

## Chapter 5. Clean Energy Portfolio Standards (CEPS)

### 5.1 Overview

Clean energy portfolio standards (CEPS) are tools states can use to increase the adoption of clean energy technologies,<sup>1</sup> including CHP,<sup>2</sup> by requiring electric utilities and other retail electric providers to meet a specified amount of load through eligible clean energy sources.<sup>3</sup> One of the goals of CEPS is to stimulate market and technology development so that, ultimately, clean energy will be economically competitive with conventional forms of electric power.<sup>4</sup> A number of states have explicitly included some form of CHP as an eligible resource in the CEPS. CEPS, which can be used in both regulated and restructured electricity markets, can be designed in a different ways to meet various objectives. CHP can be incorporated into all three of the CEPS types described below.

- *Renewable portfolio standard (RPS)* is the most common form of a portfolio standard and is usually focused on traditional renewable energy such as wind, solar, and biomass projects. This type of portfolio standard may incorporate other technologies and fuel types in addition to renewable energy and may have separate tiers or target mandates based on the form of generation. RPS are often market-based—qualifying projects receive tradable credits, typically referred to as renewable energy credits (RECs), which can then be sold for compliance purposes. Connecticut is an example of a state with CHP included in an RPS.
- *Energy efficiency resource standards (EERS)* require utilities to save a certain amount of energy every year. To do this, utilities implement energy efficiency programs to help their customers save energy in their homes and businesses.<sup>5</sup> EERS can be market-based and have a trading system of credits, although this is not as common as in RPS. EERS are typically defined as including end-use energy savings. Some states include other types of efficiency, including distribution system savings and CHP and other efficient distributed generation technologies.<sup>6</sup> Many states have an EERS and a separate RPS, but some combine an RPS and EERS into one comprehensive portfolio standard program. Michigan is an example of a state that passed legislation creating a renewable energy standard (RES). In addition to renewables, the standard requires that both electric and natural gas utilities meet certain energy savings requirements (i.e., EERS targets).
- *Alternative energy portfolio standards (APS)* often set targets for a certain percentage of a supplier's capacity or generation to come from alternative or advanced energy sources such as CHP, coal with carbon capture and storage (CCS), coal co-fired with biomass, or municipal solid waste projects. These standards are often market-based and credit eligible projects with alternative energy credits or some other form of credit, which can then be purchased by electricity suppliers to meet compliance obligations. Examples of states with APS include Massachusetts and Pennsylvania.

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<sup>1</sup> State policymakers, project developers, advocates, utilities, and others have various definitions of “clean” energy. This guide does not attempt to create one definition, but rather recognizes that the primary audience for the guide is state regulators, and that they define it as they see fit.

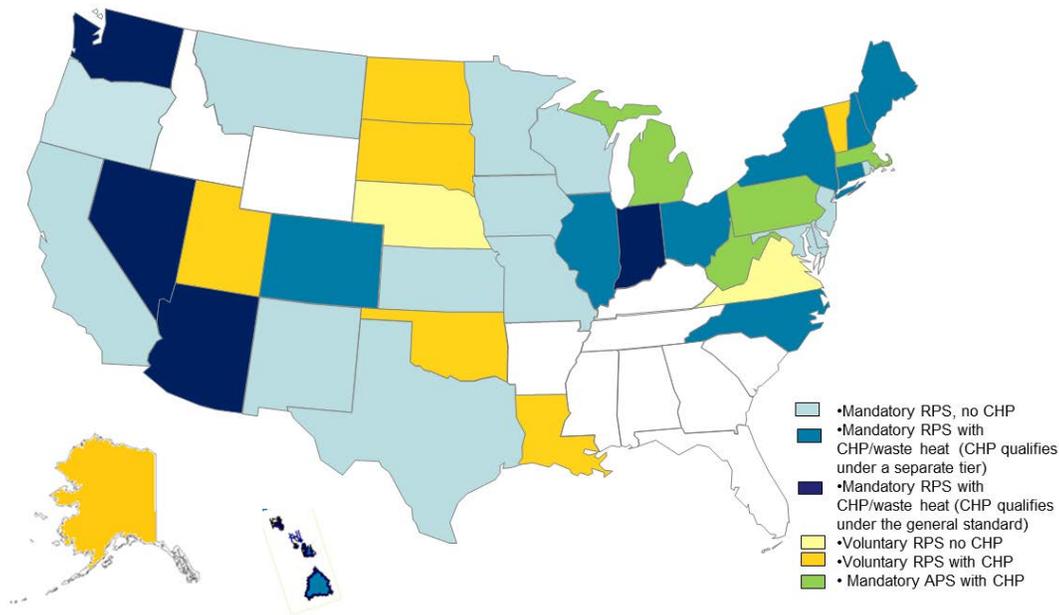
<sup>2</sup> Individual states will define clean energy and energy efficient technologies and practices specific to their state goals and regulations. CHP may or may not be considered for inclusion in a state's CEPS depending on how CHP's specific benefits such as GHG reductions support the state's goals and objectives.

