Combined Heat and Power:
Connecting the Gap Between Markets and Utility Interconnection and Tariff Practices (Part II)

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EXECUTIVE SUMMARY

Although many states have been making notable progress on combined heat and power (CHP) policies, significant barriers continue to hinder the realization of CHP's nationwide potential. In particular, individual utility policies and practices, especially relating to interconnection and tariffs, have long been identified by ACEEE and others as a major barrier to the expanded adoption of CHP. The main driving force behind this project was to examine utility policies across the nation relating to CHP and distributed generation (DG) in order to identify utility barriers to entry for proposed CHP facilities. We also wanted to identify the hierarchy that currently exists with regards to the progressivism of CHP policies on a state-by-state and regional basis. Additionally, we wanted to highlight the most appropriate policy options that might help the CHP industry move forward.

Given the fact that utility policies vary dramatically nationwide, we sought to explore the range of friendliness to CHP on an individual utility basis. In order to illustrate the clear hierarchy that exists regarding utility operations towards the adoption of CHP, we have created the following four-tier stratum.

- Level Four: those actively promoting the adoption of CHP through varied incentives
- Level Three: those not explicitly promoting the adoption of CHP, but willing to work with industry
- Level Two: those ambivalent, by choice or regional market trends
- Level One: those actively working against the adoption of CHP

We have divided this project into two parts. Part I encompassed the initial study, which focused on the major utilities operating in 15 states. Those states were as follows:

- California
- Connecticut
- Florida
- Georgia
- Iowa
- Massachusetts
- Minnesota
- Nevada
- North Carolina
- South Carolina
- Tennessee
- Texas
- Utah
- Washington
- Wisconsin

Part I provided background information on CHP and identified some of the main barriers to new projects including interconnection, tariff rates, safety issues, spark spread, utility awareness of CHP benefits, and disincentives for utilities caused by utility regulation. Part I also explored some emerging trends relating to interconnection, the utilities themselves, and the developing regional initiatives. The report for Part I can be found at http://www.aceee.org/pubs/ie062.htm.

In this report, Part II, we focus on the remaining states not covered in Part I. These states are as follows:

- Alaska
- Alabama
- Arizona
- Arkansas
- Colorado
- Delaware
- District of Columbia
- Hawaii

- Idaho
- Illinois
- Indiana
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Michigan
- Mississippi
- Missouri
- Montana
- Nebraska
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Dakota
- Virginia
- Vermont
- West Virginia
- Wyoming

There is, however, significant overlap in terms of the states between Part I and Part II since many of the utilities covered in Part II have service territories in multiple states including some of those covered in Part I. Though the main focus of Part II is on the states listed above, it is also meant to provide national and regional perspectives. The appendices of this report include information from all the utilities covered in both Part I and Part II. The discussions of the results have been organized by region—the majority of the utility details center around the Part II states, but the overall trends and general regional information are meant to encompass the entire United States. We have tried to avoid repetition in Part II and therefore often refer readers back to Part I where they can find a significant amount of background information.

In addition to the information in the body of this report and the appendices, we will be releasing a Microsoft Access database that will include all the research and information we gathered relating to (and directly from) the utility companies over the course of this project. The database will be available for download on our Web site (http://www.aceee.org/chp/index.htm) soon after the release of this report.

BACKGROUND

CHP systems, also known as cogeneration, generate electricity and thermal energy in a single, integrated system (Elliott and Spurr 1999). CHP is not a technology, but an approach to applying technologies. CHP is more energy efficient than separate generation of electricity and thermal energy. Heat that is normally wasted in conventional power generation is recovered as useful energy for satisfying an existing thermal demand, the heating and cooling of the building and water supply, thus avoiding the losses that would otherwise be incurred from separate generation of power, as shown in Elliott and Hedman (2001). CHP systems provide three general categories of benefits—environmental, economic, and transmission and distribution (T&D) (Shipley et al. 2001).

Although the adoption of CHP by U.S. industry has made significant strides in recent years and many states have been making notable progress on CHP policies, significant barriers continue to hinder the realization of CHP's nationwide potential. In particular, individual utility policies and practices relating especially to interconnection and tariffs have long been identified by ACEEE and others as a major barrier to the expanded adoption of CHP, as discussed in Part I[1] (Brooks, Elswick, and Elliott 2006). Some of the main barriers to new projects include interconnection, tariff rates, grid safety issues, spark spread, utility awareness of CHP benefits, and disincentives for utilities caused by utility regulation. CHP systems have not had uniform access to the electric power T&D system, and there is no standardization in the utility tariffs related to CHP. As a result, a CHP project may find a more or less favorable opportunity depending upon where it is located or what electric utility serves the facility. In addition, state regulations and policies may provide incentives or disincentives to CHP facilities, as was discussed in Brown and Elliott (2003). A more detailed background discussion of CHP technologies and implementation issues can be found in Part I.

EMERGING TRENDS

While Part I placed the utilities' policies in a regulatory context, Part II looks more deeply at market trends. Thus, the emerging trends section below focuses on a few key emerging market developments including: the recent increase in multi-state mergers, the problem of fluctuating spark spread, and the inclusion of CHP in renewable portfolio standards (RPS's). As we conducted our research, these three new trends clearly stood out as developments that will play an integral role in determining where the future of CHP in this country is headed. Thus, the CHP community should pay close attention to how these three trends unfold in the coming years.

Multi-State Mergers

One of the major trends that we have seen emerging recently is the increase of large multi-state utilities through mergers and acquisitions. We made note of this development in Part I, but the trend has continued to evolve and expand, thus making it important that we discuss its relevance and implications for CHP and other distributed energy markets further in this more

[1] Part I can be found at http:/www.aceee.org/pubs/ie062.htm.

nationally comprehensive report. The acquisition of Cinergy by Duke Energy and Pacificorp by MidAmerican are just two of the most recent major mergers. It is important that the CHP community pays close attention to these changes and fluctuations in the utility industry for reasons that will be discussed below.

There appear to be two major market models with respect to treatment of CHP and other issues when we look closely at these large multi-state utilities. In the first model, each subsidiary of the parent company acts independently of one another. Each has its own unique policies and operates in its territory almost entirely independently—at least in terms of customer policies—from its counterparts in other states. In the second model, the utility has attempted to harmonize some or all of its customer policies across its subsidiaries and states in which it provides service. In reality, the models are not as discrete as might be suggested because some customer policies are imposed by the regulatory environment in which they operate, but the distinction remains a useful concept. Some examples of multi-state utilities that follow the first model are American Electric Power (AEP), Xcel Energy, and Exelon. Some that follow the second model are Entergy, Southern Company, National Grid (in its New England states—New York seems to operate separately), Progress Energy, Allegheny Power, and Dominion.

The issue of consistency of policy is an important one for CHP and other distributed energy markets. On one hand, consistency of policy implies predictability on the part of the utility and can help facilitate the implementation of CHP projects. If a utility's policies are clearly outlined and harmonized across its territories, it may be easier for CHP developers to interconnect because they will know what to expect from the utility, and it is likely that the process will be more straightforward and predictable. Additionally, if a utility is fairly friendly towards CHP and has uniform policies like tariffs for standby, backup, and supplemental power, and interconnection standards, it is clearly beneficial to CHP for these policies to be implemented over as large a service territory as possible. On the other hand, in some cases, large multi-state utilities are relatively hostile when it comes to CHP projects. These utilities may have no provisions for CHP interconnection, which means that it would still have to be addressed on a case-by-case basis making the process unpredictable and therefore more intimidating to a developer. Or, the utility may have unjustifiably high standby or supplemental rates (see Part I, pages 2–3) that could be synchronized across territories and thus have a chilling effect on projected CHP projects. Therefore, though predictability is often positive for CHP, harmonization of policies does not always make things easier for adoption of CHP applications. A good example of this scenario will be discussed later in this report in the regional Southeast discussion section, which starts on page 25.

When we look at some of these large utility mergers, it is important to look at whether the newly integrated utility appears likely to synchronize its policies over its newly expanded territories. The acquisition of Cinergy by Duke looks as though it will lead to a complete merger of the companies. In other words, the two utilities will not run in parallel in any separate manner, but will merge fully into one integrated utility (Duke). When Cinergy was formed through the unification of PSI Energy, Cincinnati Gas & Electric (CG&E) and Union Light, Heat and Power, we saw the complete integration across the three-state service

territory. In addition, Cinergy has had a history of very capable and organized management, (some of whom have been relatively active within the CHP community), and it is likely that a good amount of the old Cinergy management will accompany the Chair of Duke, James Rogers, to the "new" Duke. All this suggests that it is likely that the new Duke will likely harmonize its policies across its newly acquired territories. It is still unclear what those policies will be—whether they will resemble (either partially or entirely) either the old Cinergy or Duke policies, but it seems likely that the policies will be synchronized.

In contrast, the MidAmerican acquisition of Pacificorp looks as though it will not be a complete merger. The representative we contacted at MidAmerican was unsure about exactly how the merger would play out, but suggested that the utilities were likely to run in parallel to each other, retaining many, if not all, of their old policies and running in much the same way they did before, but only with different ownership. MidAmerican, like Cinergy, has had a history of harmonizing its policies, but there may not be any synchronization with its new Pacificorp partner. It will be extremely important for the CHP community to pay close attention to these changes and watch how these large mergers transform the utilities and regions they affect.

Figure 1 shows the multi-state utilities covered in this report. (Please note that the colored states do not represent the service territories of the utilities illustrated, but the states in which each utility operates.) The utilities in these maps correspond to the utilities listed in Table 1 on page 5.

Fluctuating Spark Spread

Another important trend the CHP community must be aware of is the continuously changing spark spread. Spark spread, as discussed in Part I, is the difference between the price of electricity and the price of natural gas and alternative fuels (see Part I for a full explanation). We noted the fluctuating spark spread and the volatility of natural gas and electricity prices in Part I, but the implications of this trend became even more obvious as we continued our research. First, the barrier to entry for new CHP applications cited most frequently by the utilities nationwide was "economics." This in itself is grounds to pay close attention to the spark spread trend. In addition, we saw utilities more frequently citing economics as the main barrier in our most recent contacts than they did last year in 2005 for the states covered in Part I. Since the states in Part I are in varying regions of the United States, it seems that this change stems from a change in spark spread.

A utility might cite "economic unfeasibility" for CHP projects as a barrier for a number of reasons. Usually, however, it means that natural gas and alternative fuel prices are too high (relative to electricity prices), thus making investment in a CHP application uneconomic, or electricity prices are too low (relative to natural gas and alternative fuel prices), thus making it more economical to buy electricity from the utility.

