement.” The findings of the study include the following:

²⁵⁰ <http://energy.gov/sites/prod/files/Microgrid%20Workshop%20Report%20August%202011.pdf>.

²⁵¹ The Effect of Private Wire Laws on Development of Combined Heat and Power Facilities, Pursuant to Section 1308 of The Energy Independence and Security Act of 2007, p. 58. Jan. 12, 2009. Page 36.

²⁵² Ibid.

²⁵³ <http://energy.gov/oe/downloads/effect-private-wire-laws-development-combined-heat-and-power-facilities>.

- In states with retail choice, alternative suppliers are exempt from the definition of a public utility. Distribution of electricity remains the responsibility of the franchise utility, and except for states with limited exceptions, alternative retail suppliers must use the utility wires and compensate the utility according to tariffed rates.
- In states without retail choice, end-use customers can only buy power from the franchised utility. Self-generation is allowed but in most states, the generator cannot serve other customers. However, some States permit a CHP owner to serve other customers under limited conditions (Minnesota, California, Texas, New Jersey, New York, and Iowa).
- Private wires are inconsistent with the regulated utility franchise model. However, several states have nonetheless chosen to permit private wires under limited circumstances, including, in some states where the wires are used to provide generation specifically from CHP units. The issues surrounding private wires are complex. There are operating, planning, and rate issues, in addition to potential concerns regarding public safety and grid safety. The customer and utility impacts of permitting private wires could be significant and could vary from utility to utility, as well as from state to state.
- It is not clear that existing restrictions on private wires per se are materially hampering the development of CHP.²⁵⁴ There are many different factors that impact the development of CHP, including the economics of particular projects, as well as the economy of a region. Not every state has the same technical potential for CHP. Other factors are cited as more significant by some developers. Nonetheless, private wires restrictions may be a factor in some cases, where they may improve the economics of the project.
- Private distribution wires, if constructed, would be duplicate facilities in many respects. Customers served by the private wires would likely also be connected to the local utility's distribution system. While there are potential benefits from duplicate facilities, there are also operational, reliability, and safety challenges from the utility's perspective, since the wires would not be controlled by the utility. In addition, multiple sets of wires and other distribution facilities raise concerns as to aesthetics, public safety, and public inconvenience.

E.2 Successful Implementation Approaches

There are several states that have chosen to specifically exempt CHP from being a public utility in order to achieve clean energy and environmental policy goals.

California

California allows a narrow exception to CHP facilities selling power to neighboring loads. A CHP facility, under existing regulatory rules, selling to contiguous loads is not an electrical corporation under certain conditions.²⁵⁵ A CHP facility can, in addition to using power to meet its own load, sell electrical power to its neighbors over private wires to not more than two other corporations on the same property or to the immediately adjacent properties. These sales are known by their public utility code section as "over-the fence" transactions.²⁵⁶ When there is an intervening public street constituting the boundary between the property of the CHP facility and the adjacent property, the following apply:²⁵⁷


- The two properties cannot be under common ownership or be a subsidiary or affiliate of the company selling the output.
- The thermal output cannot be used on the adjacent property for petroleum production refining.

²⁵⁴ Thermal sales are an important economic consideration. For a discussion of utility participation in CHP markets, including thermal sales, see Chapter 6.2.

²⁵⁵ California PUC Code Section 218(b).

²⁵⁶ California PUC Code 353.13 (a).

²⁵⁷ California PUC Code 218 (b) (2).



Approximately six over-the-fence transactions exist in California.²⁵⁸ These applications are mostly in oil refining areas of the state such as in Bakersfield and Contra Costa County; however confidentiality rules prevent specific customer identification.

One novel case of CHP development and exemption from the definition of public utility involves two commercial buildings under common ownership in San Diego. A CHP system was installed at Regent 1 to serve electrical loads in both buildings (Regent 1 and 2) and thermal load at Regent 1 only. Underground electrical conduits run from the CHP system at Regent 1 to Regent 2.²⁵⁹ To avoid being designated as an electrical corporation, the developer kept the street between the two buildings under private ownership.

New Jersey

New Jersey allows electricity sales in a limited fashion for CHP systems that sell electricity to thermal customers that are non-contiguous or separated by a right-of-way. To address this and a number of related issues, New Jersey enacted a law in 2010 that provided the following:²⁶⁰

- Clarified that a CHP facility is not a public utility.
- Clarified, for purposes of electric or thermal sales, that the properties of the end-use customer and of the CHP facility are contiguous regardless of whether the customer is located across a street, easement or utility right-of-way.
- Extended the definition of “on-site generation” to include CHP facilities that service non-contiguous thermal loads (heating or cooling or both) of an end-use customer that may be located across a street, easement or utility right-of-way.
- Extended the sales tax exemption for sales of energy from CHP built after January 1, 2010
- Mandates that the delivery of electric power from a CHP facility is to be through the local utility’s distribution facilities at the normal applicable tariff rate. New Jersey desired “to avoid duplication of distribution infrastructure and to maximize economic efficiency and electrical safety.”

The 2010 law has not yet had immediate results. This may in part be due to the potentially small number of qualified CHP systems that meet the narrowly defined ruling, and the time required to implement the law.²⁶¹ CHP project developers are expected to confer with the Board of Public Utilities to determine consistency with the law.

