CHAPTER ONE

Introduction

Many state governments are pursuing clean energy Lead by Example (LBE) programs to save energy and money and reduce greenhouse gas emissions across their facilities, operations, and fleets.

These LBE programs also demonstrate leadership on energy and environmental issues, raise public awareness of the benefits of clean energy technologies, improve air quality, improve energy supply and reliability, and foster markets for environmentally preferable products and services.

The LBE Guide provides information to assist state governments as they develop and implement effective LBE programs to achieve clean energy goals. It presents strategies, resources, and tools that state decision makers can use throughout the process.

State governments across the nation are pursuing clean energy policies and programs to help meet the growing demand for energy and to address the environmental, public health, and financial challenges associated with conventional energy generation and use. Advancing clean energy can provide many benefits including reduced energy costs, lower emissions of air pollutants and greenhouse gases (GHGs), increased fuel diversity, and improved reliability and security of the energy system (U.S. EPA, 2006b).

A key strategy for state governments is implementing clean energy activities and measures in their facilities,

WHAT IS CLEAN ENERGY?

Clean energy includes demand- and supply-side resources that are less polluting ways to meet energy demand. Clean energy resources include:

Energy efficiency – refers to using less energy to provide the same or improved level of service to the energy consumer in an economically efficient way. Energy efficiency measures include a wide variety of technologies and processes, and can be implemented across all major energy-consuming sectors.

Renewable energy – energy generated partially or entirely from non-depleting energy sources for direct end use or electricity generation. Renewable energy definitions vary by state, but usually include wind, solar, and geothermal energy. Some states also consider low-impact or small hydro, biomass, biogas, and waste-to-energy to be renewable energy sources. Renewable energy can be generated on site or at a central station.

Combined heat and power (CHP) – also known as cogeneration, CHP is a clean, efficient technology that improves the conversion efficiency of traditional energy systems by using waste heat from electricity generation to produce thermal energy for heating or cooling in commercial or industrial facilities. CHP systems typically achieve 60% to 75% fuel use efficiencies, which is a significantly higher than those of conventional power plants.

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

For more information, visit the U.S. Environmental Protection Agency's (EPA's) Clean Energy Web site (http://www.epa.gov/cleanenergy) and the ENERGY STAR Web site (http://www.energystar.gov/).

operations, and fleets. These "lead by example" (LBE) programs frequently include actions such as:

- Improving how buildings are operated and maintained to maximize energy efficiency,
- Procuring energy-efficient products, and
- Purchasing green power.

In addition to the energy, environmental, and financial benefits of LBE programs, states are demonstrating leadership on clean energy issues and documenting the economic feasibility of clean energy strategies. This helps to develop markets for clean energy technologies and services, raises awareness of clean energy opportunities, and promotes the adoption of clean energy measures in other sectors of the state economy.

To pursue these benefits, states may need to overcome several persistent market barriers that limit investment in clean energy programs. These barriers include:

- Limited knowledge about clean energy or LBE programs,
- Limited high-level and agency-level support,
- Insufficient funding, and
- Insufficient staff availability.

THE LBE GUIDE AND LOCAL GOVERNMENTS

While the LBE Guide is designed primarily to assist states in planning, implementing, developing, and operating comprehensive LBE programs, local governments can also benefit from the Guide. Like states, municipalities are also actively involved in developing clean energy LBE programs, although specific program activities and issues may differ. While this Guide focuses on how states can develop LBE programs, it also highlights examples of local LBE activities that states can adopt and describes how certain state activities are relevant to local governments.

The *Lead by Example Guide* is designed to help states overcome these barriers. It provides a compilation of information to assist governments in developing their LBE programs, including step-by-step guidance, examples of successful state and local LBE programs, and resources and tools targeted at key LBE activities. An overview of the *LBE Guide* is presented in this section and includes:

- Background on the importance of LBE programs as part of state clean energy efforts,
- The key LBE activities that state governments are successfully implementing,
- The major benefits associated with LBE programs, and
- An overview of how the *Guide* is structured and the LBE program development and implementation process, and
- A list of the state and local government examples provided in the *LBE Guide*.

1.1 LBE IS A CRITICAL STATE CLEAN ENERGY POLICY

Leading by example is a key policy option for states seeking to achieve clean energy goals. The *LBE Guide* is an important next step in EPA's efforts to assist states as they develop clean energy strategies for their own facilities and operations. It extends and supports two other recent state policy assistance documents:

- EPA's *Clean Energy-Environment Guide to Action,* which describes and provides information on sixteen clean energy policies, including LBE (U.S. EPA, 2006).
- *National Action Plan for Energy Efficiency (Action Plan)*, which is a private-public initiative designed to overcome barriers to energy efficiency. The Action Plan's implementation framework – the *Vision for 2025* – defines ten implementation goals for achieving all cost-effective energy efficiency by 2025, recognizes LBE programs as an important component of this goal, and uses the presence of a strong state LBE program as an indication of progress towards achieving this goal (see text box on page 1-3) (NAPEE, 2006, NAPEE, 2007). The *Vision* also highlights the value of LBE strategies as an option for leveraging purchasing power, control of significant energy-using resources, and the high visibility of public facilities to demonstrate clean energy technologies and approaches that lower energy costs and reduce emissions. It further stresses that strong LBE programs involve establishing goals and processes necessary for program implementation and periodic reporting on progress.