Figure 1: Multi-State Utilities

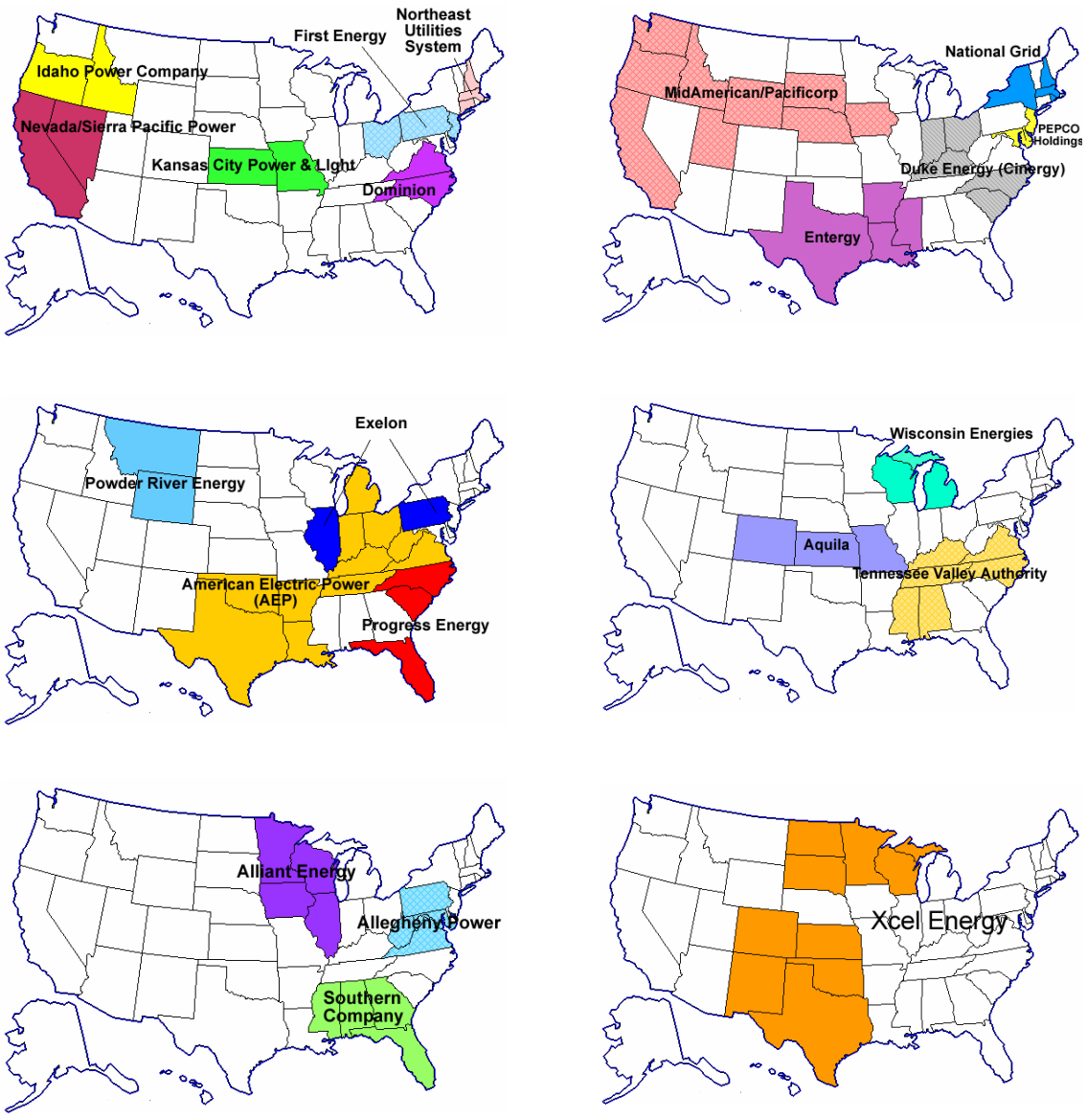


Table 1: Multi-State Utilities

Multi-State Utilities and Holding Companies	Subsidiaries	States
Allegheny Power	———	Pennsylvania, Maryland, Virginia & West Virginia
Alliant Energy	———	Iowa, Illinois, Minnesota & Wisconsin
American Electric Power (AEP)	AEP Ohio, AEP Texas, Appalachian Power, Indiana Michigan Power, Kentucky Power, Public Service Company of Oklahoma & Southwestern Electric Power Company	Kentucky, Louisiana, Texas, Ohio, Virginia, West Virginia, Tennessee, Indiana, Michigan, Arkansas & Oklahoma
Aquila	———	Missouri, Kansas & Colorado
Dominion	———	North Carolina & Virginia
Duke Energy (Cinergy)	———	Ohio, Kentucky, Indiana, North Carolina & South Carolina
Entergy Corporation	Entergy Arkansas, Entergy Louisiana, Entergy Mississippi, Entergy New Orleans & Entergy Texas	Arkansas, Louisiana, Mississippi & Texas
Exelon	———	Illinois & Pennsylvania
First Energy	———	Ohio, Pennsylvania & New Jersey
Idaho Power Company	———	Idaho & Oregon
Kansas City Power & Light Company	———	Kansas & Missouri
MidAmerican Energy Holdings	MidAmerican Energy & Pacificorp	Iowa, Illinois, Nebraska, Oregon, Washington, Wyoming, California, Utah & Idaho
National Grid	(formerly operated as Granite State Electric, Massachusetts Electric, Nantucket Electric & Niagara Mohawk)	New York, New Hampshire, Massachusetts & Rhode Island
Nevada/Sierra Pacific Power	———	Nevada & California
Northeast Utilities System	Public Service of New Hampshire, The Connecticut Light and Power Company & Western Massachusetts Electric Company	Connecticut, Massachusetts & New Hampshire
PEPCO Holdings	Atlantic City Electric, Delmarva Power & Potomac Electric Power Company	District of Columbia, Maryland, New Jersey & Delaware
Powder River Energy Corporation	———	Wyoming & Montana
Progress Energy	———	Florida, North Carolina & South Carolina
Southern Company	Alabama Power, Georgia Power, Gulf Power, Mississippi Power & Savannah Electric	Alabama, Georgia, Florida & Mississippi
Tennessee Valley Authority	———	Tennessee, Mississippi, Alabama, Georgia, North Carolina, Virginia & Kentucky
Wisconsin Energies	———	Wisconsin & Michigan
Xcel Energy	———	Colorado, Kansas, Michigan, Minnesota, New Mexico, North Dakota, Oklahoma, South Dakota, Texas & Wisconsin

As we have seen in recent months, both natural gas and electricity prices are extremely volatile, and the relationship between these two energy sources is complex. The spark spread has been constantly changing, with electricity prices playing a sort of catch-up game with natural gas, lagging by at least a year. This phenomenon makes entry for new CHP very difficult and risky as developers struggle with the uncertainty of what future prices will look like. Last year, when fewer utilities were citing economics as the main barrier, there was a

more favorable spark spread for CHP, but shortly after our research began, natural gas prices leaped up past electricity prices, making the spark spread unfavorable. Natural gas prices have since gone back down below electricity prices (in relative terms), but utilities are still citing economics as the main barrier due to the recent period of high gas prices as well as their volatility.

Recently, ACEEE hosted a CHP Analysis Working Group Meeting focused primarily on spark spread and the difficulties it poses for new CHP.[2] There was a lot of concern about the future of prices and how to better predict where they are headed. The idea that the current relationship between electricity and gas prices is not necessarily reflective of their future relationship was discussed. Another concern was that there are two emerging market negatives for CHP: first, in the fully regulated utility world (mostly in the Southeast), gas prices are relatively high and electricity is relatively cheap, creating an unfavorable spark spread; and second, in the restructured or "deregulated" utility world (everywhere else), many utilities are modifying retail tariffs with emphasis on maximizing demand charges and declining block rates in order to earn a return on their fixed delivery assets. This latter trend is not favorable for CHP or any energy efficiency measure. The consensus of the experts attending the meeting was that it is unclear where prices are going in the future, and thus the long-term economics of new CHP projects based on natural gas remain in question (CHP Analysis Meeting 2006). There is cause for hope, however. Utility regulators have in the past rejected tariff structures that explicitly encourage consumption, and with increasing tightness in fuel markets (Elliott 2006), we are likely to see tariff structures that decouple consumption from utility returns increase in use (as was discussed in Part I), encouraging efficiency including expanded CHP.

Another source of optimism has been an increased interest in "opportunity" fuels that has emerged as a result of the high prices for natural gas. Opportunity fuels are fuels that are available locally that can be used in place of purchased fuels such as natural gas or oil. Examples of opportunity fuels include: landfill gas (methane recaptured from municipal landfills); digester gas (produced from the anaerobic digestion of a biological waste such as wastewater from food or paper manufacturing or municipal sewage); or industrial waste products such as refiner gas or scrap wood and bark. By using these opportunity fuels in place of purchased fuels, the facility is able to "decouple" itself from volatile conventional energy markets—in other words, since the product is a locally available "waste," the price of the fuel is not determined by the overall energy market. The primary disadvantage of these fuel sources is that their availability is unique to a location, so the type of fuel that is available will vary by site (if there are any opportunity fuels available) (see Elliott 2006 for an expanded discussion). The EPA CHP Partnership has noticed increased interest in these types of projects and has been assisting potential CHP sites in identifying opportunity fuels and implementing them at CHP applications (Pielli 2006). According to Paul Lemar of the Resource Dynamics Corporation, it appears that the opportunity fuels that currently have the most potential for CHP and distributed energy resource (DER) projects in the U.S. are anaerobic digester gas (over 6 GW of electric capacity could be achieved at wastewater treatment plants, dairy farms, and hog farms); landfill gas (3–4 potential GW); biomass gas (about 90 potential GW); and wood waste (accounts for over 2 GW of U.S. electric capacity,

[2] Notes and presentations from this meeting can be found at: http://www.aceee.org/chp/analysis.htm.

and there is potential for at least 8 GW more). Together, these fuels have the technical potential to add 108 GW of DER capacity (Lemar 2005).

Renewable Portfolio Standards and CHP

A renewable portfolio standard is a market-driven policy, which is meant to ensure that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. This concept has been evolving for many years, with legislation having been introduced for over a decade at the national level, and to date 20 states and Washington, D.C. have implemented minimum renewable energy standards.[3] In some cases, the RPS is set up to increase over time so that the technologies and/or fuels included in the RPS can become increasingly competitive in the market. Recently, we have seen a few instances where either existing or proposed RPS's have included CHP and energy efficiency as qualifying under the standard. Pennsylvania, Connecticut, and Hawaii are examples of states that have RPS's that include CHP and other energy-efficient technologies (see Nadel 2006 for a more comprehensive discussion of Portfolio Standards and the inclusion of efficiency and CHP). This trend could be a valuable opportunity for encouraging further integration of CHP into the market and market-driven policy. The CHP community should pay close attention as to how to best use this as a policy tool to move the CHP industry forward.

STUDY METHODOLOGY

The information below was included in Part I, but for continuity and the convenience of the reader, we have included it again here, along with a few additions and updates.

Previous ACEEE Work

ACEEE compiled a significant amount of work on the subject of CHP previous to this report. Some of these reports include:

- *Distributed Energy Resources and Combined Heat and Power: A Declaration of Terms* (Shipley and Elliott 2000)
- *State Opportunities for Action: Review of States' Combined Heat and Power Activities* (Brown, Scott, and Elliott 2002)
- *State Opportunities for Action: Update of States' Combined Heat and Power Activities* (Brown and Elliott 2003)
- *CHP Five Years Later: Federal State Policies and Programs Update* (Elliott, Shipley, and Brown 2003)

Literature Review

Preceding this examination of utility policies and practices with regard to CHP, ACEEE undertook an assessment of the literature currently available on the subject. Much was

[3] For information on current RPS developments, visit the Union of Concerned Scientists Web site at http://www.ucsusa.org/clean_energy/clean_energy_policies/res-at-work-in-the-states.html.

learned in terms of perspective and breadth of detail. Significant contributors to this endeavor are highlighted directly below.

Energy and Environmental Analysis, Inc. (EEA) has endeavored to create a database existing as an online data resource organized by state, which provides basic permitting information for DER projects on a continuously updated basis (EEA 2005). Where applicable, it lists interconnection requirements, tariff rates, and economic incentives.

The eight CHP Regional Application Centers (RAC's) (described in Part I) were set up by active participants in the CHP community in an effort to address and promote increased capacity on a local scale. The centers' Web sites, constituent databases, and analysis all proved to be invaluable in the search of utilities and contacts for the focus of this study.

The EPA CHP Partnership, which promotes the use of CHP to reduce the environmental impact of power generation, was also a crucial resource for gathering information for this project. Since 2000, it has been actively offering technical assistance to end-users and direct assistance to policymakers on interconnection, rates/tariffs, and renewable portfolio standards. The Partnership's efforts as well as its Web site help raise awareness about CHP and play a vital role within the CHP community. EPA also maintains a funding database that covers CHP as well as renewably fueled incentives and offers important information for project developers and potential customers.[4]

In deciphering the labyrinthine and monolithic nature of the utility industry, with its ever evolving dynamic, ACEEE relied upon DOE's Energy Information Administration (EIA). Its statistics, data, and analysis on the nation's utilities were an early catalyst in the search for major electricity suppliers with potential capacity for increased CHP on a state-by-state basis (EIA 2006).

The vast community of CHP proponents has published an important body of work.[5] These organizations include—but are not limited to—ACEEE, DOE, EPA, and the USCHPA. This work also proved to be invaluable in that it provided important background details, was the catalyst for this and other work, and has increased the capacity of CHP through its sound analysis and public support.

Review Methodology

ACEEE conducted the review research for this report in order to form a comprehensive reference work for industry, legislators, and others to look for ideas and methods regarding

[4] http://www.epa.gov/chp/funding_opps.htm

[5] Some of these Web sites include:

- http://www.aceee.org/chp/index.htm
- http://www.eere.energy.gov/de
- http://www.epa.gov/chp
- http://uschpa.admgt.com

Also extremely useful for keeping up with state CHP projects and state regulations, respectively, were:

- http://www.eea-inc.com/chpdata/index.html
- http://www.dsireusa.org/summarytables/reg1.cfm?&CurrentPageID=7&EE=1&RE=1

the implementation of CHP projects in their states in order to address barriers impeding the adoption of CHP, but also to assess the need for a national interconnection standard (see Part I for a discussion of the IEEE 1547 interconnection standard and related implementation issues). To gather information from states, the researchers contacted many individuals, including those involved with public utility commissions or state energy offices, individuals working in CHP application centers, colleagues with parallel research expertise, and academics in the field. Once a suitable contact for the utility was found, phone and/or e-mail interviews were conducted using the questions summarized in Table 2. Please note that as a result of the experience with the Part I research, the last question relating to the utility's consistency of policy was added for Part II.

Table 2: Summary of Preliminary Questions for Utilities

Questions for Utility Representative
Published Policies
Does the utility have published policies specific to CHP (interconnection, rates, and tariffs)?
Are those positions the same as those for other DER (renewable energy included)? If not, what are those policies?
Are there any examples of CHP in the area? Where can I get information on them (they may have published case studies) or talk to project managers about them?
Unpublished/Non-Specific Policies
Are there any examples of DER or CHP in the territory? If so, where/what are they?
Interconnection
Does the utility have an interconnection policy for CHP and is it different from a general DER policy?
Does the utility have an official position on the creation of a national interconnection standard?
What sort of policies/structural changes would be necessary for the utility to support CHP in its territory?
Tariffs
Who regulates the utility tariffs?
What is the tariff schedule for DER/CHP? Specifically, what are the rates for supplemental (standby) power, maintenance, and emergency tariffs?
Incentives
Does the utility offer any incentives or work with a state agency (e.g., energy office or public utility commission) for CHP or any other form of DER?
Are those positions the same as those for other DER (renewable energy included)?
Is there any report on CHP projects that have received incentives in the area? Where can I get information on them (they may have published case studies) or talk to project managers about them?
Consistency of Policy
Are your policies the same across the different states and subsidiaries in your service territory?

