



National Action Plan for Energy Efficiency
Vision for 2025:
A Framework for Change

EXECUTIVE SUMMARY

NOVEMBER 2008

Letter from the Co-Chairs of the National Action Plan for Energy Efficiency

November 2008

To all,

As you know, the National Action Plan for Energy Efficiency is playing a vital role in advancing the dialogue and the pursuit of energy efficiency in our homes, buildings, and industries—an important energy resource for the country.

With the commitment and leadership from more than 60 diverse organizations nationwide we have made great progress in a short time. We have:

- Developed five broad and meaningful recommendations for pursuing cost-effective energy efficiency.
- Brought together more than 100 organizations from 50 states around this common goal to take energy efficiency to the next level.

However, there is much more to do. We remain substantially underinvested in efficiency at a time when using energy wisely can help address rising energy costs, rising emissions of greenhouse gases, and our dependence on foreign fuel supplies.

We need a concerted, sustained effort to overcome what are truly surmountable hurdles to making energy efficiency a larger part of our supply picture. To continue our progress we need to move from our initial Action Plan to implementation. We need a vision for where we want to be and a path for getting there.

Commensurate with that goal, we are pleased to offer this updated 2025 Vision for the National Action Plan. As we released it last year, the Vision outlines what our long-term goals should be if we are to truly achieve all cost-effective energy efficiency. With recent refinements to our approach for measuring progress under the ten key implementation goals, we believe the Vision now provides a complete framework for changing our course on energy efficiency.

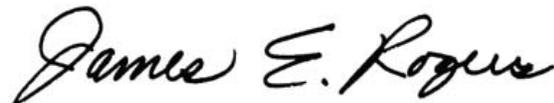
This Vision represents the thinking of many leading organizations nationwide. Importantly, we believe that this Vision is a living document that looks out to long-term needs and will be modified to reflect new information and changing conditions.

We thank the Leadership Group for its contribution to this document. It is a pleasure to work with this committed group to advance energy efficiency to address the critical energy and environmental issues facing the country.