The *LBE Guide* is offered as a tool to assist states and local governments in making progress towards their goals, consistent with the goals and recommendations of these documents.

1.2 WHAT STATE GOVERNMENTS CAN DO

State LBE activities typically fall into one of the following areas:

1. **Improve the energy efficiency of existing and new government-owned and -leased facilities.** State governments operate many facilities, including office buildings, public schools, colleges, and universities, which consume large amounts of energy. These governments 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 (U.S. DOE, 2007). Improving energy efficiency in these structures can substantially reduce energy consumption, decrease GHG and air pollutant emissions, and lead to economic and other benefits. In addition, states can assist local governments, which can, in turn, reach out to assist their communities in improving building energy efficiency.

2. **Integrate energy efficiency and renewable energy measures in green buildings.** The planning, design, and construction process for new and renovated buildings offers opportunities to integrate energy efficiency features with additional measures that achieve environmental and health benefits (e.g., purchasing green power, developing on-site renewable energy, selecting sustainable sites, using recycled-content materials, and landscaping to reduce water and energy use). Implementing energy efficiency and renewable energy measures are key ways to reduce GHG emissions and decrease the carbon footprint of new state facilities. By making this link between energy efficiency, renewable energy, and climate change, states are in a better position to achieve results and gain support for their programs.

3. **Procure energy-efficient products.** Energy-efficient product procurement can be a cornerstone of a state's overall energy management strategy. State and local governments spend $50 to $70 billion a year to purchase energy-related products, and could save a combined total of more than $750 million annually through energy-efficient product procurement (CEE, 2004; Harris et al., 2004; U.S. DOE, 2006.) This can be particularly helpful for fostering the development of in-state markets for clean energy products.

THE NATIONAL ACTION PLAN FOR ENERGY EFFICIENCY AND VISION FOR 2025: ACHIEVING ALL COST-EFFECTIVE ENERGY EFFICIENCY BY 2025

The National Action Plan for Energy Efficiency (Action Plan) recognizes that improving energy efficiency in our homes, businesses, schools, governments, and industries – which consume more than 70% of the natural gas and electricity needs in the country – is one of the most constructive, cost-effective ways to address our nation's energy challenges. The Action Plan, developed in July 2006 by more than 50 leading organizations representing key stakeholder perspectives, describes policy recommendations for creating a sustainable, aggressive national commitment to energy efficiency through gas and electric utilities, utility regulators, and partner organizations.

In 2007, Action Plan leaders defined a vision that provides the framework for implementing the Action Plan. This Vision establishes a goal of achieving all cost-effective energy efficiency by 2025; describes ten implementation goals for states, utilities, and other stakeholders; describes what 2025 might look like if the goal is achieved; and provides a means for measuring progress. The ten Vision goals are:

1. Establish cost-effective energy efficiency as a high-priority resource.
2. Develop processes to align utilities incentives equally for efficiency and supply resources.
3. Establish cost-effectiveness tests.
4. Establish evaluation, measurement, and verification mechanisms.
5. Establish effective energy efficiency delivery mechanisms.
6. Develop state policies to ensure robust energy efficiency practices.
   Key step: Develop and implement lead-by-example energy efficiency programs at the state and local levels.
7. Align customer pricing and incentives to encourage investment in energy efficiency.
8. Establish state of the art billing systems.
9. Implement state of the art efficiency information sharing and delivery systems.
10. Implement advanced technologies.

Web site: http://www.epa.gov/cleanenergy/documents/vision.pdf

4. **Purchase green power.** Green power is electricity produced from renewable sources (e.g., wind, solar, biogas, biomass, low-impact hydro, and geothermal resources) that is produced with no man-made GHG emissions, has a superior environmental profile compared to conventional power generation, and was built after January 1, 1997.[1] By choosing to purchase green power, states can reduce reliance on conventional fossil fuel-based energy, which can help stabilize energy prices and reduce GHG emissions. Increased use of green power can also provide economic benefits and improve national security.

5. **Use clean energy supply technologies.** Clean energy generation technologies, such as on-site wind and photovoltaic (PV) systems and clean DG and CHP, provide a clean energy alternative to conventional fuels that reduces the amount of energy lost in transmission from source to site, thereby reducing total energy demand, and lowers emissions of GHG and air pollutants. Increasing use of clean energy supply can also help state governments hedge against volatile fossil fuel-based energy prices.

6. **Implement other energy-saving opportunities.** Implementing other environmental activities, such as recycling, water efficiency, and sustainable landscaping activities, frequently has the secondary effect of reducing energy use. For example, using products made from recycled or renewable materials through non-energy-intensive methods can prevent unnecessary depletion of natural resources and reduce the energy required to manufacture new products and dispose of used ones. Improving the efficiency of water and wastewater treatment systems can reduce the amount of energy needed to convey, treat, and distribute water.

   In addition, some states are reducing energy costs and improving energy system reliability by incorporating demand response activities as part of their strategic approach to energy management. These activities involve changing electricity use patterns in order to reduce demand during times of peak energy use or when electricity system reliability is uncertain. States can sometimes earn additional revenue through payments from utilities and grid operators as compensation for the system reliability benefits of their demand response activities.

