

CHP Methodology in the 2012 Scorecard

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Abstract

Each year, ACEEE ranks states on a suite of energy efficiency policies in its annual *State Energy Efficiency Scorecard*. One of the categories in which states are ranked is combined heat and power (CHP), which is a suite of technologies that generate electricity and thermal energy concurrently, yielding higher efficiencies than standard energy generation.

The methodology used to rank CHP in previous versions of the *Scorecard* had been confusing to some readers. Additionally, certain aspects of the policy and regulatory environment for CHP had not been reflected in prior methodologies. To address these issues, ACEEE has developed a new scoring system and methodology for ranking CHP policies. This methodology will be used in developing rankings for the 2012 *Scorecard*. The new methodology should provide more clarity and transparency in the rankings and better reflect changes and updates in certain relevant CHP policies.

Introduction

Combined heat and power (CHP) is a suite of technologies that generate electricity and thermal energy simultaneously, resulting in much higher efficiencies than the separate generation of this energy. Due to its increased efficiency, CHP confers economic and environmental benefits to both the facilities that use it and society at large. For these reasons, policymakers are increasingly interested in encouraging CHP in their states and regions. However, economic and policy barriers can make some states far more attractive to CHP developers than others. In order to improve the market for CHP around the country, it is critical that policymakers understand how their own states could better encourage CHP and how their policies compare to those of other states.

Each year, ACEEE's *State Energy Efficiency Scorecard* ranks states on their policies and programs designed to encourage greater energy efficiency. The reports' chapters address a variety of types of programs and policies, including those of utilities, those relating to transportation, those relating to buildings, and those relating to CHP.

This paper will discuss the history of ACEEE's approach to ranking states on their CHP policies and explain impending changes to this methodology that will yield rankings that better reflect the state of CHP markets in all 50 U.S. states and the District of Columbia.

The *Scorecard* evolves every year to better tell the U.S. energy efficiency story. The proposed changes in methodology for the CHP chapter of the *Scorecard* are a reflection of ACEEE's close attention to the ever-changing world of energy policy and our dedication to constantly improving and updating our research and findings. We welcome feedback on this paper and look forward to the publication of the 2012 *State Energy Efficiency Scorecard*, which will reflect the changes discussed below.

Historical Methodology

In recent years ACEEE has used a single approach to ranking states on their CHP policies. If good policies were in place, the state was ranked highly. States were ranked in five and then (beginning in 2010) six different policy categories pertaining to CHP. The combined score was used to rank states for their overall friendliness toward CHP and then used as an input in ACEEE's overall ranking of states' energy efficiency policies.

The policy categories used in 2011 to determine how a state ranked for CHP were:

1. Interconnection standards (6 points)
2. Standby rates (5 points)
3. Incentives (4 points)
4. Output-based emission standards (4 points)
5. Treatment in an energy efficiency or renewable energy portfolio standard (3 points)
6. Net-metering standards (2 points)

A total of 24 points were used to calculate the CHP rank for the state, and point totals were broken into quintiles to determine the final score for the overall state ranking.

Interconnection standards and *standby rates* were equally weighted as the most important policy categories. Interconnection standards govern the procedural aspects and parameters of physical interconnection of a CHP system to the local grid. Critical characteristics of an interconnection standard, such as timeframes, technical requirements, fees, and legal requirements, are delineated so as to offer complete transparency to a CHP developer as they begin the process of interconnecting to the utility's grid. The standard also offers the utility and CHP developer a clear idea of what is to be expected at various points during the interconnection process. States with strong interconnection standards in place that provided a path toward interconnection for a wide range of CHP technologies and sizes were ranked more highly.

Standby/backup rates are the rates used by utilities to bill for backup/standby power (when a CHP system goes offline) and, in some cases, supplemental power (when a CHP system cannot by itself power an entire facility). These rates can provide strong economic incentives or disincentives to deploying CHP and are generally designed by utilities and subject to oversight by state regulatory commissions. States with standby rates that were fair and not overly burdensome to CHP systems that had unusual and infrequent spikes in demand were ranked more highly.

Incentives were the next highly ranked category. In some states, CHP is eligible for loans, production tax credits, grants, investment tax credits, or other financial benefits that can greatly increase CHP's economic attractiveness for certain kinds of facilities. States with a greater number of incentives and incentives that were more robust and persevered over time were ranked more highly.

Equal in weight to incentives were output-based emissions standards, which are air permitting standards that give CHP systems credit for their high levels of efficiency. More traditional emission standards calculate emissions based on fuel input, thus ignoring the fact that CHP systems generate more useful energy with a single input. Output-based standards instead set limits based on the useful energy output of a generating system, allowing CHP systems to better compete on an emissions-per-btu (or kWh) basis. States with output-based emissions standards in place were ranked more highly.