Sincerely,

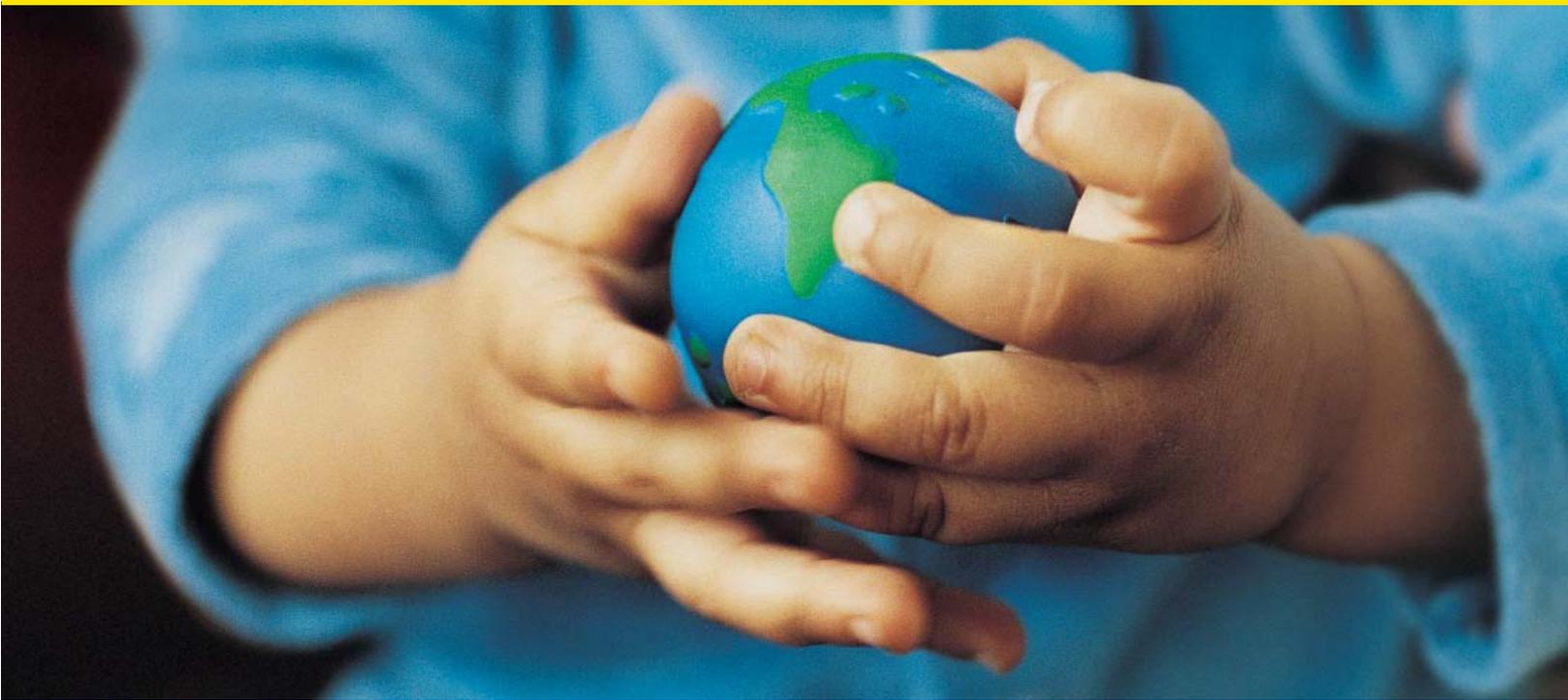


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The Leadership Group of the National Action Plan for Energy Efficiency is committed to taking action to increase investment in cost-effective energy efficiency. The Vision for 2025 was developed under the guidance of and with input from the Leadership Group. The document does not necessarily represent a consensus view and does not represent an endorsement by the organizations of Leadership Group members.

The Vision is a product of the National Action Plan for Energy Efficiency Leadership Group and does not reflect the views, policies, or otherwise of the federal government. The role of U.S. DOE and U.S. EPA is limited to facilitation of the Action Plan.

This document was originally published in November 2007, and was revised in November 2008 to include more information on establishing a baseline for measuring progress.

If this document is referenced, it should be cited as:

National Action Plan for Energy Efficiency (2008). *National Action Plan for Energy Efficiency Vision for 2025: A Framework for Change*. <www.epa.gov/eeactionplan>

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To obtain the full *Vision for 2025: A Framework for Change* report or other resources of the National Action Plan, visit www.epa.gov/eeactionplan.

Executive Summary



This Vision for the National Action Plan for Energy Efficiency establishes a goal of achieving all cost-effective energy efficiency by 2025; presents ten implementation goals for states, utilities, and other stakeholders to consider to achieve this goal; describes what 2025 might look like if the goal is achieved; and provides a means for measuring progress. It is a framework for implementing the five policy recommendations of the Action Plan, announced in July 2006, which can be modified and improved over time.

Background

Through the Leadership Group of the National Action Plan for Energy Efficiency (Action Plan), more than 60 diverse leading organizations recognized the importance of bringing greater emphasis to the role that cost-effective energy efficiency¹ can and should play in supplying our future energy needs. Improving the energy efficiency of homes, businesses, schools, governments, and industries—which consume more than 70 percent of the natural gas and electricity used in the United States—is one of the most constructive, cost-effective ways to address the challenges of high energy prices, energy security and independence, air pollution, and global climate change in the near future. Energy efficiency can play a significant role in meeting our energy requirements, and it is a critical component of the overall modernization of utility energy systems worthy of the 21st century.

Despite the value that cost-effective energy efficiency offers, it is not achieving its full potential for a number of reasons. In July 2006, the Action Plan presented five key policy recommendations (see Figure ES-1) for fully developing the cost-effective energy efficiency resources in this country, building upon experiences in particular states and regions. It was a call to action to take investment in energy efficiency to the next level. As of November 2008, more than 120 organizations have endorsed these recommendations and/or made commitments to take energy efficiency to the next level within their spheres of influence.

As a next step, the Action Plan co-chairs challenged the Leadership Group to define a vision that would detail the steps necessary to fully implement the Action Plan. The Vision presented in this document is the response to that challenge. It includes establishment of a long-term aspirational goal and ten key implementation goals. It also describes what 2025 could look like if the

Figure ES-1. National Action Plan for Energy Efficiency Recommendations

- **Recognize energy efficiency as a high-priority energy resource.**
- **Make a strong, long-term commitment to implement cost-effective energy efficiency as a resource.**
- **Broadly communicate the benefits of and opportunities for energy efficiency.**
- **Promote sufficient, timely, and stable program funding to deliver energy efficiency where cost-effective.**
- **Modify policies to align utility incentives with the delivery of cost-effective energy efficiency and modify ratemaking practices to promote energy efficiency investments.**

long-term goal were achieved and provides a means for measuring progress over time. The Vision is provided as a framework to guide the changing policies toward energy efficiency for natural gas and electricity; it can be modified and improved over time.

