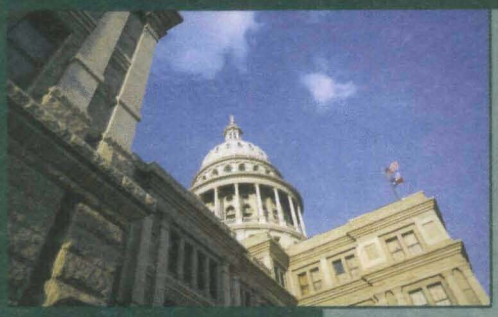
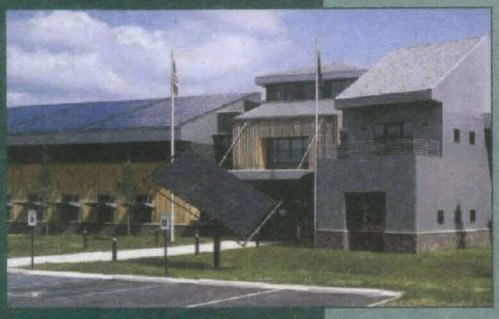
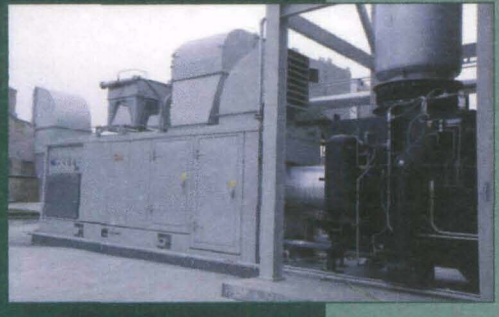
EPA United States Environmental Protection Agency

Clean Energy-Environment Guide to Action







Policies, Best Practices, and Action Steps for States

Executive Summary

Clean Energy-Environment Guide to Action

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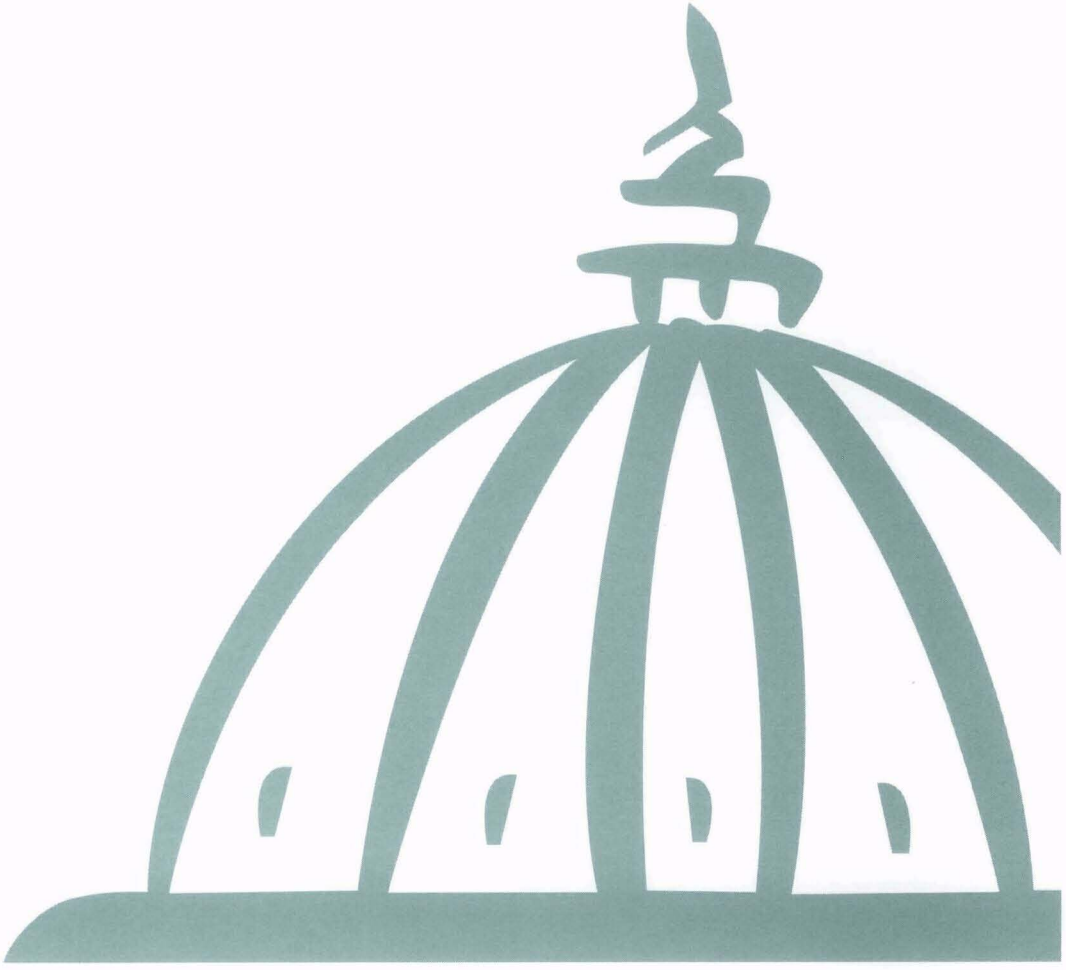


April 2006

Executive Summary

Overview

Across the country, states are using clean energy policies to help meet their expanding energy demand in a clean, low-cost, reliable manner. In addition, a growing number of states are interested in learning about successful clean energy strategies and their economic and environmental benefits.

The U.S. Environmental Protection Agency's (EPA's) *Clean Energy-Environment Guide to Action* is designed to share the experiences and lessons learned from successful state clean energy policies and help states evaluate these options, programs, and policies to determine what is most appropriate for them. The *Guide to Action* describes 16 clean energy policies, details the best practices and attributes of effective state programs, and provides resources for more information. The policies were selected from among a larger universe of clean energy strategies because of their proven effectiveness and their successful implementation.

States that are developing new clean energy programs or enhancing existing ones can use the *Guide to Action* to:

- Develop clean energy programs and policies appropriate to their state.
- Identify the roles and responsibilities of key decisionmakers—such as environmental regulators, state legislatures, public utility commissioners, and state energy offices.
- Access and apply technical assistance resources, models, and tools available for state-specific analyses and program implementation.
- Learn from each other as they develop their own clean energy programs and policies.

EPA's Clean Energy-Environment State Partnership Program

The **Clean Energy-Environment State Partnership Program** is a voluntary program designed to help states analyze and implement available policies and programs that effectively integrate clean energy into a low-cost, clean, reliable energy system for the state.

States participating in the Clean Energy-Environment State Partnership Program will use the *Guide to Action* to develop a *Clean Energy-Environment State Action Plan* for implementing existing and new energy policies and programs to increase their use of clean energy.

The EPA *Clean Energy-Environment Guide to Action* identifies and describes 16 clean energy policies and strategies that are delivering economic and environmental results for states. These policies focus on clean energy opportunities for public entities, industry, electricity generators and suppliers, homes, and businesses. There are also opportunities for states to promote clean energy in the transportation sector. These policies and programs are beyond the scope of the current *Guide to Action* but may be addressed in future editions.

Why Clean Energy?

Clean energy offers a cost-effective way to meet our nation's growing demand for electricity and natural gas while reducing emissions of air pollutants and greenhouse gases, lowering energy costs, and improving the reliability and security of the energy system.

States and the U.S. energy industry face multiple energy and environmental challenges in providing affordable, clean, and reliable energy in today's complex energy markets. In terms of energy challenges, total U.S. energy demand is expected to increase by more than one-third by 2025, with electricity

demand rising by almost 40% (EIA 2005a). This growth stresses current systems, reduces reliability, and requires substantial new investment in system expansions. In addition, higher natural gas prices increase energy costs for households and businesses and raise the financial risk associated with the development of new generation based on gas technologies. Environmental challenges stem from fossil fuel-based electricity generation, which is a major source of air pollutants that form ground-level ozone and fine particulate matter, as well as greenhouse gases. Although emission levels are declining, high pollution levels persist in many parts of the United States—nearly half of the U.S. population lives in counties where air quality sometimes exceeds the federal 8-hour standard for ozone (EPA 2005a).[1]

Clean energy includes demand- and supply-side resources that deliver clean, reliable, and low-cost ways to meet energy demand and reduce peak electricity system loads. Energy efficiency measures reduce demand for energy generation, which reduces the amount of fuel needed to power our daily lives. Renewable energy sources avoid the use of fossil fuels, and combined heat and power (CHP) can provide much greater energy output for the amount of fuel used.

States are finding clean energy to be cost-competitive with traditional sources of generation. Figure ES.1 illustrates the comparative cost of electricity from a range of sources, including energy efficiency and wind. More specifically, states' experiences with clean energy programs and policies have shown that:

- *Well-Designed Energy Efficiency Programs Cost Less Than Supplying New Generation from Power Plants.* Energy efficiency programs are saving energy at an average life cycle cost of about $0.03

What Is Clean Energy?

Clean energy includes energy efficiency and clean energy supply, which refers to clean distributed generation and renewable energy.

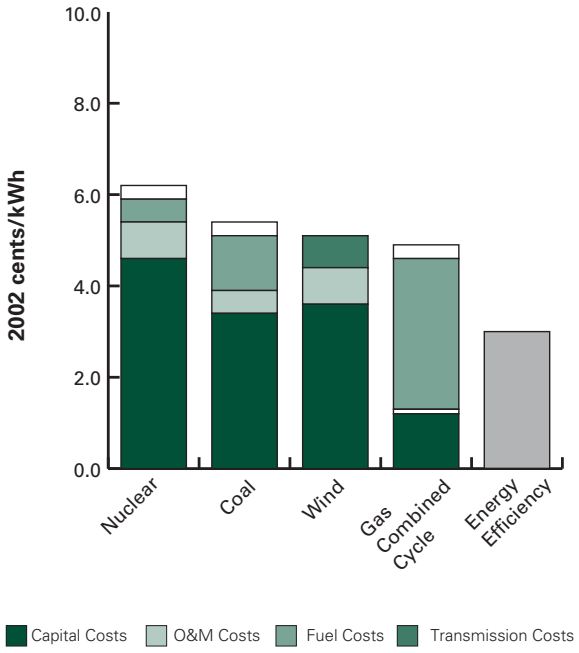
Energy efficiency (EE) reduces demand for energy and peak electricity system loads. Common energy efficiency measures include hundreds of technologies and processes for practically all end uses across all sectors of the economy.

Renewable energy (RE) is partially or entirely generated from non-fossil energy sources. Renewable energy definitions vary by state, but usually include wind, solar, and geothermal energy; some states might also include low-impact or small hydro, biomass, biogas, and waste-to-energy.

Combined heat and power (CHP), also known as cogeneration, is a clean, efficient approach to generating electric and thermal energy from a single fuel source.

Clean distributed generation (DG) refers to non-centralized—usually small-scale—renewable energy and CHP.