<sup>3</sup> U.S. Environmental Protection Agency. *Renewable Portfolio Standards Fact Sheet*. April 2009. [www.epa.gov/chp/state-policy/renewable\\_fs.html](http://www.epa.gov/chp/state-policy/renewable_fs.html).

<sup>4</sup> U.S. Environmental Protection Agency. *Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States—Chapter 5. Energy Supply Actions*. April 2006. [www.epa.gov/statelocalclimate/documents/pdf/guide\\_action\\_chapter5.pdf](http://www.epa.gov/statelocalclimate/documents/pdf/guide_action_chapter5.pdf).

<sup>5</sup> ACEEE. *EERS in Practice*. April 1, 2009. <http://aceee.org/fact-sheet/eers-practice-basic-april-2009>

<sup>6</sup> DSIRE. [www.dsireusa.org](http://www.dsireusa.org). Center for Climate and Energy Solutions (C2ES). “Energy Efficiency Standards and Targets.” [www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards](http://www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards).



Source: Map based on ICF International research. December 2012.

**Figure 1. States with CEPS and how CHP qualifies (under RPS or APS)<sup>7</sup>**

## 5.2 CEPS Activity in States

### States with Clean Energy Portfolio Standards that Include CHP

Most CEPS have been enacted through state legislation. As of February 2013, some form of CEPS has been established in 42 states plus the District of Columbia (see Figure 6).<sup>8</sup> Of these states, 24—Arizona,<sup>9</sup> Connecticut, Colorado, Delaware, Hawaii, Indiana, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Nevada, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Washington and West Virginia—specifically call out a form of CHP and/or waste heat to power as an eligible resource in some portion of their CEPS program guidelines (RPS, APS, or EERS). While a number of states have recognized CHP in RPS or EERS programs, many of the RPS programs limit qualified CHP systems to waste heat to power CHP (CHP bottoming cycles), and most EERS programs do not set separate targets for CHP reducing the effectiveness of these programs in promoting CHP development.

### State Development and CEPS Design Features

CHP systems can offer three beneficial products: electricity generation, thermal energy production, and end-user energy savings through increased efficiency. Each of these products can help states meet their portfolio standard targets when appropriately evaluated. CHP benefits and how they are evaluated may vary by which type of CEPS a state has in place. For instance, an RPS or an APS may provide credit for the supply side attributes of CHP—the electric and thermal generation. EERS may be structured in a manner to credit the demand-side savings from CHP—the energy efficiency savings.

States have incorporated CHP into their CEPS using a diverse array of eligibility definitions, efficiency thresholds, targets, and crediting techniques. All states with a RPS allow CHP systems using eligible renewable fuel types to

<sup>7</sup> Florida and Arkansas also have EERS programs. Florida's is voluntary and Arkansas' is mandatory.

<sup>8</sup> Based on ICF International Research, the Database of State Incentives for Renewable Energy (DSIRE), and C2ES. [www.dsireusa.org](http://www.dsireusa.org).

<sup>9</sup> Arizona only allows for renewably-fueled CHP to qualify.

qualify, but may not account for the thermal production, thus treating CHP like an electric-only generator. There are 23 states that allow for fossil fuel-fired CHP systems under some type of CEPS (RPS, APS, or EERS).<sup>10</sup> Some states, including Massachusetts in the APS and Connecticut in the Class III RPS, have separate targets for energy efficiency that include CHP. States such as Colorado, and Nevada, only allow for waste heat to power CHP systems to qualify under their RPS programs.<sup>11</sup> Below are several common elements for successful incorporation of CHP in CEPS during the development of implementation rules by state utility regulators and other state policymakers.