   These LBE activities are described in more detail in Chapter 2: *Lead By Example Activities and Measures* and Appendix B: *State and Local Clean Energy LBE Programs: Examples, Tools, and Information Resources*. .

   Beyond these six stationary-source energy efficiency and clean energy supply LBE activities, there are opportunities for states to lead by example in the transportation sector, which in some states (e.g., California) can account for more than 50% of the state government's energy expenditures. State LBE transportation policies and initiatives include increasing the use of alternative fuels, purchasing efficient vehicles for state fleets, developing a fueling infrastructure for

WISCONSIN EFFICIENT BUYS PROGRAM—VENDORNET SYSTEM

The Wisconsin VendorNet system serves as the purchasing authority for the state. Additionally, VendorNet allows for cooperative purchasing by counties, cities, school districts, and utility districts. These entities are provided with access to state bids and contracts through a common Web site that is monitored by the Department of Administration's Energy Division staff. Staff members work with purchasing agents to specify ENERGY STAR-qualified products, where available.

Source: Harris et al., 2004; Wisconsin, 2008.

MONTGOMERY COUNTY, MARYLAND—WIND POWER PURCHASE

In 2004, Montgomery County, Maryland represented a group of six county agencies, 11 municipalities, and a neighboring county in completing the largest ever local government purchase of wind energy. The agreement with Washington Gas Services and their wind energy supplier, Community Energy, Inc., is for more than 38.4 million kWh annually over two years, representing 5% of the group's aggregate energy demand. The deal will produce significant environmental benefits. The emissions avoided through this purchase include over 19,000 metric tons of CO2 (equivalent to 36 million miles not driven) and 43 tons of NOx (equivalent to 2.9 million trees).

Sources: Montgomery County, 2006; U.S. EPA, 2007.

CONNECTICUT DEMAND RESPONSE PROGRAM

The Connecticut Office of Policy and Management (OPM) administers a Demand Response Program that coordinates demand response activities among eleven state agencies. OPM works with these agencies to reduce peak electrical loads during period of high demand by transferring loads to distributed generation equipment and reducing non-essential electrical loads. These actions enable ISO New England, the regional grid operator, to avoid installing additional infrastructure that would otherwise be needed to meet demand. As compensation, ISO New England provides OPM approximately $430,000 quarterly, through third-party contractors. This payment is allocated to the participating agencies for reinvestment in clean energy projects

Source: Connecticut OPM, 2008.

alternative fuel vehicles, and encouraging commuting options such as ride-sharing and mass transit. For more information about EPA's transportation programs, policies, regulations, and tools, visit the EPA Office of Transportation and Air Quality Planning's State and Local Transportation Resources Web site (*http://www.epa.gov/otaq/stateresources/index.htm*) (U.S. EPA, 2006b; U.S. EPA, 2006c).[1]

1.3 BENEFITS OF LBE PROGRAMS

Clean energy LBE programs can produce significant energy, environmental, economic, and other benefits for state governments. Specifically, LBE activities can help states to:

- **Demonstrate leadership.** Clean energy LBE programs can educate policymakers and stakeholders and raise public awareness about the multiple energy, environmental, and economic benefits that clean energy offers. Governments that practice good energy management are demonstrating a proactive approach to addressing the nation's energy challenge while practicing fiscal responsibility.

- **Reduce energy consumption and costs.**[2] State governments have implemented a variety of clean energy LBE activities that are saving energy. In many buildings, energy efficiency upgrades can reduce energy costs by 35%, while designing new and renovated buildings to achieve superior energy performance can lead to energy savings of as much as 50% when compared to conventional buildings (U.S. EPA, 2008b; U.S. EPA, 2004).

  EXAMPLES: *In North Carolina, from fiscal year (FY) 2002 through 2006 the North Carolina Utility Savings Initiative for State Facilities saved the state an estimated $53 million through a number of energy investments, including energy efficiency measures that saved almost $900,000 for switching to LED traffic lights and $3 million for incorporating a bundle of energy efficiency measures recommended by the State Energy Office (North Carolina, 2007).*

  In New York, an executive order in 2003 directed state facilities to achieve a 35% reduction in energy consumption by 2010 relative to 1990 levels. By the end of FY 2001/2002, state agencies had reduced energy consumption by 9%, saving $52 million in FY 2001/2002 alone (New York, 2003).

- **Reduce GHG emissions and air pollutants.** Energy use in commercial and industrial facilities account for nearly 50% of all U.S. GHG emissions (U.S. EPA, 2008b). By implementing clean energy activities to decrease their use of conventional fossil fuel-based energy, state governments can reduce their emissions of GHGs and air pollutants (e.g., sulfur and nitrogen compounds, ozone precursors, particulate matter) associated with fossil fuel combustion.

