Chapter 2. Developing a State Strategy

Summary

This chapter presents a process states may follow to select programs or strategies that use energy efficiency, renewable energy, combined heat and power (CHP), and other clean onsite generation technologies. Such strategies provide clean, low-cost, reliable energy, while achieving state energy, environment, and/or economic goals.[6] The process draws upon states' experiences and describes key steps states have taken to develop a comprehensive strategy for energy efficiency, renewable energy, and CHP. These include creating a collaborative process, establishing goals, exploring options to adopt new or expand existing policies, and developing an implementation strategy that taps states' available potential and meets their unique needs.

To develop a comprehensive strategy, states have found it useful to:

- Assess the environmental, energy, and economic benefits of energy efficiency, renewable energy, and CHP.
- Identify and remove market, regulatory, and institutional barriers to energy efficiency, renewable energy, and CHP.
- Integrate energy efficiency, renewable energy, and CHP with specific environmental protection or economic development objectives.
- Encourage and enhance coordination across state agencies and with electric and natural gas utilities; businesses; environmental groups; local governments; and energy efficiency, renewable energy, and CHP industries.
- Identify opportunities to coordinate with and build on ongoing state activities, investments and financing mechanisms, federal programs, and private sector investments.
- Incorporate evaluation into policy design and implementation.
- Create an enabling environment (via laws and regulations) for local actions such as energy savings performance contracts and property assessed clean energy.

Statewide strategies for advancing energy efficiency, renewable energy, and CHP often include the policies and programs described in this *Guide to Action* and may be developed in conjunction with broad planning processes, such as comprehensive energy or air quality planning, statewide sustainability planning, and resource-specific planning for energy efficiency, renewable energy, and CHP supplies. Many states, for example, have developed climate change action plans that include energy efficiency, renewable energy, and CHP as a key strategy for saving energy and lowering greenhouse gas (GHG) emissions.[7] States have also developed "lead by example" action plans to increase the use of energy efficiency, renewable energy, and CHP in state facilities and operations (see Section 4.5, "Lead by Example").

Energy efficiency, renewable energy, and CHP policies and programs are typically developed and implemented across multiple agencies and regulatory jurisdictions. In some cases, the process of developing a comprehensive strategy to advance energy efficiency, renewable energy, and CHP may serve as an effective

[6] Clean onsite generation refers to small-scale renewable energy and CHP at the customer or end-use site (EPA 2011).

[7] Thirty-one states and Puerto Rico have developed climate change action plans (EPA 2014a).

platform for engaging relevant state agencies, local governments, and nongovernment stakeholders within a state, including industries, businesses, and the general public. In other circumstances, the process may provide an opportunity for regional collaboration that goes beyond political boundaries and capitalizes on the electricity grid's integrated nature (see the text box, "Regional Greenhouse Gas Initiative," as an example).

Strategies should reflect each state's unique set of circumstances with regard to individual energy needs, climatic conditions, planning processes, regulations, and economic goals. However, the steps involved in developing a comprehensive strategy for energy efficiency, renewable energy, and CHP are similar from state to state and include the following:

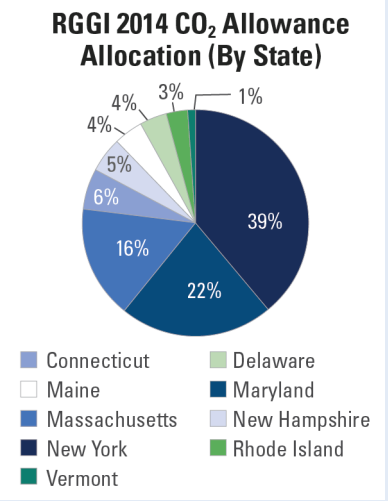
1. Engage with key state agency officials and stakeholders.
2. Clarify state priorities.
3. Understand your state's energy profile.
4. Assess energy efficiency, renewable energy, and CHP potential.
5. Identify energy efficiency, renewable energy, and CHP policy and program options.
6. Estimate potential policy and program impacts.
7. Prioritize and choose policies and programs.

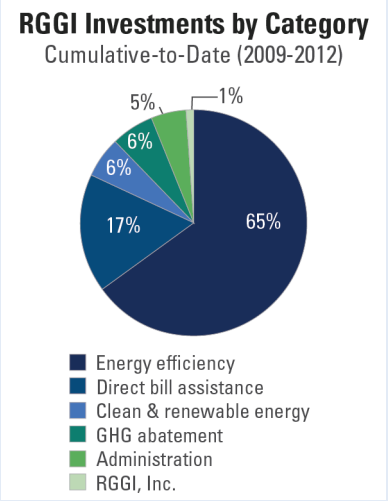
The order of these steps can vary from state to state. For example, some states start by developing broad goals based on regional goals or agreements, other state activities, or political considerations and then determine the most effective way to achieve them. Others begin by conducting thorough analyses of

Regional Greenhouse Gas Initiative

The success of the Regional Greenhouse Gas Initiative (RGGI) was based on **engaging key officials and stakeholders**. In 2003, governors from nine Northeastern and Mid-Atlantic states began discussions to develop the first regional cap and trade program to address power plant carbon dioxide (CO_2) emissions. This collaborative was possible in part because most of the participating states had experience working together on the Ozone Transport Commission NO_X Budget Program and with the Northeast States for Coordinated Air Use Management. Their shared history of successful collaboration laid the groundwork for participation in RGGI, especially since many of the staff involved were already familiar with each other.

Through collaboration, the nine RGGI **states clarified the joint priority** of limiting CO_2 emissions from fossil fuel-fired power plants, which accounts for approximately 20 percent of CO_2 emissions in the region; 95 percent of regional CO_2 emissions come from electricity generation.





Elected officials, environmental agencies, and public utility commissions across the participating states worked together to design the program in a manner that would maximize the ability of each to reach respective goals. RGGI CO_2 allowances are allocated to states based on the **current profile** and **potential opportunities** to decrease CO_2 emissions. Each RGGI state established a CO_2 Budget Trading Program that reflected its own statutory and/or regulatory authority. A comprehensive 2012 Program Review led to the implementation of a new 2014 RGGI cap of 91 million short tons. The CO_2 cap then declines annually by 2.5 percent.

The states used extensive modeling to evaluate the impacts of different emission caps and to negotiate a regional CO_2 emissions budget.

Each RGGI state has developed its own approach to limiting emissions that reflects **viable policy and program options**. RGGI includes a reinvestment mechanism that uses allowance auction proceeds to fund subsequent programs falling into the four categories of energy efficiency, renewable energy, GHG abatement, and direct bill assistance programs.

The information and figures in this text box are from www.rggi.org. States interested in replicating a similar process or learning more about RGGI can visit the Initiative website.

their energy efficiency, renewable energy, and CHP potential; evaluating policy options; and assessing related opportunities before determining a goal. Regardless of the order, the steps are common across many statewide energy efficiency, renewable energy, and CHP planning processes. Each step is described in greater detail below. The information resources and publications at the end of this chapter can help states conduct the various steps.

1. Engage Key State Agency Officials and Stakeholders

Engaging key state agency officials and stakeholders early in the process can develop interest and increase buy-in. This may be essential to developing policies and programs that will be implemented. States typically engage interested parties from multiple organizations to provide valuable information and to generate support for the process. Key players include, but are not limited to:

- *State agencies,* such as state energy departments, environmental departments, and public utility commissions, which can provide government data, analytical expertise, and policy or regulatory interpretation.
- *Elected officials,* including the governor and state legislatures, who can provide leadership, help move action through regulatory channels, and ensure follow-through.
- *Academic and research institutions,* which can provide expertise, analytic support, and/or a neutral forum to convene stakeholder meetings.
- *Utilities*, which can provide technical expertise and data and often administer some programs.
- *Independent system operators and regional transmission organizations*, which can provide technical analyses and information.
- *Independent power producers, independent transmission owners, and energy suppliers*, who can provide information and analysis about electricity markets.
- *Environmental and consumer organizations,* which can provide data, analysis, and feedback.
- *Other private sector interests,* which often maintain significant data and analytic capabilities relevant to energy planning, and/or which may be affected by new energy policies.
- *The public,* who can provide new ideas, input, and/or feedback to the state.
- *Local governments,* which can implement specific actions to help meet statewide goals and targets by reaching key sectors or working with municipally owned utilities.