Achieve All Cost-Effective Energy Efficiency

The long-term aspirational goal for the Action Plan is to achieve all cost-effective energy efficiency by the year 2025. Based on studies, the efficiency resource available may be able to meet 50 percent or more of the expected load growth over this time frame, similar to meeting 20 percent of electricity consumption and 10 percent of natural gas consumption.² The benefits from achieving this magnitude of energy efficiency nationally can be estimated to be more than \$100 billion in lower energy bills in 2025 than would otherwise occur, over \$500 billion in net savings, and substantial reductions in greenhouse gas emissions.

Importantly, the energy efficiency resource's role in meeting load and load growth may vary across the country due to regional differences in growth patterns, costs of energy, and other factors. Furthermore, the long-term goal is not a statement about the need for new power supply additions in the future, as new plants may be a critical component of the desired modernization of the energy supply and delivery system. However, the greater the energy efficiency savings, the greater the likelihood that efficiency gains can help replace older, less efficient power supply options, resulting in substantial environmental benefits.

Ten Implementation Goals

Over two decades of program experience support the implementation of a number of policies to enhance the likelihood that the long-term goal will be achieved. Energy efficiency needs to be valued similarly to supply options. Utilities and investors need to be financially interested in saving energy. State activity is key in this

transformation of natural gas and electricity supply and delivery, including updating and enforcing codes and standards to ensure that savings are captured as new buildings and products enter the system. Customers must also have the proper incentives to make investments in cost-effective energy efficiency. With such policies in place, cost-effective energy efficiency can be a key component of the modernization of the energy supply and delivery system and help to transform how customers receive and value energy services.

These policies are included in the following ten implementation goals. These goals provide a framework for implementing the recommendations of the Action Plan (see Figure ES-1) by outlining the key steps state decision-makers should consider to help achieve the 2025 Vision. The time line for achieving these implementation goals is by 2015 to 2020, so that the necessary policy foundation is in place to help ensure success of the 2025 Vision. The Vision goals are not numbered to show priorities. Accomplishing all goals is necessary to be capturing all cost-effective energy efficiency by 2025.

Goal One: Establishing Cost-Effective Energy Efficiency as a High-Priority Resource

Utilities³ and applicable agencies are encouraged to:

- Create a process, such as a state or regional collaborative, to explore the energy efficiency potential in the state and commit to its full development.
- Regularly identify cost-effective achievable energy efficiency potential in conjunction with ratemaking bodies.
- Set energy savings goals or targets consistent with the cost-effective potential.
- Integrate energy efficiency into energy resource plans at the utility, state, and regional levels, and include provisions for regular updates.

Goal Two: Developing Processes to Align Utility and Other Program Administrator Incentives Such That Efficiency and Supply Resources Are on a Level Playing Field

Applicable agencies are encouraged to:

- Explore establishing revenue mechanisms to promote utility and other program administrator indifference to supplying energy savings, as compared to energy generation options.
- Consider how to remove utility and other program administrator disincentives to energy efficiency, such as by removing the utility throughput disincentive and exploring other ratemaking ideas.
- Ensure timely cost recovery in place for parties that administer energy efficiency programs.

Goal Three: Establishing Cost-Effectiveness Tests

Applicable agencies along with key stakeholders are encouraged to:

- Establish a process to examine how to define cost-effective energy efficiency practices that capture the long-term resource value of energy efficiency.
- Incorporate cost-effectiveness tests into ratemaking procedures going forward.

Goal Four: Establishing Evaluation, Measurement, and Verification Mechanisms

Ratemaking bodies are encouraged to:

- Work with stakeholders to adopt effective, transparent practices for the evaluation, measurement, and verification (EM&V) of energy efficiency savings.

Program administrators are encouraged to:

- Conduct EM&V consistent with these practices.

Goal Five: Establishing Effective Energy Efficiency Delivery Mechanisms

Applicable agencies are encouraged to:

- Clearly establish who will administer energy efficiency programs.
- Review programs, funding, customer coverage, and goals for efficiency programs; ensure proper administration and cost recovery of programs, as well as ensuring that goals are met.

- Establish goals and funding on a multi-year basis to be measured by evaluation of programs established.
- Create strong public education programs for energy efficiency.
- Ensure that the program administrator shares best practice information regionally and nationally.

Goal Six: Developing State Policies to Ensure Robust Energy Efficiency Practices

Applicable agencies are encouraged to:

- Have a mechanism to review and update building codes.
- Establish enforcement and monitoring mechanisms of energy codes.
- Adopt and implement state-level appliance standards for those appliances not addressed by the federal government.
- Develop and implement lead-by-example energy efficiency programs at the state and local levels.