## 5.3 Successful Implementation Approaches

### 5.3.1 Qualifying Resources Definition—How CHP is Defined

A key component of CEPS is the definition of technologies and fuels that qualify towards compliance with the standard. This decision may be made in legislation or by the utility commission as part of implementing the standard,<sup>12</sup> or by other policymakers. Since the utility commission has jurisdiction to implement these standards, this component is addressed in this guide but could be also addressed in the policy design at the legislature. How narrowly eligibility is defined may impact the feasibility of the CEPS targets and may affect compliance costs and the ultimate achievement of benefits sought by the program.

How CHP is defined in a CEPS varies by state. For instance, some state CEPS only allow for bottoming cycle CHP systems (waste heat recovery or waste heat to power) to qualify, some states allow for all types of CHP regardless of fuel type used, whereas other standards may only allow for renewably-fueled CHP to qualify. Two examples where renewable and certain forms of fossil fuels qualify are Massachusetts and Connecticut:

- **Massachusetts (APS).** CHP systems using renewable fuels and natural gas qualify. CHP systems must have begun operation (including incremental additions) on or after January 1, 2008. Existing units can receive credit for their added incremental useful thermal energy or useful electrical energy. The APS provides credit for both the electric and thermal output from the CHP system.
- **Connecticut RPS Class III.** In 2005, Connecticut added a third tier to the RPS resource requirements, establishing a new RPS Class III that must be fulfilled with CHP, demand response, and electricity savings from conservation and load management programs. Eligible CHP systems must have been developed on or after January 1, 2006. In 2007, the Class III standard was expanded to include systems that recover waste heat. Eligible systems that recover waste heat or pressure from commercial and industrial processes must be installed on or after April 1, 2007. Existing units that have been modified on or after January 1, 2006, may earn certificates only for the incremental output gains.

#### How the Criteria Are Addressed

**Policy Intent.** It may make sense if a state wants to encourage all cost-effective CHP to allow for a range of CHP technology types and fuels. A wide variety of system sizes may help achieve the policy intent of many CEPS programs, including encouraging the development of resources with greater environmental benefits compared to conventional sources of generation, while also focusing on projects that are cost-effective.

**Market Signals.** Eligible resources in CEPS often receive a credit, typically called a renewable energy credit (REC) or alternative energy credit that can be sold to those utilities that must comply with the standard.<sup>13</sup> The value of these credits can enhance CHP project economics providing a long-term source of sustainable financing that can

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<sup>10</sup> The U.S. EPA's Combined Heat and Power Partnership (CHPP) has a fact sheet on Portfolio Standards. The information cited is from information in this fact sheet.

<sup>11</sup> In these states, topping cycle CHP generally does not qualify.

<sup>12</sup> In most states, the utility regulator implements the CEPS, but in some states like Massachusetts, the state energy office implements the standard.

<sup>13</sup> Massachusetts APS credits under which CHP qualifies were selling for \$19.75/credit whereas Class I credits (for traditional renewables) were valued at \$42.67/credit for 2012 vintages. SNL. "CSAPR NOx, SO2 Allowance Bids Move Higher." January 20, 2012. Connecticut Class III credits were priced at \$10/credit as of September 2011. BGC Environmental Brokerage Services. [www.bgcebs.com/Renewables](http://www.bgcebs.com/Renewables).



encourage a range of clean energy projects, including CHP. This can send signals to the market that a specific state has a favorable economic environment for CHP.

**Ratepayer Impact.** Technology eligibility definitions along with target levels are key CEPS elements that have rate impacts. The states eligibility definition may have significant impact on the compliance costs. Considerations that state policymakers must weigh include the following:

- Narrowly defined eligibility may result in higher compliance costs that are commonly passed along to ratepayers.<sup>14</sup>
- Including a wider range of eligibility in CEPS, such as all CHP technologies using a variety of fuels, can help reduce ratepayer impacts since there would be a greater amount of potential resources available to fulfill the standard, reducing overall compliance costs for utilities.<sup>15</sup>

State regulators must carefully consider these options as they implement CEPS.