2. Clarify State Priorities

States have found that clarifying energy efficiency, renewable energy, and CHP priorities can help ensure that planning is focused on specific outcomes. Each state has its own economic, environmental, and energy objectives with its own unique potential for energy efficiency, renewable energy, and CHP. States have found it helpful to make clear their overall priorities and what they hope to achieve through energy efficiency, renewable energy, and CHP early in the planning process. For example, a state may be looking to use energy efficiency, renewable energy, and CHP to increase electricity reliability, lower energy demand, enhance economic development, and/or reduce GHG emissions and other air pollutants. By clarifying their goals upfront, states have recognized that they can better understand the criteria they should use to evaluate their options. This then enables them to determine the appropriate combination of policies and programs to support their priorities.

States have found that engaging stakeholders (Step 1) can be an effective way to begin establishing qualitative and quantitative goals that reflect the needs, conditions, and priorities of an individual state.

States often use qualitative goals to promote broad policy objectives, such as achieving all cost-effective energy efficiency or enhancing economic development. These objectives may then be further refined and presented with quantitative goals.

Quantitative goals are helpful when states are defining specific targets for energy efficiency, renewable energy, and CHP expansion. Quantitative goals may reflect expanding energy efficiency, renewable energy, and CHP by a given percentage by a certain year or by a fixed number. States typically compare potential goals against a state's unique energy efficiency, renewable energy, and CHP potential (see Step 4) to ensure they are realistic. Alternatively, states can define specific goals relative to environmental priorities, such as GHG emission reductions, and then develop a comprehensive approach for using energy efficiency, renewable energy, and CHP to meet those goals. A combination of interim quantitative goals can be an effective way for a state to measure if it is on track to reach long-term goals.

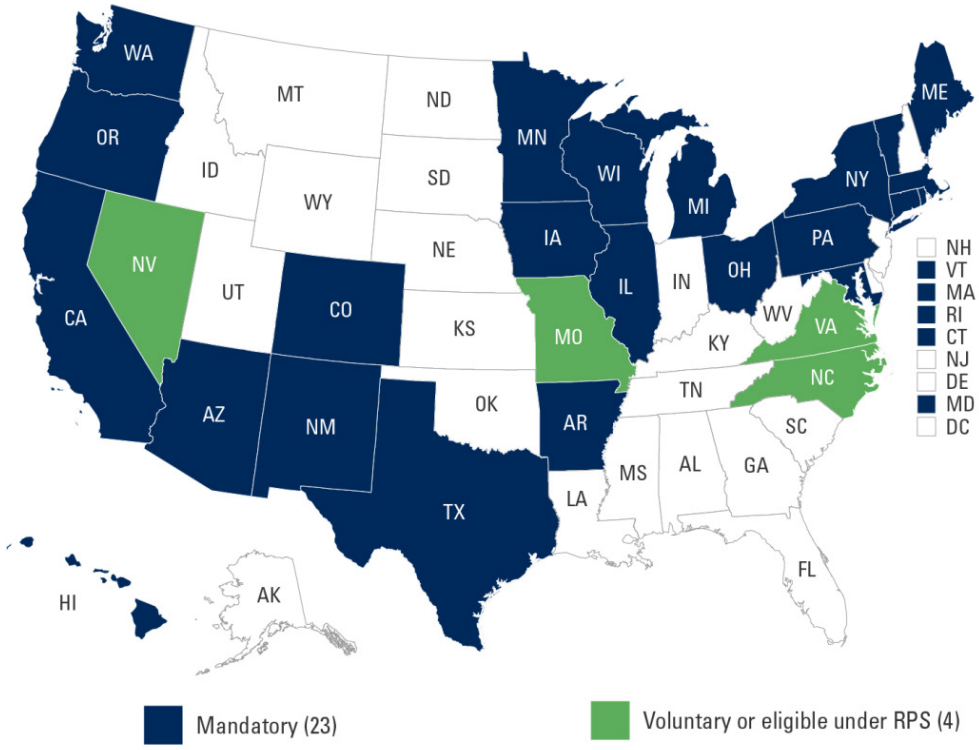
States use both qualitative and quantitative goals to ensure that all stakeholders and agencies clearly understand the project's desired outcome. By measuring success and identifying timelines for implementation, a state can evaluate progress and provide direction when mid-course corrections are necessary.

Many states have established clear quantitative energy efficiency, renewable energy, CHP, or greenhouse goals.

- As of March 2015, 27 states had an active energy efficiency resource standard (EERS) in place that establishes multiyear targets for energy savings (see Figure 2.1); four states have energy efficiency targets or goals that are voluntary (ACEEE 2014, DSIRE 2015a).
- As of March 2015, 29 states and Washington, D.C., have adopted a mandatory renewable portfolio standard (RPS) that requires retail electricity suppliers to supply a minimum percentage or amount of their retail electricity load with electricity generated from eligible renewable energy sources. An additional eight states have adopted non-binding renewable portfolio goals (DSIRE 2015b). In addition, two states have an RPS (see Figure 2.2) that provides the option for energy efficiency to meet requirements (ACEEE 2014).
- As of September 2014, 20 states and Washington, D.C., have set GHG emission targets (see Figure 2.3).[8] Although states use a variety of baseline target years, most states have a common ultimate target year of 2050 (C2ES 2014). For more information, see the text box, "Mandatory Statewide Climate Goals," on page 2-10.

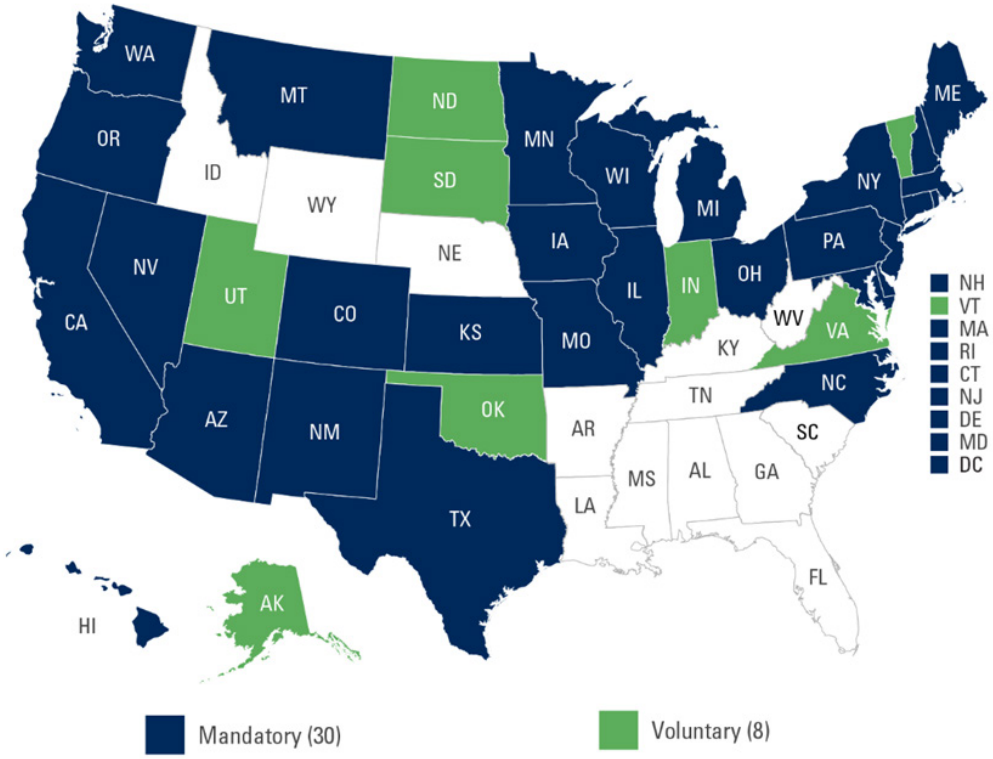
[8] In general, mandatory targets were set by legislation and voluntary goals were set by executive order (some non-binding goals were set by legislation).