The treatment of CHP in an energy efficiency portfolio standard was the next highly ranked category for CHP. Most states have renewable portfolio standards, and CHP is seldom encouraged by such standards, typically only if it is fueled by biomass or the capture of waste energy from a preexisting industrial process. An energy efficiency resource standard requires that states or utilities meet a certain portion of future load growth with energy efficiency, and they can identify certain types of technologies as eligible efficiency measures to meet the standard. States that had efficiency resource standards or renewable energy portfolio standards that specifically delineated all (or most) types of CHP as eligible resources were ranked more highly.

Finally, a state's net-metering rules were the last category in which states were ranked for their CHP policies. Net-metering rules govern whether a self-generator can be credited for excess energy generated on site, and generally apply to smaller systems. States with net-metering rules that specifically allow small CHP systems to participate were ranked more highly.

The Need for a Change

In years past, the characteristics and presence of the above policies had gone a long way in describing a given state's CHP policy environment. However, they did not always align with certain realities, such as which states actually saw higher levels of CHP deployment in recent years.

In the previous two years, feedback on the CHP chapter of the *Scorecard* reflected a general sense that the rankings were not always telling the full story of how friendly or unfriendly a particular state was to CHP. CHP developers and advocates in particular noted that they were encountering barriers to CHP deployment in some of the states ranked more highly. On the flip side, developers reported that certain states were actually quite attractive for CHP though they ranked poorly in the *Scorecard*.

In response, ACEEE published a report in late 2011 that attempted to address some of the other “on-the-ground” realities of deploying CHP projects that may not have been fully captured in the *Scorecard*.¹ CHP developers and advocates provided anecdotal descriptions of local CHP policies, opportunities, and challenges. Data were collected to determine the actual size and number of CHP deployments in each state in the past five years, but the report was largely a qualitative one, designed to convey some of the representative opinions about certain CHP markets held by those most familiar with them.

The response to the report was strong, and most readers indicated that the descriptions of their states were accurate. However, the report did not offer a clear way in which to compare one state with another in some of the areas most cited by developers, such as economic considerations, utility business models, and alternative financing tools. Policymakers at the state and local level often indicate that having other states and localities to compare themselves to help them better understand how they could improve their own policies. The *Scorecard* is the best vehicle in which to offer states the means to compare and contrast their energy efficiency policies with those of other states.

Thus the 2012 *Scorecard* will move beyond simple policies in the CHP chapter, reflecting some additional economic and market considerations as well. The above-mentioned categories will remain, but the 2012 edition will include additional categories and changes in categories that should better reflect what CHP developers and advocates are facing on the ground.

Changes for 2012

For the CHP chapter of the 2012 *Scorecard*, additional policy and market considerations will include:

- Available revenue streams for CHP
- Average retail price of electricity and natural gas to commercial and industrial customers
- A more accurate reflection of financing tools available to CHP systems
- Additional policies that encourage CHP

¹ See <http://aceee.org/research-report/ie111> for this report in full.

The addition of available revenue streams will go beyond simple incentives and instead reflect the various channels that exist for CHP system owners to earn some sort of return on excess power generated by their systems. Feed-in-tariffs, standard offer programs, Public Utility Regulatory Policy Act (PURPA) qualifying facilities' contractual agreements, impactful energy portfolio payments, and other credits will be identified where applicable.

In discussing the average retail price of electricity and natural gas to commercial and industrial facilities in a state, a critical component of the fundamental economics of CHP systems will be addressed. The electricity rates paid by facilities that could be good candidates for CHP vary significantly around the country. When facilities considers CHP, they must compare the cost of power generated by the potential system – typically natural gas – with the cost of power to be otherwise purchased from the grid. Low electric power prices can make the economics of a CHP system harder to justify, negatively impacting the local CHP market. Similarly, higher natural gas prices can negatively impact the overall economics of CHP systems, though many newer CHP systems are running on biomass or biogas.

Additional financing tools identified in the 2012 *Scorecard* will include bonding authorities exercised by cities, counties, or the state and other means by which a facility could obtain very low interest financing or work with a third party to make projects happen.

Finally, a bonus category for additional policies will give credit to states that have deployed unique programs and policies that support CHP. These could include technical assistance to help industrial facilities consider CHP as they retire old boilers, new or emerging business structures that encourage utilities to invest in CHP, and other policies that help broaden and strengthen a state's CHP market.