  EXAMPLE: *A 660 kW wind turbine at the Massachusetts Maritime Academy, which supplies 25% of the academy's electricity demand, help avoid 556 tons of GHG emissions (Massachusetts EOEA, 2006).*

- **Foster markets for energy-efficient products and encourage economic development in local and regional communities.** Clean energy LBE activities support the development of in-state markets for clean energy products, manufacturers, and services (e.g., energy service companies, renewable energy equipment installers, and energy-efficient product manufacturers). In addition, investing in energy efficiency and local clean energy typically provides a greater economic stimulus to the local economy than traditional energy purchases, particularly when that energy comes from out of state. Energy cost savings resulting from energy efficiency are also available to reinvest and further spur local economic development. State governments can provide

ASSESSING THE MULTIPLE BENEFITS OF CLEAN ENERGY

EPA is currently developing guidance for state energy, environmental, and economic policy makers on assessing the many benefits of clean energy. This guidebook will address energy savings, energy system benefits, environmental quality and related human health benefits, and economic benefits of clean energy. While they are sometimes reported in qualitative terms, these benefits can also be estimated using computer simulations of a state's economy (e.g., job creation, reduction in trade deficits), public health models (e.g., reductions in asthma), and other analytic tools.

Assessing the Multiple Benefits of Clean Energy, will describe each type of benefit; present methods, tools, and resources for estimating each type of benefit; and provide information on how states can use the results to build support for their clean energy programs.

Source: U.S. EPA, Forthcoming.

[1] *January 1, 1997 is the accepted date marking the beginning of the voluntary green power market.*

[2] *Throughout the LBE Guide, energy savings resulting from clean energy LBE programs and activities are expressed in terms of total dollars (i.e., energy cost savings in $) and/or kilowatt hours (i.e., energy savings in kWh), depending on the source of information.*

a starting point for broader implementation of these clean energy technologies and practices.

- **Offer improved energy supply reliability.** Many LBE activities are designed to reduce demand or enhance distributed supply during periods of peak demand. Reducing demand at peak demand times is sensible financially (i.e., due to significantly higher on-peak energy or power demand costs) and improves transmission and distribution system reliability.

  EXAMPLE: *Twice during the summer of 2002, the New York State Public Service Commission (PSC) requested state entities to curtail their energy demand during the day to help avoid brownouts and blackouts. Agencies were able to reduce peak load by approximately 100 MW during these times of strain on the electric grid. The PSC load-curtailment campaign is an important component of the state's efforts to assure reliable electric service for all New Yorkers (New York, 2003).*

- **Offer greater energy price certainty.** Using a clean energy supply can provide more reliable energy services and help government energy consumers hedge against uncertain future energy costs and availability (U.S. EPA, 2006b).

  EXAMPLE: *Electricity from renewable sources provide 100% of state government needs in Maine, making state government less susceptible to price volatility that may accompany future constrained supply of conventional fossil fuels (DSIRE, 2007).*

  Reducing demand for conventional energy can also reduce energy prices, which is a special concern in areas where sales-volume-sensitive gas prices have been steadily increasing. According to one estimate, for every 1% reduction in national natural gas demand, natural gas prices decrease by 0.8% to 2% (Wiser et al., 2005).

- **Promote sustainable alternatives to conventional practices.** By implementing other energy and environmental activities that complement LBE clean energy activities, states can achieve secondary energy savings benefits. For example, coordinating LBE activities with waste management, water treatment, and other state programs can lead to energy savings due to the energy benefits of recycling, solid waste reduction, water conservation, and landscaping strategies. In terms of recycling, the amount of energy saved from recycling one ton of office paper or one ton of aluminum cans is equal to more than 10 million BTU and nearly 207 million BTU, respectively (Choate et al., 2005).

  EXAMPLE: *In North Carolina, reported purchases of recycled content office paper by state agencies totaled $12 million in 2005. This effort conserved 115,000 trees and reduced the CO2 equivalent of 900 cars while saving enough BTUs to supply energy to 900 homes (North Carolina DENR, 2005).*

- **Provide other benefits.** Clean energy LBE programs can sometimes produce additional benefits, including:

  - *Improved indoor air quality and productivity in energy-efficient and green buildings.* Energy efficiency upgrades can improve occupant health by enhancing indoor air quality. Installing energy recovery ventilation equipment, for example, can reduce infiltration of air contaminants from outdoors while significantly reducing HVAC energy loads (U.S. EPA, 2003). One study on building performance found that the average reduction in illness as a result of improving air quality in buildings is approximately 40% (Carnegie Mellon, 2005).

    Enhanced indoor air quality along with well-designed lighting, greater use of daylighting, and comfortable heating, cooling, and ventilation, can improve employee comfort and reduce fatigue, accidents, absenteeism, turnover, and health costs—all of which can contribute to employee morale and productivity (U.S. EPA, 2008). Use of environmentally preferable building materials in green buildings can also help improve indoor air quality.

  - **Increased Asset Value in Energy-Efficient Buildings.** Improving energy efficiency can increase a building's lifetime and overall value. EPA estimates that for every $1 spent on energy efficiency improvements, a building's value increases by $2 to $3 (U.S. EPA, 2004). In addition, energy-efficient products often have longer lifetimes than conventional products.

  - **Reduced Maintenance Costs in Energy-Efficient Buildings.** Because energy-efficient products may require less-frequent maintenance or replacement, cost savings over the lifetime of the product can be significant. Reducing the number of times a product needs to be replaced can be especially important when replacement involves handling valuable or antique items, which can be found in many state government facilities (U.S. EPA, 2004).