Figure ES.1: Clean Energy Is Competitive with Fossil Fuel and Nuclear Generation Technologies



Note: The costs for nuclear, coal, wind, and gas combined cycle are projections for the cost of producing energy from new plants in 2010. The cost for energy efficiency is a median figure based on recent reports of the cost of energy saved over a portfolio of programs in leading states.

Sources: ACEEE 2004, EIA 2004.

[1] In April 2005, 134 million people were living in 470 counties where the air quality sometimes exceeds the federal 8-hour standard for ozone. Seventy-five million people were living in more than 200 counties that do not meet the PM2.5 standard (EPA 2005a).

Energy Savings Potential from State Clean Energy Actions

The potential energy savings achievable through state actions is significant. EPA estimates that if each state were to implement cost-effective clean energy-environment policies, the expected growth in demand for electricity could be cut in half by 2025, and more demand could be met through cleaner energy supply. This would mean annual savings of more than 900 billion kilowatt-hours (kWh) and $70 billion in energy costs by 2025, while preventing the need for more than 300 power plants and reducing greenhouse gas emissions by an amount equivalent to emissions from 80 million of today's vehicles.[a]

[a] This estimate is based on EPA analysis of independent evaluations of the potential for cost-effective energy efficiency investments to help meet the nation's growing demand for energy and electricity. Evaluations include a 2004 meta-analysis that examined the results of 11 different studies that estimated the potential for energy efficiency in various states and regions in the country and for the United States as a whole (Nadel et al. 2004).

per kilowatt-hour (kWh) saved, which is 50% to 75% of the typical cost of new power sources and less than one-half of the average retail price of electricity (ACEEE 2004a, EIA 2005b).

- *There Is Significant Potential for Additional Cost-Effective Investment in Energy Efficiency.* State and regional energy efficiency potential studies have found that adoption of economically feasible and technically achievable, but as yet untapped, energy efficiency could yield a 24% savings in total electricity demand nationwide by 2025, which is equivalent to a 50% or greater reduction in electricity growth (SWEEP 2002, Nadel et al. 2004, NEEP 2005, NWPCC 2005). Many states could capture a greater portion of achievable energy potential and lower energy costs for consumers and businesses by increasing spending on cost-effective energy efficiency.
- *Renewable Energy Technologies Are Increasingly Competitive with Conventional Generation.* Renewable energy continues to grow rapidly, in part because state policies are helping increase its cost competitiveness. For example, depending on geographic location, wind energy technology can produce power at about $0.04 to $0.06/kWh, which is competitive with conventional natural gas combined cycle generation (Navigant 2003). In 2004, approximately 18 gigawatts (GW) of non-hydro renewable capacity was operational in the United States, representing about 2% of total U.S. electricity generation capacity (EIA 2005c).
- *CHP Systems Are Substantially More Efficient Than Traditional Electricity Generation Purchased from the Grid and for Meeting Thermal Needs with a Boiler or Process Heater Alone.* CHP systems achieve fuel use efficiencies that typically range between 60% and 75%, a significant improvement over the average efficiency of separately generated heat and power. In 2004, approximately 80 GW of CHP were operational in the United States (EPA 2004a).

States are also using clean energy to promote economic development by reducing energy costs, creating jobs, and attracting business investments in clean energy technologies and services. For example, investment in energy efficiency leads to energy bill savings, with those savings being reinvested in the economy and supporting more jobs than if the energy were purchased (SWEEP 2002). Clean energy projects create short-term construction and installation jobs and provide numerous long-term opportunities associated with new clean energy businesses.

Clean energy addresses environmental challenges by helping improve air quality. Energy efficiency, renewable resources, and clean energy technologies such as CHP systems can reduce air pollution and greenhouse gas emissions. States are implementing a range of innovative approaches that are achieving quantifiable reductions in air pollutants through clean energy programs, policies, and measures.

Opportunities for State Action

State governments are increasingly developing policies and programs that address their energy challenges and spur greater investment in energy efficiency, renewable energy, and clean distributed resources. For example, states are:

- *Leading by example* by establishing programs that achieve substantial energy cost savings within their own state facilities, fleets, and operations and encouraging the broader adoption of clean energy by the public and private sectors. State governments across the country are collaborating with state agencies, local governments, and schools to identify and capture energy savings within their facilities and operations, purchase or generate renewable energy, and use clean DG/CHP in their facilities.
- *Establishing ratepayer-funded energy efficiency programs* (e.g., public benefits funds) to help overcome a variety of first-cost, informational, split-incentive, and other market barriers that limit greater reliance on energy efficiency. Seventeen states and Washington, D.C. have adopted public benefits funds (PBFs) for energy efficiency, and 16 states have developed PBFs for clean energy supply (ACEEE 2004b, ACEEE 2004c, UCS 2004, DSIRE 2005, Navigant 2005).
- *Adopting state minimum appliance efficiency standards* for products not covered by the federal government that yield net cost savings to businesses and consumers. Ten states have adopted appliance standards covering 36 types of appliances (Delaski 2005, Nadel et al. 2005).
- *Establishing renewable portfolio standards* (RPS) that direct electric utilities and other retail electric providers to supply a specified minimum percentage (or absolute amount) of customer load with eligible sources of renewable electricity. Twenty-one states and Washington, D.C. have adopted RPS requirements, which are expected to generate more than 26,000 MW of new renewable energy capacity by 2015 (Navigant 2005).
- *Reviewing utility incentives and planning processes* and designing policies that accurately value energy efficiency, renewables, and distributed resources in a way that "levels the playing field" so public utility commissions and consumers can make fair, economically based comparisons between clean energy and other resources. More than 12 states have developed approaches that remove disincentives for utilities to invest in demand-side resources.

The *Guide to Action*

The *Guide to Action* presents a menu of 16 clean energy strategies that states can review and choose from when developing their clean energy policies or *Clean Energy-Environment Action Plans* (see *What States Can Do*, page ES-21, for additional information about *Clean Energy-Environment Action Plans*). States have found that a combination of clean energy policies, developed as a coordinated package, is the most effective approach. Typically, states have chosen policies to address each of the clean energy areas: energy efficiency (EE), renewable energy (RE), and clean DG.

Table ES.1 provides an overview of the policies addressed in the *Guide to Action* and the type(s) of clean energy targeted by each policy. These policies were selected for inclusion in the *Guide to Action* because of their proven effectiveness, their ability to help overcome the barriers states face as they promote clean energy, and their successful implementation by a number of states. The information presented about each policy is based on proven models, state experiences, and lessons learned.

Table ES.2 presents additional detail about each of the 16 policies, including information on specific approaches states can use to implement each policy, key design issues and resources, and states that can serve as examples of each policy. (Note that many other states have also implemented these policies; for more information, see the policy sections in the *Guide to Action*.) A brief description of each of the 16 policies, including highlights of state experiences with each policy, follows Table ES.2.

Table ES.1: Summary of Clean Energy Policies by Type of Clean Energy

Clean Energy Policy	*Guide to Action* Section	Type of Clean Energy: EE	RE	Clean DG/ CHP
State Planning and Incentive Structures				
Lead by Example	3.1	●	●	●
State and Regional Energy Planning	3.2	●	●	●
Determining the Air Quality Benefits of Clean Energy	3.3	●	●	●
Funding and Incentives	3.4	●	●	●
Energy Efficiency Actions				
Energy Efficiency Portfolio Standards (EEPS)	4.1	●		
Public Benefits Funds (PBFs) for Energy Efficiency	4.2	●		
Building Codes for Energy Efficiency	4.3	●		
State Appliance Efficiency Standards	4.4	●		
Energy Supply Actions (Renewable Energy and Combined Heat and Power)				
Renewable Portfolio Standards (RPS)	5.1		●	●
Public Benefits Funds (PBF) for State Clean Energy Supply Programs	5.2		●	●
Output-Based Environmental Regulations to Support Clean Energy Supply	5.3		●	●
Interconnection Standards	5.4		●	●
Fostering Green Power Markets	5.5		●	●
Utility Planning and Incentive Structures				
Portfolio Management Strategies	6.1	●	●	●
Utility Incentives for Demand-Side Resources	6.2	●	●	●
Emerging Approaches: Removing Unintended Utility Rate Barriers to Distributed Generation	6.3		●	●

Table ES.2: Summary of Clean Energy Policies

Policy Description	Specific Approaches	Design Issues	State Examples	Key Resources in the *Guide to Action*
State Planning and Incentive Structures				
Section 3.1 Lead by Example				
States lead by example by establishing programs that achieve substantial energy cost savings within their own operations, buildings, and fleets and demonstrate the feasibility and benefits of clean energy to the larger market.	• Energy savings targets for public buildings. • Renewable and energy efficiency purchase commitments for state facilities. • State loan and incentive programs for public buildings. • Energy performance contracting. • Technical support and training. • State clean energy planning.	• Understand state's own energy use and then set aggressive goals. • Collaborate across public agencies, local governments, schools, private sector, and nonprofit organizations. • Identify funding sources and develop funding mechanisms. • Measure, verify, and communicate energy savings.	CA, CO, IA, NH, NJ, NY, OR, TX	• Details about state-specific "lead by example" program design. • Evaluation guidelines and information resources. • Examples of legislation and executive orders passed by states related to lead by example actions.
Section 3.2 State and Regional Energy Planning				
Energy planning at a state or regional level can be an effective means for ensuring that clean energy is considered and used as an energy resource to help states address their multiple energy, economic, and environmental goals.	• Clean energy plan. • Clean energy included within a comprehensive state energy plan. • Planning conducted by energy providers.	• Analyze a full range of impacts for a variety of policy scenarios. • Establish specific quantitative and other goals; monitor and report progress regularly. • Link the plan to action by developing specific steps for plan adoption and implementation, and making these actions enforceable where appropriate.	CA, CT, NM, NY, OR, Northwest Power Planning and Conservation Council, New England Governors' Conference, Western Governors' Association, Western Interstate Energy Board	• Design information. • Benefits of energy plans. • Program implementation and evaluation. • Links to existing state and regional energy plans. • References to articles on energy planning.
Section 3.3 Determining the Air Quality Benefits of Clean Energy				
States estimate the emission reductions from their clean energy programs, incorporate those reductions into air quality programs, and evaluate and report the emission reduction benefits of their clean energy programs and policies.	• Incorporating clean energy into air quality plans and long-term utility planning requirements. • Developing set-asides for energy efficiency and renewable energy projects. • Tracking and reporting emission reductions.	• Choose the most appropriate methodology for the given purpose, geographic scope, time scale, magnitude of energy savings, available resources, and available data. • Make all assumptions and inputs transparent; identify how to address electricity dispatch, imports and exports, line losses, and transmission constraints. • Understand and account for how the results will interact with other programs.	LA (local), MD (local), TX, WI, Western Regional Air Partnership	• Information about EPA guidance and analyses. • General and specific information about quantification methods and tools. • Articles about quantifying emission reductions. • State examples.