Figure 2.1: States with EERSs



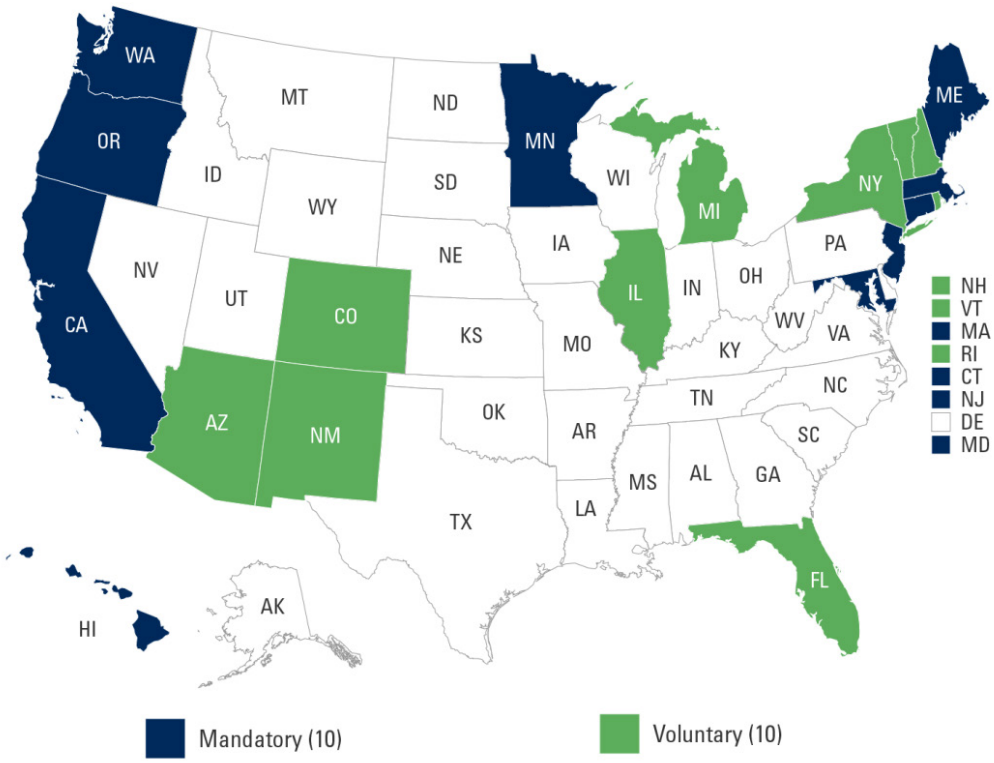
Sources: ACEEE 2014; VA, MO sourced from DSIRE 2015a.

Figure 2.2: States with RPSs



Source: DSIRE 2015b

Figure 2.3: Statewide GHG Emissions Targets



Source: C2ES 2014

3. Understand Your State's Energy Profile

States interested in increasing their energy efficiency, renewable energy, and CHP portfolios have found that establishing a baseline inventory of the state's energy production and use helps them understand the state's current profile and anticipated demand and provides a reference point for setting goals and measuring progress. States have found it helpful to quantify the amount of energy used in the state, identify which sectors or utilities are the largest consumers, develop a database of the energy efficiency, renewable energy, and CHP policies and programs that are already underway, and project future energy demand to understand the anticipated need for additional capacity. Many state energy offices already undertake comprehensive energy planning processes on a regular basis (for more information, see the "State Energy Planning" text box).

The U.S. Department of Energy's (DOE) Energy Information Administration offers state-level energy use data that can be projected into the future. Alternatively, some states rely on their own state-level data to model and forecast energy demand. By using a methodology or model that is transparent about assumptions and widely accepted by experts in the field, states can minimize challenges or confusion about how to interpret the results.

For states also interested in reducing GHG emissions, states have found it useful to include a baseline GHG inventory so that GHG emissions can be understood in the context of a state's energy profile. States can use EPA's State Inventory and Projection Tool to inventory and project their GHG emissions (for information about this and other tools offered by EPA, see the text box below).[9] The baseline and projection can help a state understand trends and identify sectors or sources that might be logical targets for policy intervention.

State Energy Planning

Comprehensive state energy planning can help meet current and future energy needs in a cost-effective and sustainable manner. State energy plans are traditionally led or coordinated by the state energy offices and include statewide coordination of policies and programs.

A state energy plan is a package of strategic goals with recommended policy and program actions to support these goals. These actions, which relate to all available energy resources, can be carried out in public and private sectors through methods such as legislation, investment incentives, energy conservation guidelines, and taxation. When states are interested in increasing the use of energy efficiency, renewable energy, and CHP, they look to their plans to learn about any options that have already been recommended.

Additional resources and information on state energy planning can be found at:

- U.S. Department of Energy's State Energy Program Guidance: http://energy.gov/eere/wipo/state-energy-program-guidance.
- National Association of State Energy Officials' State Energy Planning Guidelines: http://www.naseo.org/data/sites/1/documents/publications/NASEO-State-Energy-Planning-Guidelines.pdf.

4. Assess Energy Efficiency, Renewable Energy, and CHP Potential

States have found it useful to conduct energy efficiency, renewable energy, and CHP potential analyses to determine how much they could achieve with those policies, and to pinpoint where the greatest opportunities exist. Several methods and approaches exist for assessing statewide energy efficiency, renewable energy, and CHP potential.

Energy efficiency, renewable energy, and CHP potential can be assessed at different geographic scopes (i.e., national, regional, state, and utility service territory level) and at various degrees of aggregation (i.e., economy-wide, sector, and program). The assessments generally fall into one of the four following classifications: technical, economic, achievable, and program. The broadest classification is technical potential while the most specific is program assessment. Through assessing the potential viability of energy efficiency, renewable energy, and CHP, states can develop programs, plans, and budgets to maximize the expansion of these programs.

Technical Potential Assessment

"Technical potential" refers to the maximum theoretical amount of energy that could be produced (renewable energy) or displaced (energy efficiency), given existing limitations. The technical potential is limited by technology performance, topographic limitation, environmental, and land-use constraints. However, it does not consider non-engineering constraints such as the willingness of consumers to adopt new behaviors or purchase new appliances, and the costs of making the changes. Technical potential assessments often assume immediate implementation.

[9] EPA's State Inventory and Projection Tool is an interactive spreadsheet model designed to help states develop GHG emissions inventories and projections. It was created to lessen the time it takes to develop an inventory (collecting data, identifying emission factors, etc.). To download this free tool, go to http://www.epa.gov/statelocalclimate/resources/tool.html.

Tools and Resources for Assessing the Benefits of Clean Energy

EPA offers or supports several tools or resources to help states assess the benefits of clean energy policies.

- Information about these and other tools can be found at: http://epa.gov/statelocalclimate/resources/index.html.

Information and resources on estimating potential policy and program impacts can be found at:

- Clean energy benefits: http://epa.gov/statelocalclimate/documents/pdf/epa_assessing_benefits_ch1.pdf.
- Projections of energy impacts: http://www.epa.gov/statelocalclimate/state/statepolicies.html and http://www.epa.gov/statelocalclimate/state/activities/exploring-state-climate.html.
- Assessing energy impacts of policies and programs: http://epa.gov/statelocalclimate/documents/pdf/epa_assessing_benefits_ch2.pdf.
- Electric system benefits: http://www.epa.gov/statelocalclimate/documents/pdf/epa_assessing_benefits_ch3.pdf.
- Economic impacts: http://www.epa.gov/statelocalclimate/documents/pdf/epa_assessing_benefits_ch5.pdf.
- Air quality, GHG, and public health benefits: http://www.epa.gov/statelocalclimate/state/activities/assessing-air-quality-and-public-health.html.

Tools for States

To better understand greenhouse gas emissions and energy use in your state:

- State Inventory Tool (SIT): http://epa.gov/statelocalclimate/resources/tool.html.
- State Energy CO_2 Data Tables: http://www.eia.gov/environment/emissions/state/analysis/.
- Emissions and Generation Resources Integrated Database (eGRID): http://www.epa.gov/cleanenergy/energy-resources/egrid/.

To assess the air pollution impacts of energy efficiency, renewable energy, and CHP:

- AVoided Emissions and geneRation Tool (AVERT): www.epa.gov/avert.

To assess the air quality, public health benefits, and health cost savings of air pollution reductions:

- The Co-Benefits Risk Assessment (COBRA) screening model: http://epa.gov/statelocalclimate/resources/cobra.html.

To translate GHG emissions into easily understood metrics:

- Greenhouse Gas Equivalencies Calculator: http://www.epa.gov/cleanenergy/energy-resources/calculator.html.