### 5.3.2 Minimum Efficiency Requirements or Performance-Based Metrics

An efficiency threshold for CHP projects is an important feature of incorporating CHP in CEPS. CHP efficiency is defined as the amount of useful energy output (electricity and heat) divided by fuel input. The efficiency of CHP systems varies according to the power and thermal needs of the customer, the type of generating technology employed and the amount of waste heat captured for useful purposes.<sup>16</sup> An appropriate eligibility threshold for CHP systems is one that is set high enough that so that it is clear that the CHP is achieving energy savings compared to separate heat and power, but not at a level that many CHP systems considered to be “high efficiency” would be excluded. Connecticut, Ohio, and Washington are examples of states with minimum efficiency requirements. As an overlay or as a stand-alone policy, progressive incentives for greater energy efficiency requirements in CEPS can also serve as a market driver for the development of systems with greater efficiency.<sup>17</sup> For example, a performance-based metric, instead of a minimum efficiency threshold, such as what Massachusetts has implemented in the APS, can also be used to encourage highly efficient CHP systems.

**Minimum Efficiency Example.** To ensure that CEPS are encouraging technologies that help achieve their policy goals, states commonly set an efficiency threshold for CHP systems or some sort of a performance based metric. By setting such a requirement, only well designed and operated CHP systems qualify—systems correctly sized to the thermal load so very little thermal energy is wasted. States such as Connecticut credit all electricity (kWh) generated from systems that meet or exceed the minimum efficiency threshold of 50%. In Washington State, CHP systems must have a useful thermal output of at least 33% to qualify.<sup>18</sup>

**Performance Metric Example.** The Massachusetts APS does not have an explicit minimum efficiency threshold, but instead has a performance-based incentive. The credits are allocated on the basis of one credit per MWh of net source fuel savings. Source fuel savings are determined by metering the CHP generated electrical and useful thermal energy as well as the fuel energy consumed and comparing the CHP fuel energy consumed with what would have been needed to generate an equal amount of electricity by the grid and thermal energy from a boiler or furnace. An empirical formula is used to quantify the net source fuel reduction. Systems that operate with either a low electrical and/or overall efficiency will generate very few or no credits. In addition, this approach

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<sup>14</sup> Summit Blue Consulting. *An Analysis of Potential Ratepayer Impact of Alternatives for Transitioning the New Jersey Solar Market from Rebates to Market-Based Incentives*. Prepared for the New Jersey Board of Public Utilities. Revised Draft. July 31, 2007. [www.nicleanenergy.com/files/file/SACP\\_RPI\\_Analysis0731.pdf](http://www.nicleanenergy.com/files/file/SACP_RPI_Analysis0731.pdf).

<sup>15</sup> U.S. EPA. *Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States—Chapter 5. Energy Supply Actions*. April 2006. [www.epa.gov/statelocalclimate/resources/action-guide.html](http://www.epa.gov/statelocalclimate/resources/action-guide.html).

<sup>16</sup> A minimum efficiency requirement doesn't apply to bottoming cycle CHP systems.

<sup>17</sup> U.S. EPA. *Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States—Chapter 5. Energy Supply Actions*. April 2006. [www.epa.gov/statelocalclimate/resources/action-guide.html](http://www.epa.gov/statelocalclimate/resources/action-guide.html).

<sup>18</sup> Washington State only allows for renewably fueled CHP systems to qualify under the Renewable Portfolio Standards.

encourages designers and developers to achieve high capacity factors through sound design, optimized sizing, and appropriate preventative and scheduled maintenance.

### How the Criteria Are Addressed

**Policy Intent.** CEPS are designed to encourage clean sources of generation (as defined by the state). To also achieve a policy's energy efficiency and/or GHGs reduction goals, states have selected efficiency thresholds or performance criteria that exceed the performance of conventional separate heat and power (i.e., central station electricity purchased via the grid and the use of an on-site boiler or heater). In contrast, allowing systems that do not meet a minimum efficiency or performance level lessens the achievement of the CEPS objective, and hence does not satisfy the policy intent.