Goal Seven: Aligning Customer Pricing and Incentives to Encourage Investment in Energy Efficiency

Utilities and ratemaking bodies are encouraged to:

- Examine, propose, and modify rates considering impact on customer incentives to pursue energy efficiency.
- Create mechanisms to reduce customer disincentives for energy efficiency (e.g., financing mechanisms).

Goal Eight: Establishing State of the Art Billing Systems

Utilities are encouraged to:

- Work with customers to develop methods of supplying consistent energy use and cost information across states, service territories, and the nation.

Goal Nine: Implementing State of the Art Efficiency Information Sharing and Delivery Systems

Utilities and other program administrators are encouraged to:

- In conjunction with their regulatory bodies, explore the development and implementation of state of the art energy delivery information, including smart grid infrastructures, data analysis, two-way communication programs, etc.
- Explore methods of integrating advanced technologies to help curb demand peaks and monitor efficiency upgrades to prevent equipment degradation, etc.
- Coordinate demand response and energy efficiency programs to maximize value to customers.
- Support development of an energy efficiency services and program delivery channel (e.g., quality trained technicians), with specific attention to residential programs.

Goal Ten: Implementing Advanced Technologies

Applicable agencies and utilities are encouraged to:

- Review policies to ensure that barriers to advanced technologies, such as combined heat and power (CHP), are removed; ensure inclusion into the broader resource plans.
- Work collectively to review advanced technologies and determine rapid integration timelines.

Measuring Progress

Measurement of the progress toward full implementation of these ten goals by 2015 to 2020 is an important part of the Vision. Progress will be measured and reported on every few years. As of December 31, 2007, based on information collected from across the country (see Table ES-1), there is a strong basis of experience with these energy efficiency policies upon which to

draw and to expand. For example, more than a dozen states have:

- Established a policy to recognize energy efficiency as a high-priority resource.
- Identified the cost-effective, achievable potential for energy efficiency over the long term, and established energy savings goals or targets consistent with this potential.
- Established cost-effectiveness tests for energy efficiency consistent with the long-term benefits of energy efficiency.
- Established energy efficiency programs for their various types of customers.

There is also more progress to make. For example, several states have partially implemented the following policy steps to advance energy efficiency:

- Integrated energy efficiency savings goals or expected energy savings targets into state energy resource plans, with provisions for regular updates.
- Provided for stable (multi-year) funding for energy efficiency programs, consistent with energy efficiency goals.

These policies go hand in hand with significant investment in energy efficiency, as well as capturing the energy savings and environmental benefits from these programs. As of 2008, the most recent national benefits data show that:

- Cumulative electricity savings total 63 billion kilowatt-hours (kWh) (about 2 percent of retail sales) as of 2006, including incremental electricity savings of over 8 billion kWh in 2006 alone. These cumulative savings have avoided the need for 16 gigawatts of new capacity, equivalent to 32 new 500-megawatt power plants.⁴
- Cumulative natural gas savings total 135 million therms (0.1 percent of retail sales) as of 2006.⁵

Table ES-1. Progress in Meeting Implementation Goals

Implementation Goal and Key Steps		States Having Adopted Policy Step as of December 31, 2007			
		Electricity Services		Natural Gas Services	
		Completely	Partially	Completely	Partially
Goal One: Establishing Cost-Effective Energy Efficiency as a High-Priority Resource					
1	Process in place, such as a state and/or regional collaborative, to pursue energy efficiency as a high-priority resource.	14	0	14	0
2	Policy established to recognize energy efficiency as high-priority resource.	21	22	8	8
3	Potential identified for cost-effective, achievable energy efficiency over the long term.	25	1	13	0
4	Energy efficiency savings goals or expected energy savings targets established consistent with cost-effective potential.	15	3	5	2
5	Energy efficiency savings goals and targets integrated into state energy resource plan, with provisions for regular updates.	0	16	0	1
6	Energy efficiency savings goals and targets integrated into a regional energy resource plan.**	TBD	TBD	TBD	TBD
Goal Two: Developing Processes to Align Utility and Other Program Administrator Incentives Such That Efficiency and Supply Resources Are on a Level Playing Field					
7	Utility and other program administrator disincentives are removed.	17	8	18	5
8	Utility and other program administrator incentives for energy efficiency savings reviewed and established as necessary.	10	5	5	2
9	Timely cost recovery in place.**	TBD	TBD	TBD	TBD
Goal Three: Establishing Cost-Effectiveness Tests					
10	Cost-effectiveness tests adopted which reflect the long-term resource value of energy efficiency.	29	2	9	0
Goal Four: Establishing Evaluation, Measurement, and Verification Mechanisms					
11	Robust, transparent EM&V procedures established.	14	6	5	2
Goal Five: Establishing Effective Energy Efficiency Delivery Mechanisms					
12	Administrator(s) for energy efficiency programs clearly established.	24	2	13	1
13	Stable (multi-year) and sufficient funding in place consistent with energy efficiency goals.	4	9	2	4
14	Programs established to deliver energy efficiency to key customer classes and meet energy efficiency goals and targets.	24	2	7	0
15	Strong public education programs on energy efficiency in place.	18	5	13	6
16	Energy efficiency program administrator engaged in developing and sharing program best practices at the regional and/or national level.	30	0	18	0