Note: The preliminary questions led to follow-up calls and Internet research, leading ACEEE to a significant amount of additional information in most cases.

RESEARCH RESULTS

Based on our analysis, we attempted to group the utilities into four general categories reflecting their friendliness to CHP:

- Level Four: those actively promoting the adoption of CHP through varied incentives
- Level Three: those not explicitly promoting the adoption of CHP, but willing to work with industry
- Level Two: those ambivalent, by choice or regional market trends
- Level One: those actively working against the adoption of CHP

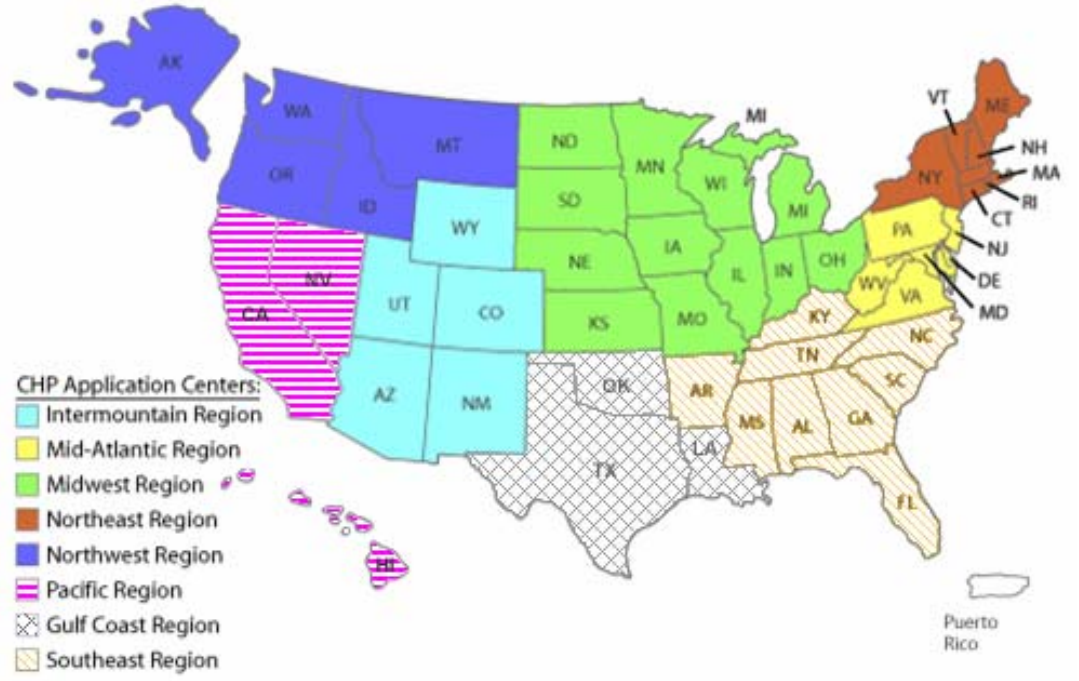
These groupings represent qualitative judgments made by ACEEE based on the data collected, discussions with utility staff, and conversations with CHP advocates with experience interacting with the various utilities. The categories assigned to the utilities covered in this report can be found in Table 4 on page 27.

It is important to remember the subjective nature of the conclusions we have come to in this report. Clearly, the utilities themselves often have a very different perception of their own policies than outsiders—for example, individuals at the public utility commissions or CHP advocacy groups. We have tried to balance the information we've received from the utilities with information from the state energy offices, the RAC's, and experts within the CHP community. However, in the end, we have made subjective judgment calls about where the utilities as well as the regions stand relative to each other. It must also be noted that the CHP and utility industries are constantly in flux. There are also a wide range of policies and levels of progressiveness within the regions as well as across them. It is likely that there are exceptions to some of the generalizations we are making—most of the utilities covered are very large and it is likely that individual project experiences often diverge from one another. Therefore, the conclusions we've come to should be used as an indicator of general trends and not as absolute tenets.

After we finished the research process, we decided the most appropriate way to examine and present the information would be to arrange it according to the CHP Regional Application Center regions. These regions are familiar to the CHP community and provide a method by which we can group the utilities, thereby identifying regional trends and synthesizing the data in a manageable and organized fashion. Figure 2 illustrates these regional divisions.

The following discussions of each region are not meant to be comprehensive, but endeavor to give the reader a substantial amount of information in terms of regional trends, policies, and practices of the dominant individual utilities in each region, and a general understanding of important CHP developments in those regions. We have highlighted some of the utility specifics that we thought were of particular interest, but the reader should see the appendices or database for details about all states and utilities covered.

Figure 2: Combined Heat and Power Regional Application Center Regions



Source: DOE 2006

In these discussions, we have tried to come to some conclusions about how each region is faring relative to the others. As we saw in Part I, some regions (and states) have traditionally been more progressive than others. We analyzed our results for the utilities in each area and made some assessments about each region's general progress in terms of CHP. In much the same way as we came to a conclusion about which "category" each utility should be placed in, our assessments of how "well" a particular region is doing on CHP is based on a balance of several factors and conversations with various individuals at the state energy offices, advocacy groups, and utilities. In each region we considered the number and type of CHP projects, general utility awareness about those projects, and individual utility policies regarding interconnection, rates, and incentives.

Finally, we want to clarify a distinction we've made throughout the following regional discussions: the difference between PURPA-defined cogeneration and new CHP.

PURPA-Defined Cogeneration and New CHP

The *Public Regulatory Policy Act of 1978* (U.S. Congress 1978) was in large part responsible for the modern expansion of CHP (Elliott and Spurr 1999). PURPA allowed non-utility entities to site generation assets at end-user facilities with thermal demand, such as large industrial facilities and institutional campuses. PURPA referred to such facilities as "cogenerators." The Federal Energy Regulatory Commission (FERC) was responsible for administering this provision, trumping the state regulators. Under Section 210 of PURPA, these cogenerators were registered with FERC as "Qualifying Facilities," or "QF's," and this provision served as the model for contractual interactions between a cogenerator and its

utility. The utility was required to interconnect the QF, and the cogenerator sold power to the utility at "avoided cost." In turn, the utility sold power and ancillary services (e.g., backup, emergency, and supplemental power) to the QF at a regulated rate.

Many thought that, with the passage of the *Energy Policy Act of 1992* (U.S. Congress 1992), this model for CHP would be superseded by CHP systems that participated in competitive electricity markets. Under this model, the facility would buy and sell power and ancillary services from the competitive power market. Unfortunately, while competitive markets have emerged in some states, the hopes for emergence of national competitive markets has not materialized for an array of reasons, and as a result many electric markets continue to be served by regulated, vertically integrated utilities. This duality was codified by the *Energy Policy Act of 2005* (U.S. Congress 2005), which removes the PURPA requirements for CHP systems operating in competitive markets,[6] while the provisions for PURPA remain in effect in the rest of the country. In these non-competitive markets, PURPA continues to serve as the dominant if not sole model for CHP. Because a significant share of the current installed CHP base is in the Southeast and Gulf Coast at wood product facilities (largely biomass based), petroleum refineries, and chemical plants, the PURPA QF remains an important model for the interaction between the CHP facility and the utility in many parts of the country.

The Regions

By the best estimates, over 80,000 MW of CHP is installed in the country (EEA 2005). This represents a dramatic increase over the past ten years. The distribution is by no means uniform, with the largest share installed in the Gulf Coast and Southeast regions, much at large, industrial facilities such as pulp and paper, wood products, petroleum refining, and chemicals (see Table 3). This distribution reflects differences in opportunities, but also in the market favorability toward CHP.

[6] It is important to note that FERC has agreed to reexamine this specific decision and there is currently an open docket (RM06-10-000) on this issue.

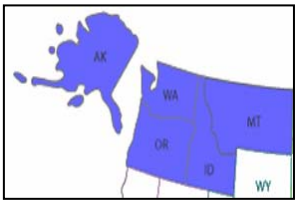
Table 3: Installed CHP (MW) by Region[7]

Region	CHP Installed (MW)	Examples of Applications
Northwest	4,370	Pulp & Paper, Wood Products, Food Processing
Midwest	9,675	Food Processing, Colleges/Universities, Pulp & Paper
Mid-Atlantic	9,752	Chemicals & Metals, Food Processing, Refining
Pacific	9,882	Oil/Gas Extraction, Pulp & Paper, Refining
Northeast	9,395	Food Processing, Chemicals, Hospitals, Colleges/Universities
Intermountain	1,578	Colleges/Universities, Agriculture, Metals
Gulf Coast	25,181	Chemicals, Refining, Pulp & Paper
Southeast	12,099	Food Processing, Pulp & Paper, Chemicals
TOTAL	81,932	

Source: Energy and Environmental Analysis, Inc. CHP database (last updated May 2005)[8]

Northwest

The Northwest region has seen significant progress in the past few years with respect to several facets of the CHP industry, and an active effort has emerged at both the regional and state level. The region has 67 active CHP projects totaling 931 MW in various stages of development including feasibility study, design, permitting, financing, construction, or recently online (Sjoding 2006b).



On a regional level, there are two main initiatives: the Northwest Power and Conservation Council (NPCC) and the Modern Grid Initiative. The NPCC recently published *The Fifth Northwest Electric Power and Conservation Plan,*[9] which has now been adopted. It is the first time that CHP was included (see Part I for a more detailed description of the NPCC). The Modern Grid Initiative[10] is being developed by the DOE's Office of Electricity Delivery and Energy Reliability (OE). The Initiative aims to develop a plan for a national, fully modernized electric power system. The Modern Grid Initiative held its Northwest Summit this past April. Appendix A5 of the Initiative's document called *A Systems View of the Modern Grid* focuses on accommodating a wide variety of generation options (Sjoding 2006a).

In addition to these two initiatives, the Western Governor's Association (WGA) has developed a Clean and Diversified Energy Initiative,[11] and three of the regional application centers (Intermountain, Pacific, and Northwest) have helped form a CHP taskforce to support the WGA effort. Finally, the Bonneville Power Administration (BPA), which owns 80% of

[7] It is important to note that EEA's database may under-represent smaller CHP installations, particularly those below 1 MW.
[8] http://www.eea-inc.com/chpdata/index.html
[9] http://www.nwcouncil.org/energy/powerplan/default.htm
[10] http://www.themoderngrid.org/index.htm
[11] http://www.westgov.org/wga/initiatives/cdeac/index.htm

the transmission grid in the Northwest region, is experiencing increased congestion. BPA released a white paper this past April[12] that led to the development of the Non-Wires Solutions Round Table,[13] the goal of which is to explore all options (not just traditional power line construction) to address congestion problems. The options considered include demand-side energy efficiency programs, demand reduction initiatives, and pricing strategies as well as distributed generation. In addition, a Northwest effort called the ColumbiaGrid,[14] a group of control area operators, has emerged and will work with BPA on these efforts (Sjoding 2006a).

There are also some positive developments for CHP and DG at the state level. Alaska's unique geography, consisting of hundreds of small villages dispersed over enormous expanses of land, leads to specific challenges for energy service providers. Villages often barge in diesel for fuel, which makes power very expensive. As a result, the governor has appointed a Rural Energy Action Council that recently completed a report including a section on diesel efficiency improvements. In addition, the Alaska Energy Authority (AEA) has completed an assessment of the condition of each village micro-grid and identified necessary efficiency improvements. It is funding CHP projects where it feels they are appropriate and necessary[15] (Sjoding 2006a).

The Chugach Electric Association works closely with the AEA on DG projects. There are very few CHP projects in the Chugach territory—Chugach cited economics as the primary reason for the lack of CHP. Additionally, it noted that industrial customers in Alaska often don't have the appropriate skilled technicians for a CHP project and can't afford to have a person on staff just for that purpose. Despite these issues, Chugach has uniform interconnection standards for all DG, which mimic the IEEE guidelines; it has made proposals for CHP projects at hospitals and large industrial plants (which haven't come to fruition due to the economics issues cited earlier); and they routinely work with the AEA and customers on DG projects.

Idaho did not go through the major electrical power restructuring process that occurred in many other states during the 1990s. The Idaho Public Utilities Commission still requires the utilities to submit a ten-year Integrated Resource Plan (IRP) biennially. Idaho Power Company is the major utility in Idaho and has a number of cogeneration and small power production projects running in its territories. Idaho Power Company's IRP includes 48 MW of CHP (Sjoding 2006a) at customer facilities and cites market forces or economics as the main barriers against more projects.

Montana faces a unique set of challenges. Approximately 68% of its deregulated electric sales are provided by bankrupt investor-owned utilities including NorthWestern Energy. Still, there have been some positive developments for CHP. In 2005, the legislature passed and the governor signed several pieces of CHP-related legislation, which include:

[12] http://www.bpa.gov/corporate/pubs/Congestion_White_Paper_April06.pdf
[13] http://www.transmission.bpa.gov/PlanProj/Non-Wires_Round_Table
[14] http://www.columbiagrid.org
[15] http://www.akenergyauthority.org

- authorizing certain local governments to enter into energy efficiency performance contracts including CHP;
- establishing a renewable power production standard including renewable CHP;
- providing for alternative energy loans including renewable CHP;
- clarifying that renewable energy projects including renewable CHP are eligible for renewable resource grants and loans; and
- requiring an interim legislative study of the benefits and obstacles to expanding distributed generation in Montana.