(continued on next page)

Table ES.2: Summary of Clean Energy Policies (continued)

Policy Description	Specific Approaches	Design Issues	State Examples	Key Resources in the *Guide to Action*
State Planning and Incentive Structures *(continued)*				
Section 3.4 Funding and Incentives				
States implement a range of targeted funding and incentives strategies that encourage governments, businesses, and consumers to save energy through cost-effective clean energy investments. Between 20 and 30 states have revolving loan funds for energy efficiency, tax incentives for renewable energy, grants for renewable energy, or rebates for renewable energy.	• Revolving loan funds. • Energy performance contracting. • Tax incentives. • Grants, rebates, and generation incentives. • NO_x set-asides for energy efficiency and renewable energy projects. • Supplemental Environmental Projects (SEPs).	• Develop specific target markets and technologies based on technical and economic analysis. • Use financing and incentives as part of a broader package of services designed to encourage investments. • Establish specific technical and financial criteria for clean energy investments. • Track program participation, costs, and energy savings to enable evaluation and improvement.	CA, CO, IA, MT, NY, OR, TX, WA	• Program design information, including funding sources, levels, and duration. • Implementation and evaluation information. • Information about federal incentives and existing state programs. • Examples of legislation.
Energy Efficiency Actions				
Section 4.1 Energy Efficiency Portfolio Standards (EEPS)				
Similar to Renewable Portfolio Standards (see Section 5.1), EEPS direct energy providers to meet a specific portion of their electricity demand through energy efficiency. Seven states have direct or indirect EEPS requirements.	• Energy efficiency targets for energy providers as a percentage of load growth, base year sales, or fixed energy savings (e.g., kWh).	• Use economic potential studies and other analyses to help establish the energy savings target. • State the target clearly (e.g., as a percentage of base year energy sales) and establish a robust measurement and verification process. • Ensure workable funding mechanisms are available to meet the goal.	CA, IL, NJ, NV, PA, TX	• Information about state experiences. • Information about measurement and verification. • Examples of legislation and PUC rulemakings.
Section 4.2 Public Benefits Funds (PBFs) for Energy Efficiency				
PBFs for energy efficiency are pools of resources used by states to invest in energy efficiency programs and projects and are typically created by levying a small charge on customers' electricity bills. Seventeen states and Washington, D.C. have established PBFs for energy efficiency.	• Funds for efficiency programs based on a system-wide charge (mills per kWh). • Grants, rebates, and loans. • Technical assistance, education, and training support for energy efficiency investments.	• Establish funding via a universal, non-bypassable charge at a rate that captures economic energy efficiency potential, but is not a cap on investments. • Set the duration for an extended period of time (e.g., five to 10 years) to provide continuity and certainty for investors. • Select the most appropriate administering organization for the given conditions (e.g., utilities, state agencies, independent organizations). • Regularly evaluate the program's quantitative impacts (e.g., energy saved, emissions avoided, dollars saved, jobs created) and the effectiveness of program operations and delivery.	CA, NY, OR, WI	• Descriptions of cost-effectiveness tests and information on energy and cost savings. • Information about PBF program designs, funding levels, and evaluation methods. • Examples of legislation and PUC rulemakings.

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Table ES.2: Summary of Clean Energy Policies *(continued)*

Policy Description	Specific Approaches	Design Issues	State Examples	Key Resources in the *Guide to Action*
Energy Efficiency Actions *(continued)*				
Section 4.3 Building Codes for Energy Efficiency				
Building energy codes establish energy standards for residential and commercial buildings, thereby setting a minimum level of energy efficiency and locking in future energy savings at the time of new construction or renovation. More than 40 states have implemented some level of building codes for residential buildings and/or commercial buildings.	• Minimum energy efficiency requirements for residential and commercial buildings. • Periodic review and updates to existing codes. • Code implementation, evaluation, and compliance assistance.	• Develop effective program implementation, evaluation, and enforcement approaches. • Work collaboratively with builders, developers, and building owners to ensure compliance. • Establish requirements and process for periodically reviewing and updating codes to reflect changes in building technology and design. • Promote "beyond code" building programs to achieve additional cost-effective energy efficiency.	AZ, CA, OR, TX, WA	• Information about individual state codes. • Compliance and analytic tools. • Examples of code language.
Section 4.4 State Appliance Efficiency Standards				
State appliance efficiency standards set minimum energy efficiency standards for equipment and appliances that are not covered by federal efficiency standards. Ten states have adopted appliance standards.	• Minimum energy efficiency levels for consumer products and commercial equipment. • Periodic evaluation and review of standards, markets, and product applications.	• Identify the products covered by federal law and carefully define the set of appliances to be covered by the state standard. • Use established test methods, as developed by federal agencies, other states, or industry associations, to set efficiency levels for the state appliance standards. • Consider implementation issues, including product certification, labeling requirements, and enforcement.	CA, CT, NJ, NY	• General and state-specific information about standards. • Definitions of products covered by federal and state standards. • Examples of enabling legislation, state rulemakings, and requests for preemption waivers.
Energy Supply Actions				
Section 5.1 Renewable Portfolio Standards (RPS)				
RPS establish requirements for electric utilities and other retail electric providers to serve a specified percentage or amount of customer load with eligible resources. Twenty-one states and Washington, D.C. have adopted RPS.	• Promoting specified technologies through "technology tiers" and "credit multipliers." • Alternative compliance payments. • Renewable Energy Certificates (RECs) trading.	• Develop broad support for an RPS, including top-level support of the governor and/or legislature by performing studies that analyze job creation, economic development, and customer bill impacts. • Specify which renewable energy technologies and resources will be eligible, based on clearly articulated goals and objectives. • Consider using energy generation (not installed capacity) as a target, make compliance mandatory for all retail sellers, allow utility cost recovery, establish cost caps, and consider flexible compliance mechanisms.	AZ, CA, MA, TX, WI	• Information on state RPS requirements and eligible technologies. • Information on selected state RPS program designs. • Description of renewable energy credits and power markets.
Section 5.2 Public Benefits Funds (PBFs) for State Clean Energy Supply Programs				
PBFs are a pool of resources used by states to invest in clean energy supply projects and are typically created by levying a small charge on customers' electricity bills. Sixteen states have established PBFs for clean energy supply.	• Funds for emerging and commercially competitive technologies and clean energy market development programs based on a system-wide charge (mills per kWh). • Grants, rebates, and generation incentives.	• Protect funding from being diverted for other uses. • Consider the importance of technology stages. • Ensure that PBFs support the state's energy and environmental goals and work in concert with other state renewable energy initiatives (e.g., RPS and tax credits).	CA, CT, MA, NJ, NY, OH	• Information on federal resources. • General and specific information on state approaches and models. • Information on funding levels and technologies supported by PBFs. • State examples.

(continued on next page)

Table ES.2: Summary of Clean Energy Policies *(continued)*

Policy Description	Specific Approaches	Design Issues	State Examples	Key Resources in the *Guide to Action*
Energy Supply Actions *(continued)*				
Section 5.3 Output Based Environmental Regulations to Support Clean Energy Supply				
Output-based environmental regulations establish emissions limits per unit of productive energy output of a process (i.e., electricity, thermal energy, or shaft power), with the goal of encouraging fuel conversion efficiency and renewable energy as air pollution control measures. Twelve states have established output-based environmental regulations.	• Conventional emission limits using an output formula. • Special regulations for small distributed generators that are output based. • Output-based allowance allocation methods in a cap and trade program. • Output-based allowance allocation set-asides for energy efficiency and renewable energy. • Multi-pollutant emission regulations using an output-based format.	• Determine the types of DG and CHP technologies and applications that may be affected and if the regulation needs to address any specific technology issues. • Gather/review available output-based emissions data for regulated sources. Alternatively, convert available data to output-based format. • Evaluate alternative approaches to account for multiple outputs of CHP units.	CT, IN, MA, TX	• Information on federal and other resources. • Articles on output-based regulation. • Examples of federal and state legislation and program proposals.
Section 5.4 Interconnection Standards				
Standard interconnection rules establish processes and technical requirements that apply to utilities within the state and reduce uncertainty and delays that clean DG systems can encounter when obtaining electric grid connection. Fourteen states have standard interconnection rules, and 39 states offer net metering.	• Standard interconnection rules for DG systems through defined application processes and technical requirements. • Net metering, which defines application processes and technical requirements, typically for smaller projects.	• Develop standards that cover the scope of the desired DG technologies, generator types, sizes, and distribution system types. • Address all components of the interconnection process, including issues related to the application process and technical requirements. • Create a streamlined process for generators that are certified compliant with technical standards such as IEEE Standard 1547 and UL Standard 1741. • Consider adopting portions of national models and successful programs in other states.	MA, NJ, NY, TX	• State-by-state assessment and references. • Information on federal and other resources. • National standards organizations. • Examples of standard interconnection rules.
Section 5.5 Fostering Green Power Markets				
States play a key role in fostering the development of voluntary green power markets that deliver cost-competitive, environmentally beneficial renewable energy resources by giving customers the opportunity to purchase clean energy. Green power is available in more than 40 states.	• Customer access to green power markets. • Green pricing tariffs. • Green "check-off" programs. • Establishing quantitative goals and objectives for green power markets.	• Encourage new resources to ensure that renewable benefits are realized. • Create real value for green power customers (e.g., by exempting them from utility fuel adjustment charges or developing recognition programs for commercial customers). • Create programs with sufficiently long time horizons to encourage long-term power contracts. • Determine the appropriate relationship between green power purchases and compliance with RPS.	CT, MA, NJ, NM, WA	• Information about state programs. • Examples of state legislation and regulations. • Information on federal and other resources.