Economic Potential Assessment

"Economic potential" refers to the subset of technical potential that is economically cost-effective. An economic potential assessment of energy efficiency, renewable energy, or CHP includes data that can vary based on the state or evaluator's inputs. Some economic potential assessments are limited to evaluating the upfront cost of the technology, the operating costs (including energy prices), the product lifetime, and a discount rate. Other assessments may include a broader set of inputs including factors such as consumer preferences and out-of-pocket consumer expenditures. The assessments all compare the energy efficiency, renewable energy, or CHP alternative to the conventional alternative or supply-side energy resources. Similar to technical potential assessments, economic potential assessments assume immediate implementation without regard to a phased adoption process or the time required for real-life implementation. Economic potential focuses on the cost of the energy efficiency, renewable energy, or CHP measure and may not reflect market failures, barriers to implementation, or transaction costs.

Achievable Potential Assessment

"Achievable potential" (or "market potential") refers to the energy efficiency savings or renewable energy expansion that can be realistically achieved. This is a subset of the economic potential. Achievable potential takes additional factors into account, such as the technology adoption process, market failures or barriers that inhibit technology adoption, transaction costs, consumer preferences, and social and institutional constraints. In contrast to economic and technical potential assessments, an achievable potential assessment may capture

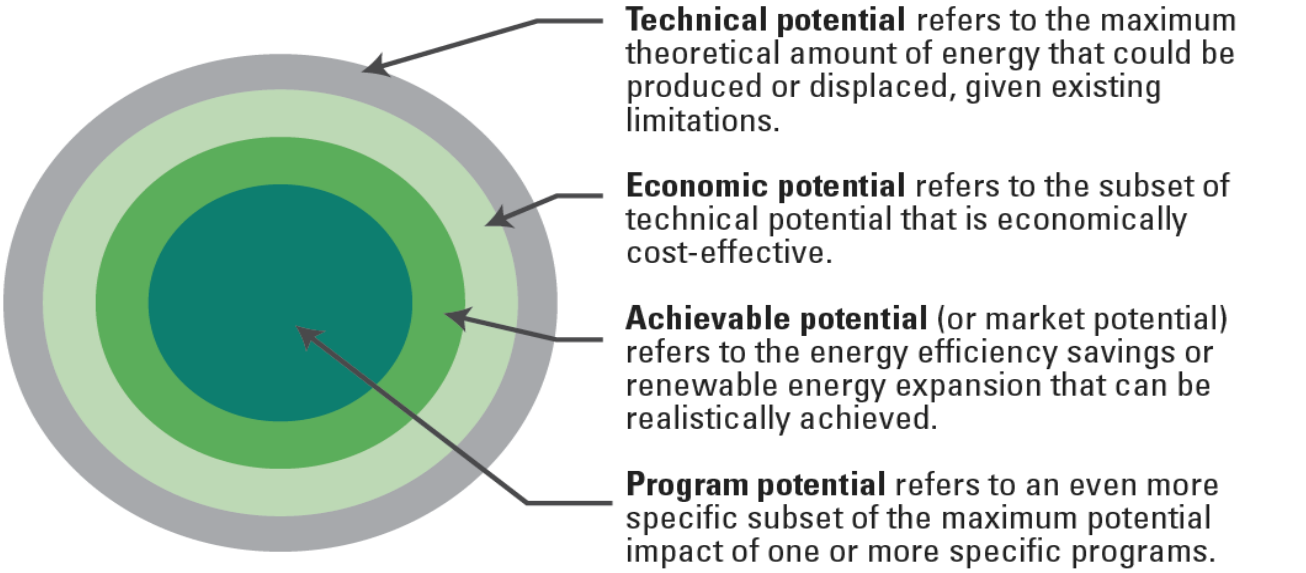
the capacity of a program and administrators to ramp up program activity over time, assuming that full implementation may not be immediate.

Program Potential Assessment

"Program potential" refers to an even more specific subset of the maximum potential impact. The program potential assessment is an analysis based on specific program funding levels and designs. This type of assessment provides the most specific detail and could consider a single program or a portfolio of multiple programs (EPA 2014b).

These analyses help states identify opportunities and determine the feasibility of different goals based upon technologies or resource availability.

Figure 2.4: Relationship Between Energy Efficiency Potentials



5. Identify Energy Efficiency, Renewable Energy, and CHP Policy and Program Options

When assessing how to best invest in or implement energy efficiency, renewable energy, and CHP, states have found it useful to both examine their existing policies and programs and to identify new policies and programs by exploring the experiences of other states. For states that already have energy efficiency, renewable energy, and CHP policies in place, opportunities and potential often exists to improve or expand them so that they can achieve greater impacts. Whether they have a lot or a little experience with energy efficiency, renewable energy, and CHP, most states find it valuable to learn best practices from other states that might be adaptable to local conditions.

Review Existing Policies

States often evaluate the success of existing programs to determine if and how they can be extended, expanded, or modified to achieve more energy efficiency, renewable energy, and CHP. States can start by using the policies in the *Guide to Action* as a checklist to see which policies they already have on the books. Since multiple agencies across a state influence clean energy investments and use it for purposes of energy, air quality, and/or GHG mitigation planning, states typically find it helpful to exchange information across agencies on how existing policies are working and where potential exists for expansion. States can also review other states' energy plans, air quality plans, and GHG emission reduction strategies to understand the breadth of state policies that advance clean energy.

When considering policy options, states often evaluate barriers to advancing cost-effective energy efficiency, renewable energy, and CHP programs simultaneously. For example, approval processes designed for large onsite generation systems seeking to connect to the grid may be too onerous to allow small systems to come online. Reexamining interconnection standards (discussed in Section 7.3, "Interconnection and Net Metering Standards") can stimulate the growth of renewable energy by making the process more appropriate to the size and scale of the project and cost-effective for the generation owners.

Mandatory Statewide Climate Goals

Several states have adopted mandatory climate goals through legislative action. The climate goals listed below are targets for overall emission reductions that could be met through a series of programs that include but are not limited to energy efficiency, renewable energy, and CHP.

California: Reduce emissions to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Connecticut: Reduce emissions to 10 percent below 1990 levels by 2020, and to 80 percent below 2001 levels by 2050.

Hawaii: Reduce emissions to 1990 levels by 2020.

Maine: Reduce emissions to 1990 levels by 2010, 10 percent below 1990 levels by 2020, and 75 to 80 percent below 2003 levels in the long term.

Maryland: Reduce emissions to 25 percent below 2006 levels by 2020.

Massachusetts: Reduce emissions to 25 percent below 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Minnesota: Reduce emissions to 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050, based on 2005 levels.

New Jersey: Reduce emissions to 1990 levels by 2020 and to 80 percent below 2006 levels by 2050.

Oregon: Reduce emissions to 10 percent below 1990 levels by 2020 and to 75 percent below 1990 levels by 2050.

Washington: Reduce emissions to 1990 levels by 2020, 25 percent below 1990 levels by 2035, and 50 percent below 1990 levels by 2050.

Identify New Policies

Once states have enumerated the existing energy efficiency, renewable energy, and CHP programs and policies, the additional potential can be assessed by consulting available data, using an assessment method described in Step 4, and exploring the *Guide to Action* to identify new policies and programs that are feasible in the state. For each policy or program, the *Guide to Action* describes objectives and benefits, state examples, roles and responsibilities of key players, opportunities for coordination with other programs or policies, best practices for policy design and evaluation, action steps for states, and resources for additional information. States can use the information about other states' successes and best practices to identify those options that they would like to explore further.

Chapters 3 through 7 of the *Guide to Action* provide information and resources relating to specific programs and policies that states have found useful for implementing cost-effective energy efficiency, renewable energy, and CHP. States can use the *Guide to Action* to determine an appropriate mix of new, modified, and expanded policies that warrant further analysis.

6. Estimate Potential Policy and Program Impacts

Evaluating the potential impacts of the range of policies and programs under consideration can help states choose which ones to implement or expand. States typically establish criteria to judge the options, consider various design options (such as related to timing and stringency), and then conduct quantitative and qualitative analyses to explore potential impacts on their state's energy system, environment, and/or economy.

Establish Criteria to Assess Policies

Assessment criteria vary from state to state, and depend on a state's unique priorities, goals, and circumstances. Criteria can include, but are not limited to: cost-effectiveness, ease of implementation, political feasibility, GHG and/or criteria pollution reduction effectiveness, payback period, and economic benefit (e.g., impacts on jobs). To avoid confusion, states have found it useful to define the criteria upfront. For example, when using cost-effectiveness as a criterion, states typically clarify whether they are using dollar per kilowatt-hour saved or dollar per tons of emissions saved. States have discovered that this prevents confusion and helps to identify the types of information and tools needed to assess the policies.