Finally, the Montana Department of Environmental Quality recently issued two CHP-related reports to the Montana Public Service Commission and the Montana Legislative Environmental Quality Council (Sjoding 2006a). While there seem to be few CHP projects running in Montana, these legislative steps should help pave the way for change in the future.

Oregon is moving forward steadily on CHP. The Oregon Department of Energy (ODOE), the Oregon Public Utilities Commission (OPUC), and the Energy Trust of Oregon are coordinating their efforts to advance CHP projects:

- ODOE is developing a RPS for 2007 that will likely include CHP;
- The Governor's Advisory Group on Global Warming published the *Oregon Strategy for Greenhouse Gas Reductions*[16] in 2004 that supports renewable CHP;
- The Oregon PUC completed a study on DG regulatory barriers,[17] which was supportive of enabling CHP;
- The Oregon Department of Energy provides Business Tax Credits to help finance CHP projects;
- The Energy Trust of Oregon has a bio-power program focused on renewable CHP;
- The Climate Trust provides funding for greenhouse gas offsets including CHP (Sjoding 2006a); and
- In June 2006, the OPUC initiated proceedings to issue an interconnection rule.[18]

Portland General Electric Company (PGE), the utility serving the greater Portland area, is a great example of a more progressive utility in this region. Though the utility itself does not offer direct incentives for CHP, it works with both the ODOE and the Energy Trust of Oregon to help facilitate CHP projects. The utility cites high gas prices as the main barrier to CHP projects in Oregon, but it has numerous DG projects in its territories. CHP is also part of its IRP and it is actively looking at possibilities for CHP projects at facilities like local dairy farms, universities, and a wastewater treatment plant.

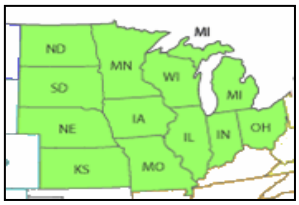
In Washington, a legislative initiative is underway for a RPS requiring both cost-effective energy efficiency and new renewable energy (CHP can be applied to both provisions) (Sjoding 2006a). Additionally, net metering laws in Washington now include CHP for smaller systems up to 100 kW. Seattle City Light in Washington has a greenhouse gas

[16] http://egov.oregon.gov/ENERGY/GBLWRM/docs/GWReport-FInal.pdf
[17] http://egov.oregon.gov/PUC/electric_gas/dg_report.pdf
[18] http://www.oregon.gov/PUC/admin_rules/intercon.html.

neutral policy. It supports CHP if that helps with this policy, but otherwise does not encourage it in any way. There seem to be mostly large industrial pulp and paper cogeneration facilities in Seattle City Light's territory and few smaller new CHP projects.

Overall, CHP in the Northwest region is largely dominated by the wood products industry—pulp and paper large industrial facilities that are often PURPA cogeneration units (see the previous section on PURPA and new CHP, page 11). Nevertheless, there is progress being made in this region on adoption of new CHP projects outside the wood products industry. States like Oregon are moving forward with relatively progressive legislation, and there are coordinated efforts among the state agencies that are working directly and often successfully with the utilities. A wide range of friendliness to CHP exists among utilities in this region, ranging from utilities like PGE that have been fairly progressive to Seattle City Light that is doing little to nothing to support CHP. However, overall, there is good reason to believe that this region is on the way up in terms of CHP in its future.

Midwest



In spite of hosting the first regional CHP initiative (Brown and Elliott 2003), there has been relatively little recent CHP installation activity in the Midwest. This expansive region, for the most part founded in agriculture, has a wide range of friendliness towards CHP. In addition, utility awareness varies in this region more so than any other. Many utilities contacted were simply unaware as to whether there were CHP projects running in their territories. Most have no policies specific to CHP, and many were unsure of the details of their interconnection and tariff policies. There were a few utilities that were anxious to learn more about CHP and DG and what the implications would be for them. However, it seems that the CHP industry, in general, has not infiltrated this area to a large extent. Most utilities in this region cited economic barriers as the main reason for the lack of CHP projects, but many of the state PUC staff suggested that the utilities themselves were creating the economic barriers.

With respect to new developments, in Indiana there is a rulemaking in progress now regarding interconnection standards. Indiana Michigan Power (an AEP subsidiary) has been involved in the development of that rulemaking, but was unaware of any CHP projects in its territories and has no policies specific to CHP (either in terms of interconnection standards or tariffs). Indiana Michigan Power cited the relatively low electricity rates in Indiana as the major reason for the lack of CHP projects. It is worth noting that NiSource, a utility operating in Indiana, has been relatively supportive of CHP; however, we were unable to speak directly with any individuals there.

Kansas City Power & Light (KCP&L) is a good example of a utility that knew very little about CHP, but seemed genuinely interested in learning more. The individual we contacted mentioned that the utility had just learned of the Galvin Electricity Initiative[19] (an effort with the goal of developing solutions that improve the reliability and service of the electric grid) and was planning on reading up on its findings. KCP&L did not know of any CHP projects

[19] http://www.galvinelectricity.org/

in its territories, had no policies specific to CHP, and cited economic barriers (like the price of alternative fuels) on the customer side as the main reason for lack of projects. The contact also noted that if it was able to get emissions credits for CHP projects that might help enable projects.

At the other end of the spectrum in this region is Xcel Energy in South Dakota, which is actively opposed to net metering. There are almost no CHP projects operating in South Dakota. As is true in other states, a lack of net metering provisions tends to make small (e.g., less than 100 kW) CHP projects economically unfeasible, creating a significant barrier to new CHP.[20] This problem is largely a state issue (Xcel does have net metering provisions in Minnesota), but Xcel's opposition to net metering in South Dakota makes change at the state level more difficult and unlikely in the near future.

Michigan is a good example of one state with several very different perspectives about the role the utilities are playing with regard to CHP. The individuals contacted at the Public Utilities Commission explained that many of the utilities in Michigan have a history of making interconnection difficult for CHP and DG projects. However, individuals at the utility companies insisted they were doing no such thing. Like many others, they cited the high price of natural gas and economic unfeasibility as the main barrier for CHP. This difference of perspectives is evident in several other states and regions throughout the country.

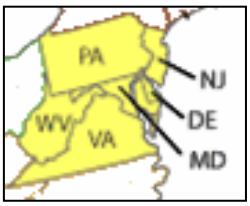
Wisconsin is one of the few states in the Midwest region that has a significant number of CHP projects operating and whose utilities have policies specific to CHP. Though Wisconsin Energies offers incentives only for renewables, it works with both the PUC and Midwest RAC on interconnection issues.

Overall, in the Midwest region, there is relatively little going on in terms of new CHP. States have been slow in this region to act and move forward. Illinois has been talking about a rulemaking on interconnection standards for some time now, but still has not taken any steps in that direction. Again, there is a large range of friendliness to CHP. Utilities like KCP&L are doing little to facilitate projects and Xcel South Dakota actively opposes CHP. Judging from a series of recent workshops in Ohio, utilities there have also been making things difficult for CHP through interconnection issues and standby rates. Cinergy operates in this region as well, but as discussed earlier, its recent merger with Duke leaves its future relationship with CHP unclear. There seem to be few utilities in this region helping to enable CHP, and thus the CHP industry remains relatively sluggish. The one promising opportunity is interest in the installation of CHP at the new ethanol fuel manufacturing facilities popping up across the heartland. CHP appears ideally suited to the electric and thermal needs of fuel ethanol production with the systems fueled from the bio-digestion of

[20] Net metering requires a customer to be fitted with a special electric meter that measures both the electricity purchased from the grid as well as excess electricity provided back to the grid from any distributed generation assets. The customer pays for the "net" electricity purchased from the grid. See Elliott and Spurr (1999) for a more detailed discussion of the various versions of net metering. Currently, 15 states have no statewide net metering provisions (see www.dsireusa.org). In some of the states that do offer net metering, the provisions are limited in terms of the type and size of distributed generation that can qualify, and the specifics of the tariffs vary by state and utility.

wastes (Bautista 2006; Pielli 2006). However, there also appears to be a trend towards the use of coal that environmental groups are concerned about (Clayton 2006).

Mid-Atlantic



The Mid-Atlantic region is similarly sluggish regarding the CHP industry. However, there is a notable consistency of policy in this region. As discussed earlier, this has not yet proven to be necessarily beneficial for CHP, but there are certain advantages to this consistency. The Mid-Atlantic Distributed Resource Initiative (MADRI) (see Part I for a description) has been actively trying to move forward with an incentive-based CHP pilot program. In addition, PJM Interconnection covers all states in this region.[21] Even though it only regulates the wholesale electricity market, the presence of a strong regional transmission organization often tends to make utilities in the region behave similarly, especially since it is using the IEEE 1547 interconnection standard (USCHPA Policy Summit 2006).

Dominion Power and Allegheny Power (both of which operate in several states in the Mid-Atlantic region) seem to have generally consistent policies across their territories. There do not seem to be many CHP projects operating in their territories and neither seems to be helping to facilitate any new projects. Dominion explained that for a CHP project to be feasible, the utility system's reliability cannot be compromised and the total cost associated with the interconnection must be borne by the generator—the company emphasized that the ratepayer or company cannot subsidize the generator. Allegheny Power claimed that since it is solely a T&D utility, it is neither helped nor harmed by CHP projects. However, distribution-only utilities are particularly sensitive to cost recovery and revenue as a result of throughput. Unless Dominion's revenue is fully decoupled from its power throughput, its claim is inaccurate and it may actually be more vulnerable to reductions (see Bluestein 2006).

New Jersey has implemented an aggressive series of incentives through its Clean Energy Program.[22] Administered by the New Jersey Board of Public Utilities, it provides information and financial incentives to move New Jersey towards more energy-efficient and renewable energy technologies. It appears likely that the program will continue to facilitate CHP projects in New Jersey. Finally, the Public Service Electric & Gas Company (PSE&G) explained that this program helps form many of the utility's policies—the interconnection guidelines on the Web site are followed by the state's three electric utilities. PSE&G has also done away with its standby charges, and New Jersey is in the middle of the rulemaking process for interconnection standards.

[21] PJM Interconnection is a regional transmission organization (RTO) that ensures the reliability of the largest centrally dispatched control area in North America by coordinating the movement of electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. http://www.pjm.com/index.jsp.
[22] http://www.njcleanenergy.com/

Pennsylvania has proposed interconnection standards and has adopted an Alternative Energy Portfolio Standard that includes CHP. There is some talk of Pennsylvania looking into providing agriculturally based incentives, but it is unclear whether that will come to fruition. There is also a financial incentives program in Pennsylvania called the West Penn Power Renewable Energy Fund[23] (Allegheny Power is one utility that participates in this fund). Pennsylvania also offers the Energy Harvest Grant, which funds projects that promote and build markets for advanced or renewable energy technologies.[24] There seem to be a decent number of CHP projects running in Pennsylvania, but there is still much work to be done. The utility we covered in Pennsylvania, First Energy, mentioned that there are various provisions for net metering, but not all types of DG qualify.

Overall, there is very little new CHP operating in the Mid-Atlantic region. However, there is potential for new projects in places like the District of Columbia that have very little industry, but lots of large commercial buildings. PEPCO, the utility that provides electricity for all of the District of Columbia, is in the process of drafting a standard contract for net metering that could be promising for new CHP projects (if CHP qualifies in the provisions). Baltimore Gas & Electric (BG&E) has operated with decoupling[25] for over seven years, which is positive for CHP in this region.[26]

Pacific

The Pacific region has generally been very good on CHP. California stands out as one of the most progressive states in the U.S. on many energy and environmental issues—CHP is no different. California was one of the first states to adopt a standard practice for the interconnection of distributed energy systems to the electric grid. Rule 21 was one of the more significant results of that rulemaking process and continues to help keep California at the top of the hierarchy of progressivism (see Part I for more details on California and Rule 21). Though the competitive market was for the most part a failure in California, the progressive nature of the state, the financial incentives available through the state agencies, and the willingness of the utilities to be supportive has made up for this failure and helped to make the CHP industry successful there. High electricity prices in California have also been a key driver. In addition, the governor's ambitious greenhouse gas policy is expected to have indirect, but positive results for CHP (RAC Meeting 2006).

The Hawaiian Electric Company (HECO) believes itself to be the only utility, other than Austin Energy, that is advocating for utility-owned CHP. In other words, instead of independent developers generating their own power through CHP, HECO wants to be able to offer CHP as a service to its customers directly. HECO believes the introduction of third-party generators into Hawaii's unique geography (small, isolated islands) will have greater

[23] http://www.wppsef.org/index.html
[24] http://www.depweb.state.pa.us/energy/cwp/view.asp?a=1374&q=483024
[25] Decoupling, or revenue-based regulation (as opposed to price-based regulation), sets the utility's revenue at a fixed rate (or fixed revenues per customer). This means that if sales drop, revenues stay the same. Since in this scenario, revenue and thus profits are no longer affected by sales, the utility does not suffer when distributed energy resources projects are applied by consumers (Moskovitz 2000). See Part I for an expanded discussion.
[26] http://www.bge.com/vcmfiles/BGE/Files/Rates%20and%20Tariffs/Gas%20Service%20Tariff/Brdr_3.doc

negative financial consequences for the utility and its customers than a mainland utility serving several hundred thousand (or million) customers across contiguous states. Therefore, it is very much opposed to independent CHP projects, but would like to offer CHP to its customers because it believes it is a beneficial energy-efficient technology.