1.4 OVERVIEW OF THE LBE GUIDE AND THE LBE IMPLEMENTATION PROCESS

States can use the *LBE Guide* to initiate or expand an LBE program with the objective of establishing a comprehensive LBE program across their buildings, facilities, and operations. They can use the *LBE Guide* for guidance on both simple and more complex approaches, selecting and applying strategies appropriate to their situation. The steps involved in the LBE process, and specific actions states can undertake to achieve each of the steps are illustrated in Table 1.4.1. These key steps include

- Establish the program framework;
- Screen LBE activities and measures;
- Develop a comprehensive program; and
- Track, evaluate, and report on program progress.

The *Guide* includes strategies, resources, and tools for states to use throughout this process. Table 1.4.2 describes how one state, Connecticut, has followed these steps in developing its clean energy LBE program. A list of all the state and local government examples provided in the *Guide* through text boxes and case studies is provided in Table 1.4.3. These examples are organized according to the step in the LBE process that they address and by section of the *Guide*.

The *Guide* is organized as follows:

- Chapter 2, *LBE Activities and Measures,* introduces key background information on benefits and implementation issues associated with six key types of LBE activities. Information on the specific measures that comprise an LBE activity is provided where appropriate. The information and examples provided in this chapter can help inform decisions at multiple stages in the LBE program development process, described in subsequent chapters.

- Chapter 3, *Establishing the LBE Program Framework*, describes the first steps in establishing a framework for a comprehensive LBE program, including selecting an LBE team and other key participants, obtaining high level support, setting goals, and initiating the program.

- Chapter 4, *Screening LBE Activities and Measures,* provides information on assessing the universe

OVERVIEW OF CONTENTS OF THE LEAD BY EXAMPLE GUIDE

DOCUMENT MAP

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Introduction

CHAPTER TWO
Potential LBE Activities and Measures

CHAPTER THREE
Establish the LBE Program Framework

CHAPTER FOUR
Screen LBE Activities and Measures

CHAPTER FIVE
Develop LBE Program

CHAPTER SIX
Track, Evaluate, and Report on Progress

Appendix A:
State Executive Orders, Legislation, Policies, and Plans Initiating LBE Programs

Appendix B:
State and Local Clean Energy LBE Programs: Examples, Tools, and Information Resources

Appendix C:
Resources for Implementing LBE Programs

Appendix D:
Resources for Funding LBE Programs

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Resources for Conducting Communications and Outreach for LBE Programs