(continued on next page)

Table ES.2: Summary of Clean Energy Policies *(continued)*

Policy Description	Specific Approaches	Design Issues	State Examples	Key Resources in the *Guide to Action*
Utility Planning and Incentive Structures				
Section 6.1 Portfolio Management Strategies				
Portfolio management strategies include energy resource planning approaches that place a broad array of supply and demand options on a level playing field when comparing and evaluating them in terms of their ability to meet projected energy demand and manage uncertainty.	• Energy resource planning and procurement. • Integrated resource planning (IRP). • Retail choice portfolio management.	• Identify state policy goals for portfolio management, such as cost, environmental impacts, resource diversity, and risk management. • Identify the entities that procure and plan for energy supply, transmission, and distribution. • Determine the appropriate process for acquiring and comparing alternative resource options. • Establish clear roles for utility and regulatory authorities in selecting evaluation criteria, reviewing proposals, and choosing final resources. • Require that all demand and supply resources be considered in meeting identified needs.	CA, CT, IA, MT, NV, OR, PA, VT, Idaho Power, Northwest Power and Conservation Council, PacifiCorp, Puget Sound Energy	• Design guidance. • Information on program implementation and evaluation. • State and regional examples and links to key references.
Section 6.2 Utility Incentives for Demand Side Resources				
A number of approaches—including decoupling and performance incentives—remove disincentives for utilities to consider energy efficiency and clean distributed generation equally with traditional electricity generation investments when making electricity market resource planning decisions.	• Decoupling utility profits from sales volume. • Program cost recovery. • Shareholder performance incentives.	• Understand state utility ratemaking and revenue requirements. • Determine if utility rates create financial disincentives for energy efficiency and clean distributed generation. • Gather information and stakeholder input on utility incentive options. • Devise an implementation plan to remove disincentives.	AZ, CA, CT, ID, MA, MD, ME, MN, NM, NV, NY, OR, WA	• Design guidance. • References to state incentive regulation efforts. • References to articles and Web sites on utility incentives.
Section 6.3 Emerging Approaches: Removing Unintended Utility Rate Barriers to Distributed Generation				
Electric and natural gas rates, set by Public Utility Commissions, can be designed to support clean DG projects and avoid unintended barriers, while also providing appropriate cost recovery for utility services on which consumers depend.	• Utility ratemaking and revenue requirements. • Revised standby rate structures. • Exit fee exemptions. • Natural gas rates for DG and/or CHP. • In regulated markets, help generators and utilities establish appropriate buyback rates.	• Ensure that state PUC commissioners and staff have current and accurate information on rate issues for CHP and renewables and their potential benefits for the generation system. • Open a generic PUC docket, if needed, to explore the actual costs and system benefits of onsite clean energy supply and rate reasonableness. • Engage energy users to accurately examine the costs and system benefits of existing and planned onsite clean DG.	*Exit Fees:* CA, IL, MA *Standby Rates:* CA, NY *Gas Rates:* NY	• Examples of state legislation and rules. • Information on federal resources. • Articles about ratemaking.

State Planning and Incentive Structures

States are substantially reducing energy costs and emissions and are supporting in-state economic development through clean energy policies. The *Guide to Action* provides resources on the following policies that states have successfully implemented to promote clean energy within their own operations, through state and regional energy and air quality planning efforts, and funding and incentive programs.

Lead by Example

State and local governments are implementing a range of "lead by example" programs and policies that advance the use of clean energy within their own facilities, fleets, and operations, substantially reducing their energy bills. These bills are sizable—states are responsible for more than 16 billion square feet of building space and spend more than $11 billion annually on building energy costs, which can account for as much as 10% of a typical government's annual operating budget (DOE 2005a). In addition to achieving energy savings within state facilities, lead by example initiatives promote the adoption of clean energy technologies by the public and private sectors.

States have initiated lead by example initiatives through executive orders, legislation, and agency rulemakings. Typically, these initiatives are coordinated by the state energy office, and involve multiple agencies and programs across state and local government and other public agencies.

States Are Leading by Example

- *New York's* "Green and Clean" State Buildings and Vehicles, administered by the New York State Energy Research and Development Authority (NYSERDA), sets aggressive targets for reducing energy use in state buildings and vehicles, green power purchasing, and purchasing energy efficient products.
- *Iowa's* Executive Order Number 41 directs state agencies to obtain at least 10% of their electricity from renewable energy sources by 2010. To satisfy this requirement, agencies may generate their own renewable energy or may participate in their utility's green power programs (Iowa 2005).
- *New Hampshire's* Executive Order 2005-4 requires state agencies to reduce energy use by 10% and purchase ENERGY STAR equipment. Executive Order 2004-7 requires state staff to conduct an inventory of annual energy use by all state facilities, using EPA's Energy Performance Rating System to assess energy efficiency, and to conduct audits to identify energy efficiency opportunities in state facilities.

State and Regional Energy Planning

Energy planning at a state or regional level is an effective means for ensuring that clean energy is considered and used as an energy resource to help states address their multiple energy and nonenergy

States and Regions Are Developing Energy Plans

- *California's* Integrated Energy Policy Report (IEPR) is an extensive assessment prepared biennially at the direction of the state legislature. It includes policy recommendations for addressing multiple goals, including conserving resources; protecting the environment; ensuring reliable, secure, and diverse energy resources; enhancing the state's economy; and protecting public health and safety. The IEPR is complimented by a brief "blueprint" for energy-related actions, the California "Energy Action Plan" (CEC 2005a).
- The *Connecticut Energy Advisory Board* develops an Annual Energy Plan that includes specific strategies to support energy efficiency and renewable resources based on a detailed assessment of supply and demand options and related policy opportunities and challenges. The Plan describes how programs and policies across the state help advance Connecticut's energy and other goals and includes a progress report on the Connecticut Climate Change Action Plan, as a significant energy-related initiative (CEAB 2005).
- The *Western Governors' Association's Clean and Diversified Energy Advisory Committee (CDEAC),* created by the governors of 18 western states, recently undertook an extensive analysis to explore how to meet a regional goal of developing 30,000 MW of clean energy by 2015 and increasing energy efficiency 20% by 2020 (WGA 2005).

challenges. Energy planning helps support a cost-effective response to projected load growth (possibly avoiding the need for new power plants and infrastructure); improves system reliability, supply diversity, and security; reduces energy prices and price volatility; and reduces the environmental impact of energy generation. Energy plans are usually developed by one or more state agencies. Typically, the state energy office leads the planning effort, and a variety of public and private sector stakeholders play a role in developing the plan or providing input.

Energy planning takes place in several contexts—it can be part of a broad, multi-faceted strategy (e.g., the New York State Energy Plan), or a more targeted effort that specifically addresses one or more clean energy goals (e.g., the Illinois Sustainable Energy Plan). At the regional level, planning typically occurs in two separate but related forums. In one approach, government or quasi-government entities (e.g., governors' associations) focus on developing broad regional policy approaches. Alternatively, power system operators engage in rigorous power system planning (with input from states) that focuses on providing reliable and adequate power supplies within their region. Both forums offer opportunities to consider clean energy as a way of meeting future energy demand.

Determining the Air Quality Benefits of Clean Energy

Meeting energy demand through clean energy sources can reduce emissions from fossil-fueled generators and provide many emissions benefits. States are employing a number of methods to quantify the emission reductions from their clean energy programs and policies and incorporate those reductions into documentation for air quality planning efforts, energy planning, and clean energy program results.

Quantifying emission reductions from clean energy options provides states with additional information to use when selecting among alternative clean energy solutions, determining the best way to design clean energy programs to comply with existing and prospective regulations, and determining the best investment opportunities for a specific clean energy program. Some states are working with EPA to include clean energy as an emission reduction measure in air quality plans. EPA provides guidance and can help states identify ways to use emission reduction data and appropriate quantification methods and documentation requirements (EPA 2004b).

States Are Identifying the Air Quality Benefits of Clean Energy

- The *Texas* Legislature passed the Texas Emissions Reduction Plan in 2001, requiring counties to implement energy efficiency measures and reduce electricity consumption 5% a year for five years to help the state comply with federal emissions limits and standards. The Texas Commission on Environmental Quality worked with EPA and several Texas organizations to develop a methodology for quantifying the nitrogen oxide (NO_x) emission reductions associated with energy savings from individual clean energy projects.
- The *Western Regional Air Partnership (WRAP)* was established in 1997 to help incorporate 10% renewable energy into its resource mix by 2010 and 20% by 2015 in an effort to reduce regional haze. A WRAP study of the air emission reductions from state clean energy programs estimated that NO_x emissions would be reduced by about 14,000 tons and carbon dioxide (CO_2) emissions by about 56 million metric tons by 2018 (WRAP 2003).

Funding and Incentives

States are using well-designed, targeted funding and incentives for a broad range of clean energy technologies and services. State funding and incentive programs, some of which are self-sustaining (e.g., revolving loan funds), deliver energy and cost savings for governments, businesses, and consumers. These programs help overcome barriers, stimulate markets and build infrastructure, and leverage public and private sector investment. States have made additional investments and achieved subsequent savings by coordinating financial incentives with federal incentives (e.g., the production tax credit for renewable energy generation), other state programs, and utility-based clean energy programs.

States Are Providing Funding and Incentives for Clean Energy

- The *Texas* LoanSTAR program is a self-sustaining program that provides low-interest loans to finance energy conservation retrofits in state public facilities. Loans are repaid in four years or less using cost savings from verified energy reductions. Public agencies in Texas have reduced their energy costs by more than $150 million through the LoanSTAR program (DOE 2005c, Texas SECO 2005).
- *Oregon* offers the Business Energy Tax Credit (BETC) and Residential Energy Tax Credit (RETC) to businesses and residents. Through 2004, more than 12,000 energy tax credits worth $243 million have been awarded. Altogether, these investments save or generate energy worth about $215 million a year (Oregon DOE 2005).

Energy Efficiency Actions

States have implemented a variety of policies and programs that encourage investment in and adoption of energy efficiency. Cost-effective energy efficiency programs can be structured to help remove the key market, regulatory, and institutional barriers that might otherwise hinder investment in energy efficiency measures by consumers, businesses, utilities, and public agencies. The *Guide to Action* describes four energy efficiency policies that a number of states have successfully implemented to support greater investment in and adoption of energy efficiency.

Energy Efficiency Portfolio Standards (EEPS)

EEPS require energy providers to meet a specific portion of their electricity demand through energy efficiency. A relatively recent policy tool, EEPS have been developed primarily in states with restructured utility markets, typically as a partial replacement for their Integrated Resource Planning (IRP) requirements. EEPS offer several policy advantages, including simplicity, specificity, and economies of scale.

To date, seven states have adopted EEPS either directly or indirectly (with energy efficiency as a component of a larger clean energy target or goal). Overall, these EEPS targets range from the equivalent of a 10% to 50% reduction in energy demand growth (EPA 2005b). Specific EEPS designs vary by state. Some states, such as California, have established specific energy savings goals defined in terms of the amount of savings (e.g., expressed as MW, megawatt-hours [MWh], and/or therm savings) required over a specified time frame. Other states (e.g., Connecticut, Texas, and Illinois) require utilities to use energy efficiency to meet a specified percentage of total energy sales or forecast load growth over a certain time period. EEPS targets have been established by state legislatures and are administered by the state public utility commission (or other regulatory body), with input from utilities, public interest organizations, and the general public.

States Are Adopting Energy Efficiency Portfolio Standards

- The *California* EEPS sets ambitious annual energy savings goals for the period 2004 to 2013 for the state's four largest investor-owned utilities (IOUs). The cumulative effect of these goals is estimated to result in annual savings in 2013 of 23,183 GWh, 4,885 MW of peak demand, and 444 million therms of natural gas and to meet more than half of the IOUs' electricity sales growth and nearly half of natural gas sales growth (CPUC 2004, CEC and CPUC 2005).
- *Texas* was the first state to implement an EEPS. The Texas PUC calculated that it has exceeded its target of a 10% reduction in load growth by 2004 and has saved more than 400 million kWh of electricity at a cost of $82 million, for a net benefit of $76 million to date (Gross 2005).