HECO has been struggling to get approval of this proposal from the Hawaii PUC for several years. The PUC would like CHP to develop as a competitive market and is therefore opposed to utility-owned CHP. HECO's argument is that although there would probably be some competition between the utility-owned CHP and independently owned CHP, its proposal enables the two to complement each other, and in the end, the overall CHP market in Hawaii would be improved.

This dilemma is very interesting for CHP advocates. On the one hand, HECO is a utility that is actively opposed to independent developers of CHP—this stance is more than a little troubling to CHP advocates. However, it is actively supporting CHP as a utility-owned service, claiming this will positively impact the CHP market as a whole and simultaneously satisfy its customers. In the end, a utility that actively supports CHP as a technology in any way is certainly a net positive for the CHP community. Utility-owned CHP is, at the very least, an issue to which the community should pay close attention in this relatively progressive region and elsewhere.

Northeast

The Northeast region is doing very well on CHP relative to the other regions. For some time, it has been one of the more progressive regions, with New York leading the way within the region and nationally. Several states in this region are following New York's lead, including Connecticut, and it seems that there is a lot of potential for more to follow.

There is generally good policy consistency in this region. Though it only applies to the wholesale market (similar to the PJM Interconnection), the ISO New England[27] tends to harmonize utility behavior. Additionally, several states in this region have signed onto the Regional Greenhouse Gas Initiative (RGGI),[28] a regional effort to reduce carbon dioxide emissions, which may also indirectly benefit the CHP industry. Finally, the Coalition of Northeastern Governors (CONEG)[29] may be following the Western Governors' Association (WGA) whose Clean and Diversified Energy Initiative recently prepared an excellent white paper on CHP[30] (RAC Meeting 2006).

New York, like California and Texas, was one of the first states to adopt a statewide interconnection standard. The state also established the New York State Research and Development Authority (NYSERDA) Distributed Energy Resources and Combined Heat and Power Program, which supports the development and expansion of DER systems,

[27] http://www.iso-ne.com
[28] http://www.rggi.org/
[29] http://www.coneg.org/
[30] http://www.westgov.org/wga/initiatives/cdeac/CHP-full.pdf

technologies, and applications in industrial, municipal, commercial, and residential sectors (see Part I for more information about policies in New York). One of the utilities we profiled in New York, Consolidated Energy Company (Con-Ed), works closely with state agencies including NYSERDA and mentioned that several programs (residential net metering and designated technologies, for example) have emerged from programs resulting from working groups with those agencies. Con-Ed emphasized the necessity that interconnection results in safe and reliable service and it tries to work with its customers to that end. Con-Ed also recently released a request for proposals (RFP) for approximately 150 MW of demand management and CHP is eligible.[31]

Connecticut is following New York's lead. It is in the process of developing a state standard for interconnection. In 2005, Connecticut passed legislation, *An Act Concerning Energy Independence*, which included significant incentives for CHP: a low interest loans program that will help facilitate DG and a "class three" Renewable Portfolio Standard that was recently finalized. In addition, the legislation includes monetary grants for customer-side DG and provisions for customer-sited distributed resources using natural gas to get a rebate of gas delivery charges from the electric distribution company. Finally, it allows customers who develop DG projects, which have a capacity less than the customer's maximum metered peak load, to avoid paying back-up power rates (providing the resource is available during system peak periods) (Pielli 2006).

There seems to be a small amount of CHP in Connecticut and the utility we contacted, Connecticut Light & Power, had very little information on any projects in its territory. There is, however, a lot of potential and reason to believe that things are changing favorably for CHP in Connecticut. A key factor that will likely contribute to this change is the transmission constraint in the southwest part of the state that has been identified as one of the most serious in the country (NERC 2006).

A bill has been recently introduced into the Rhode Island state legislature that would ban standby rates and take caps off net metering (USCHPA Policy Summit 2006). Both Rhode Island and Vermont are studying financial incentives for CHP (RAC Meeting 2006). There is also an interconnection rule in progress in Vermont, which may be finalized by early 2007. Vermont's state legislature also passed legislation that was signed by the Governor in June, 2005, which includes provisions promoting CHP development through the Sustainably Priced Energy Enterprise Development Program (SPEED). The legislation requires the Public Service Board to create a program that will encourage developers and utilities to enter into long-term, affordable contracts for new renewable energy projects, including high efficiency CHP (NE CHP 2005; Sedano 2006). The utility we profiled in Vermont, the Central Vermont Public Service Corporation, though it does not offer incentives for CHP specifically, does offer incentives for biomass generation. Central Vermont Public Service as well as Public Service of New Hampshire knew of a few (but not many) projects operating in their territories and believe their interconnection practices to be fair and non-obstructive. Public Service of New Hampshire also mentioned that it offers customers interested in DG a model cost estimate of the potential project. However, it continues to believe that utility-

[31] http:/www.coned.com/newsroom/news/pr20060417.asp

provided power is the lowest cost option. Most utilities in these states cite economics as the main barrier to new projects.

Maine lags behind in this region partially because it is a distribution-only state. It is also a state with a significant amount of pulp and paper and lumber industries, which often utilize CHP. The fact that there is a lack of CHP in Maine is therefore indicative of barriers. This is affirmed by the fact that utilities in Maine have gone to 100% demand charge rates, which has significant negative implications for CHP (CHP Analysis Meeting 2006). In addition, the utility we contacted, Central Maine Power, does not work with the state agencies on issues related to CHP and knew of no projects in its service territory.

National Grid covers a large service territory in the Northeast region covering area in New England as well as upstate New York (formerly, Niagara Mohawk Power Corporation in its New York territory). While National Grid's policies have been fairly progressive and consistent in its New England territory, its New York territory operates a bit differently and more independently. Though it recently improved its standby tariff in New York, it remains to be seen whether its New England policies and level of progressivism will spread to its New York territory. In its New England territories, National Grid knew of several CHP projects operating and is supportive of a national interconnection standard. It is participating in groups in Massachusetts as well as Rhode Island that are developing interconnection standards. It did, however, emphasize the issue of safety and noted that the interconnection of large facilities can be complicated in order to ensure safety and reliability. It has a large conservation program as well, but it does not cover CHP.

Though this region can be considered more progressive than most, the majority of the utilities in this region continue to cite economics as the main barrier to new CHP projects. Interconnection and rates issues are still major problems. However, unlike the Midwest, most utilities across the region are very much aware of the issues surrounding CHP, are relatively well informed of the projects in their territories, and are thinking about policy options relating to CHP. There seems to be a lot of potential for CHP in the Northeast, but there is still much work to be done.

Intermountain

There are very few CHP projects that are operating in the Intermountain region and the utilities seem to be paying very little attention to CHP in general. Utilities in this region claim that they are not putting up barriers to CHP and that it just does not seem to be economical for independent developers. Yet it seems that few utilities in this region have policies specific to CHP and there are few, if any, incentives for CHP in this region.

Arizona has been going through the rulemaking process for interconnection standards for some time now. It seems that they are close to an agreement, but may still have a long way to go before it is finalized. In addition, there is a bill in the Arizona legislature which, if it passes, would include some incentives for CHP. These state-level advances may help improve the future of CHP in Arizona, but currently there seems to be very little new CHP. Instead, there are a large amount of photovoltaics in operation. Arizona is ideal for

photovoltaics because there is a lot of sunlight and few clouds, and the state is at a relatively high altitude (thus the solar radiation is not obscured by the atmosphere as much). Additionally, there are many remote applications in Arizona (few pipelines), making it more of a constrained market and a transit state to California. A lower natural gas price in California coupled with the neighboring state's financial incentives for CHP projects makes Arizona a less ideal location for new CHP projects and more ideal for projects like photovoltaics.

Both utilities profiled in Arizona, Arizona Public Service Company and Salt River Project, cited economics as the main barrier to new CHP projects. Arizona Public Service Company has its own interconnection standards for CHP and has been working with the state on drafting the new state standards, but continues to disagree with some of the DG advocates on what the standard should look like. It mentioned the fact that it is looking at net metering possibilities for small systems and noted the reliability benefits of CHP, but in general, was quick to emphasize the fact that it doesn't encourage CHP because of the costs to them as a utility. Salt River Project has guidelines consistent with IEEE 1547 (see Part I for a discussion of IEEE 1547), but also highlighted its belief that CHP holds little if any benefit to it as a utility. It also explained that the interconnection process can be difficult because of the administrative requirements. The process is meant to ensure safety throughout the system, but customers have found it difficult and the utility cited that as another reason people may not choose to install CHP or other DG.

There seems to be very little new CHP in either New Mexico or Wyoming (though there are some cogeneration projects in Wyoming, mostly in the petroleum industry). Neither utility we covered in those states (Public Service Company of New Mexico and Powder River Energy Corporation, respectively) knew of any CHP projects in their territories. However, Powder River purchases all its power from Basin Electric Power Corporation and so if an independent developer wanted to generate its own power and interconnect, it would probably do so through Basin Electric. Public Service Company of New Mexico was an active participant in the formulation of IEEE 1547, but has no policies specific to CHP. Neither utility facilitates the adoption of CHP in any way. In general, the Intermountain region and the utilities within it have been sluggish in terms of the CHP industry.

Gulf Coast

The PURPA large cogeneration model dominates the Gulf Coast region with numerous facilities of this kind (see the previous section on p. 11 regarding PURPA versus CHP). Texas is unique within this region in that it has been very progressive towards CHP in recent years and it appears that this will continue. We will look at Texas separately from the other states in the region. It is also important to note the Gulf Coast region's recent experience with Hurricanes Rita and Katrina and how CHP can and is making positive contributions to the rebuilding effort. CHP may have an important role to play in this region as we enter another hurricane season this summer (see text box on page 25 for a discussion of CHP reliability and hurricane season).

Texas, like California and New York, has been a strong leader for CHP, with perhaps the largest installed base of CHP of any state (Hedman 2006). The state is unique in that it is an isolated, non-interconnected market that, unlike California, has developed a largely successful competitive market. The Electric Reliability Council of Texas (ERCOT) is responsible for the management of reliability and cost-effective operation of the electric grid and for facilitating appropriate market-driven policies.[32] Texas' economy has been dominated by the petrochemical industry (and thus the PURPA large industrial cogeneration model), similar to the other states in this region. However, Texas has a significant installed CHP base in other markets and very good potential for new CHP projects in a wide range of markets (Elliott and Hedman 2001). Given its significant experience, Texas appears to be an attractive market for CHP projects ranging from large manufacturers to small business owners. High electricity prices and reliability problems are forcing people to reconsider their options—CHP is gaining momentum as one of those options. In addition, the gas utilities in Texas are very supportive in terms of helping to facilitate projects (RAC Meeting 2006).

Austin Energy is a unique utility within a unique state. It is very proactive in terms of CHP: it currently operates and owns two major CHP facilities, one at the Domain Business Park (4.5 MW) and one at the Mueller Energy Center (4.3 MW). Both systems utilize gas turbines and absorption chillers to simultaneously produce power, heating, and cooling. It also operates a 200 kW fuel cell CHP project at a health clinic (Braddock 2006). In addition, it does a significant amount of work with the state energy conservation office, the DOE regional application offices, and the Houston Advanced Research Center (HARC).[33]

Overall, utilities in the Gulf Coast region, other than Texas, have not created a fertile environment for CHP. Utilities cite economics as the main barrier to new CHP projects especially due to high gas prices in the Gulf. In addition, utilities in Louisiana cited transmission difficulties and a lack of incentives for CHP as additional obstructions. Entergy is the dominant utility in the Gulf Coast as well as in some parts of the Southeast. Though Entergy follows the utility model where its policies are synchronized across its territories, it is a good example of how this consistency of policies is not necessarily a positive thing for CHP. Entergy has not been supportive of CHP in the past. It has no policies specific to CHP and though it works with FERC, it does not seem to work much with state agencies in its territories. It also has a history of unfavorable tariff practices especially regarding standby rates and has been unwilling to interconnect non-PURPA CHP systems. Though Entergy does serve Texas, the state regulatory environment has trumped individual utility practices there. The absence of a similar regulatory environment in the rest of the Gulf Coast region means CHP continues to be dominated by the PURPA cogeneration model.

[32] For more information on ERCOT, visit their Web site at http://www.ercot.com/
[33] http://www.harc.edu/

Southeast

The Southeast has not been particularly active regarding CHP. Although there are Green Power Initiatives in several of these states, they currently focus exclusively on wind and solar and do not include CHP. The utilities seem to be doing very little work with the state energy offices or PUC's, and there are no state interconnection standards in this region other than in North Carolina (USCHPA Policy Summit 2006). Progress on CHP has been sluggish in the Southeast in large part because of low electric rates, which makes it difficult to get people interested.

CHP Reliability and Hurricane Season

As we saw in 2005, the Gulf Coast region is extremely vulnerable to hurricanes. Along with the tragic loss of human life as well as enormous damage to cities and residential areas, Hurricanes Katrina and Rita caused severe damage and disruptions to the electricity grid, which had serious adverse consequences. Reliable power is critical under normal conditions, but it is especially vital in crisis situations since facilities like hospitals, fire stations, and shelters must be able to continue operation.