Appendix F:
Resources on Technical and Financial Assistance to Local Governments

Appendix G:
State LBE Programs and Contacts

Appendix H:
State LBE Tracking Tools and Resources

Appendix I:
M&V Protocols and Guidance

Appendix J:
Resources for Reporting the Results of LBE Programs

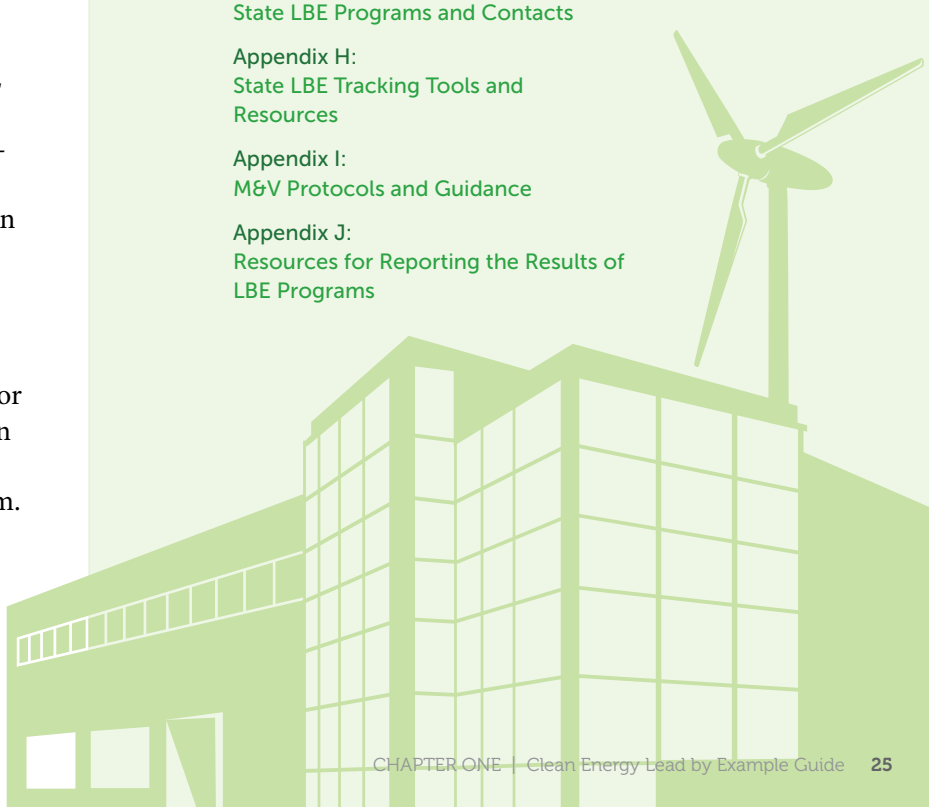


TABLE 1.4.1 SUMMARY OF THE LBE IMPLEMENTATION PROCESS

LBE Activities and Measures	Establish the LBE Program Framework			Screen LBE Activities and Measures	Develop a Comprehensive LBE Program	Track, Evaluate, and Report on LBE Program Progress
	Establish LBE Team and Obtain Support	Set Clean Energy Goals	Establish Mechanisms to Implement the LBE Program			
See Chapter 2	See Sections 3.1–3.3	See Section 3.4	See Section 3.5	See Chapter 4	See Chapter 5	See Chapter 6
POSSIBLE ACTIONS	POSSIBLE ACTIONS	POSSIBLE ACTIONS	POSSIBLE ACTIONS	POSSIBLE ACTIONS	POSSIBLE ACTIONS	POSSIBLE ACTIONS
Improve energy efficiency in buildings.	Identify lead and supporting LBE clean energy agencies.	Develop energy consumption baseline.	Governor issues an executive order.	Screen LBE activities and measures from the universe of LBE activities.	Integrate clean energy opportunities.	Develop tracking, evaluation, and reporting plan.
Integrate energy efficiency and renewable energy measures in green buildings.	Identify key personnel.	Assess state context.	State legislature enacts LBE legislation.	Develop assessment criteria.	Determine program financing.	Establish baselines.
Purchase energy-efficient products.	Identify and obtain high-level support.	Set state LBE activity goals.	State establishes LBE program through state planning process.	Estimate costs and benefits.	Conduct communications and outreach.	Conduct benchmarking.
Purchase green power.	Identify other key agencies and grvoups to help shape and implement LBE programs	Overall energy savings and GHG emission targets.	State energy office initiates LBE program.	Select and implement LBE activities and measures.	Provide technical and financial assistance to local governments.	Track energy use, emissions, and savings. Conduct impact, process, and/or market effects evaluations.
Use a clean energy supply.		Existing building targets.	Other organizations adopt programs that support or influence the state's adoption of an LBE program.		Share information and access federal, state, and local LBE resources.	Report progress.
Implement other energy-saving activities.		New building targets.				Revise program based on results.
		Energy-efficient product procurement goals.				
		Renewable energy targets.				
		Energy-efficient procurement goals.				
		State fleet and fuel use targets.				

of LBE activities and measures to formulate a portfolio of high-priority LBE activities and measures.

- Chapter 5, *Developing a Comprehensive LBE Program* discusses key design and implementation issues for states to consider as they develop their LBE programs, including integrating multiple LBE activities, financing the LBE program, conducting communications and outreach, and providing technical and financial assistance to local governments.
- Chapter 6, *Tracking, Evaluating, and Reporting LBE Program Progress,* provides information on how to track, evaluate, and report on the performance of LBE programs and activities.
- The *LBE Guide's* appendices provide examples, resources, and tools that can assist state governments in developing an effective LBE program.

DEVELOPING A STATE CLEAN ENERGY LBE PROGRAM: CONNECTICUT CASE STUDY

Connecticut's LBE program was developed as an integral part of the Climate Change Action Plan, the blueprint for achieving cost-effective GHG emissions reductions across the state. The Governor's Steering Committee recognized the importance of including a strong LBE component in the plan and stated that "only by leading by example can the state of Connecticut encourage its corporations and residents to make comparable decisions" (Connecticut 2002).

A summary of the process involved in developing the Climate Change Action Plan, with specific reference to the LBE components of this plan, is presented below.

Getting Started: Initiate Program Planning Framework and Set Goals Connecticut's LBE program got its start in 2002 when the state held a Climate Change Action Plan Summit to establish a process for developing a GHG emissions reduction plan. The specific objectives of this meeting were to:

- Develop a framework for a participatory process for developing a plan to address climate change;
- Identify opportunities for state agencies to initiate this program by "leading by example."
- Twenty-two participants, representing 13 state agencies, attended the summit. The framework adopted at the summit is summarized in the figure. Working groups developed a short list of GHG reduction options which included the following LBE activities:
- Transportation—state vehicle fleet to turnover to alternative, hybrid, fuel-efficient vehicles;
- Energy—state purchase of renewable energy;
- Buildings/Facilities—state buildings to meet U.S. Green Building Council LEED-rated silver green building standards.

Identify and Screen Options

In 2003, nearly 100 organizations, including businesses, nonprofit organizations, state and local government agencies, and academic institutions, worked together to develop a set of 55 recommended actions for reducing Connecticut's GHG emissions. Many of these recommendations involved LBE activities, including:

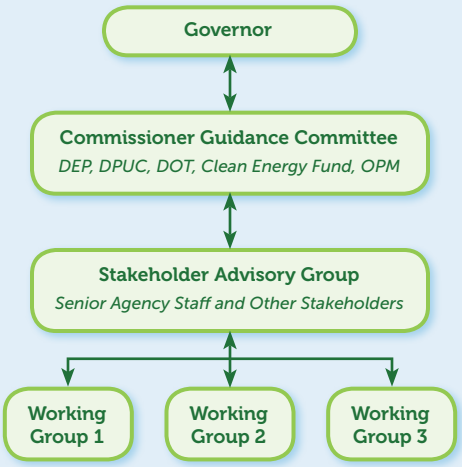
- Fleet vehicle incentives and initiatives;
- High performance schools and state-funded buildings;
- Shared savings program for government agencies;
- Green campus initiative;
- Energy benchmarking and tracking program for municipal buildings;
- Pilot fuel-switching project;
- State procurement of environmentally preferable services and products;
- Government clean energy purchase.