States have also found it helpful to evaluate initial policy recommendations according to qualitative criteria (e.g., ease of implementation, political feasibility) to identify options suitable for further consideration. These policies can then be ranked and sorted according to the criteria chosen.

Design the Policies

A policy's impacts vary depending upon design. For example, the impact of an RPS set at 2 percent to be achieved in 10 years will differ significantly from one set at 25 percent to be achieved in 5 years. States have found it valuable to evaluate policies using different designs or specifications to find the ones that best meet their criteria.

Some states have found it useful to consider how policies relate to the goal and interact with other policies and programs. To avoid confusion upon implementation, states have examined policies and programs upfront and assessed how to design them so that they are complementary and do not introduce conflicting barriers. For example, public benefits funds for energy efficiency can be used to bolster building code effectiveness through support for implementation and enforcement. Likewise, RPSs, net metering, interconnection standards, and grant programs can enhance the deployment of renewables. Alternatively, some policies may create barriers for other policies. For example, interconnection standards with low capacity limits (e.g., less than 10 kilowatts [kW] for residential applications and less than 100 kW for commercial applications), high liability insurance mandates, and other burdensome requirements may inhibit broader adoption of onsite generation (EPA 2014c).

When designing a policy, states have found it advantageous to identify the type of action required, the key players needed to implement the action, and the timeframe for implementation. For example, a regulatory action would require one set of specific agencies, stakeholders, and participants and occur on one timeline, whereas an energy efficiency program may require an entirely different set of players and take place over varying timeframes. Identifying this information upfront helps ensure that the appropriate experts can be involved and contribute their expertise early in the process. These experts can assist in shaping the policy to maximize its effectiveness. States have realized that this type of upfront planning and specificity improves coordination across programs, ensures that key players know what is expected of them, and facilitates future

measurement, evaluation, and communication of results. This process also facilitates the development of an implementation strategy that is a key component of advancing clean energy.

Analyze the Potential Impacts

Once policies are designed, states can use analytic tools to evaluate the options based on the criteria they have developed. These tools help states quantify the impacts of the various policies and rank them according to the agreed upon criteria. Usually, this includes an assessment of the energy, economic, and/or environmental and public health impacts of the options, sometimes referred to collectively as co-benefits. States have found it particularly helpful to measure the policies' impact against the goal established in Step 2. This will enable the collaborative to choose those policies that bring a state closest to its goal. The EPA report, *Assessing the Multiple Benefits of Clean Energy,* provides tools and a framework for state policy-makers to assess the energy, environmental, and economic benefits of energy efficiency, renewable energy, and CHP policies and programs during development and implementation.

While analytical tools necessarily involve predictions and uncertainty, they can address a number of specific questions. It is important to thoroughly understand the strengths and weaknesses of the models used, the ways they interact with each other, and the underlying assumptions to avoid misinterpreting the results. As stated earlier, states have found it useful to select models that are widely accepted by experts in the field and are transparent in their assumptions and structures.

EPA offers or supports several tools or resources to help states assess the impacts of policies. States can use the tools provided in the "Tools and Resources for Assessing the Benefits of Clean Energy" text box in Step 4 to enhance their assessment of energy efficiency, renewable energy, and CHP policies.

7. Prioritize and Choose Policies and Programs

Once states have assessed and ranked policy options according to the desired criteria, most states have found it useful to review the findings with their collaborative. Based upon the rankings and discussion among the stakeholders, states typically present recommendations for action in a state strategy that can be referenced, implemented and measured against.

A complete strategy for advancing energy efficiency, renewable energy, and CHP typically includes the following components:

- The state goals (established in Step 2).
- Descriptions of the policies recommended in order to achieve the goal (developed in Steps 4 and 5).
- Projected policy impacts as they relate to the goal (developed in Step 5).
- An implementation strategy (outlined in Step 5).
- A measurement, evaluation, and reporting plan, described in Section 4.1, "Energy Efficiency Resource Standards."

As states design and evaluate energy efficiency, renewable energy, and CHP policy options, they find it beneficial to consider in advance how to measure success. States often specify an evaluation strategy, a timeline for reporting progress, the key metrics to be reported, and the key players involved. This measurement, evaluation, and reporting plan enables states to regularly check their progress against their goals and adjust their course as needed.

Together, these steps can help a state develop a strategy to deliver clean, low-cost, and reliable energy through the use of energy efficiency, renewable energy, and clean onsite generation. Several states have successfully completed energy efficiency, renewable energy, and CHP strategies that can serve as useful models for other states interested in reaping the multiple benefits of cost-effective energy efficiency, renewable energy, and CHP. Examples and links to many of these plans are listed in the information resources below.

Information Resources

Mandatory Statewide GHG Emission Targets

State	Title/Description	URL Address
Statewide GHG Emission Target Resources		
California	California Global Warming Solutions Act of 2006 (Assembly Bill No. 32). This bill requires California to reduce its GHG emissions to 1990 levels by 2020, a reduction of approximately 15 percent below emissions expected under a "business as usual" scenario.	http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf
Connecticut	An Act Concerning Connecticut Global Warming Solutions (H.B. No. 5600). This bill sets a statewide GHG emissions reduction target of 10 percent below 1990 levels by 2020 and an 80 percent reduction below 2001 levels by 2050.	http://www.cga.ct.gov/2008/ACT/PA/2008PA-00098-R00HB-05600-PA.htm
Hawaii	Hawaii Global Warming Solutions Act (Act 234). This act mandates that statewide GHG emissions be reduced to 1990 levels by 2020.	http://www.capitol.hawaii.gov/session2007/bills/GM1005_.PDF
Maine	An Act to Provide Leadership in Addressing the Threat of Climate Change. This act establishes statewide GHG emissions reduction targets to below 1990 levels by 2010, 10 percent below 1990 levels by 2020, and 75 to 80 percent below 2003 levels in the long term.	http://www.mainelegislature.org/ros/LOM/lom121st/5pub201-250/pub201-250-44.htm
Maryland	An Act Concerning Greenhouse Gas Emissions Reduction Act of 2009 (Chapter 171). This act requires the state to achieve a 25 percent reduction in statewide GHG emissions from 2006 levels by 2020.	http://www.mde.state.md.us/programs/Air/ClimateChange/Documents/2011%20Draft%20Plan/A_GGRA_Act.pdf
Massachusetts	An Act Establishing the Global Warming Solutions Act (Chapter 298 of the Acts of 2008). This act requires GHG emissions reductions from all sectors of the economy to reach a target of 25 percent reduction by 2020 and 80 percent reduction by 2050.	https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter298
Minnesota	Next Generation Energy Act of 2007. This act establishes goals to reduce per capita use of fossil fuels by 15 percent by 2015 and to derive 25 percent of total energy used in the state from renewable power sources by 2025.	https://www.revisor.mn.gov/bin/bldbill.php?bill=S0145.2.html&session=ls85
New Jersey	Global Warming Response Act. This act mandates the statewide reduction of GHG emissions to 1990 levels by 2020, followed by an 80 percent reduction below 2006 levels by 2050.	http://www.njleg.state.nj.us/2006/Bills/A3500/3301_R2.PDF
Oregon	House Bill 3543. This bill establishes a goal of 10 percent reduction of GHG emissions below 1990 levels by 2020 and 75 percent reduction below 1990 levels by 2050.	https://olis.leg.state.or.us/liz/2007R1/Downloads/MeasureDocument/HB3543
Washington	Washington Senate Bill 6001. This bill commits the state to reduce statewide emissions to 1990 levels by 2020, 25 percent below 1990 levels by 2035, and 50 percent below 1990 levels by 2050.	http://lawfilesext.leg.wa.gov/biennium/2007-08/Pdf/Bills/Senate%20Bills/6001.pdf