Hurricanes Katrina and Rita showed us that utility power is unreliable in those crisis situations. Power lines that cover long distances are simply wiped out by hurricane force winds and are not the best option in such conditions. The reliability and proximity benefits of CHP to the energy user make CHP a very attractive option in those areas that are vulnerable to severe weather. The following case study of two hospitals clearly illustrates the benefits of a CHP facility during a hurricane.

Memorial Hermann Baptist Hospital in Beaumont, Texas was unable to continue operations during Hurricane Rita. It did not have a CHP generator and its backup generators were unable to start. It was thus not able to provide services and care during the storm and was forced to send its patients to other facilities. It was unable to reopen until a week after the storm. It incurred over $30 million in costs and damages primarily due to humidity infiltration that severely damaged floors, ceiling tiles, medical supplies, and equipment. Repairs took three months and full power was not restored until September 30.

In contrast, during Hurricane Katrina, the Mississippi Baptist Medical Center in Jackson, Mississippi, due to its CHP application, was able to continue operating at full capacity throughout the storm and its aftermath. After the main power grid failed, it was able to switch to its CHP generators and operated for 52 full hours on CHP alone. It was the only hospital in the Jackson Metro Area to be nearly 100% operational. This hospital was able to provide service and care when people in the area needed it most and took in patients that were being sent away from other non-operational facilities. In addition, it avoided the enormous costs related to the loss of power and humidity infiltration that facilities like the Memorial Hermann Baptist Hospital were forced to take on (Bullock 2006).

This example exemplifies the benefits of CHP especially in situations where power is essential for survival. As another hurricane season approaches with forecasts for more damaging storms (NOAA 2006), it seems that it would be wise for the Gulf Coast region to consider CHP as a serious option.

There is a consistency of policy in the Southeast because it is dominated by two major utilities, Entergy and Southern Company, which tend to harmonize their policies within each of their territories. However, as we saw in the Gulf Coast region, Entergy's consistency of policy does not translate to a favorable environment for CHP. Entergy in Arkansas seems to be operating similarly. Although it has unpublished policies specific to CHP, there seem to be few, if any, examples of CHP in its territory besides large PURPA cogeneration facilities. It does have a net metering standard, but there seem to be very few customers utilizing it for DG. Entergy claims the reason for this is that its retail price has been very cheap, making DG uneconomical. In addition, interconnection seems to be a difficult task in its service territory partially because the standards are long and complex. Entergy Arkansas is working with the PUC on its inquiry into more energy-efficient projects, but there does not seem to have been any progress there. The same is true for Entergy in Mississippi and thus it also has only examples of PURPA cogeneration facilities in its territory. Similarly, Southern Company in Alabama has not been supportive of CHP. It follows the IEEE 1547 standard, but does little work with the state agencies, does not help facilitate interconnection, and there seem to be few, if any, examples of new CHP projects in its territories.

Kentucky is another state where CHP is a difficult sell. Kentucky Power (AEP) supports a national interconnection standard, but has no policies specific to CHP, was not aware of any new CHP projects in its territory, and has not worked with any state agency regarding CHP or any other form of DG. Cinergy, now Duke Energy, also operates in Kentucky, but as discussed earlier, it is unclear how the merger will unfold and what the implications will be for CHP.

Florida has been a harsh environment for CHP. Florida Power and Light has been notoriously hostile to CHP over the years. It helped to pass legislation making new grid-interconnected CHP projects (non-PURPA qualifying facilities) illegal in the state unless they are owned by a regulated utility.

The Carolinas have posed an interesting challenge for the authors. We discussed the surprisingly progressive nature of the Carolinas in Part I relative to the rest of the Southeast. However, since that report has been released, we have had several individuals within the CHP community question this conclusion so we have taken another look and decided to slightly revise our previous judgment. North Carolina is the only state in the Southeast that has an interconnection standard. It also runs a Green Power Initiative (though it does not include CHP), has a net metering provision, and is considering the possibility of an RPS. However, it is also true that Progress Energy has not been particularly supportive of CHP and has done little to facilitate new projects in its territories. Though it seems that North Carolina may be trying to move forward at the state level, the utilities remain sluggish.

Overall, utilities in the Southeast cite economics as the main barrier to new CHP projects. It is one of the most unfavorable environments in the country for CHP. The utilities continue to hold back the industry, and the states are making very little progress on their own.

Table 4: Utility Policies and Categories

State	Financial Incentives	Published CHP Policies Regarding Interconnection	National Interconnection Standard Position	CHP Category	Notes
Alabama					
Alabama Power Company	No	No	Supportive	2	
Alaska					
Chugach Electric Association	No	No	No position	3	Works closely with the state energy authority on DG projects
Arizona					
Arizona Public Service Company	No	No	Supportive	2	
Salt River Project	No	No	Supportive	2	
Arkansas					
Entergy Arkansas	No	Yes	No position	2	Interconnection policies consistent across service territories
Southwestern Electric Power Company (AEP)	(see AEP Corporate in Ohio)				
California					
SCE	Yes	Yes	No position	3	
PG&E	Yes	Yes	No position	3	
LADWP	Yes	Yes	No position	4	
SMUD	No	Yes	Opposes	3	Supportive of CHP in the community
Colorado					
Public Service Company of Colorado	(see Xcel Energy in Minnesota) Note: Xcel in Colorado follows Amendment 37 Renewables Portfolio Standards that includes interconnection standards				
Aquila	(see Missouri)				
Connecticut					
Northeast Utility Systems–Connecticut Light & Power	No	No	No position	3	
Delaware					
Delmarva Power	(see PEPCO in the District of Columbia)				
District of Columbia					
Potomac Electric Power Company (PEPCO Holdings)	No	No	No position	2	
Florida					
Florida Power & Light	No	No	No position	1	Has been hostile in the past to CHP
Georgia					
Southern Company–Georgia Power	No	No	Supportive	2	
Hawaii					
Hawaiian Electric Company	No	Yes	No position	3	Working toward a utility-owned CHP program

State	Financial Incentives	Published CHP Policies Regarding Interconnection	National Interconnection Standard Position	CHP Category	Notes
Idaho					
Idaho Power Company	No	No	No position	3	
Illinois					
Alliant Energy	(see Alliant Energy in Iowa)				
MidAmerican Energy	(see MidAmerican Energy in Iowa)				
Indiana					
Indiana Michigan Power (AEP)	No	No	No position	3	Upcoming rulemaking on interconnection standards
Iowa					
MidAmerican Energy	No	No	No position	2	
Alliant Energy	No	No	No position	3	
Kansas					
Kansas City Power & Light Company	No	No	No position	2	
Kentucky					
Kentucky Power (AEP)	No	No	Supportive	2	
Louisiana					
Entergy Louisiana	No	No	No position	2	Interconnection policies consistent across service territories. Transmission is constrained.
Southwestern Electric Power Company (AEP)	(see AEP Corporate in Ohio)				
Maine					
Central Maine Power	No	No	No position	2	Does not generate power and is not obligated to purchase power from cogeneration plants
Maryland					
Allegheny Power	No	Yes	No position	2	Participates in the West Penn Renewable Energy Fund
Massachusetts					
National Grid	No	Yes	Supportive	4	
Michigan					
Consumers Energy	No	No	No position	2	
Detroit Edison Company	No	No	Supportive	2	Actively involved in formation of IEEE 1547 standard
Minnesota					
Xcel Energy	No	No	No position	2	
Mississippi					
Entergy Mississippi	No	No	No position	2	
Missouri					
Aquila	No	No	No position	2	
Montana					
Powder River	(see Powder River in Wyoming)				
Northwestern Energy	(Information pending)				
Nebraska					
Nebraska Public Power District	No	No	Opposes	2	

State	Financial Incentives	Published CHP Policies Regarding Interconnection	National Interconnection Standard Position	CHP Category	Notes
Omaha Public Power District	No	No	No position	2	
New Hampshire					
Public Service of New Hampshire	No	No	Supportive	3	
New Jersey					
Public Service Electric & Gas Company	No	No	No position	3	Subscribes to the NJ Office of Clean Energy CHP incentive program
New Mexico					
Public Service Company of New Mexico (PNM)	No	No	Supportive	2	
New York					
Consolidated Edison	No	No	Supportive	3	Works closely with state agencies that have programs providing for net-metering, CHP, and renewable technologies
National Grid[34]	Yes	Yes	No position	3	Exempts highly efficient CHP projects from certain fixed costs to encourage customers to optimally size the system's generation
Nevada					
Nevada/Sierra Pacific Power	No	Yes	No position	3	
North Carolina					
Progress Energy–Carolina Power & Light	No	Yes	No position	3	
Dominion North Carolina Power	(see Dominion Power in Virginia)				
North Dakota					
Xcel Energy	(see Xcel Energy in South Dakota)				
Ohio					
AEP Ohio/Corporate	No	No	Supportive	2	Has tried to move toward a centralized DG process across 11 states
Duke Energy Corporation	Yes	No	Supportive	3	
Oklahoma					
Public Service Company of Oklahoma (AEP)	(see AEP Corporate in Ohio)				
Oregon					
Pacificorp	No	No	No position	3	

[34] As discussed in the text, National Grid's policies differ between its New England (see Massachusetts in Table 4) and its upstate New York territories. It has been assigned a "4" in New England and a "3" in New York as it remains to be seen whether its policies in New York will mimic the more progressive policies in its New England territory.

State	Financial Incentives	Published CHP Policies Regarding Interconnection	National Interconnection Standard Position	CHP Category	Notes
Portland General Electric Company	No	Yes	Supportive	4	Works with the Oregon Department of Energy and the Energy Trust of Oregon
Pennsylvania					
First Energy	No	No	No position	3	
Allegheny Power	(see Allegheny Power in Maryland)				
Rhode Island					
National Grid	(see National Grid in Massachusetts)				
South Carolina					
Progress Energy–Carolina Power & Light	No	Yes	No position	3	
South Dakota					
Xcel Energy	No	No	No position	2	
Tennessee					
Tennessee Valley Authority	Yes	No	No position	3	
Texas					
Austin Energy	No	No	No position	4	Owns and operates several CHP facilities, works with the state energy office and DOE's regional application offices
Utah					
PacifiCorp	No	No	No position	3	Financial support to the CHP Intermountain Application Center
Vermont					
Central Vermont Public Service Corporation	No	No	No position	3	Incentives for biomass generators
Virginia					
Dominion Virginia Power	No	No	No position	3	
Allegheny Power	(see Allegheny Power in Maryland)				
Washington					
Seattle City Light	No	No	No position	2	
West Virginia					
Allegheny Power	(see Allegheny Power in Maryland)				
Wisconsin					
We Energies	No	Yes	No position	3	Worked with the WI PUC to develop interconnection rules and involved with Midwest CHP Application Center
Madison Gas & Electric	No	Yes	Supportive	3	
Wyoming					
Powder River	No	No	No position	2	

CONCLUSIONS

Although some states continue to make progress regarding the expansion of CHP systems, individual utility policies and practices remain a significant barrier in many parts of the country. Utility opposition to new CHP is a widespread national problem and in addition, each region has its own unique obstructions and challenges. Discontinuities in interconnection standards, discriminatory tariff rates, utility disincentives, negative impact on utility revenues, lack of awareness of CHP benefits, misconceptions about safety issues, and a general lack of education amongst those outside the CHP community continue to be common problems.

In addition, the market is currently in flux, which makes the expansion of CHP difficult. Fluctuating spark spread due to volatile natural gas and electricity prices creates an enormous challenge for the CHP industry. The noticeable increase in the number of sources that cited economics as the main barrier for new CHP projects in the discussions we had this year compared with those we had last year testifies to these fast-paced market changes and the potentially negative implications for CHP. Customers understandably want to know that their CHP project will be economically feasible for years to come before they commit their capital. Economics was the barrier to CHP most often cited by utilities and individuals within the CHP community alike.

In addition to the challenging economics, several large multi-state mergers have been adding to market uncertainty, and it is unclear what the long-term consequences will be for CHP. Though many large multi-state utilities are moving to synchronize their policies across their territories, benefiting CHP in some cases, it may hold negative consequences in other regions as was discussed. It will be extremely important that the CHP community keep a close eye on these market trends and meet the challenge they create head on. These mergers and the regulatory processes that are required for their completion may represent an opportunity to create a more positive future CHP environment.

As discussed in Part I, there is a continued inability to move forward on legislative and regulatory solutions at the federal level. This problem, coupled with declining U.S. Department of Energy resources for programs supporting CHP due to budget constraints has forced several states and regional initiatives to assume the lead in the promotion and provision of technical assistance to CHP projects, while also beginning to address the regulatory disincentives that exist for CHP. The EPA CHP Partnership has proven to be an important complement to the DOE-funded RAC's over the last few years, and while this program appears safe at the moment, it is essential that full funding is maintained for *both* EPA and DOE programs to address these challenges. It remains the case that many states are doing little or nothing, and since utility interests have succeeded in blocking CHP projects in many states, the CHP community must look to other agents such as the National Association of Regulatory Utility Commissioners (NARUC) to address these issues in a nationally uniform way. It is critical that DOE and EPA both have sufficient resources to support this discussion at both the state and national levels.