**Market Signals.** Setting an efficiency threshold or establishing performance metrics for CHP systems to qualify for CEPS encourages optimal design for CHP projects, ensuring that systems are appropriately sized to the thermal load and maximizing the utilization of available thermal energy. Well designed and operated CHP systems matched to the thermal loads of the facility will have higher annual capacity factors, typically resulting in greater energy and emissions savings, and better project economics. Setting an efficiency requirement of performance-based metric encourages the development of efficient, well-designed CHP systems.

**Ratepayer Impact.** Setting the efficiency or performance bar at high but achievable levels for CHP systems ensures that the energy and emissions savings objectives, if applicable, of the CEPS are met with cost-effective options.<sup>19</sup>

### 5.3.3 Separate, Distinct Targets for CHP and Other Technologies

Establishing separate targets or tiers for different categories of resources ensures that a certain class of resource is not encouraged to the detriment of others.<sup>20</sup> If a policy goal is to encourage diversity of supply, this can also help achieve the goal.

The following are two state implementation approaches that have proven effective:

- To set a separate tier for CHP and related energy efficiency technologies and require a specified percentage of the target to be met by each of these tiers (Examples: Connecticut's Class III and Pennsylvania's Tier II).
- To establish a separate portfolio standard program (distinct from the RPS) which is devoted to CHP and/or other energy efficiency technologies (Example: Massachusetts' APS and Michigan's Energy Optimization Savings Standard).

### How the Criteria Are Addressed

**Policy Intent.** As CEPS look to encourage clean energy there are two key considerations. The first is that if CHP and energy efficiency measures qualify under the same general target as conventional renewable energy, the more cost-effective resources may be installed first.<sup>21</sup> This may or may not achieve the policy intent (some states explicitly identify a policy goal of greater renewable energy). The second consideration is how targets are established—whether they are total capacity targets (kW or MW) or whether the targets are set as a percent of utility sales over a definitive time period. When targets are set as a percentage of sales, CHP or other efficiency measures, by reducing load, can reduce the amount of renewable energy that must be procured by utilities pursuant to CEPS targets. Another option is to set a more aggressive target to account for the expected reduction of utility load.

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<sup>19</sup> See Appendix A for a discussion on evaluating the cost-effectiveness of a CHP program.

<sup>20</sup> Setting separate targets for different resources can also diminish competition between technologies.

<sup>21</sup> This ensures that each category of resource (e.g., renewable energy, energy efficiency, and CHP) is encouraged to the same extent as before energy efficiency or CHP was added to the target, or allows a state to encourage in-state technology development (e.g., fuel cells) while also stimulating energy efficiency and/or CHP development.



**Market Signals.** The development of CHP and other efficiency measures is more likely if there is a supportive policy structure in place, such as having clear targets for CHP in CEPS. A mixed signal may be sent to the market if CHP is included as an eligible resource along with energy efficiency, since the lowest-cost resource will be developed first, which in most cases is energy efficiency.<sup>22</sup> States will weigh their policy goals, including clean energy resource development, with cost impact, and reach an appropriate decision and communicate that to the market.

**Ratepayer Impact.** As discussed above, CEPS inherently have ratepayer impacts. Allowing for a wider range of projects to qualify can help reduce ratepayer costs since there is also more variety in costs associated with eligible projects. Since CHP may be lower in cost compared to some other supply-side resources eligible under the CEPS, allowing for CHP systems can help lower overall ratepayer costs associated with the CEPS.

## 5.4 Conclusions

CEPS can be used by states to successfully increase the use of clean energy. A number of states have explicitly included CHP as an eligible resource in the CEPS. There are three implementation approaches that state regulators should focus on when implementing CHP as a resource for CEPS. While this guide does not explore the merits or problems with the development of CEPS, it identifies how such policies can be successfully implemented to facilitate CHP.

### SUCCESSFUL IMPLEMENTATION APPROACHES: CLEAN ENERGY PORTFOLIO STANDARDS

- Qualifying resources definition—how CHP is defined
- Minimum efficiency requirements or performance-based metrics
- Separate, distinct targets for CHP and other technologies.