Public Benefits Funds (PBFs) for Energy Efficiency

Many states have found that PBFs, also known as system benefits charges (SBCs) or clean energy funds, are an effective mechanism for securing investment in cost-effective energy efficiency, resulting in lower-cost, cleaner energy. PBFs are typically created by levying a small charge on every customer's electricity bill, thus providing an annual revenue stream to fund energy efficiency programs. States with restructured as well as traditional electricity markets are using PBFs as a component of their clean energy policy portfolios.

To date, 17 states and Washington, D.C. have established PBFs to support energy efficiency at various levels of funding (ACEEE 2004b, ACEEE 2004c). For the more comprehensive programs, funding levels range from about 1% to 3% of total utility revenues. PBF charges range from 0.03 to 3 mills[2] per kWh and are equivalent to about $0.27 to $2.50 on a residential customer's monthly energy bill (ACEEE 2004b).

PBFs have supported programs that reduce energy demand and related emissions at a lower cost than new supply. For example, for just 12 of the states with energy efficiency PBFs, total annual investments of about $870 million in 2002/2003 yielded nearly 2.8 million kWh of electricity savings. Emission reductions from nine of these states included a total of 1.8 million tons of CO_2. The median program cost was $0.03 per kWh saved, which is 50% to 75% of the typical cost of new power sources and less than half of the average retail price of electricity (ACEEE 2004a, EIA 2005b).

States Are Establishing Public Benefits Funds for Energy Efficiency

- In *New York*, NYSERDA administers the PBF program with the goals of improving system-wide reliability, reducing peak load, improving energy efficiency and access to energy options for underserved customers, reducing environmental impacts, and facilitating competition in the electricity markets. NYSERDA has invested more than $350 million in energy efficiency programs and brought about an estimated additional investment of $850 million, for a total of $1.2 billion in public and private sector energy- and efficiency-related investments in the state. The program is expected to result in a total of $2.8 billion in new public and private investment in New York (NYSERDA 2004).
- *California* established the first PBF for energy efficiency in 1996. The California Public Utility Commission (CPUC) provides policy oversight of the state PBF (known in the state as the "Public Goods Charge"), approves plans for efficiency programs in each of the utility service areas, and coordinates statewide activities. The PBF provides $289 million annually for energy efficiency programs, at a cost of less than 3 cents per kWh saved. The CPUC has adopted aggressive energy efficiency savings goals for regulated electric and natural gas utilities, which will capture additional cost-effective energy savings, with $2 billion authorized for energy efficiency programs in 2006–2008. This investment will achieve $2.7 billion in net savings to consumers and meet more than half of future electricity load growth over the next decade—avoiding the need for three large (500 MW) power plants (CPUC 2005).
- The *Wisconsin* PBF, Focus on Energy, is a public-private partnership with the goals of encouraging energy efficiency and renewable energy, enhancing the environment, and ensuring a future supply of energy. This program realized a total lifetime energy savings of $214.5 million during FY 2004 for a program benefit-cost ratio of 5.4 to 1 (WI DOA 2004).

[2] A mill is equivalent to one-tenth of a cent.

Building Codes for Energy Efficiency

Building energy codes establish standards that set a minimum level of energy efficiency for residential and commercial buildings, thereby locking in the energy savings at the time of new construction or renovation. Well-designed, implemented, and enforced codes can help eliminate inefficient construction practices and technologies with little or no increase in total project costs.

Codes typically specify requirements for "thermal resistance" in the building shell and windows, minimum air leakage, and minimum heating and cooling equipment efficiencies. These measures can reduce energy use by 30% or more, resulting in cost savings for businesses and consumers (DOE 2005b). Building energy codes also reduce peak energy demand, air pollution, and greenhouse gas emissions. Recognizing these benefits, a majority of states have adopted building energy codes in some form for residential and commercial construction.

State Appliance Efficiency Standards

State appliance efficiency standards establish minimum energy efficiency levels for appliances and other energy-consuming products that are not already covered by federal efficiency standards. Federal laws such as the recent Energy Policy Act of 2005 (EPAct 2005) have established appliance efficiency standards for more than 40 products. States are preempted from setting their own standards for the products covered by federal standards but can enact standards for products that are not yet covered by federal law (which in many cases emerged from state standard-setting activities) or may petition for a waiver under particular circumstances. Ten states have adopted standards covering a total of 36 types of appliances and at least two additional states are considering adopting standards (Delaski 2005, Nadel et al. 2005).

States Are Implementing Building Energy Codes for Energy Efficiency

- *California's* Title 24 standards for residential and commercial buildings are stringent and well enforced. They include a combination of performance-based and mandatory provisions that are expected to yield $43 billion in electricity and natural gas savings by 2011. The standards are expected to reduce annual energy demand by 180 MW, equivalent to the electricity requirements of 180,000 average-sized California homes (CEC 2003).
- *Oregon and Washington* take a simple and prescriptive approach to building energy codes. The result is a high level of code compliance; a recent construction practice survey found that 94% of homes surveyed in Washington and 100% in Oregon met or exceeded code requirements for the building envelope (Ecotope 2001).

States Are Implementing Appliance Efficiency Standards

- *California* was the first state to initiate an appliance efficiency standards program (in 1977) and maintains the most active and well-funded standards program of any state. California law now covers 30 products; new or upgraded standards are under consideration for three products. Operated by the California Energy Commission (CEC), the appliance standard program is currently reducing peak electric demand by about 2,000 MW or about 5% of peak load. These savings account for about 20% of California's total peak demand reductions from all efficiency programs over the past 20 years (CEC 2005a, CEC 2005b).
- *New York's* Appliance and Equipment Energy Efficiency Standards Act of 2005 established state energy efficiency standards for 14 household appliances and electronic equipment not covered by federal standards. The law also requires efficiency standards for electronic products that use standby power when they are turned off but remain plugged in (e.g., DVD players and recorders) to reduce "phantom" energy consumption. These standards are expected to save 2,096 GWh of electricity annually, enough to power 350,000 homes. This equates to annual savings of $284 million per year (State of New York 2005).

Energy Supply Actions

States can achieve a number of environmental and economic benefits by encouraging the development of clean energy supply (i.e., renewable energy and CHP) as part of a balanced energy portfolio. The *Guide to Action* describes five policies that states have successfully used to support and encourage continued growth of clean energy supply in their state.

Renewable Portfolio Standards (RPS)

RPS provide states with a tool to increase the amount of renewable energy using a cost-effective, market-based approach. RPS, which can be used in both regulated and restructured electricity markets, require electric utilities and other retail electric providers to supply a specified minimum percentage or amount of customer load with eligible sources of renewable electricity. As of September 2005, RPS requirements have been established in 21 states and Washington, D.C. More than 2,300 MW of new renewable energy capacity (through 2003) is attributable to RPS programs. RPS is cited as the driving force behind the installation of approximately 47% of new wind capacity additions in the United States between 2001 and 2004 (Bird and Swezey 2004).

PBFs for State Clean Energy Supply Programs

PBFs for clean energy supply accelerate the development of renewable energy and CHP within a state. They are typically created by levying a small fee or surcharge on customers' electricity rates (e.g., for renewable energy, this fee ranges from approximately 0.01 to 0.1 mills/kWh). While PBFs have traditionally been used to fund energy efficiency and low-income programs, states have recently begun to implement PBFs to support clean energy supply. PBFs were initially established by states undergoing electricity market restructuring but are now used by both restructured states and states with traditional electricity markets.

As of 2005, 16 states had established renewable energy programs that are expected to provide more than $300 million annually in support of clean energy supply. PBFs will provide much of this funding; according to one estimate, clean energy funding will total $4 billion by 2017 (UCS 2004, DSIRE 2005, Navigant 2005).

States Are Implementing Renewable Portfolio Standards

- *Texas* was among the first states to establish a RPS requirement and is considered by many policymakers and advocates to be among the most successful. Between 1999, when the RPS was initiated, and February 2005, 1,187 MW of renewable energy capacity was installed in Texas. The Texas RPS includes long-term contracts, penalties for noncompliance, and RECs trading.
- *California's* RPS—enacted by the state legislature in September 2002—is among the most aggressive in the country. The RPS requires retail sellers of electricity to purchase 20% renewable electricity by 2017. At a minimum, retailers must increase their use of renewable electricity by 1% each year. California is considering increasing the RPS requirement to 33% by 2020 (CEC 2005a).

States Are Establishing Public Benefits Funds for State Clean Energy Supply Programs

- *New Jersey's* clean energy initiative, administered by the New Jersey Board of Public Utilities, provides information and financial incentives and creates enabling regulations designed to help New Jersey residents, businesses, and communities reduce their energy use, lower costs, and protect the environment. New Jersey's Clean Energy Program has three components: residential programs, commercial and industrial programs, and renewable energy programs. CHP is funded as an efficiency measure through the commercial and industrial programs.
- In *New York*, the New York State Energy Research and Development Authority (NYSERDA) administers the New York Energy $mart program, which is designed to support certain public benefits programs during the transition to a more competitive electricity market. About 2,700 projects in 40 programs are funded by a charge on the electricity transmitted and distributed by the state's investor-owned utilities.

Output-Based Environmental Regulations to Support Clean Energy

Designing environmental regulations that account for the emission reduction benefits of energy efficiency, renewable energy, and CHP increases the attractiveness for facilities to install clean energy technologies and increase efficiency. Output-based environmental regulations, which relate emissions to the productive output of a process, accomplish this by encouraging the use of fuel conversion efficiency and renewable energy as air pollution control measures. For electric generation, this unit of measure is the amount of emissions per MWh (lb/MWh). In contrast, most environmental regulations for power generators and boilers have historically established emission limits based on heat input or exhaust concentration (lb/MMBtu or parts per million [ppm]). These traditional input-based limits do not account for the pollution prevention benefits of process efficiency in ways that encourage the application of more efficient generation approaches.

Interconnection Standards

Standard interconnection rules encourage the connection of clean distributed generation (DG) systems (i.e., renewable and CHP) to the electric grid by establishing uniform processes and technical requirements that apply to utilities within a state. These rules reduce the uncertainty and prevent long delays and costs that clean DG systems may encounter when obtaining approval for grid connection. In addition, some states use net metering rules to govern interconnection of smaller DG systems. Net metering, which can be considered a subset of interconnection standards for small-scale projects, allows smaller DG owners to offset power that they obtain from the grid with excess power that they can supply

States Are Developing Output-Based Regulations

- *Connecticut* has adopted an output-based regulation for NO_x, particulate matter, carbon monoxide (CO), and CO_2 from small distributed generators (< 15 MW capacity), including CHP. The regulation values the efficiency of CHP based on the emissions that are avoided by not having separate electric and thermal generation. Connecticut also allocates allowances based on energy output in its NO_x trading program.
- *Massachusetts* has incorporated the output-based approach in several important regulations. The Massachusetts NO_x cap and trade program allocates emission allowances to affected sources (generators > 25 MW) on an output basis, including the thermal output of CHP. This approach provides a significant economic incentive for CHP within the emissions cap. Massachusetts also has a multi-pollutant emission regulation (NO_x, sulfur dioxide [SO_2], mercury [Hg], CO_2) for existing power plants, which uses an output-based format for conventional emission limits. In addition, Massachusetts allocates 5% of its NO_x state trading program budget to a public benefits set-aside account to provide for allocations for energy efficiency and renewable energy.