In addition to federal regulation, expanded federal funding in support of the regional initiatives (that are already proving valuable) would also be extremely useful. A key benefit of CHP is that it increases reliability and security by distributing the energy resource closer to the point of use, taking the pressure off already over-extended utility infrastructure. Since the challenges and major players are at the state level, this sort of localized power structure is best supported by local organizations, which is one reason the CHP Regional Application Centers and Initiatives have proven to be so successful. Working at the local level makes it possible to work with and build relationships with local utilities and regulators. The regional initiatives are uniquely positioned to act as facilitators to promote expanded development of CHP. It would be advantageous if this kind of local support was fueled by expanded federal funding.

Similarly, increased federal facilitation of coordinated efforts between the state agencies and the individual utility companies would also be extremely beneficial. Engagement of federal agencies (like the DOE through the RAC's and the EPA CHP Partnership) with PUC's, state energy offices, and individual utilities has proven to help create more favorable marketplaces for CHP. In most cases, utilities that work with their local state agencies are more educated about issues relating to CHP policy and are thus better prepared to meet the challenges they face. In addition, this kind of collaboration tends to help utilities work more effectively with their customers, which results in an increased facilitation of CHP projects in their territories.

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APPENDIX 1: UTILITY INFORMATION

Utility	Utility Type	Number of Electric Customers	Generating Capacity (MW)	States Served
Allegheny Power*	Investor-Owned	1,500,000	10,400	Pennsylvania, Maryland, Virginia & West Virginia
Alliant Energy*	Investor-Owned	1,000,000	5,700	Iowa, Illinois, Minnesota & Wisconsin
American Electric Power*	Investor-Owned	5,000,000	36,000	Kentucky, Louisiana, Texas, Ohio, Virginia, West Virginia, Tennessee, Indiana, Michigan, Arkansas & Oklahoma
Aquila*	Investor-Owned	460,000	950	Missouri, Kansas & Colorado
Arizona Public Service Company	Investor-Owned	1,000,000	N/A	Arizona
Austin Energy	Public Power/ Municipal	360,000	2,600	Texas
Baltimore Gas & Electric	Investor-Owned	1,200,000	N/A	Maryland
Central Maine Power	Investor-Owned	582,000	N/A	Maine
Central Vermont Public Service Corporation	Investor-Owned	150,000	460	Vermont
Chugach Electric Association	Cooperative	69,000	530	Alaska
Con Edison of New York	Investor-Owned	3,200,000	10,600	New York
Consumers Energy	Investor-Owned	1,700,000	6,400	Michigan
Detroit Edison Company	Investor-Owned	2,100,000	11,000	Michigan
Dominion*	Investor-Owned	2,300,000	28,000	North Carolina & Virginia
Duke Energy*	Investor-Owned	3,800,000	28,000	Ohio, Kentucky, Indiana, North Carolina & South Carolina
Entergy*	Investor-Owned	2,700,000	30,000	Arkansas, Louisiana, Mississippi & Texas
Exelon*	Investor-Owned	5,200,000	38,000	Illinois & Pennsylvania
First Energy*	Investor-Owned	4,500,000	13,000	Ohio, Pennsylvania & New Jersey
Florida Power & Light Company	Investor-Owned	4,300,000	21,000	Florida
Hawaiian Electric Company	Investor-Owned	280,000	1,700	Hawaii
Idaho Power Company*	Investor-Owned	450,000	2,000	Idaho & Oregon
Kansas City Power & Light Company*	Investor-Owned	500,000	4,000	Kansas & Missouri
Los Angeles Dept of Water & Power	Public Power/ Municipal	1,400,000	7,200	California
Madison Gas & Electric	Investor-Owned	136,000	N/A	Wisconsin
MidAmerican Energy/Pacificorp*	Investor-Owned	2,300,000	13,900	Iowa, Illinois, Nebraska, Oregon, Washington, Wyoming, California, Utah & Idaho
National Grid*	Investor-Owned	3,200,000	N/A	New York, New Hampshire, Massachusetts & Rhode Island
Nebraska Public Power District	Public Power/ Municipal	87,000	N/A	Nebraska
Nevada/Sierra Pacific Power*	Investor-Owned	1,165,000	N/A	Nevada & California
Northeast Utilities System*	Investor-Owned	1,860,000	N/A	Connecticut, Massachusetts & New Hampshire
Omaha Public Power District	Public Power/ Municipal	323,000	2,500	Nebraska
Pacific Gas & Electric	Investor-Owned	5,000,000	N/A	California
PEPCO Holdings*	Investor-Owned	1,800,000	N/A	District of Columbia, Maryland, New Jersey & Delaware
Portland General Electric Company	Investor-Owned	762,000	N/A	Oregon
Powder River Energy Corporation*	Cooperative	25,000	N/A	Wyoming & Montana
Progress Energy*	Investor-Owned	3,000,000	24,500	Florida, North Carolina & South Carolina
Provo City Power	Public Power/ Municipal	N/A	N/A	Utah

Utility	Utility Type	Number of Electric Customers	Generating Capacity (MW)	States Served
Public Service Company of New Mexico	Investor-Owned	420,000	N/A	New Mexico
Public Service Electric & Gas Company	Investor-Owned	2,100,000	14,000	New Jersey
Public Service of New Hampshire	Investor-Owned	475,000	1,100	New Hampshire
Sacramento Municipal Utility District	Public Power/ Municipal	553,000	N/A	California
Salt River Project	Public Power Authority	860,000	N/A	Arizona
Seattle City Light	Public Power/ Municipal	370,000	N/A	Washington
Southern California Edison	Investor-Owned	4,600,000	N/A	California
Southern Company*	Investor-Owned	4,250,000	40,000	Alabama, Georgia, Florida & Mississippi
Tennessee Valley Authority*	Public Power Authority	8,500,000	33,000	Tennessee, Mississippi, Alabama, Georgia, North Carolina, Virginia & Kentucky
Wisconsin Energies*	Investor-Owned	1,100,000	6,000	Wisconsin & Michigan
Xcel Energy*	Investor-Owned	3,300,000	15,200	Colorado, Kansas, Michigan, Minnesota, New Mexico, North Dakota, Oklahoma, South Dakota, Texas & Wisconsin

Notes: Utilities marked with an asterisk are multi-state utilities. See Table 1 for more information.

APPENDIX 2: UTILITY ACTIVITY REGARDING CHP

Alabama

Alabama Power Company

Policies specific to CHP?

Has a general interconnection standard, but it is not specific to CHP.

Are there examples of CHP in the service territory?

APC is not aware of any published case studies.

Position on a national interconnection standard?

Alabama Power and Southern Company are involved in the debate and have filed their positions with FERC.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Alaska

Chugach Electric Association

Policies specific to CHP?

Interconnection guidelines are not specific to CHP.

Are there examples of CHP in the service territory?

There is almost no CHP customer self-generation. There have been some installations of fuel cells or microturbine projects and the utility has made a number of proposals for CHP to hospitals and large industrial plants, but they have not come to fruition.

Position on a national interconnection standard?

The utility is supportive of an interconnection standard; its position is largely consistent with the IEEE standard.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Chugach Electric works closely with the state energy authority on other DG projects.

Arizona

Arizona Public Service Company

Policies specific to CHP?

There are interconnection standards (and new ones in progress), but there is nothing specific to CHP.

Are there examples of CHP in the service territory?

There are many photovoltaic converter projects but not a lot of CHP. The reason for this is that rates are much lower than in California. Arizona is a very low-priced energy state, which makes CHP less economic. In addition, natural gas prices are very high so CHP becomes more uneconomic.

Position on a national interconnection standard?

No official position at this time, but it is generally supportive of IEEE 1547.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Salt River Project

Policies specific to CHP?

No policies specific to CHP.

Are there examples of CHP in the service territory?

There are a few industrial customers that use CHP for their own production purposes.

Position on a national interconnection standard?

The utility does not have an official position at this time, but it is generally supportive of IEEE 1547.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Arkansas

Entergy Arkansas

Policies specific to CHP?

There are policies specific to CHP, but they are not published. There are a few policies in the form of riders.

Are there examples of CHP in the service territory?

Mostly paper mills at this time, which have been in service for more than 20 years. Riceland Foods and Riviana partnered in a cogeneration project that used rice hulls as the primary fuel. The project is still operating today. There are a couple of sawmills reviewing the economics of using wood waste.

Position on a national interconnection standard?

Entergy has filed an official position with FERC.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

California

Los Angeles Dept. of Water & Power

Policies specific to CHP?

LADWP has a number of different programs, including a customer generation rebate program; Rule 21 for interconnection.

Are there examples of CHP in the service territory?

There is about 300 MW of customer generation, probably 75% of which is CHP. Most are colleges/universities or oil/petroleum refineries. About 50 customers in the area use CHP.

Position on a national interconnection standard?

No official position at this time. LADWP was involved with the creation of Rule 21, which governs the state of California.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered, but LADWP offers rebate programs for fuel cells and renewables and tries to point customers toward CPUC's Self-Generation Incentive Program through the gas company.

Pacific Gas & Electric

Policies specific to CHP?

No specific language for CHP installation, but have interconnection rules and policies for any kind of generation. Does have a tariff obligation guide, which has more language for clarification. PG&E conforms to the statewide, uniform policy for CHP- Rule 21.

Are there examples of CHP in the service territory?

There are many examples, probably about 300 units. These are mostly hospitals and refineries.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

Yes, the Self-Generation Incentive Program through CPUC is available for qualifying CHP systems. Also standby waivers and installation rebates based on the wattage of the unit. PG&E also works jointly with CPUC and CEC on these matters.

Sacramento Municipal Utility District

Policies specific to CHP?

Rule 21.

Are there examples of CHP in the service territory?

There are a few. Kaiser medical office building has four microturbines. There are a couple at hotels and the local university hospital at UC Davis.

Position on a national interconnection standard?

SMUD opposes the creation of a national interconnection standard and generally opposes national regulatory requirements. SMUD sees the value in a standard but has difficulty with the tariffs.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered, but SMUD is looking into policies that will help it engage CHP more publicly. Customers are encouraged to pursue the Self-Generation Incentive Program through PG&E.

California continued>>

California(continued)

Southern California Edison

Policies specific to CHP?

Rule 21. SCE also has specific tariffs in regard to DER, but not specific to CHP.

Are there examples of CHP in the service territory?

There are about 150 CHP projects, which generate about 170 MW. Examples include hospitals, casinos, office buildings, and manufacturing and industrial processes.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

There is the Self-Generation Incentive Program through CPUC, which provides differential incentives to pay down capital costs for DG products, including CHP, renewables, and fuel cells. These are based on the wattage of the installed equipment.

Connecticut

Northeast Utilities System

Policies specific to CHP?

Interconnection standard is not specific to CHP.

Are there examples of CHP in the service territory?

There are some CHP applications, but overall there is very little CHP in Connecticut.

Position on a national interconnection standard?

CL&P has its own interconnection standard (a Connecticut PUC standard). The utility states that the above standard meets most of its needs.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. The Connecticut Light & Power fund offers some incentives for efficiency measures in new construction, and this may expand to include CHP pending the outcome of current legislative action.

District of Columbia

Potomac Electric Power Company

Policies specific to CHP?

Interconnection policies are for any type of interconnection, but are not specific to CHP.

Are there examples of CHP in the service territory?

There are a few applications.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Florida

Florida Power & Light Company

Policies specific to CHP?

Not specific to CHP.

Are there examples of CHP in the service territory?

Not that the utility is aware of. FP&L claims that part of the issue is that there is very little natural gas availability.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Florida Solar Energy Center is the resource for incentives on renewable energy sources.

Georgia

Georgia Power

Policies specific to CHP?

No specific policies in regard to CHP, but rate information regarding nonrenewable resources exists, as does an interconnection standard.

Are there examples of CHP in the service territory?

There are some examples in the pulp and paper industry. There are probably about 200 MW of these types of facilities in the state.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives are offered.

Southern Company

Policies specific to CHP?

Not specific to CHP.

Are there examples of CHP in the service territory?

Southern Company has a long-term purchase power agreement with Mid-Georgia Cogeneration and it provides steam to Frito Lay. That project is around 300 MW. There are some others, but that information is not available to the public.

Position on a national interconnection standard?

Southern Company acknowledges the value of the guidelines as developed by IEEE, but the standard needs to be applied flexibly in accordance with unique local circumstances.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Georgia Power works with the Public Service Commission on procedures and processes for Qualifying Facilities.

Hawaii

Hawaiian Electric Company

Policies specific to CHP?

In Hawaii there is a PUC rule that was approved regarding interconnection for DG. It does not differentiate between CHP and other DG.

Are there examples of CHP in the service territory?

Most CHP applications are at hospitals and large resort hotels. They are on the order of a few hundred to several hundred kWs.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered, but Hawaiian Electric is pursuing a utility CHP program and filing the standby tariffs with the PUC.

Idaho

Idaho Power Company

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

There are a number of cogeneration and small power production projects. They have about 87 contracts—some are CHP projects, but mostly other kinds of DG.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Indiana

Indiana Michigan Power

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

No examples that the utility is aware of.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Indiana Michigan Power participates with the Indiana PUC and state agencies, which have interests in these activities, including a recent rulemaking currently in progress regarding interconnection standards.

Iowa

Alliant Energy

Policies specific to CHP?
Nothing specific to CHP.

Are there examples of CHP in the service territory?
There are a couple of agricultural experimental projects with digesters.

Position on a national interconnection standard?
No official position at this time.

Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered. Alliant will work with clients through Iowa Economic Development upon request.