Develop a Comprehensive Program

The state developed the following LBE activities to implement the Connecticut Climate Change Action Plan recommendations:

- State Agency Energy Roundtable: a quarterly meeting of state agency facility managers to help them implement cost- and energy-saving actions;
- Purchase Climate Friendly Products: Governor Rell's Executive Order 17 (February, 2008) requires that all future equipment and appliances purchased by and for executive branch state agencies shall be ENERGY STAR® certified, provided such equipment and appliances are commercially available.
- Use the State Fleet's Hybrid Vehicles: the Department of Administrative Services has purchased approximately 300 hybrid gas-electric vehicles, which comprise 7% of the state fleet.
- Buy Locally Grown Foods: many state agencies, including the Department of Corrections, the Department of Mental Retardation, and public universities are reducing emissions resulting from long-distance food transport by buying locally grown produce;
- Purchase Clean Energy: most state agencies currently meet their electricity needs through a state contract for electricity that provides for an average of 17.5% Class 1 clean energy (plus clean energy through CT's Renewable Portfolio Standard). From July 2009 – 2013, the electric supply contract for all CT state agencies will average 19.35% Class I plus clean energy provided through CT's Renewable Portfolio Standard;
- Increase Recycling and Composting: the Departments of Correction and Environmental Protection have had effective recycling and composting programs;
- Encourage Clean Commuting and VMT Reduction: agencies are encouraging employees to use cleaner commuting options, such as ride sharing, mass transit, and biking to work. In addition, several state agencies have active telecommuting programs;

PLANNING PROCESS FRAMEWORK



- Energy efficiency improvements to state buildings: many state buildings are upgrading energy systems and seeing energy and cost savings. Projects include lighting and exit sign retrofits; installation of energy management systems; pump, motor, boiler, and chiller replacements; vending machine and computer energy saving devices; and water treatment system upgrades.

Track, Evaluate, and Report on the Program

Connecticut established an emissions baseline forecast for each policy recommendation, set a reductions goal (with respect to the baseline), and evaluated each measure in the context of the goal. The state also established the following procedures to build on this existing analysis, track progress, and maintain support:

- Track progress on each measure;
- Continue to calculate GHG benefits and costs;
- Continue to analyze the co-benefits of priority policy options;
- Obtain stakeholder feedback on the Action Plan and its implementation;
- Assess progress on each measure and report on results.

Connecticut's progress reports include a section describing the specific LBE actions the state has taken to install clean energy systems, purchase renewable energy, construct green buildings, benchmark and reduce energy consumption in state buildings, reduce vehicle miles traveled by state vehicles, and purchase hybrid vehicles.

Sources: Connecticut 2002, 2004, 2005, 2006a, 2006b, 2006c.

TABLE 1.4.2 STATE EXAMPLES IN THE LEAD BY EXAMPLE GUIDE

Chapter One: Introduction		
▪ **WI:** Efficient Buys Program – VendorNet ▪ **MN:** State Agency Recycling Challenge	▪ **MD:** Montgomery County Wind Power Purchase	▪ **CT:** Developing a State LBE Program ▪ **CT:** Demand Response Program
Chapter Two: LBE Activities and Measures		
2.1 Energy Efficiency in Buildings		
▪ **SC:** Energy Use in State Facilities in FY 2004 ▪ **VA:** Energy Efficiency Policy and Council ▪ **CA:** Benchmarking State Facilities ▪ **MI:** State Facilities Energy Savings Plan	▪ **MT:** 20 x 10 Initiative ▪ **NH:** ENERGY STAR Challenge Participant ▪ **OR:** Building Commissioning Program ▪ **WA:** Building Commissioning Program	▪ **WI:** Wisconsin Energy Initiative ▪ **NC:** Sustainable Energy Efficient Buildings Program ▪ **CO:** Energy Management and Integrated Energy-Efficient Design in K-12 Schools
2.2 Energy Efficiency and Renewable Energy Measures in Green Buildings		
▪ **AZ:** Green Building Policy ▪ **HI:** Lead by Example Initiative ▪ **MN:** State Sustainable Building Guidelines ▪ **MA:** LEED-Plus Standard ▪ **NM:** Lead by Example Initiative ▪ **NY:** "Green and Clean" State Buildings	▪ **NY:** Collaborative for High-Performance Schools ▪ **PA:** High Performance Green Building Program ▪ **PA:** Cambria State Office Building ▪ **OR:** Portland Green Building Policy	▪ **WI:** Sustainable Facilities Guidelines/ Standards ▪ **WI:** Department of Natural Resources Building ▪ **DC:** Washington, D.C. Green Building Policy
2.3 Energy-Efficient Product Procurement		
▪ **MA:** Environmentally Preferable Products Procurement	▪ **NYC:** Energy-Efficient Product Procurement	
2.4 Green Power Procurement		
▪ **PA:** Green Power Purchase Commitment ▪ **CT:** Green Power Purchases	▪ **ME:** Aggregated Green Power Purchase ▪ **NJ:** Aggregated Green Power Purchase	▪ **MD:** Montgomery County Wind Power Purchase
2.5 Clean Energy Supply		
▪ **VA:** Solar Power at New State Facilities ▪ **AZ:** Army Aviation Training Site Solar Farm ▪ **UT:** Solar Power Demonstration ▪ **OR:** Solar State Buildings ▪ **CA:** Solar Technology at State Facilities	▪ **MA:** Renewable Energy Initiatives ▪ **IL:** State Agency CHP Activities ▪ **NJ:** Solar Power in Public School District ▪ **CA:** Solar Power at a University ▪ **OH:** CHP at a University	▪ **TX:** CHP at a University ▪ **WI:** CHP at a University ▪ **MN:** CHP at a Wastewater Treatment Facility
2.6 Other Energy Saving Opportunities		
▪ **CT:** Demand Response Program ▪ **MA:** State Sustainability Program	▪ **CO:** Water Conservation in State Agencies ▪ **MA:** Water Consumption Reduction Goal	
Chapter Three: Establishing the LBE Program Framework		
3.1- 3.3 Establish LBE Team and Obtain Support		
▪ **MA:** LBE Champions ▪ **GA:** Gaining Support for LBE Program ▪ **IA:** Executive Branch Participation	▪ **CA:** Local Government Participation ▪ **WA:** School Participation ▪ **NH:** ESCO Participation	▪ **CT:** Nonprofit Organization Participation
3.4 Set Clean Energy Goals		
▪ Executive Order Establishes Federal LBE Goals	▪ **MA:** Energy and CO2 Inventory ▪ **CA:** Benchmarking Initiative	▪ **NY:** "Green and Clean" State Buildings and Vehicles