States Are Establishing Interconnection Standards

- In *New Jersey*, the New Jersey Board of Public Utilities developed net metering and interconnection standards for Class I renewable energy systems. These rules, which became effective on October 4, 2004, are separated into three levels based on system size and technical certification. Each level has specific interconnection review procedures and timelines for each step in the review process. The New Jersey interconnection standard is designed to support systems up to 2 MW.
- In *Texas*, the Texas Public Utility Commission adopted substantive rules in November 1999 that apply to generation facilities of 10 MW or less that connect to distribution-level voltages at the point of common coupling. These rules are intended to streamline the interconnection process for applicants, particularly those with smaller devices and those that are likely to have minimal impact on the electric utility grid. This ruling applies to both radial and secondary network systems[a] and requires Texas utilities to evaluate applications based on pre-specified screening criteria, including equipment size and the relative size of the DG system to feeder load.

[a] A radial distribution system is the most common electric power system. In this system, power flows in one direction from the utility source to the customer load.

through their grid connection. As of November 2005, 14 states had adopted standard interconnection requirements for distributed generators and seven additional states were in the process of developing similar standards. As of early 2005, 39 states and Washington, D.C. had rules or provisions for net metering (Navigant 2005).

Fostering Green Power Markets

Green power is a small but growing market that provides electricity customers the opportunity to make environmental choices about their electricity consumption by purchasing electricity generated by renewable resources. Green power programs in more than 40 states currently serve approximately 540,000 customers, representing nearly 4 billion kWh annually. These green power markets have resulted in the construction of more than 2,200 MW of new renewable capacity over the past 10 years. A recent study estimates this could reach 8,000 MW by 2015 by giving customers the choice to support cleaner electricity generation options in both vertically integrated and competitive retail markets (Wiser et al. 2001).

Because participation in green power programs is voluntary, the role for states may be more limited than with other clean energy policy options, but it is still important. In vertically integrated markets (i.e., states where regulated utilities perform generation, transmission, and distribution functions), several states require utilities to offer a green pricing tariff. This policy ensures that all customers have the option available to them. In restructured markets, green power products are available from a range of competitive suppliers. Customers are also increasingly able to add renewable energy to their default service with "green check-off" programs, which enable customers to select green power while maintaining service with the default provider.

Utility Planning and Incentive Structures

Long-term utility planning policies and incentive structures play an important role in determining the attractiveness of investments in energy efficiency and clean DG. In many states, utility profits are reduced if they experience decreased energy sales as a result of aggressive investments in energy efficiency or customer-sited DG. The *Guide to Action* describes specific approaches state PUCs can use to address these disincentives to creating low-cost, clean energy markets by allowing for a fair, economically based comparison between supply- and demand-side resource alternatives.

States Are Encouraging Green Power Markets

- *New Jersey* is the first state with restructured electricity markets to institute a statewide voluntary green power program. The New Jersey Clean Energy Council established a goal to double the amount of green electricity purchased by electric customers and increase the load served by qualified renewable resources by 50% over the Class I RPS. The state's Green Power Choice Program supports this goal by implementing a statewide green check-off program that requires utilities to offer retail electricity customers the option of selecting an energy product with a higher level of renewable energy than required by the state RPS.
- *New Mexico* provides a state-mandated utility green pricing program that was created by regulatory authority. In 2002, the New Mexico Public Regulation Commission (PRC) adopted regulations requiring all investor-owned utilities and electric cooperatives in the state to offer their customers a voluntary renewable energy tariff. These tariffs allow consumers the option of purchasing more renewable energy than is required by the RPS, range from 1.8 cents/kWh to 3.2 cents/kWh, and combine varying mixes of wind, solar, and biomass. Utilities are also required to develop educational programs for their customers on the benefits and availability of the voluntary renewable energy program (DOE 2005d).

Portfolio Management Strategies

Portfolio management refers to the electric utility's energy resource planning and procurement strategies, covering both supply- and demand-side resources. State PUCs are requiring electric utilities to conduct portfolio management as a way to provide least-cost and stable electric and natural gas

States Are Requiring Utilities to Manage Their Portfolios

- The *Northwest Power and Conservation Council's* Fifth Northwest Electric Power and Conservation Plan includes policies to enable the region to manage uncertainties that affect the power system and mitigate risks associated with these uncertainties. Clean energy options promoted in the plan include energy conservation and efficiency (targeted at 700 MW between 2005 and 2009), demand response (targeted at 500 MW between 2005 and 2009), and wind power (targeted at 1,100 MW between 2005 and 2014 from system benefits charges and utility integrated resource plans) (Northwest Power and Conservation Council 2005).
- In *California*, the CPUC requires each utility to submit a 10-year procurement plan biennially. Each plan must demonstrate that the utility has adequate, reliable supplies and complies with CPUC goals for efficiency and renewable energy. Utilities must prioritize their resource procurements by following the "loading order" established in the state's Energy Action Plan (EAP), as follows: (1) energy efficiency and demand response, (2) renewable energy (including renewable DG), and (3) clean fossil-fueled DG and clean fossil-fueled central-station generation. CPUC authorized $2 billion in procurement funding for energy efficiency programs from 2006 to 2008. These measures are expected to achieve $2.7 billion in net savings to consumers and avoid the need for three large (500 MW) power plants (CPUC 2005).

service to customers over the long term. Portfolio management can also increase energy efficiency, renewable generation, and clean DG in order to address reliability, safety, and environmental issues.

Portfolio management strategies are implemented through individual utilities' integrated resource plans in states served by regulated, vertically integrated utilities. These plans consider a broad array of supply and demand options using predefined criteria for evaluating options to meet projected needs. They compare a utility's current and projected future generation needs to all of its available generation demand- and supply-side options. "Retail Choice" portfolio management strategies refer to portfolio management by deregulated utilities. These strategies strive to protect consumers from high electricity prices by requiring competitive procurement policies. In either case, an ideal portfolio is diversified and involves choosing among a variety of electricity products and contracts, including energy efficiency, renewables, and clean DG, to enable the utility to adapt to shifting market conditions.

Utility Incentives for Demand-Side Resources

States are reworking traditional electric and gas utility rate structures to incorporate incentives for demand-side resources (e.g., energy efficiency and clean DG). Traditional ratemaking structures link a utility's financial health to the volume of electricity or gas it sells, thus providing a disincentive to investing in cost-effective demand-side resources that reduce sales. Aligning utilities' investment incentives with state interests of providing efficient, affordable, and reliable energy can "level the playing field" to allow for a fair,

States Are Creating Incentives for Utilities to Invest in Demand-Side Resources

- In 2005, *California* re-adopted a revenue balancing mechanism that applies between rate cases and removes the throughput disincentive by allowing for rate adjustment based on actual electricity sales. The California public utilities are also returning to larger-scale promotion of energy efficiency through their demand-side management programs. Simultaneously, the CPUC is revising its policies to establish a common approach for evaluating the performance of energy efficiency programs that defer more costly supply-side investments (CEC and CPUC 2005).
- In September 2002, the *Oregon* PUC adopted a partial decoupling mechanism for one of its gas utilities, Northwest Natural Gas, that uses a price elasticity adjustment and a revenue deferral account (Oregon PUC 2002). An evaluation found that the mechanism reduced, but did not completely remove, the link between sales and profits and that it "is an effective means of reducing NW [Northwest] Natural's disincentive to promote energy efficiency" (Hansen and Braithwait 2005).

economically based comparison between supply- and demand-side resource alternatives.

States with incentive policies for demand-side resources have implemented policies that: (1) remove disincentives by "decoupling" profits from sales volumes, (2) ensure that utilities recover their costs for effective, economic energy efficiency and clean DG programs, and (3) create incentives for utility managers and shareholders to actively invest in well-run and high-performing energy efficiency and clean DG programs.

Emerging Approaches: Removing Unintended Utility Rate Barriers to Distributed Generation

The unique operating profile of clean energy supply projects (i.e., renewable energy and CHP) may require different types of rates and different rate structures. However, if not properly designed, these rates and charges can create unnecessary barriers to the use of renewables and CHP. Appropriate rate design is critical to allowing utility cost recovery while also providing appropriate price signals for clean energy supply.

Customer-sited clean energy supply projects are usually interconnected to the power grid and may purchase electricity from or sell to the grid. Electric utilities typically charge these customers special rates for electricity and for services associated with this interconnection. These rates include exit fees, standby rates, and buyback rates. A key state PUC objective is to ensure that consumers receive reliable power at the lowest cost. In approving these rates, the PUC can support renewable and CHP projects and avoid unanticipated barriers while also providing appropriate cost recovery for the utility services on which consumers depend.

As of early 2005, several states had evaluated or begun to evaluate utility rate structures and had made changes to promote CHP and renewables as part of their larger efforts to support cost-effective clean energy supply as an alternative to expansion of the electric grid. This type of work is typically conducted by the state PUC through a formal process (i.e., docket or rulemaking) that elicits input from all stakeholders.

States Are Developing Utility Rates to Support Clean Energy Supplies

- In *California*, several types of exit and transition fees exist that are handled differently depending on the utility. Fee exemptions exist for various classes of renewable and CHP systems, including: systems smaller than 1 MW that are net-metered or are eligible for CPUC or CEC incentives for being clean and super-clean; ultra-clean and low-emission systems that are 1 MW or greater and comply with California Air Resources Board (CARB) 2007 air emission standards; and zero-emitting or highly efficient (> 42.5% efficiency) systems built after May 1, 2001.
- In *New York*, the New York State Public Service Commission (NYPSC) voted in July 2003 to approve new standby rates for utilities' standby electric delivery service to DG customers and standby service to independent wholesale electric generating plants that import electricity as "station power" to support their operations. A key consideration was for the rates to result in onsite generation running when it is less expensive than purchasing power from the grid. The NYPSC has also directed electric utilities to consider DG as an alternative to traditional electric distribution system improvement projects. It required natural gas companies to create a natural gas rate class specifically for DG users that provides predictable gas rates for the emerging DG industry (ceilings are frozen until at least the end of 2007).

What States Can Do

As described previously in this Executive Summary, states are supporting clean energy through a diverse range of programs and policies. Each policy description in the *Guide to Action* includes specific action steps and best practices drawn from state experiences for designing, implementing, and evaluating clean energy programs. When developing a comprehensive approach to clean energy, states can use this information to:

- Develop a *Clean Energy-Environment Action Plan* that establishes clean energy goals to increase the use of cost-effective clean energy in their state and identifies programs and policies to achieve these goals.
- Implement a coordinated package of policies, programs, and strategies defined in the *Clean Energy-Environment Action Plan*.
- Draw on federal, state, and other resources to help achieve clean energy goals.