MidAmerican Energy Company

Policies specific to CHP?
Nothing specific to CHP.

Are there examples of CHP in the service territory?
MidAmerican has several coal-fired cogeneration units in the area.

Position on a national interconnection standard?
No official position at this time.

Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP or DG are offered. Funding is provided to the Iowa Energy Center in support of such initiatives.

Kansas

Kansas City Power & Light Company

Policies specific to CHP?
Nothing specific to CHP.

Are there examples of CHP in the service territory?
None that the utility is aware of.

Position on a national interconnection standard?
No official position at this time.

Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered.

Kentucky

Kentucky Power

Policies specific to CHP?
Nothing specific to CHP.

Are there examples of CHP in the service territory?
None that the utility is aware of.

Position on a national interconnection standard?
Kentucky Power supports the IEEE standard.

Does the utility incentivize DG/CHP in any manner?
Kentucky Power has not worked with any state agency or given any incentive for CHP or DG.

Louisiana

Entergy Corporation

Policies specific to CHP?

The utility has procedures for the interconnection of new generation or the modification of existing generation, but nothing specific to CHP.

Are there examples of CHP in the service territory?

There are several cogeneration projects in the service territory. Most are in the petro-chemical and wood, pulp, and paper sectors.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Maine

Central Maine Power

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

No projects in the area that the utility is aware of.

Position on a national interconnection standard?

Central Maine Power is in the process of incorporating the FERC standard.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered, and there are currently no collaborative efforts with state agencies

Maryland

Allegheny Power

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

Two examples of CHP customers that are served by Allegheny Power are a large university and a paper mill.

Position on a national interconnection standard?

Allegheny supports IEEE Standard 1547 as long as it is adaptable to utilities' differing distribution systems that may require different standards.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Allegheny Power participates with the West Penn Renewable Energy Fund, which offers grants for various renewable energy projects.

Baltimore Gas & Electric

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

There are some examples, but no specific information is available.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives for CHP are offered.

Massachusetts

National Grid

Policies specific to CHP?

The company has published policies specific to CHP.

Are there examples of CHP in the service territory?

There are probably about a half dozen going on in its service territory in New England at any given time, mostly at some of the big colleges and larger hospitals (e.g., University of Massachusetts Medical Center).

Position on a national interconnection standard?

National Grid supports the FERC standard, but it emphasizes that it has to be both consistent and fair to be valuable.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP or DG are offered.

Michigan

Consumers Energy

Policies specific to CHP?

There is a cogeneration rate.

Are there examples of CHP in the service territory?

Examples of cogeneration facilities in the Consumers Energy service area of Michigan include Kraft foods in Battle Creek, Menasha Paper in Otsego, MCV in Midland, and Tondu Plant in Manistee.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. The commission is starting a collaborative group on DG in Michigan.

Detroit Edison Company

Policies specific to CHP?

The utility has riders for various distributed generation applications.

Are there examples of CHP in the service territory?

Information is not available at this time.

Position on a national interconnection standard?

The utility is supportive of an interconnection standard; its position is largely consistent with the IEEE standard.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Minnesota

Xcel Energy

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

None that the utility is aware of.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Mississippi

Entergy Mississippi

Policies specific to CHP?
Not specific to CHP.
Are there examples of CHP in the service territory?
There are several cogenerators in the Entergy territory.
Position on a national interconnection standard?
No official position at this time.
Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP or DG are offered.

Mississippi Power

Policies specific to CHP?
Not specific to CHP.
Are there examples of CHP in the service territory?
There is a Chevron cogeneration facility over 85 MW.
Position on a national interconnection standard?
Mississippi Power supports standardization of interconnection policies.
Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered. Mississippi Power works in conjunction with the state agencies that have programs to evaluate the cost savings of energy programs.

Missouri

Aquila

Policies specific to CHP?
There is a cogeneration rate.
Are there examples of CHP in the service territory?
No known examples in the service territory.
Position on a national interconnection standard?
No official position at this time.
Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered.

Nebraska

Nebraska Public Power District

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

There is one customer that uses DG for cogeneration and that is the Western Sugar Company in Scottsbluff. There is also a wholesale customer using animal waste in a methane generator.

Position on a national interconnection standard?

Nebraska PPD does not support a national standard. It believes that should be a state policy issue.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Nebraska's state energy office has different programs for various energy efficiency projects, including renewable generation, energy efficiency, and power quality issues.

Omaha Public Power District

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

None that the utility is aware of.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered, but there is an application process in place for self-generation requests. The Nebraska Power Review Board approves projects that prove they are cost-effective.

Nevada

Nevada/Sierra Pacific Power

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

There are a few examples in its territory.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

New Hampshire

Public Service of New Hampshire

Policies specific to CHP?

There are interconnection policies that apply to all generation interconnections, but not specific to CHP applications.

Are there examples of CHP in the service territory?

There are a couple of applications.

Position on a national interconnection standard?

No official position at this time, but PSNM is comfortable with a national standard and abides by FERC standards.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. There are, however, a few energy efficiency incentive programs.

New Jersey

Public Service Electric & Gas Company

Policies specific to CHP?

Interconnection guidelines are a collaborative effort between the state's three electric utilities, but are not specific to CHP.

Are there examples of CHP in the service territory?

There are a reasonable number (e.g., health facilities and large industrial projects like pharmaceuticals). The NJ Board of Public Utilities is in the process of developing a few case studies from its 2004 and 2005 program solicitations.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

The utility works with state energy offices, which approve and fund renewable energy projects.

New Mexico

Public Service Company of New Mexico

Policies specific to CHP?

PNM's policies and interconnection requirements are for Qualifying Facilities and applies the same QF interconnection requirements and procedures to other customer-owned generation including CHP.

Are there examples of CHP in the service territory?

None that the utility is aware of.

Position on a national interconnection standard?

PNM is supportive of IEEE 1547.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

New York

Consolidated Edison Company of New York

Policies specific to CHP?

Nothing specific to CHP. Con Edison's interconnection requirements for electrical interconnection of distributed generation encompasses many different technologies but does not differentiate among various technologies.

Are there examples of CHP in the service territory?

There are a few examples of CHP.

Position on a national interconnection standard?

Con Edison supports the IEEE 1547 standard.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Con Edison works closely with state agencies, such as the Public Service Commission, NYSERDA and Department of Environmental Conservation on programs to provide subsidies (e.g., Residential Net-Metering, Designated Technologies).

National Grid

Policies specific to CHP?

The utility has tariffs that outline the rules, terms, and conditions for distributed generation. It has recently revised its rates, exempting highly efficient CHP projects from certain fixed costs to encourage customers to optimally size generation.

Are there examples of CHP in the service territory?

There are several examples. The New York State Energy Research and Development Authority has assumed the role of doing case studies of these projects.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP at this time.

North Carolina

Progress Energy

Policies specific to CHP?

Some tariffs specific to CHP, which govern buy-back power rates, as well as a specific interconnection policy.

Are there examples of CHP in the service territory?

There are some paper plants – for example, Sinoco products in Hartsville and Wirehauser in Neauburg. There are about half a dozen in the service territory.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Ohio

American Electric Power

Policies specific to CHP?

Nothing specific to CHP. In some states there are interconnection tariffs or rules that would dictate interconnection for all types of generators. There is not a distinction on interconnection in terms of CHP or non-CHP generators. There is net metering in some jurisdictions and some variations in different states.

Are there examples of CHP in the service territory?

There is at least one project, which is in the Canton, Ohio area, where a high school uses a system to heat its swimming pool.

Position on a national interconnection standard?

American Electric Power supports the IEEE 1547 standard.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Duke Energy Corporation

Policies specific to CHP?

Nothing specific to CHP. Duke's policies are for DG in general.

Are there examples of CHP in the service territory?

There are some including refineries and steel & aluminum producers.

Position on a national interconnection standard?

No official position at this time, but Duke Energy is generally supportive of a national interconnection standard for distributed generation.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered, but Duke Energy funds some DG projects and also cooperates with state agencies.

Oregon

Pacificorp

Policies specific to CHP?
Nothing specific to CHP.
Are there examples of CHP in the service territory?
There are several in Oregon.
Position on a national interconnection standard?
No official position at this time.
Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered.

Portland General Electric Company

Policies specific to CHP?
It has produced an Integrated Resource Plan and there is a section dealing with CHP and its approach to it as a resource.
Are there examples of CHP in the service territory?
There are a number of examples of cogeneration/CHP projects in Oregon, which range from biogas at a local dairy to microturbines at a local university and a wastewater treatment plant.
Position on a national interconnection standard?
No official position at this time, but PGEC is generally supportive of a national standard.
Does the utility incentivize DG/CHP in any manner?
The utility offers no incentives specific to CHP, but it cooperates with the Oregon Department of Energy and the Energy Trust of Oregon, which provide tax credits for both residential and commercial renewable projects and are currently developing policy for CHP incentives.

Pennsylvania

First Energy

Policies specific to CHP?
Nothing specific to CHP. First Energy's interconnection policies are applicable to all DG .
Are there examples of CHP in the service territory?
There are a few examples.
Position on a national interconnection standard?
No official position at this time.
Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered.

South Dakota

Xcel Energy

Policies specific to CHP?
Nothing specific to CHP.

Are there examples of CHP in the service territory?
None that the utility is aware of.

Position on a national interconnection standard?
No official position at this time.

Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered.

Tennessee

Tennessee Valley Authority

Policies specific to CHP?
None specific to CHP.

Are there examples of CHP in the service territory?
There are some. Examples include local universities.

Position on a national interconnection standard?
No official position at this time.

Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered.

Texas

Austin Energy

Policies specific to CHP?
Nothing specific to CHP.

Are there examples of CHP in the service territory?
Austin Energy has customers operating CHP and also operates its own CHP facilities. It currently operates and owns two major CHP facilities, one at the Domain Business Park (4.5 MW) and one at the Mueller Energy Center (4.3 MW). Both systems utilize gas turbines and absorption chillers to simultaneously produce power, heating, and cooling. It also operates a 200 kW fuel cell CHP project at a health clinic.

Position on a national interconnection standard?
No official position at this time.

Does the utility incentivize DG/CHP in any manner?
No incentives specific to CHP are offered. They do a significant amount of work with the state energy conservation office, the DOE regional application offices, and the Houston Advanced Research Center.

Utah

Pacificorp

Policies specific to CHP?

Nothing specific to CHP.

Are there examples of CHP in the service territory?

There are a handful of large projects, including US Magnesium. Examples of other DG are small hydro or biomass.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Pacificorp works with Questar, which has a program for CHP customers.

Vermont

Central Vermont Public Service Corporation

Policies specific to CHP?

Nothing specific to CHP. Its interconnection tariffs and rules apply to all DG.

Are there examples of CHP in the service territory?

There are several CHP projects in the service territory, which are mostly institutional projects. There are two significant projects: a college and a health care provider for a college campus.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Virginia

Dominion

Policies specific to CHP?

Generation interconnection rules do not distinguish between DG and CHP. However, Dominion does have unpublished policies to assure system reliability standards are not compromised.

Are there examples of CHP in the service territory?

There are several DG interconnections with INGENCO.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Dominion works closely with other electric utilities, the North Carolina Public Staff, or the Virginia Staff, and other interested parties on policies, including renewable energy policy and interconnection standards.

Washington

Seattle City Light

Policies specific to CHP?

Nothing specific to CHP, but SCL's policy is to be greenhouse gas neutral—most policies are geared towards renewables.

Are there examples of CHP in the service territory?

There is a wood-based power plant in Snahomish County, Hampton Lumber. There is also a local sewage facility that uses heat recovery to heat the digesters.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.

Wisconsin

Madison Gas & Electric

Policies specific to CHP?

The utility has interconnection policies and rates specific to CHP for systems below or above 20 kW.

Are there examples of CHP in the service territory?

It is opening up a 150 MW joint cogeneration plant, which feeds the universities steam and central water loop. Electricity will only go to MGE, but the steam and chilled water will be used by the University of Wisconsin.

Position on a national interconnection standard?

Madison Gas and Electric is comfortable with a national standard and would support it.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Wisconsin Focus on Energy offers DG incentives.

Wisconsin Energies

Policies specific to CHP?

CHP is a subset of its distributed energy resources policies, Wisconsin Administrative Code Chapter PSC 119—rules for interconnecting distributed energy resource facilities.

Are there examples of CHP in the service territory?

There are several. There is a demonstration project in partnership with the City of Milwaukee—the Lake Tower Building, where a 60 kW Capstone is used for back-up to heat the building and to reduce electrical demand. There are a few cogeneration plants, including one of the largest plants in North America, Valley Power Plant—a 280 MW coal-fired plant that heats most of downtown Milwaukee buildings with an underground steam system. Another example is Waukeshaw sewage treatment facility.

Position on a national interconnection standard?

No official position at this time. It is supportive of state interconnection standards.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered. Wisconsin Energies works with the PUC of Wisconsin and the Midwest CHP RAC.

Wyoming

Powder River Energy Corporation

Policies specific to CHP?

No policies specific to CHP.

Are there examples of CHP in the service territory?

There are a couple companies talking about the potential of cogeneration, but no known customers in any serious stages of negotiation.

Position on a national interconnection standard?

No official position at this time.

Does the utility incentivize DG/CHP in any manner?

No incentives specific to CHP are offered.