Table ES-1. Progress in Meeting Implementation Goals (continued)

Implementation Goal and Key Steps		States Having Adopted Policy Step as of December 31, 2007			
		Electricity Services		Natural Gas Services	
		Completely	Partially	Completely	Partially
Goal Six: Developing State Policies to Ensure Robust Energy Efficiency Practices					
17	State policies require routine review and updating of building codes.	28	13	28	13
18	Building codes effectively enforced.**	TBD	TBD	TBD	TBD
19	State appliance standards in place.	11	0	11	0
20	Strong state and local government lead-by example programs in place.	13	24	13	24
Goal Seven: Aligning Customer Pricing and Incentives to Encourage Investment in Energy Efficiency					
21	Rates examined and modified considering impact on customer incentives to pursue energy efficiency.	7	5	2	0
22	Mechanisms in place to reduce consumer disincentives for energy efficiency (e.g., including financing mechanisms).	4	1	0	0
Goal Eight: Establishing State of the Art Billing Systems					
23	Consistent information to customers on energy use, costs of energy use, and options for reducing costs.**	TBD	TBD	TBD	TBD
Goal Nine: Implementing State of the Art Efficiency Information Sharing and Delivery Systems					
24	Investments in advanced metering, smart grid infrastructure, data analysis, and two-way communication to enhance energy efficiency.	5	29	***	***
25	Coordinated energy efficiency and demand response programs established by customer class to target energy efficiency for enhanced value to customers.**	TBD	TBD	***	***
26	Residential programs established to use trained and certified professionals as part of energy efficiency program delivery.	9	0	9	0
Goal Ten: Implementing Advanced Technologies					
27	Policies in place to remove barriers to combined heat and power.	11	24	***	***
28	Timelines developed for the integration of advanced technologies.**	TBD	TBD	TBD	TBD

* The Vision goals are not numbered to show priorities. See Appendix D of the full *Vision for 2025* report for additional information on how these numbers have been determined.

** See Appendix D of the full *Vision for 2025* report for discussion of why progress on this policy step is not currently measured.

*** Steps 24, 25, and 27 do not apply to natural gas.

TBD = To be determined

Table ES-2. Current Benefits from and Funding for State- and Utility-Administered Energy Efficiency Programs*

Annual Benefits and Funding	Energy Savings		Avoided CO ₂ Emissions (million tons)	Efficiency Funding	
	Energy Use (kWh or therms)	Peak Capacity (GW)		2006 Spending (\$ billion)	2007 Budgets (\$ billion)
Electricity					
Incremental	8 billion	1.3	5.8	\$1.60 (0.5% of utility revenues)	\$1.88
Cumulative	63 billion (2% of retail sales)	16.0	46.1		
Natural Gas					
Incremental	N/A	—	N/A	\$0.29 (0.3% of utility revenues)	\$0.28
Cumulative	135 million (0.1% of retail sales)	—	0.8		

Sources: ACEEE (Eldridge et al., 2008), CEE (Nevius et al., 2008), eGRID2007 Version 1.0 (EPA, 2008), EIA energy sales and savings data (EIA, 2007, 2008a, 2008b, 2008c), and American Gas Association statistics (AGA, 2008).

*For information on how these numbers were derived, see Chapter 2 of the full Vision for 2025 report.

N/A = Not available

- Greenhouse gas emissions are being reduced by nearly 50 million metric tons annually, equivalent to emissions from 9 million vehicles per year.⁶
- Approximately \$2 billion (approximately 0.5 percent of utility revenues) is being invested annually in state- and utility-administered energy efficiency programs.⁷
- State energy savings goals and utility energy savings targets are in place to encourage cumulative savings exceeding 200 billion kWh in the year 2025, in addition to current energy savings.⁸

Additional details on the estimates for current investments and benefits are provided in Table ES-2. Improving the available data will be an ongoing effort as the Action Plan continues to measure progress toward all cost-effective energy efficiency.