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<sup>22</sup> ACEEE. *Across the Nation, State Energy Efficiency Policies Deliver, Save Consumers Billions*. June 15, 2011. “These states are demonstrating that energy efficiency programs deliver real savings for utilities and ratepayers, and it is more affordable than any supply-side energy source,” said Michael Sciortino, Policy Analyst and the report’s lead author. By law and rule, the energy efficiency programs implemented in a state with EERS must cost less than the electricity that would have been produced if not for the programs.

**Table 1. Examples of CHP Eligibility in State Portfolios<sup>23</sup>**

State	RPS with CHP	APS with CHP	EERS with CHP		Characteristics <sup>24</sup>
			CHP Explicitly Included	EERS unspecified technology	
AZ	Yes, only includes renewably fueled CHP	NA <sup>25</sup>	Yes		Under Arizona’s Renewable Electricity Standard, systems installed on or after <sup>26</sup> January 1, 1997, using eligible renewable fuels qualify. Credit is granted to CHP systems based on a calculation which accounts for their thermal output; 3,415 BTUs equals one Renewable Energy Credit (REC), or one kWh of electric generation is equal to one REC. Arizona also has an EERS. CHP systems are mentioned in the standard in the following context: “energy savings from CHP installations that do not qualify under the RPS may count towards the EERS.”
CO	Yes, separate DG tier	NA		Yes	Under Colorado’s RPS, only renewably fueled CHP and waste heat to power (WHP) systems 15 MW or less qualify as “recycled energy” under the standard. CHP systems are not specifically mentioned in the state’s EERS but can potentially qualify pending approval by the Colorado Public Utilities Commission.
CT	Yes, CHP is in a separate tier—a Class III resource	NA	Yes, as part of the RPS (Class III)		Under Connecticut’s RPS, CHP systems that began operation on or after January 1, 2006, are eligible. CHP systems must meet a minimum 50% efficiency threshold. WHP systems that were installed on or after April 1, 2007, and recover waste heat or pressure from commercial and industrial processes also qualify. Both fossil fuel-fired topping cycle CHP and WHP are eligible as Class III resources. Renewably fueled CHP systems may qualify as Class I or Class II resources. Connecticut has specified calculation methodologies to account for the electric output from topping-cycle CHP systems and the thermal output from waste heat to power systems.
DE	Yes, only renewably fueled CHP <sup>27</sup>	NA	Yes		Waste heat to power defined as “recycled energy” is eligible under Delaware’s EERS. For waste heat to power systems to qualify, savings must be from systems that began operation prior to July 29, 2009.

<sup>23</sup> U.S. EPA Combined Heat and Power Partnership. Table derived from forthcoming EPA fact sheet on Portfolio Standards. The table only includes those states that specifically call out CHP and WHP as eligible; there may be others states with CEPS that CHP could potentially qualify.

<sup>24</sup> Under all state RPS programs, CHP systems using eligible renewable fuels qualify (renewably fueled CHP is specifically called out as eligible in AZ and ME CEPS). However, in most states, only the electric output of the renewable-fueled CHP system qualifies (not the thermal output), effectively treating the CHP as a power-only resource.

<sup>25</sup> “Not Applicable (NA)” indicates that a state does not have this type of standard in place.

<sup>26</sup> Vintage Eligibility indicates the year in which system operation and/or modification must have begun for that project to be considered eligible under the CEPS. For example, in Arizona, a CHP system must have an operation date of on or after January 4, 1997, to qualify for credit in the CEPS.

<sup>27</sup> “No” indicates that the state has this type of standard in place, but it does not include CHP and/or waste heat to power as eligible.