Energy Efficiency, Renewable Energy, and CHP Potential Studies

Title/Description	URL Address
State Potential Studies	
HECO IRP-4: Energy Efficiency Study. This 2008 report, prepared by Global Energy Partners, LLC, for the Hawaiian Electric Company (HECO), details a study of energy efficiency and demand response potential and program development in support of HECO's integrated resource plan filing.	http://www.hawaiianelectric.com/vcmcontent/IntegratedResource/IRP/PDF/AppendixN_HECO_IRP4_Final_GEP_DSM.pdf
Missouri Statewide DSM Market Potential Study: Final Report. This 2011 study, prepared by KEMA, Inc., for the Missouri Public Service Commission, assessed the electric and natural gas demand-side management (DSM) potential for Missouri's residential, commercial, and industrial sectors. The goal was to determine the levels of DSM savings available, the costs associated with procuring them, and whether the measures delivering the savings are cost-effective.	http://energy.mo.gov/energy/docs/Finalreport_041411.pdf
Electric Energy Efficiency Potential for Pennsylvania: Final Report. This 2012 study, prepared by GDS Associates, Inc., for the Pennsylvania Public Utilities Commission, characterizes the technical, economic, and achievable potential for electric energy efficiency programs in Pennsylvania for 3-, 5-, and 10-year time periods, pursuant to Pennsylvania Act 129.	https://www.puc.pa.gov/electric/pdf/Act129/Act129-PA_Market_Potential_Study051012.pdf
Energy Efficiency and Renewable Energy Potential Study of New York State. This 2014 study, prepared by Optimal Energy, Inc., for the New York State Energy Research and Development Authority, presents the potential for increased adoption of energy efficiency, renewable energy, and CHP technologies in New York State using a 20-year study period, 2013–2032.	http://www.nyserda.ny.gov/Cleantech-and-Innovation/EA-Reports-and-Studies/EERE-Potential-Studies
Triennial Plan for Fiscal Years 2014–2016. The Efficiency Maine Trust was established by the Maine Legislature to reduce energy costs, administer cost-effective energy efficiency programs, ensure that expenditures are cost-effective, and promote investment in cost-effective energy measures that reduce overall energy costs. The Efficiency Maine Trust Act (2012) specifies that the Trust should prepare a strategic plan every 3 years.	http://www.efficiencymaine.com/docs/TriPlan2-11-26-2012.pdf
2013 Statewide Energy Conservation Plan. This report documents the state of New Hampshire's progress toward its goal of reducing fossil fuel consumption by 25 percent by 2025, in state buildings, on a square foot basis, compared with a 2005 baseline. The report also identifies challenges that may prevent the state from achieving its goal.	http://admin.state.nh.us/EnergyManagement/Documents/ConservationPlan2013.pdf
Texas' Clean Energy Economy: Where We Are, Where We're Going, and What We Need to Succeed. This 2010 report, prepared by Hamilton Consulting for the Cynthia and George Mitchell Foundation, examines the factors that affect the Texas energy economy and presents three possible scenarios for a clean energy economy over the next decade.	http://www.treia.org/assets/documents/HamiltonReportOnCleanEnergy.pdf

Title/Description	URL Address
U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis. This 2012 National Renewable Energy Laboratory (NREL) report details technical potential estimates for six different renewable energy technologies, as well as methods and results for several other renewable energy technologies from previously published reports. It summarizes the U.S. technical potential of the technologies examined.	http://www.nrel.gov/docs/fy12osti/51946.pdf
Electric Energy Efficiency Potential for Pennsylvania. This 2012 report for the Pennsylvania Public Utility Commission provides detailed information on energy efficiency measures that are the most cost-effective and have the greatest potential energy savings in the service areas of Pennsylvania's electric distribution companies.	https://www.puc.state.pa.us/electric/pdf/Act129/Act129-PA_Market_Potential_Study051012.pdf
Regional Energy Efficiency Potential Studies	
Air Pollution Prevention Forum Documents. This website contains documents from Western Regional Air Partnership's Air Pollution Prevention Forum, which examines barriers to energy efficiency, renewable energy, and CHP technology use, identifies actions to overcome such barriers, and recommends potential programs and policies that could result in a reduction of air pollution emissions from energy production and energy end-use sectors in the Grand Canyon Visibility Transport Region.	http://www.wrapair.org/forums/ap2/docs.html
Conservation Resources Advisory Committee. This committee was created to advise the Northwest Power and Conservation Council regarding policy and program alternatives to effectively develop the cost-effective conservation potential identified in the Seventh Pacific Northwest Conservation and Electric Power Plan.	http://www.nwcouncil.org/energy/crac/home/
From Potential to Action: How New England Can Save Energy, Cut Costs, and Create a Brighter Future with Energy Efficiency. This 2010 report was prepared for Northeast Energy Efficiency Partnerships and EPA's Office of Air and Radiation, Climate Protection Partnerships Division by Optimal Energy, Inc. It guides policy-makers, program administrators, advocates, and stakeholders in the New England states as they shape energy policy over the coming decade and beyond by compiling efficiency studies from the six states.	http://psb.vermont.gov/sites/psb/files/docket/7862VYRelicense/Exhibit%20PSD-ASH-8.pdf
Emerging Energy-Saving HVAC Technologies and Practices for the Buildings Sector (2009). The American Council for an Energy-Efficient Economy (ACEEE) periodically reviews technologies that promise to reduce energy consumption. This analysis highlights 15 of the most promising heating, ventilating, and air conditioning (HVAC) technologies.	http://aceee.org/research-report/a092
The State of the States: Energy Efficiency Policy in 2011. 2012. This ACEEE article highlights significant developments in energy efficiency, including increased utility-sector investments and increased adoption of policies and programs to promote energy-efficient transportation systems, at the state level in 2011.	http://www.aceee.org/blog/2012/01/state-states-energy-efficiency-policy

Title/Description	URL Address
Sixth Northwest Conservation and Electric Power Plan. This plan recommends five specific actions to help meet the Northwest region's growing electricity needs while reducing future uncertainties. The plan includes a detailed analysis of efficiency potential in hundreds of applications, and it demonstrates that a substantial amount of growth in electricity demand could be met by conservation.	http://www.nwcouncil.org/media/6284/SixthPowerPlan.pdf
Tennessee Valley Authority Potential Study. This 2011 energy efficiency study assesses the TVA market to deliver forecasts of energy use and peak demand, as well as forecasts of energy and peak-demand savings achievable through energy efficiency and demand response programs.	http://www.tva.com/news/releases/energy_efficiency/GEP_Potential.pdf
National Energy Efficiency Potential Studies	
The Long-Term Energy Efficiency Potential: What the Evidence Suggests. This 2012 ACEEE report examines the potential contributions of energy-efficient behaviors and investments in reducing overall energy use by the year 2050.	http://www.garrisoninstitute.org/downloads/ecology/cmb/Laitner_Long-Term_E_E_Potential.pdf
Unlocking Energy Efficiency in the U.S. Economy. This 2009 study from McKinsey and Company examines the potential for greater efficiency in non-transportation uses of energy, assesses barriers to achievement of that potential, and surveys possible solutions.	http://www.mckinsey.com/client_service/electric_power_and_natural_gas/latest_thinking/unlocking_energy_efficiency_in_the_us_economy
Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. (2010–2030). This 2009 study, prepared by the Electric Power Research Institute (EPRI), assesses the achievable potential for energy efficiency and demand response programs to reduce the growth rate in electricity consumption and peak demand through 2030.	http://www.edisonfoundation.net/iee/Documents/EPRI_SummaryAssessmentAchievableEEPotential0109.pdf
U.S. Energy Efficiency Potential Analysis through 2035. EPRI updated their 2009 analysis in 2014. This report forecasts achievable energy efficiency by 2035.	http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000000001025477
Policy Drivers for Improving Electricity End-Use Efficiency in the U.S.: an Economic-Engineering Analysis. The Integrated Policy scenario in this 2014 paper demonstrates significant achievable potential: 261 TWh (6.5%) of electricity savings in 2020 and 457 TWh (10.2%) in 2035.	http://www.spp.gatech.edu/publications/working-papers/policy-drivers-improving-electricity-end-use-efficiency-us-economic
Recent Estimates of Energy Efficiency Potential in the USA. This 2013 paper by Priya Sreedharan summarizes recent potential studies and reviews their differing assumptions, methods, and data.	https://ethree.com/documents/EEPotential_Sreedharan_2012.pdf
State-Level Energy Efficiency Analysis: Goals, Methods, and Lessons Learned. This 2008 ACEEE publication provides a meta-analyses of energy efficiency potential studies conducted at the state level.	http://aceee.org/files/proceedings/2008/data/papers/8_468.pdf
Cracking the TEAPOT: Technical, Economic, and Achievable Energy Efficiency Potential Studies. This 2014 ACEEE report summarizes results from a wide range of U.S. energy efficiency potential studies.	http://aceee.org/sites/default/files/publications/researchreports/u1407.pdf