Using the *Guide to Action*

The *Guide to Action* provides a menu of clean energy policies and programs that states have successfully implemented. When using the *Guide to Action*:

- Select from the menu of policies by reviewing Table ES.2 and the chapter introductions to identify policies that are most likely to meet state goals. Cross-references are provided within each section to help efficiently navigate the document.
- Keep in mind that some of the policies described in the *Guide to Action* represent different paths to the same goal or can be used in combination to achieve a goal.
- Consider designing clean energy programs by building upon the established models, examples, and action items described for each policy.

Develop a *Clean Energy-Environment Action Plan*

A *Clean Energy-Environment Action Plan* describes a clear strategy for delivering clean, low-cost, reliable, and stable-priced energy to state residents through a portfolio of energy efficiency, renewable energy, and clean DG policies and programs. Chapter 2 of the *Guide to Action* details the key steps involved in developing this clean energy strategy. These steps typically include:

1. *Create a Collaborative.* States have found it particularly useful to reach out to the parties in their states that are interested in and/or may be affected by changes in energy use within the state. Key players in the collaborative can include representatives from the governor's office, state legislature, state agencies, and universities. Stakeholders include utilities; independent system operators and regional transmission organizations; independent power producers, independent transmission system owners, and energy suppliers; environmental and consumer organizations; other private sector interests; and the public.
2. *Establish a Quantitative Goal Based on Future Energy Use Expectations and the Potential for Clean Energy in the State.* A quantitative clean energy goal defines a specific level of cost-effective clean energy the state can strive to acquire during a particular period of time. To define their goals, states can:
   - Develop or refine a baseline inventory of their energy use and emissions and make projections about the future.
   - Conduct energy efficiency and/or renewable energy potential analyses to determine areas of greatest opportunity for energy savings. These findings help states identify opportunities and determine the feasibility of different goals based on technologies or resource availability. Understanding and quantifying the potential for clean energy within the state also helps states ensure that they are providing adequate funding to make cost-effective investments in clean energy.

- Quantify the full range of savings to maximize the benefits of clean energy. By assessing and quantifying the full range of short- and long-term energy, environmental, and economic benefits from energy efficiency and renewable energy, states can ensure that their policy decisions are based on a complete accounting of the benefits of clean energy.

3. *Identify Both Existing and New Clean Energy Policies and Programs.* As states develop their *Clean Energy-Environment Action Plans*, they identify policies that could help achieve their goal by conducting an inventory of existing policies, identifying new clean energy policies that build on lessons learned from their own experience and other states' experiences, and establishing criteria to evaluate the policies. When selecting policies to include in their plan, states also can identify the market, regulatory, and/or institutional barriers to implementing the clean energy programs and develop approaches to mitigate or remove these barriers. Finally, states can also target support for investment in new clean energy technologies as they emerge in the marketplace.
4. *Design Policies and Evaluate Their Impacts.* States compare the impacts of different clean energy policies to ensure that they work well together. They also find it advantageous to identify the type of action, key players required, and time frame for implementation when designing a policy. Once policies are initially designed, states use analytic tools to evaluate the options based on the criteria they have developed. The tools enable states to quantify the impacts of the various policies and rank them according to the agreed-upon criteria. This usually includes an assessment of the energy, economic, and/or environmental and public health impacts of the options.
5. *Develop a Measurement, Evaluation, and Reporting Plan.* As states design and evaluate clean energy policy options, they often find it beneficial to consider in advance the ways they will measure the success of the implemented policies. This measurement, evaluation, and reporting plan enables states to regularly check their progress against their goals and adjust their course as needed.
6. *Recommend Specific Actions for State Decision-Makers.* Once policy options have been assessed and ranked according to the desired criteria, the collaborative typically reviews the findings. Based on the rankings and discussion among the stakeholders, recommendations for action are presented in the *Clean Energy-Environment Action Plan*.

Implement the *Clean Energy-Environment Action Plan*

The actions required to design and implement the clean energy programs articulated in a *Clean Energy-Environment Action Plan* vary according to type of program. Nevertheless, the following key themes have emerged that apply to all clean energy programs and that states can follow to help ensure the success of their programs:

- *Involve Stakeholders in Clean Energy Program Development and Deployment.* Clean energy policy objectives require broad public and political support to be successful. Successful states have implemented clean energy policies with the support of their governor, legislature, and state agencies. If support is lacking, states can consider implementing education programs on the environmental and economic benefits of clean energy. When support for clean energy activities is established, it is important to involve multiple stakeholders during discussions and negotiations about clean energy objectives.
- *Incorporate Clean Energy As a Resource in Other State and Utility-Level Resource Planning Decisions.* States can look for opportunities to incorporate clean energy policies as part of other state and utility-level planning decisions.
- *Evaluate the Effectiveness of Clean Energy Programs.* Evaluation is important to sustaining the success of state clean energy programs. By measuring program success against stated objectives on a regular basis and in a transparent way, states can identify problems, develop approaches for addressing these issues, and ensure continued support from stakeholders. Evaluating energy efficiency programs can also entail using special techniques to measure and verify the energy savings from these programs.

- *Communicate Program Results.* States communicate the findings from their program evaluation to key players and stakeholders on a regular basis. By reporting on the progress and lessons learned for each clean energy policy and for the overall program and soliciting feedback on these findings, states can ensure a transparent implementation process and continued support for their program. States can also help ensure continued support for clean energy policies by communicating the energy, economic, and environmental benefits accrued from these programs to stakeholders.

Each of the policy description sections in the *Guide to Action* describes how states consider these and other themes as they develop and implement clean energy programs and policies.

Leverage Federal, State, and Other Resources

As states pursue policies and programs for promoting clean energy, they can work with a variety of federal, state, and nonprofit organizations to help enhance their clean energy programs. Table ES.3 provides examples of how these federal, state, and other resources can be used when developing each of the 16 clean energy policies and programs covered in the *Guide to Action*. The following section, *Information Resources*, provides a list of the key federal voluntary program resources available to states (a more detailed description is provided in Appendix A, *Federal Clean Energy Programs*) and a summary of the Web sites for each of the resources described in Table ES.3.

Table ES.3: Federal, State, and Nonprofit Resources for Enhancing State Clean Energy Programs

Policy Name (Section No.)	Examples of State Actions[a]
Chapter 3. State Planning and Incentive Structures	
Lead by Example (3.1)	• Establish energy savings and renewable energy goals for state and local government facilities (including leased space), schools, colleges, and universities. Use ENERGY STAR tools, guidelines, and partnerships and join the ENERGY STAR Challenge to improve building energy efficiency by 10% or more. • Procure ENERGY STAR-qualified products using ENERGY STAR product procurement information and online training resources. • Require ENERGY STAR certification as part of green building/energy efficiency standards in new state and local government buildings, K-12 schools, and colleges and universities. • Purchase renewable energy for state facilities under EPA's Green Power Partnership Program. • Use CHP in public facilities with help from EPA's CHP Partnership. • Leverage ENERGY STAR consumer education activities, such as National Campaigns.
State and Regional Energy Planning (3.2)	• Develop and implement a *Clean Energy-Environment Action Plan* with guidance and support from EPA's Clean Energy-Environment State Partnership Program. • Leverage DOE State Energy Program funding (to state energy offices) and grants authorized by EPAct 2005 (Section 140) to support state energy planning and deploy clean energy technologies.
Determining the Air Quality Benefits of Clean Energy (3.3)	• Use the software tools, analyses, and EPA guidance described in Section 3.3 of the *Guide to Action* to evaluate the air quality benefits of clean energy policies and programs. • Incorporate emission reductions from clean energy into air quality planning using EPA's Guidance: Incorporating Emerging and Voluntary Measures in a State Implementation Plan (2004).
Funding and Incentives (3.4)	• Use ENERGY STAR financing information and training sessions for public and private sector organizations. • Learn about federal and state funding opportunities using EPA's Funding Opportunities Directory and CHP and biomass/biogas funding opportunities database. • Use EPA's Supplemental Environmental Projects Toolkit to convert environmental enforcement settlements into environmentally beneficial projects. • Include provisions for energy savings performance contracting using the information resources in Section 3.4. Identify energy service companies in your state using ENERGY STAR's online directory of service and product providers. • Leverage federal tax incentives authorized by EPAct 2005 for energy efficiency and renewable energy.
Chapter 4. Energy Efficiency Actions	
Energy Efficiency Portfolio Standards (EEPS) (4.1)	• Assess energy efficiency potential, evaluate past successes, and then design, develop, implement, and evaluate a customized EEPS program for your state. Contact EPA's Clean Energy-Environment State Partnership Program for more information and technical assistance to support the design of an EEPS for your state.
Public Benefits Funds (PBFs) for Energy Efficiency (4.2)	• Enhance PBF programs by leveraging ENERGY STAR's portfolio of energy efficiency program and service delivery models, building performance and product specifications, network of partners, and consumer education and awareness campaigns.
Building Codes for Energy Efficiency (4.3)	• Regularly update, implement, evaluate, and enforce building codes using compliance tools, technical assistance, and other code information and support available from DOE and the Building Codes Assistance Project. • Encourage construction of beyond-code ENERGY STAR-qualified new homes using ENERGY STAR education and training resources.
State Appliance Efficiency Standards (4.4)	• Use DOE's information resources to identify products that are covered by federal standards and obtain information about state appliance standards. • Identify potential products for which standards could be established, and estimate the overall benefits and costs of upgrading current standards or setting new standards using the information resources provided by the California Energy Commission and the Appliance Standards Awareness Project.

[a] See *Federal, State, and Nongovernmental Clean Energy Resources* on page ES-27 for the URLs for the underlined resources listed in this table.