The Energy System in 2025

An energy system in 2025 that would evolve with the suite of energy efficiency policies in place as outlined above and that captures all cost-effective energy efficiency will be different from the one we have today. Some of the key differences based on the effects that some of these policy changes are having in parts of the country, as well as expectations of some of the advantages that new technology and system modernization can bring, are highlighted below from the perspectives of the energy customer and society.

- **Customers** across the residential, commercial, and industrial sectors would have ready, uniform access to comprehensive energy efficiency services across the country. These services would bring a range of efficiency improvements to homes, buildings, and

Table ES-3. Changes to Watch in Evolving Technology, Policy, and Program Practices for Energy Efficiency

Policy Area	Changes to Watch
Evaluation, measurement, and verification	<ul style="list-style-type: none"> • Development of national standards • Requirements for independent verification • Growing role for smart grid technologies in EM&V • Requirements for state and regional carbon programs
Demand response, advanced metering, and smart grids	<ul style="list-style-type: none"> • New technologies, such as advanced meters and smart appliances/controls • Data collection networks and data analysis to enhance energy efficiency • New customer interfaces • Increased interoperability
Regional resource planning	<ul style="list-style-type: none"> • Regional value of energy efficiency identified
Building energy efficiency expertise/workforce	<ul style="list-style-type: none"> • Development and use of energy efficiency curriculum for various segments of the workforce • Development and broad use of training and certification programs
Integration of R&D, building codes, appliance standards, and market transformation efforts	<ul style="list-style-type: none"> • Regional and national coordination across these efforts

Sources: PJM, 2007; CEC and CPUC, 2005; Business Roundtable, 2007; Elliott et al., 2007; Roseman and Hochstetter, 2007; Schiller Consulting, 2007; Western Governors' Association, 2006.

facilities and reduce customers' bills below what they would have been without these programs. Customers would also have clear information on the cost of energy and increased awareness of their total energy use. In addition, new efficient appliances and other equipment will help to control the peak demand of utility systems and give large customers greater flexibility in how they manage and control their own operations to reduce energy use, reduce costs, and increase their own competitive positions. New homes and buildings would meet up-to-date energy codes.

- **Society** would benefit from significantly modernized energy supply, transmission, and distribution systems and, with increased investment in cost-effective energy efficiency, would benefit from lower overall cost of energy supply, increased fuel diversity, and lower emissions of air pollutants and greenhouse

gases. The low-income populations would benefit, in particular, from the lower energy bills resulting from a commitment to deliver energy efficiency to these customer classes. Society may also see economic benefits from the greater employment necessary to build an industry capable of delivering energy efficiency services at this broad scale, from a robust business in energy efficiency products and services, and from using more capital locally.

There are a number of challenges to achieving this Vision, including the necessary evolution of technology, policy, and program practices. Table ES-3 highlights some of these evolving areas, including evaluation approaches for efficiency resources, customer involvement through demand response programs and smart grid technology, regional resource planning, workforce building, and integration across energy efficiency efforts.

Related State, Regional, and National Policies

Other energy and environmental policy decisions at the state, regional, and national levels can affect energy efficiency. Ideally, these policies will be designed and implemented in a manner that helps remove barriers to energy efficiency and helps capture energy efficiency resources for a lower-cost energy system than otherwise would be necessary. Integrating energy efficiency considerations into related policy areas, as appropriate, will be critical to achieving this Vision. Such related policy areas are those designed to:

- Limit emissions of greenhouse gases.
- Encourage the use of clean, efficient distributed generation.
- Promote clean energy supply, such as renewable energy.
- Promote load reductions at critical peak times through demand response.
- Modernize and maintain the nation's electric transmission and distribution system, including "smart grid" and advanced meter infrastructure.
- Maintain a sufficient reserve margin for reliable electricity supply.

Next Steps

This Vision is offered as a framework to assist change in energy efficiency and related policies and programs at the state level across the country, toward the goal of achieving all cost-effective energy efficiency in 2025. It presents a snapshot of where the country is as of December 31, 2007 based on the collection and organization of available information on the existing policy and program options. The decision of whether to adopt a policy or program and particular design details at the state level are, of course, to be determined through state processes that address state goals, objectives, and circumstances. The Action Plan Leadership Group and other public and private sources provide a wealth of tools and assistance to parties taking action to advance the Vision, as summarized in Table ES-4.