TABLE 1.4.2 STATE EXAMPLES IN THE LEAD BY EXAMPLE GUIDE *(cont.)*

3.5 Establish Mechanisms to Implement the LBE Program		
▪ **MA:** Executive Order Builds on Earlier Executive Order and Administrative Bulletins	▪ **SC:** Energy Efficiency Act ▪ **WA:** King County Model LBE Program	
Chapter Four: Screening LBE Activities and Measures		
▪ **MI:** Energy Reduction Strategy – Financial Criteria	▪ **MA:** Sustainability Program – Selection Criteria ▪ **UT:** Screening Energy Efficiency Options	▪ **VT:** State Agency Energy Plan ▪ **WI:** Wisconsin Energy Initiative ▪ **NV:** Energy Conservation Plan
Chapter Five: Developing a Comprehensive LBE Program		
5.1 Integrate Individual Clean Energy Activities into a Program		
▪ California Solar Schools Program		
5.2 Finance the LBE Program		
▪ **VT:** Life-Cycle Accounting ▪ **CO and CA:** Performance Contracting Resources ▪ **NY:** City of Amherst Using ESCOs ▪ **WA:** Energy Performance Contracting Program	▪ **NY:** Financing New Heating Systems ▪ **NH:** Building Energy Conservation Initiative ▪ **IA:** Iowa Energy Bank ▪ **OR:** State Business Tax Credit for Efficiency and Renewables	▪ **TX:** LoanSTAR Revolving Loan Program ▪ **UT:** Policy to Advance Energy Efficiency ▪ **IA, SC, CT:** States Developing Ways to Share or Retain their Energy Savings ▪ **WA:** King County – Win Win Program
5.3 Conduct Communications and Outreach: Building and Maintaining Support for an LBE Program		
▪ **MA:** Obtaining LBE Support from State Agencies ▪ **CO:** State Employee Incentives	▪ **VT:** Emphasizing the Benefits of Clean Energy ▪ **CO:** Rebuild Colorado Training Sessions	▪ **MA:** Sustainability Planning and Implementation Guide
5.4 Provide Technical and Financial Assistance to Local Governments		
▪ **CA:** Technical Assistance in Buildings ▪ **NY:** Product Procurement Assistance ▪ **OR:** Energy Audits and Design Reviews ▪ **PA:** Energy Management Plan Assistance	▪ **TX:** Schools and Local Government Program ▪ **WV:** Building Professionals Energy Training ▪ **CA:** Energy Efficiency Financing Program	▪ **KS:** Facility Conservation Improvement Program ▪ **OR:** State Energy Loan Program ▪ **PA:** Local Government Handbook
5.5 Information Sharing: Federal, State, and Local LBE Resources		
▪ California ▪ **CA:** Local Energy Efficiency Program Workbook ▪ Colorado ▪ Massachusetts ▪ New York	▪ Pennsylvania ▪ Vermont ▪ Alameda County, California ▪ Boulder, Colorado ▪ Hennepin Ccounty, Minnesota	▪ King County, Washington ▪ Madison, Wisconsin ▪ Philadelphia, Pennsylvania ▪ San Antonio, Texas ▪ San Francisco, California
Chapter Six: Tracking, Evaluating, and Reporting LBE Program Progress		
▪ **WY:** Energy Conservation Improvement Program: Measurement and Verification Plan Guidelines ▪ **MA:** Data Collection Approach – Energy and CO2 Intensity ▪ **GA:** Energy Tracking System ▪ **NY:** Energy Utilization Index	▪ **CA and NY:** State Applications of the IPMVP ▪ **CA:** Evaluation, Measurement, and Verification of the 2004-2005 San Diego Local Government Energy Efficiency Program	

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