(continued on next page)

Table ES.3: Federal, State, and Nonprofit Resources for Enhancing State Clean Energy Programs *(continued)*

Policy Name (Section No.)	Examples of State Actions[a]
Chapter 5. Energy Supply Actions	
Renewable Portfolio Standards (RPS) (5.1)	• Determine the renewable energy and CHP potential in your state and develop an RPS for your state with assistance from the National Renewable Energy Lab (NREL) and EPA's CHP Partnership. • Leverage the federal production tax credit and other federal incentives to advance renewable energy resource development and achieve standards.
Public Benefits Funds (PBF) for State Clean Energy Supply Programs (5.2)	• Use lessons learned from other state PBF programs described in Section 5.2 of the *Guide to Action* to establish or enhance your state programs. • Leverage other funding sources without activating "double-dipping" clauses. For example, incentives for wind projects allow developers to take advantage of federal incentives such as the production tax credit (PTC) and accelerated depreciation. • Contact EPA's CHP Partnership for assistance in designing a CHP incentive program.
Output-Based Environmental Regulations to Support Clean Energy Supply (5.3)	• Review federal programs that have adopted output-based regulations with recognition of CHP, including the proposed New Source Performance Standards (NSPS) for NO_x from electric utility boilers and combustion turbines, and the new EPA cap and trade programs (Clean Air Interstate Rule and the Clean Air Mercury Rule). For more information, visit the CHP Partnership State Resources Web site. • Use EPA's CHP Partnership resources, including *Output-Based Regulations: A Handbook for Air Regulators* to evaluate opportunities to adopt output-based regulations.
Interconnection Standards (5.4)	• Review existing model rules, such as those developed by FERC, NARUC, and IREC, as well as other state rules described in Section 5.4. • Develop an interconnection standard for clean DG/CHP projects with assistance from EPA's CHP Partnership.
Fostering Green Power Markets (5.5)	• Use EPA's Green Power Partnership resources and partners to enhance green power markets programs. • Learn about other state Green Power programs and policy approaches using the information resources available in Section 5.5 of the *Guide to Action* and from the DOE Green Power Network. • Take advantage of federal renewable energy incentives to complement state efforts to foster green power markets.
Chapter 6. Utility Planning and Incentive Structures	
Portfolio Management Strategies (6.1)	• Link portfolio management policies to other state policies described in Section 6.1, such as RPS, energy efficiency policies, and energy planning policies. • Incorporate lessons learned from other states and regions as described in Section 6.1 of the *Guide to Action*. • Contact the EPA-State Energy Efficiency and Renewable Energy Projects staff and/or EPA/DOE Energy Efficiency Action Plan staff for further assistance.
Utility Incentives for Demand-Side Resources (6.2)	• Incorporate lessons learned from states to remove financial disincentives and create incentives for utilities to invest in demand-side resources as described in Section 6.2 of the *Guide to Action*. • Contact the EPA-State Energy Efficiency and Renewable Energy Projects staff and/or EPA/DOE Energy Efficiency Action Plan staff for further assistance.
Emerging Approaches: Removing Unintended Utility Rate Barriers to Distributed Generation (6.3)	• Contact EPA's CHP Partnership for assistance in evaluating current utility rate structures for DG, such as standby rates, and developing rate structures that avoid unwarranted barriers, while also providing appropriate cost recovery for utility services. • Review the Regulatory Assistance Project's report, Accommodating Distributed Resources in the Wholesale Market.

[a] See *Federal, State, and Nongovernmental Clean Energy Resources* on page ES-27 for the URLs for the underlined resources listed in this table.

Information Resources

Key Federal Program Resources

A list of key EPA and DOE voluntary program resources available to states is provided below.

Federal Clean Energy Programs

EPA and DOE administer a number of voluntary programs that promote the production and use of clean energy and complement the Clean Energy-Environment State Partnership Program. These programs include:

ENERGY STAR

ENERGY STAR is a voluntary, public-private partnership designed to reduce energy use and related greenhouse gas emissions. The program, administered jointly by EPA and DOE, has an extensive network of partners including equipment manufacturers, retailers, builders, energy service companies, private businesses, and public sector organizations. EPA and DOE invest in a portfolio of energy efficiency efforts that state and utility energy efficiency programs can leverage to further their energy efficiency programs, including:

- Establishing performance specifications and performing outreach on efficient products.
- Establishing energy efficiency delivery models to existing homes.
- Establishing performance specifications and performing outreach for new homes.
- Improving the performance of new and existing commercial buildings.
- Conducting education and awareness building.

More information about ENERGY STAR can be found at: http://www.energystar.gov.

EPA-State Energy Efficiency and Renewable Energy Projects

This program is a joint initiative between EPA, the National Association of Regulatory Utility Commissioners (NARUC), and individual state utility commissions. It explores utility regulatory and market-based approaches that deliver significant energy cost savings and other benefits through greater use of energy efficiency, renewable energy, and clean distributed generation. More information can be found at: http://www.epa.gov/cleanenergy/utilitypolicy/.

Energy Efficiency Action Plan

This joint effort between DOE and EPA engages energy market leaders—including electric and gas utilities, state utility regulators and energy agencies, energy consumers, energy service providers, and environmental/energy efficiency advocates—in the development of an *Energy Efficiency Action Plan*. Action Plan participants will identify key barriers limiting greater U.S. investment in energy efficiency and develop and document sound business practices for removing these barriers. More information is available at: http://epa.gov/cleanenergy/eeactionplan.htm.

The Combined Heat and Power (CHP) Partnership

This EPA partnership seeks to reduce the environmental impact of power generation by fostering the use of CHP. The CHP Partnership works closely with energy users, the CHP industry, state and local governments, and other stakeholders to support the development of new policies, programs, and projects and promotes their energy, environmental, and economic benefits. More information is available at: http://www.epa.gov/chp.

The Green Power Partnership

EPA's Green Power Partnership is a voluntary partnership between EPA and organizations that are interested in buying green power. Through this program, EPA supports organizations that are buying, or planning to buy, green power. As a Green Power Partner, an organization pledges to replace a portion of its electricity consumption with green power within one year of joining the partnership. See http://www.epa.gov/greenpower.

State Activities and Partnerships

DOE's Office of Energy Efficiency and Renewable Energy (EERE) provides technical assistance to state and local jurisdictions that enables them to adopt renewable energy and energy efficiency technologies. The program offers training, technical assistance, and information on state activities. More information can be found at: http://www.eere.energy.gov/states/.

The State Energy Program

DOE provides grants to states and directs funding to state energy offices from technology programs in EERE. States use grants to address their energy priorities and program funding to deploy emerging renewable energy and energy efficiency technologies. More information is available at: http://www.eere.energy.gov/state_energy_program/.

Technical Assistance Program (TAP)

TAP provides state and local officials quick, short-term access to experts at DOE national laboratories for assistance with crosscutting renewable energy and energy efficiency policies and programs. TAP helps states in crosscutting areas not currently covered by an existing DOE program. More information is available at: http://www.eere.energy.gov/wip/informationsources/Tap.html.

For more information on EPA, DOE, and other federal agency clean energy efforts, see Appendix A, *Federal Clean Energy Programs*.

Federal, State, and Nongovernmental Clean Energy Resources

The following Web sites provide links to the federal, state, and nonprofit information resources and technical assistance opportunities that are described in Table ES.3.

Organization	Resource	URL
Federal Resources		
EPA and DOE	ENERGY STAR	http://www.energystar.gov/index.cfm?c=hom.index
	Energy Efficiency Action Plan	http://www.epa.gov/cleanenergy/eeactionplan.htm
	ENERGY STAR Financing Strategies	http://www.energystar.gov/index.cfm?c=business.bus_internet_presentations#money
	ENERGY STAR for Government	http://www.energystar.gov/index.cfm?c=government.bus_government
	ENERGY STAR National Campaigns	http://www.energystar.gov/index.cfm?c=promotions.pt_national_promotions
	ENERGY STAR Online Training Sessions	http://www.energystar.gov/index.cfm?c=business.bus_internet_presentations#procure
	ENERGY STAR Purchasing & Procurement	http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing
	ENERGY STAR Qualified New Homes	http://www.energystar.gov/index.cfm?c=new_homes.hm_index
	ENERGY STAR Qualified Products	http://www.energystar.gov/index.cfm?fuseaction=find_a_product
	ENERGY STAR Residential Marketing and Sales Materials	http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.pt_ResMktgSalesMaterials
	ENERGY STAR Service and Product Provider Directory	http://www.energystar.gov/index.cfm?fuseaction=SPP_DIRECTORY
	Federal Tax Credits for Residential Energy Efficiency	http://www.energystar.gov/index.cfm?c=products.pr_tax_credits
EPA	Clean Energy-Environment State Partnership Program	http://www.epa.gov/cleanenergy/stateandlocal/ourpartners.htm
	Combined Heat and Power Partnership • CHP Partner Resources, Funding Opportunities • CHP Partnership State Resources • CHP Partnership State Resources: Output-Based Regulations • CHP Partnership State Resources: Utility Rates	http://www.epa.gov/chp/ http://www.epa.gov/chp/funding_opps.htm http://www.epa.gov/chp/state_resources.htm http://www.epa.gov/chp/state_resources/output_based_reg.htm http://www.epa.gov/chp/state_resources/utility.htm
	EPA Guidance Documents: Incorporating Emerging and Voluntary Measures in a State Implementation Plan	http://www.epa.gov/ttn/oarpg/t1/memoranda/evm_ievm_g.pdf (http://www.epa.gov/cleanenergy/stateandlocal/guidance.htm)
	EPA-State Energy Efficiency Renewable Energy Projects	http://www.epa.gov/cleanenergy/utilitypolicy/
	Funding Opportunities: A Directory of Energy Efficiency, Renewable Energy and Environmental Protection Assistance Programs	http://www.epa.gov/cleanenergy/pdf/eere_fun.pdf

Organization	Resource	URL
Federal Resources *(continued)*		
EPA	Green Power Partnership	http://www.epa.gov/greenpower/
	Supplemental Environmental Projects Toolkit	http://www.epa.gov/cleanenergy/pdf/sep_toolkit.pdf
DOE	Appliances and Commercial Equipment Standards	http://www.eere.energy.gov/buildings/appliance_standards/
	Building Energy Codes Program	http://www.energycodes.gov/
	Energy Policy Act of 2005: Tax Credits for Renewable Energy	http://www.energy.gov/taxbreaks.htm
	The Green Power Network	http://www.eere.energy.gov/greenpower/
	National Renewable Energy Laboratory	http://www.nrel.gov/
	State Energy Program	http://www.eere.energy.gov/state_energy_program/about.cfm
State and Nonprofit Resources		
Appliance Standards Awareness Project	Appliance Standards Awareness Project Web site	http://www.standardsasap.org
Building Codes Assistance Project	Building codes implementation and technical assistance	http://www.bcap-energy.org
California Energy Commission	Appliance efficiency regulations and products database	http://www.energy.ca.gov/appliances/
DSIRE	Information on federal incentives for renewable energy and energy efficiency	http://www.dsireusa.org/library/includes/genericfederal.cfm?CurrentPageID=1&state=us
The Regulatory Assistance Project (RAP)	RAP report: Accommodating Distributed Resources in the Wholesale Market	http://www.raponline.org/showpdf.asp?PDF_URL=%22Pubs/DRSeries/DRWhlIMkt.pdf%22
U.S. Green Building Council	LEED certification requirements	http://www.usgbc.org

EPA Clean Energy-Environment State Partnership Program Contact Information

To download the *Clean Energy-Environment Guide to Action*, visit EPA's Clean Energy Web site at: http://www.epa.gov/cleanenergy/stateandlocal/.

To order a print copy of the *Guide to Action*, contact the National Service Center for Environmental Publications (NSCEP) at: http://www.epa.gov/ncepihom/ordering.htm. Or call NSCEP at: 1-800-490-9198. Request EPA Publication No. 430-R-06-001.

For more information about the *Guide to Action*, please contact the EPA Clean Energy-Environment State Partnership Program staff:

EPA Clean Energy-Environment State Partnership Program Contacts:

Julie Rosenberg, Branch Chief
Phone: 202-343-9154
E-mail: rosenberg.julie@epa.gov

Steve Dunn, Policy Analyst
Phone: 202-343-9341
E-mail: dunn.stevev@epa.gov

Mailing Address:

U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
6202J
Washington, DC 20460

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