2012 Methodology and Scoring System

In 2012, states will be ranked in seven different categories within the CHP chapter of the *Scorecard*. These categories will combine some of the historical metrics with some of the newly identified ones. The new 2012 categories are listed below, along with the maximum number of points available within that category:

1. Interconnection (1 point)
2. Net metering standards (.5 point)
3. Energy efficiency/renewable energy portfolio standard treatment (1 point)
4. Incentives and other revenue streams (1 point)
5. Financing opportunities, including loan programs (.5 point)
6. Emissions treatments (.5 point)
7. Additional supportive policies (.5 point)
8. Local electricity and gas rates (no points; will simply be reported)
9. Standby rates and related activities (no points; will simply be reported)

States will be ranked for their interconnection standards in a manner similar to previous years. States will be assessed for whether or not they have interconnection standards in place, and if so:

- Whether all forms of CHP and types of fuel are covered
- Whether larger CHP systems (over 10 MW) are covered
- Whether smaller systems can be “fast tracked”
- If the entire interconnection process is transparent and uniform and without allowances for arbitrary process delays
- The extent to which additional insurance or expensive equipment is required, and in what cases
- Whether the standard offers a transparent and workable dispute resolution clause

States will be assessed for whether or not they have net-metering standards in place, and if so, whether these standards:

- Can be used by customers in all customer classes
- Cover the full suite of CHP technologies and fuels
- Cover systems larger than 2 MW
- Limit the overall aggregate amount of capacity within a utility system
- Offer wholesale or retail rates for their net metering standard
- Handle carry over/expiration of credit

States will be assessed for how CHP is treated in its renewable energy portfolio standards, energy efficiency standards, or other portfolio standards, particularly:

- Whether CHP is included as an eligible technology, and how broadly applicable the definition of CHP is.
- How lucrative the portfolio standard treatment actually is to CHP projects.
- Whether enforceable benchmarks for CHP are part of the portfolio standard.
- How CHP is treated relative to other types of energy resources identified in the standard.

States will be assessed on how they help CHP projects tap into other revenue streams and incentives that can improve the overall economics of a CHP project. We will determine:

- Whether incentives and grants specific to CHP systems exist, and how significant and broadly applicable they are.
- Whether other revenue streams, such as standard offer programs or feed-in-tariffs are applicable to CHP and whether such revenue streams are persistent and reliable.

States will be assessed for the level of financing assistance CHP systems can enjoy. In particular we will examine:

- Whether low-interest loan programs are available to CHP systems and how broadly applicable the programs are.
- Whether special bonding authorities are being used by governmental entities to fund CHP systems.
- Whether additional financing assistance, such as loan guarantees or interest rate buy-downs, are available to CHP systems.

States will be assessed for the environmental regulations pertaining to CHP and in particular we will:

- Determine whether emissions standards are developed with an output-based approach.
- Assess whether other environmental regulations are designed to encourage CHP.
- Determine whether “fast-track” or “standard” permitting is available to CHP, expediting the permitting process.

States will be assessed for additional policies that might serve to encourage CHP but will not be captured in any of the previous categories. This could include:

- Unique technical assistance designed to encourage CHP deployment.
- Educational campaigns designed to increase interest in and knowledge of CHP.
- Special incentives available to utilities that help encourage CHP deployment.

States will be assessed for the manner in which policies regarding standby rates are supportive or at least neutral toward CHP projects. While a utility-by-utility assessment of standby rates will not be conducted in 2012, states will be able to earn extra points if they:

- Have policies in place stipulating that standby rates have to be structured in a manner that do not unfairly penalize CHP systems.
- Support the opening of rate cases to improve or modify existing standby rates.

Finally, the retail electric and natural gas rates paid by commercial and industrial facilities in a given state can have significant impacts on the overall economics of a CHP system. However, states will not earn points in this category but will instead be ranked to reflect this one aspect of economic attractiveness to CHP developers. This distinction recognizes that a state cannot directly control the retail price of electricity or gas to its customers. However, the price of electricity and gas directly drives a state’s CHP market to varying degrees, and policymakers can implement policies that help overcome economic barriers presented in part by lower electricity prices or higher gas prices.

This category will also note whether natural gas utilities offer throughput incentives to facilities using natural-gas fired CHP systems.

There will be 5 total points available within the CHP category. This final score will then become an input into the larger 2012 *Scorecard*.

Conclusion

CHP continues to be an economically attractive and environmentally preferable way to meet energy needs around the country. Importantly, some states have gone to great lengths to encourage CHP, though most have only recognized its benefits through a small number of less impactful policies. In order to meet national goals for CHP deployment, policymakers must understand the variety of factors that converge to make a state an attractive or unattractive market for CHP.

Previous versions of ACEEE's *State Energy Efficiency Scorecard* ranked states on their CHP policies based solely on whether particular policies were in place. An update to the methodology for the 2012 version of the *Scorecard* will incorporate more market elements and allow for the crediting of certain states that are pursuing creative policies that boost revenue streams for CHP. As states continue to prioritize cost-effective energy efficiency resources for their residents, CHP will play an important role in generating highly efficient and clean energy. States offering the right mix of policy and economic signals will benefit from greater CHP deployment now and in the near future.