Clean Energy Plans and Planning Processes

Title/Description	URL Address
State Energy Efficiency Plans	
California's Secret Energy Surplus: The Potential for Energy Efficiency. This 2002 study, prepared for The Energy Foundation and The Hewlett Foundation, examines potential energy and peak demand savings from energy efficiency measures in California. It demonstrates that significant additional and long-lasting energy efficiency potential exists.	http://www.issuelab.org/click/download1/californias_secret_energy_surplus_the_potential_for_energy_efficiency
The State Energy Efficiency Scorecard. ACEEE's 2014 State Energy Efficiency Scorecard ranks states on their adoption of policies that encourage energy efficiency using metrics spanning seven different policy areas.	http://www.aceee.org/state-policy/scorecard
Hawaii Energy: Your Conservation and Energy Efficiency Program: Program Year 2012. This Science Applications International Corporation report presents Hawaii's 2012 annual plan, which describes the key elements of the state's vision of making energy conservation and efficiency the most cost-effective, sustainable, and utilized of any energy options available.	https://auction.hawaiienergy.com/images/resources/AnnualPlans_ProgramYear2012.pdf
Nevada Energy Efficiency Strategy. This 2005 Southwest Energy Efficiency Project report presents 14 policy options for further increasing the efficiency of electricity and natural gas and reducing peak power demand in Nevada.	http://www.eswaterheater.org/sites/default/files/library/1232/409.pdf
Leaders of the Pack: ACEEE's Third National Review of Exemplary Energy Efficiency Programs. This report profiles 63 leading energy efficiency programs that span a wide array of program types offered to utility customers.	http://www.aceee.org/research-report/u132
Texas Emissions Reduction Plan (TERP). The Texas Commission on Environmental Quality's TERP program provides financial incentives to eligible individuals, businesses, and local governments to improve air quality by reducing emissions from vehicles and equipment.	http://www.tceq.texas.gov/airquality/terp
National Action Plan for Energy Efficiency. The July 2006 Action Plan presents recommendations for creating a national commitment to energy efficiency through gas and electric utilities, utility regulators, and partner organizations. The Plan was developed by more than 50 organizations representing key stakeholder perspectives. EPA and DOE facilitated this partnership.	http://www.epa.gov/cleanenergy/documents/suca/napee_report.pdf

Title/Description	URL Address
Guide for Conducting Energy Efficiency Potential Studies: A Resource of the National Action Plan for Energy Efficiency. This 2007 document is designed to assist state officials, regulators, and others in implementing the National Action Plan for Energy Efficiency's recommendations, which was a private-public partnership facilitated by EPA and DOE. The Guide identifies three main applications for energy efficiency potential studies and provides examples of each, along with an overview of the main analytical steps in conducting a potential study.	http://www.epa.gov/cleanenergy/documents/suca/potential_guide.pdf
Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers. This 2008 guide assists utility regulators, gas and electric utilities, and others in meeting the implementation goals of the National Action Plan for Energy Efficiency's vision to achieve all cost-effective energy efficiency by 2025. The document reviews issues and approaches involved in considering and adopting cost-effectiveness tests for energy efficiency.	http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf
State Clean Energy-Environment Technical Forum: State Energy Forecasting. This background document, developed in 2008, provides an overview of the process of developing an energy forecast, available approaches, and issues that states should consider throughout the process.	http://www.epa.gov/statelocalclimate/documents/pdf/background061908.pdf
State Renewable Energy Plans	
Oregon's Renewable Energy Action Plan. This 2005 Oregon DOE plan outlines recommended actions for the state of Oregon to develop its renewable energy policy and meet a large fraction of energy needs with new renewable energy generation by the year 2025.	http://egov.oregon.gov/ENERGY/RENEW/docs/FinalREAP.pdf
A Framework for State-Level Renewable Energy Market Potential Studies. This 2010 NREL document provides a framework and next steps for state officials who require estimates of renewable energy market potential. The report gives insights on how to conduct a market potential study and distinguishes between goal-oriented studies and other types of studies while explaining the benefits of each type.	http://www.nrel.gov/docs/fy10osti/46264.pdf
Regional Clean Energy Initiatives or Plans	
Powering the South: A Clean and Affordable Energy Plan for the Southern United States. This 2002 Renewable Energy Policy Project report features a plan for the aggressive implementation of energy efficiency and renewable resources in six southeastern states. The analysis includes electricity market simulation modeling, a technical assessment of cost-effective energy opportunities, a technical and economic assessment of renewable resource potential, and policies for overcoming market barriers.	http://www.synapse-energy.com/sites/default/files/SynapseReport.2002-01.REPP_.Powering-the-South.00-02.pdf

Title/Description	URL Address
Repowering the Midwest: The Clean Energy Development Plan for the Heartland. This 2001 Environmental Law and Policy Center plan quantifies the Midwest's energy efficiency and renewable resources and lays out strategies, policies, and practices to advance a cleaner electricity future.	http://www.issuelab.org/resource/repowering_the_midwest_the_clean_energy_development_plan_for_the_heartland
Southern Alliance for Clean Energy. This organization works to find clean energy solutions in the southern United States by engaging directly with stakeholders and industries on energy issues and promoting policy change through education and outreach.	http://www.cleanenergy.org
Western Governors' Association (WGA) Regional Energy Initiative. WGA has developed multiple reports on opportunities for western states to develop and deliver energy in a secure, affordable, and environmentally conscious manner. WGA's *10-Year Energy Vision* sets regional goals and objectives that Governors have agreed should guide energy development, use, and policy in the West.	http://www.westgov.org/index.php?option=com_content&view=article&id=129&Itemid=57
Assessing the Multiple Benefits of Clean Energy: A Resource for States. This document helps state energy, environmental, and economic policy-makers identify and quantify the benefits of clean energy. The document presents a comprehensive review of these benefits with an analytical framework that states can use to assess those benefits.	http://epa.gov/statelocalclimate/documents/pdf/epa_assessing_benefits.pdf
Identifying and Analyzing Policy Options. This EPA State and Local Climate and Energy Program Web page highlights suggestions and resources for identifying and analyzing climate and clean energy policy options that states can implement to advance energy efficiency, renewable energy, and CHP.	http://epa.gov/statelocalclimate/state/activities/policy-options.html
Exploring State Climate and Clean Energy Actions. This EPA State and Local Climate and Energy Program website provides resources on policies and programs that states have adopted to reduce GHG emissions from the power sector. The website also identifies benefits of these policies and provides examples of GHG reduction strategies.	http://www.epa.gov/statelocalclimate/state/activities/exploring-state-climate.html
State Climate Change Plans	
State Examples. This EPA State and Local Climate and Energy Program interactive map documents state Lead by Example case studies, GHG inventories, and climate change action plans.	http://www.epa.gov/statelocalclimate/state/state-examples/index.html
Connecticut Climate Change Action Plan. This 2005 plan informs policy-makers, implementing agencies, organizations, institutions, and the public on Connecticut's efforts to reduce GHG emissions. The plan includes technical analysis of proposed policy actions.	http://www.ct.gov/deep/lib/deep/climatechange/ct_climate_change_action_plan_2005.pdf

Title/Description	URL Address
Commonwealth of Massachusetts: Global Warming Solutions Act 5-Year Progress Report. This 2013 publication reports on progress towards implementing Massachusetts' Global Warming Solutions Act and considers how measures and strategies taken to reduce GHG emissions affect other criteria and public policy considerations for the state.	http://www.mass.gov/eea/docs/eea/gwsa/ma-gwsa-5yr-progress-report-1-6-14.pdf
Developing a Greenhouse Gas Inventory. This EPA State and Local Climate and Energy Program website provides general guidance on developing a GHG inventory. It also includes training resources and tools for stakeholders looking to begin the process of developing an inventory.	http://epa.gov/statelocalclimate/state/activities/ghg-inventory.html
Maryland Commission on Climate Change: Climate Action Plan. This 2008 document presents timetables, benchmarks, and preliminary recommendations for reducing Maryland's GHG emissions.	http://www.mde.state.md.us/programs/Air/ClimateChange/Pages/Air/climatechange/legislation/index.aspx
Pennsylvania: Final Climate Change Action Plan. This 2009 report details the state of Pennsylvania's Climate Action Plan, which includes an integrated climate impact assessment and describes policy measures that can be taken to reduce GHG emissions.	http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_001957.pdf
Stakeholder Processes	
Rhode Island Greenhouse Gas Process (RI GHG). RI GHG formulated a Greenhouse Gas Action Plan for the state of Rhode Island in 2002 and has continued to meet to implement the plan, which includes a set of 49 consensus options for reducing the state's GHG emissions. RI GHG is composed of government, industry, environmental, and consumer groups.	http://righg.raabassociates.org/
Engaging Stakeholders. This EPA State and Local Climate and Energy Program website provides recommendations on engaging with stakeholders to implement climate and clean energy policies, including working with partner agencies, identifying other key stakeholders, and reaching the community.	http://epa.gov/statelocalclimate/state/activities/engaging-stakeholders.html