The Vision will be updated as new information becomes available and improved as information changes. Information on measuring progress at the state level will be updated on a regular basis at the Action Plan Web site, www.epa.gov/eeactionplan. People are encouraged to provide additional information and their comments for how to refine this Vision to the Action Plan Leadership Group. Please send feedback to the Action Plan sponsors via Larry Mansueti, U.S. Department of Energy (lawrence.mansueti@hq.doe.gov, 202-586-2588) and Stacy Angel, U.S. Environmental Protection Agency (angel.stacy@epa.gov, 202-343-9606).

Table ES-4. National Action Plan for Energy Efficiency Tools by Implementation Goals

Goal	Type of Tool or Resource		Detailed Action Plan Tools and Resources
	Introduced in Action Plan Report	Detailed Guide/ Material	
Goal One: Establishing Cost-Effective Energy Efficiency as a High-Priority Resource	X	X	<ul style="list-style-type: none"> • Guide to Resource Planning with Energy Efficiency • Guide for Conducting Energy Efficiency Potential Studies • Communications Kit
Goal Two: Developing Processes to Align Utility and Other Program Administrator Incentives Such That Efficiency and Supply Resources Are on a Level Playing Field	X	X	<ul style="list-style-type: none"> • Aligning Utility Incentives with Investment in Energy Efficiency Paper
Goal Three: Establishing Cost-Effectiveness Tests	X	X	<ul style="list-style-type: none"> • Understanding Cost-Effectiveness of Energy Efficiency Programs Paper • Guide to Resource Planning with Energy Efficiency • Guide for Conducting Energy Efficiency Potential Studies
Goal Four: Establishing Evaluation, Measurement, and Verification Mechanisms	X	X	<ul style="list-style-type: none"> • Model Energy Efficiency Program Impact Evaluation Guide
Goal Five: Establishing Effective Energy Efficiency Delivery Mechanisms	X		<ul style="list-style-type: none"> • Program Design and Implementation Best Practices Guidance (under development)
Goal Six: Developing State Policies to Ensure Robust Energy Efficiency Practices		X	<ul style="list-style-type: none"> • Building Codes for Energy Efficiency Fact Sheet • Efficiency Program Interactions with Codes Paper (under development) • State and Local Lead-by-Example Guide (under development)
Goal Seven: Aligning Customer Pricing and Incentives to Encourage Investment in Energy Efficiency	X		<ul style="list-style-type: none"> • Executive Briefings on Customer Incentives Through Rate Design (under development)
Goal Eight: Establishing State of the Art Billing Systems		X	<ul style="list-style-type: none"> • Utility Best Practices Guidance for Providing Business Customers with Energy Use and Cost Data
Goal Nine: Implementing State of the Art Efficiency Information Sharing and Delivery Systems			<ul style="list-style-type: none"> • Paper on Coordination of Demand Response and Energy Efficiency (under development)
Goal Ten: Implementing Advanced Technologies			<ul style="list-style-type: none"> • Most Energy-Efficient Economy Scoping Paper (under development)

Notes

1. “Energy efficiency” refers to using less energy to provide the same or an improved level of service to the energy consumer in an economically efficient way. As used here, the term includes using less energy at any time, including at times of peak demand through demand response and peak shaving efforts.
2. The energy efficiency savings as a percent of load growth and savings depend on forecast assumptions used and vary by region. This magnitude of savings is consistent with the potential savings documented in a number of recent studies. See Appendix B of the full *Vision for 2025* report for references for these studies.
3. “Utility” refers to any organization that delivers electric and gas utility services to end-users, including investor-owned, cooperatively owned, and publicly owned utilities.
4. Annual incremental electricity savings are from the American Council for an Energy-Efficient Economy (ACEEE) (Eldridge et al., 2008) and cumulative electricity savings are from Energy Information Administration (EIA) Form-861 data (EIA, 2008b), both for year 2006. Values reflect reported data for administered energy efficiency programs only and do not include low-income programs nor other load management efforts such as demand response. Cumulative savings do not capture those programs administered by state entities. Peak electricity savings are from EIA Form-861 data for year 2006 and reflect reported data for utility-administered energy efficiency programs only and do not include load management programs.
5. Natural gas savings are from the Consortium for Energy Efficiency (CEE) for their members only (Nevius et al., 2008) and include estimated savings from measures installed in 2006, as well as those installed as early as 1992 that were still generating savings as of 2006.
6. The 2005 non-baseload output carbon dioxide (CO₂) emission rates from eGRID2007 Version 1.0 were applied to 2006 electricity savings. Emissions savings from natural gas savings assume 0.00585 tons CO₂ per therm. Vehicle conversion assumes that 5.46 tons CO₂ are emitted per vehicle annually.
7. Annual spending value considers both ACEEE’s 2006 actual electricity efficiency program spending (Eldridge et al., 2008) and CEE’s 2007 budget estimates for residential, commercial, and industrial electricity and gas efficiency programs (Nevius et al., 2008). CEE budget estimates capture both CEE members and nonmember administrators of energy efficiency program respondents. Program funding for low-income, load management, and other programs is not included in these estimates. Actual 2006 spending for electricity efficiency programs comes from ACEEE, leveraging EIA and ACEEE’s independent information collection efforts.
8. Expected energy to be saved through energy savings goals assumes energy savings post-2007 from 14 states. More details on this methodology are included in Appendix E. No states were found to have comparable, enforceable savings goals for natural gas.