State	RPS with CHP	APS with CHP	EERS with CHP		Characteristics <sup>24</sup>
			CHP Explicitly Included	EERS unspecified technology	
HI	Yes	NA	Yes, full implementation begins in 2015		Under Hawaii's RPS, CHP, excluding certain fossil-fueled units that sell excess electricity, may qualify. The regulations state that "Renewable Electrical Energy" defined as "electric energy savings brought about by the use of rejected heat from cogeneration and combined heat and power systems, excluding fossil-fueled Qualifying Facilities that sell electricity to electric utility companies and central station power projects" qualifies. Energy efficiency, including CHP, is eligible in the state's RPS until 2015 when it will then be eligible under the state's Energy Efficiency Portfolio Standard.
IN (voluntary goal)	Yes (goal)	NA		Yes	Indiana has a Clean Energy Portfolio Goal (CEPG) under which CHP qualifies. WHP is defined as "waste heat recovery from capturing and reusing the waste heat in industrial processes for heating or for generating mechanical or electrical work." CHP is credited in the following manner—one Clean Energy Credit (CEC) is granted for each MWh of clean energy generated. Indiana also has an EERS. CHP systems are not specifically mentioned in the standard but can potentially qualify pending approval by the Indiana Utility Regulatory Commission.
LA (voluntary program)	Yes, only WHP (pilot)	NA	NA		Louisiana has a Renewable Energy Pilot Program in place. WHP defined as "waste heat recovery" (WHR) qualifies. Systems that began operation on or after January 1, 2010, qualify.
MA	CHP not explicitly mentioned, renewably fueled CHP only	Yes, stand-alone EE program, separate from the state's RPS	Yes, targets as part of the Green Communities Act		Under Massachusetts APS, CHP systems using any fuel type that began operation on or after January 1, 2008, qualify. To qualify, CHP must have a net CO <sub>2</sub> emissions rate of 890 lbs/MWh or lower. Credit for CHP systems under this standard is calculated as the energy savings on a quarterly basis compared to utilizing grid electricity at a conversion of 33% for the electric load, and fuel for the thermal load at a net 80% conversion efficiency. CHP is also eligible for a Capital Expenditure incentive under the state EERS program. Qualifying CHP must pass cost effectiveness screen with an overall efficiency ≥ 60%.
ME	Yes	NA		Yes, unspecified technologies qualify (potentially CHP)	Fossil fueled CHP systems in operation prior to January 1, 1997, qualify under Class II of the RPS. CHP systems must also meet a minimum 60% efficiency threshold. Under the state's EERS, CHP systems are not specifically mentioned in the standard but can potentially qualify pending approval by the Maine Public Utilities Commission.

State	RPS with CHP	APS with CHP	EERS with CHP		Characteristics <sup>24</sup>
			CHP Explicitly Included	EERS unspecified technology	
MI	NA	Yes, renewable standard with EERS component	Yes, part of APS		Advanced cleaner energy facilities (including industrial WHP) that began operation on or after October 6, 2008 qualify under the state's APS/EERS combined standard. Industrial CHP qualifies defined as "a facility that generates electricity using industrial thermal energy or industrial waste energy."
MN	No	NA	Yes		Under Minnesota's EERS, renewably fueled CHP and WHP (measured by electricity output) qualify, although certain exceptions apply.
NV	Yes	NA	Yes, part of RPS		Under Nevada's EERS, renewably fueled CHP and WHP (15 MW or less) qualify. The system must have begun operation on or after January 1, 2005. Under the standard, one Portfolio Energy Credit is granted for each one kWh generated from an eligible resource. Energy efficiency gets a credit multiplier of 1.05.
NC	Yes	NA	Yes, part of RPS		CHP using renewable fuels qualifies under the renewable portion of the standard. Fossil-fueled CHP and waste heat to power systems qualify as efficiency measures, which can provide up to 25% of the RPS requirements. After 2018, up to 40% of the standard can be met through energy efficiency, including CHP. Systems must have been installed on or after January 1, 2007. CHP systems are credited using the following methodology—thermal energy that is not used to generate electric power and is measured accurately in British thermal units (Btu) shall earn equivalent RECs based on the end-use energy value of electricity of 3,412 Btu per kWh. One REC is equivalent to one MWh of generation.
OH	NA	Yes	Yes		Under the APS, WHP using fossil fuels and renewably fueled CHP systems qualify. Typical CHP, meaning fossil fuel-fired topping cycle systems qualify as an "advanced energy resource," but compliance with these targets does not have to be demonstrated until 2025. CHP systems must have an overall efficiency of at least 60%, and at least 20% of total energy output must be thermal. WHP systems must have been installed on or after September 10, 2012, to qualify. Renewably fueled CHP must have been placed into service on or after January 1, 1998. All forms of CHP using any fuel type qualify under the state's separate EERS. The same efficiency thresholds apply as under the APS. Systems must have been installed or retrofitted on or after September 10, 2012, to qualify.