New York

The New York Public Service Commission will review the circumstances of CHP generated electricity sales across public rights- of-way on a case-by-case basis. An example is the Burrstone Energy Center, located in Oneida County, New York. This project is a 3.6 MW CHP system at St. Luke’s Hospital with electric service to St. Luke’s residential Health Care Facility on the same property, and electric service via privately-owned underground wires to Utica College across the street.²⁶² The thermal output is used on-site at the hospital. A number of design and legal issues confronted the project. The design of the CHP system was dictated by Public Service Commission rules that require that each of the loads be served separately and not be tied together into a common electrical interconnection point. If the loads could have been electrically tied together at a common bus, the efficient design solution would have been a single turbine. Instead, four engines were installed to meet the separate loads.

²⁵⁸ Personal communication between ICF and Pacific Gas and Electric Company.

²⁵⁹ Personal communication between ICF and Randy Minnier, electrical engineer for the CHP system installed at Regents 1 and 2.

²⁶⁰ P.L. 2009, Chapter 240, amending and supplementing C.48:3-51 (enacted Jan. 16, 2010). [www.njleg.state.nj.us/2008/Bills/AL09/240 .htm](http://www.njleg.state.nj.us/2008/Bills/AL09/240.htm).

²⁶¹ A utility commission needs 12 to 18 months to promulgate regulation; sales and negotiation of contract between the project developer and the end-user can take 18 to 24 months; permit acquisition and engineering design can take one to two years; and construction time can take 1 to 2 years; total time can range from four to six years.

²⁶² Communication with John Moynihan, Division Manager, Cogen Power Technologies. Bette & Cring. Aug. 28, 2012.

The legal issues of the Burrstone project were reviewed by the NY Public Service Commission (PSC) in 2007. The first legal issue was whether the project was subject to PSC regulation. The second issue was whether the service to multiple users separated by a street, was an acceptable departure from precedent which held that CHP facilities could only serve one user owning property on both sides of the street.

Burrstone sought a declaratory ruling that its CHP facility and the line to the college constitute related facilities located at the same project site, and therefore it is not subject to PSC regulation under Public Service Law. In addressing the legal issues, the PSC, consistent with a set of previous rulings, expanded the rights of CHP operators to provide service to third parties at or near a project site. The PSC found:²⁶³


- Burrstone's electric and steam distribution lines to the hospital, electric line to the health care facility, and the underground line to Utica college are related cogeneration facilities and therefore not subject to regulation.
- Public Service Law contemplates multiple users and does not require users share property ownership rights.



Source: Presentation by John Moynihan, Senior Project Manager, Cogen Power Technologies. U.S. EPA CHP Partnership 2009 Annual Partners Meeting.

Figure F.1. Schematic showing the physical layout of the Burrstone Energy Center at the hospital, the St. Luke's nursing home, and Utica College.

²⁶³ Declaratory Ruling on Exemption from Regulation. Case 07-E-0802. Issued and effective Aug. 28, 2007.



The Burrstone example delineates the following legal boundaries that would need to be examined by the PSC in future CHP project-specific reviews:

- How many customers may be served by the CHP facility?
- How widespread geographically may the CHP facility, “its related facilities,” and its users be?
- At what point do public health and safety concerns become issues?
- Will the same rules and policies be applied uniformly across the state? There are more potential CHP customers per square mile in New York City as compared to a typical upstate project site. Would the number of customers, or the geographic footprint, impact the PSC’s analysis of downstate CHP projects?

A CHP project attempting to cross public ways within New York City would require an additional “revocable consent” from the NYC Department of Transportation.

How the Criteria Are Addressed

Policy Intent. Establishing explicit rules that provide for multiple loads on contiguous properties to be served by electric and / or thermal outputs from a CHP facility requires careful balancing of policy considerations. The fulfillment by utilities of its obligation to serve in exchange for a monopoly franchise and a reasonable return on its investments is a cornerstone of the regulatory compact. New York and New Jersey are examples of “leading states” whose experience provide lessons learned for other utility commissions. In the broader context, CHP serving multiple loads on contiguous properties can help achieve a state’s efficiency and environmental goals.

Market Signals. Regulatory rules that provide for the delivery of electricity and/or thermal output to multiple contiguous loads on adjacent properties or across a public thoroughfare signal the market for such development. Such rules can be a factor for businesses that seek increased reliability, have expansion plans, and job retention/creation objectives that become achievable due to potential lower energy costs. The examples described for New York, New Jersey, and California represent energy savings through increased efficiencies of the CHP system compared to separate heat and power to help sustain local business.

Ratepayer Impact. The concern of customer load leaving the utility rate base is a significant policy consideration that state regulators will balance in context of their clean energy goals and other requirements. New Jersey’s approach was to seek greater CHP deployment and at the same time prevent cross-subsidies by requiring payment of their state-specific fees—the societal benefits charges, market transition charge, and transition bond charge. This minimizes ratepayer impact and provides the CHP customer with electric and natural gas bill savings.

E.3 Conclusion

A number of states have exempted CHP serving off-site loads from being an electrical corporation. Though some states prohibit any electric and thermal sales to end-users on contiguous properties, other states allow CHP facilities to serve off-site customers separated from the on-site CHP facility by a public street or other right-of-way. State regulators can address the issues associated with regulation invoking the definition of an electrical corporation and the implications of multiple loads on contiguous property. CHP offers efficient and practical solutions for the on-site customer hosting the facility and for multiple other customers on contiguous properties.²⁶⁴ The following issues can be considered in developing a successful state implementation approach:

- Whether to allow electricity and /or thermal energy to be served only to immediately adjacent customers or to non-contiguous customers or customers across a public thoroughfare
- How restrictive or expansive in determining what constitutes CHP “related facilities”
- Whether to allow private wires or mandate use of local utility wires
- Whether to allow service to the same owner or different owners of load on contiguous properties.

²⁶⁴ <http://law.pace.edu/energy/events/capturing-benefits-microgrids-and-district-energy-systems-communities>.