References

- American Gas Association [AGA] (2008). Gas Utility Industry Revenues from Sales, by Class of Service. Accessed 2008. <<http://www.aga.org/Research/statistics/annualstats/revenues/GasUtilityRevenuesSales.htm>>
- Business Roundtable (2007). *More Diverse, More Domestic, More Efficient—A Vision for America’s Energy Future*. <http://www.businessroundtable.org/pdf/Energy/Business_Roundtable_Energy_Report_06062007.pdf>
- California Energy Commission [CEC] and California Public Utilities Commission [CPUC] (2005). *Energy Action Plan II: Implementation Roadmap for Energy Policies*. <http://www.energy.ca.gov/energy_action_plan/2005-09-21_EAP2_FINAL.PDF>
- U.S. Energy Information Administration [EIA] (2007). Revenue from Retail Sales of Electricity to Ultimate Customers by Sector, by Provider. *Electric Power Annual*. Released October 22, 2007. <<http://www.eia.doe.gov/cneaf/electricity/epa/epat7p3.html>>
- U.S. Energy Information Administration [EIA] (2008a). Electric Sales, Revenue, and Average Price, 2006. Accessed 2008. <http://www.eia.doe.gov/cneaf/electricity/esr/esr_sum.html>. See Table 2: Sales to Bundled and Unbundled Consumers by Sector, Census Division, and State, 2006. <<http://www.eia.doe.gov/cneaf/electricity/esr/table2.xls>>
- U.S. Energy Information Administration [EIA] (2008b). Form EIA-861 Final Data File for 2006. Accessed 2008. <<http://www.eia.doe.gov/cneaf/electricity/page/eia861.html>>
- U.S. Energy Information Administration [EIA] (2008c). Natural Gas Consumption by End Use. Accessed 2008. <http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm>
- Eldridge, M., M. Neubauer, D. York, S. Vaidyanathan, A. Chittum, and S. Nadel (2008). *The 2008 State Energy Scorecard*. American Council for an Energy-Efficient Economy. <<http://www.aceee.org/pubs/E086.pdf>>
- Elliott, R.N., M. Eldridge, A.M. Shipley, J. Laitner, S. Nadel, A. Silverstein, B. Hedman, and M. Sloan (2007). *Potential for Energy Efficiency, Demand Response, and Onsite Renewable Energy to Meet Texas’s Growing Electricity Needs*. American Council for an Energy-Efficient Economy. <http://www.environmentaldefense.org/documents/6029_ACEEE_Texas_Report.pdf>
- U.S. Environmental Protection Agency [EPA] (2008). eGRID2007 Version 1.0. <<http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>>. Year 2005 Summary Tables at <http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2007V1_year05_SummaryTables.pdf>
- Nevius, M., J. Krouk, S. Griffith, and C. Lasky (2008). *Energy Efficiency Programs: A \$3.7 Billion U.S. and Canadian Industry*. Boston: Consortium for Energy Efficiency. <<http://www.cee1.org/ee-pe/2007/>>

PJM (2007). *Bringing the Smart Grid Home*. <<http://www2.pjm.com/documents/downloads/strategicresponses/letters/smartgrid.pdf>>

Roseman, E., and S. Hochstetter (2007). *Regional Resource Planning Makes Sense*. <http://www.energypulse.net/centers/article/article_display.cfm?a_id=1416>

Schiller Consulting, Inc. (2007). *Survey of Energy Efficiency Evaluation Measurement and Verification (EM&V) Guidelines and Protocols*. <<http://www.naesb.org/pdf2/dsmee061807w19.pdf>>

Western Governors' Association (2006). *Energy Efficiency Taskforce Report*.



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