Title/Description	URL Address
Economic Impacts of Clean Energy Policies	
The Economic Impact of Pennsylvania's Alternative Energy Portfolio Standard. This 2012 report examines the economic effect of Pennsylvania's Alternative Energy Portfolio Standard, which requires that 10 percent of the state's energy be met by alternative energy sources—including waste coal as well as renewable sources such as solar, hydro, wind, and biomass—by 2021.	http://www.beaconhill.org/BHIStudies/PA-AEPS2012/PA-AEPS-study-BHI-Dec-2012.pdf
Job Jolt: The Economic Impacts of Repowering the Midwest: The Clean Energy Development Plan for the Heartland. This 2008 report for the Environmental Law and Policy Center provides a blueprint for producing economically and environmentally sound power by unleashing the Midwest's homegrown clean energy potential. It calls for reducing the use of coal and nuclear generating plants and increasing modern clean energy technologies.	http://elpc.org/wp-content/uploads/2008/06/jobjolt1.pdf
Advancing Energy Efficiency in Arkansas: Opportunities for a Clean Energy Economy. Prepared by ACEEE, this 2011 report presents a suite of energy efficiency policies and programs that have the potential to generate enough energy savings to satisfy the projected growth in electricity consumption by 2025 and reduce natural gas consumption by 8 percent below 2009 levels.	http://www.arkansasenergy.org/media/337914/eeo-aceee%20final%20report.pdf
Projected Job and Investment Impacts of Policy Requiring 25% Renewable Energy by 2025 in Michigan. This 2012 report, prepared by Michigan State University, focuses on the investment and job impacts that would be the result of increasing Michigan's renewable energy generation to 25 percent of total electricity by the year 2025.	http://www.environmentalcouncil.org/mecReports/MSU_Jobs_Report_25x25.pdf
Economic Impact Analysis of Clean Energy Development in North Carolina—2014 Update. This 2014 report prepared by RTI International provides a retrospective economic impact analysis of renewable energy and energy efficiency investments.	http://www.rti.org/pubs/ncsea_2013_update_final.pdf
Economic Development Opportunities for Arizona in National Clean Energy and Climate Change Legislation. In 2010, faculty and students from Northern Arizona University analyzed the potential economic impacts on Arizona of a national clean energy and climate change mitigation policy.	http://nau.edu/CEFNS/Centers-Institutes/Sustainable-Energy-Solutions/_Forms/NAU-Economic-Opportunities-for-Arizona-in-Clean-Energy-and-Climate-Change-Legislation/
The Economic Impact of the Kansas Renewable Portfolio Standard. This 2012 study prepared by the Kansas Policy Institute estimates the economic impacts of RPS mandates in Kansas.	http://www.kansaspolicy.org/researchcenters/budgetandspending/budgetandspendingstudies/d95311.aspx?type=view
Tools and Models to Analyze Economic Impacts	
Energy 2020. Energy 2020 is an integrated energy model by Systematic Solutions, Inc., containing detailed energy demand, energy supply, and pollution accounting sectors. The model can generate analyses that include the 50 states plus D.C., the 10 Canadian provinces, and the three Canadian territories.	http://www.energy2020.com/energy2020.html

Title/Description	URL Address
Minnesota IMPLAN Group, Inc., IMPLAN system. The IMPLAN system provides economic impact analysis to help users understand the economic impact and economic contributions of projects. The system uses regional Social Accounting Matrices to provide specialized models.	http://www.implan.com/
Applied Dynamic Analysis of the Global Economy (ADAGE). The RTI ADAGE model is an economy-wide model that can examine the effects of climate change mitigation and other energy policies. ADAGE contains a regional module and a power sector module (known as the Electricity Market Analysis).	http://www.rti.org/page.cfm?objectid=DDC06637-7973-4B0F-AC46B3C69E09ADA9
Regional Economic Accounts. The U.S. Department of Commerce Bureau of Economic Analysis provides data on GDP in the United States by state and metropolitan area, as well as personal income and employment by state and local area.	http://www.bea.gov/regional/index.htm
Regional Economics Applications Laboratory (REAL). The University of Illinois at Urbana-Champaign's REAL focuses on the development and use of analytical models for urban and regional forecasting and economic development. REAL provides analytical economic information for decision-making by public sector agencies, and it can provide both impact and forecasting analyses.	http://www.real.illinois.edu/
DOE-2.2 Model. DOE-2.2 is the newest version of DOE-2, which is a building energy analysis program that can predict the energy use and cost for all types of buildings by using a description of the building layout, construction, operating schedules, conditioning systems, and utility rates provided by the user, along with weather data, to perform an hourly simulation and estimate utility bills.	http://www.doe2.com/
Regional Input-Output Modeling System (RIMS II). The Bureau of Economic Analysis' RIMS-II produces regional multipliers that can be used in economic impact studies to estimate the total economic impact of a project on the region. A modified economic model will replace the original RIMS II in 2015.	https://www.bea.gov/regional/rims/
System Advisor Model (SAM). NREL's SAM is a comprehensive solar technology systems analysis model that allows users to investigate the impact of changes in physical, cost, and financial parameters to better understand their impact on system output (hourly, monthly, and annual), peak and annual system efficiency, levelized cost of electricity, net present value, system capital costs, and system operating and maintenance costs.	https://www.nrel.gov/analysis/sam/
Jobs and Economic Development Impact (JEDI) Models. NREL's JEDI estimates the economic impacts of constructing and operating power generation and biofuel plants at the local and state levels. The model can analyze biofuels, coal, concentrating solar power, geothermal, marine and hydrokinetic power, natural gas, and photovoltaic power plants.	http://www.nrel.gov/analysis/jedi/

Title/Description	URL Address
The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs. This 2014 ACEEE report reviews utility-sector energy efficiency program costs and calculates the levelized cost of saved energy using data collected by program administrators. The report finds that energy efficiency programs are holding steady as the nation's least-cost energy resource option.	http://www.aceee.org/research-report/u1402
The Future of Utility Customer-Funded Energy Efficiency Programs in the United States: Projected Spending and Savings to 2025. This 2013 article features projections of future spending on and savings from energy efficiency programs funded by electric and gas utility customers under three scenarios through 2025. The three scenarios represent a range of potential outcomes under the current policy environment.	http://emp.lbl.gov/sites/all/files/lbnl-5803e.pdf

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ACEEE. 2014. State Energy Efficiency Resource Standards (EERS). American Council for an Energy-Efficient Economy. Accessed September 2014.	http://www.aceee.org/files/pdf/policy-brief/eers-04-2014.pdf
AKHR. 2010. House Bill 306. Alaska House of Representatives.	http://www.legis.state.ak.us/basis/get_bill_text.asp?hsid=HB0306Z&session=26
C2ES. 2014. Greenhouse Gas Emissions Targets. Center for Climate and Energy Solutions. Accessed September 2014.	http://www.c2es.org/us-states-regions/policy-maps/emissions-targets
DSIRE. 2015a. Summary Tables: Energy Efficiency Resource Standard. Database of State Incentives for Renewables and Efficiency. Accessed April 22, 2015.	http://programs.dsireusa.org/system/program?type=84&
DSIRE. 2015b. Summary Tables: Renewables Portfolio Standard. Database of State Incentives for Renewables and Efficiency. Accessed April 22, 2015.	http://programs.dsireusa.org/system/program?type=38&
EPA. 2011. Assessing the Multiple Benefits of Clean Energy: A Resource for States. U.S. Environmental Protection Agency.	http://epa.gov/statelocalclimate/documents/pdf/epa_assessing_benefits.pdf
EPA. 2014a. State Examples. State and Local Climate and Energy Program. U.S. Environmental Protection Agency. Accessed August 2014.	http://www.epa.gov/statelocalclimate/state/state-examples/index.html
EPA. 2014b. GHG Abatement Measures. U.S. Environmental Protection Agency. Accessed October 2014.	http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-ghg-abatement-measures.pdf
EPA. 2014c. Interconnection Standards. Combined Heat and Power Partnership. U.S. Environmental Protection Agency. Accessed October 2014.	http://www.epa.gov/chp/policies/interconnection.html