Building An Energy-Efficient Future

Western Governors' Association

Policy Recommendations for Energy Efficient Buildings

January 2008

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Dear Stakeholders in the West:

Energy efficiency and conservation represent a vast and still underutilized domestic energy resource. In fact, it is often said that the cheapest and cleanest watt is the one that we never have to produce.

With the adoption of the Clean and Diversified Energy report in 2006, the Western Governors' Association emphasized its commitment to providing its citizens with an abundant, affordable and environmentally friendly energy future. In that report, we demonstrated that adopting "best practices" for energy efficiency could reduce the need to construct new generating facilities by 48,000 megawatts in the West over the next 15 years. Over that same time period, we could save 1.8 trillion gallons of water and create a regional economic gain of $53 billion.

*In July 2007, the WGA convened an energy efficient buildings workshop with experts from the building industries, utilities, public interest groups, all levels of government and energy service companies. We asked these experts to discuss and provide recommendations on how the West could achieve a 30 percent improvement over the current International Energy Conservation Codes. The result of that work is contained in this document, "*Building an Energy Efficient Future: Policy Recommendations for Energy Efficient Buildings*."*

The report focuses on the energy efficiency categories with the greatest potential to cost-effectively generate energy savings: information and education, stronger code performance, incentives for energy efficiency practices, removing impediments for utilities to aggressively promote efficiency and conservation, and use of innovative financing programs. We commend the report to our constituents, colleagues and all those working to ensure that we have an abundant, affordable and environmentally friendly energy future. We are sure you will find it to be a valuable tool for crafting larger and more effective efficiency and conservation programs.

Dave Freudenthal
Governor of Wyoming
WGA Chairman

Jon M. Huntsman, Jr.
Governor of Utah
WGA Vice Chairman

Table of Contents

Executive Summary

Energy conservation improvements in homes and public buildings are the foundation of an energy-efficient future in the West.

In an era of rising energy prices and increasing concerns about the adverse effects rising energy demand could have on the environment, there are tremendous opportunities in energy efficiency and conservation. Efficiency and conservation represent vast and relatively untapped domestic energy resources capable of reducing the need for more costly production-side expansions in electricity generation. In transitioning to a new energy economy, the Western states can take the leading role by promoting energy efficiency to create even stronger economies, greener communities and a healthier environment.

Energy efficiency truly represents an undiscovered gold mine of energy and cost savings across the West. The best practice scenarios for energy efficiency elucidated in the Western Governors' Association's 2006 report on Clean and Diversified Energy illustrate that the savings potential is enormous. If every Western state adopted these energy efficiency best practices, the need for new generating facilities in the region could be reduced by as much as 75 percent over the next 15 years, the equivalent of 100 new large power-generating facilities. Estimates project a regional net economic gain of $53 billion from these energy efficiency practices, along with improved air quality, water savings and reductions in regional greenhouse gas emissions.

When improved and widely implemented, energy efficiency and conservation practices provide a successful formula for producing immeasurable benefits that Western states will enjoy for generations to come. Public and residential buildings offer energy-saving opportunities because they represent roughly one-third of all energy consumption in the U.S. Homes and public buildings serve as foundations upon which the West can begin to build an energy-efficient future.

In July 2007, the Western Governors' Association convened expert stakeholders from building and energy industries, government, public interest groups and utilities to discuss the best practices for generating greater returns on energy savings in homes and public buildings. Their policy recommendations focus broadly on improvement areas that endeavor to make the region a leader in energy efficiency by exceeding International Energy Conservation Codes (IECC) by at least 30 percent. Key recommendations include:

1. Improve energy efficiency education

The importance of energy efficiency cannot be overemphasized to consumers. Labeling and outreach campaigns, such as Leadership in Energy and Environmental Design (LEED), ENERGY STAR for Homes and BUILT-GREEN, showcase above-code performance on the market and convey necessary steps for making improvements with results-oriented information and brand-name marketability.

Educational efforts can focus on bringing awareness of energy conservation to people of all ages by integrating energy efficiency into primary school curriculums, generating enthusiasm for careers in the green technology sector and establishing a public service advertisement campaign to endorse energy efficiency as a healthy and patriotic lifestyle choice.

Educational outreach programs have enjoyed growing success in Western states and should be embraced or expanded to promote knowledge of energy conservation practices and lifestyles.

2. Strengthen code performance

The Western states show a patchwork of residential building energy codes that vary between local jurisdictions and statewide standards, with some states having more stringent codes than others. An increasing number of states are beginning to implement minimum codes in accordance with the latest version of the IECC, but the region still lacks consistency between statewide and local adoption of building codes.

Form a regional code collaborative of state and local leadership to discuss adopting the most recent version of IECC and coordinating educational efforts.

3. Use incentives to reward energy-efficient practices

In order to reform bad habits and reinforce the best energy-saving practices, offering more robust incentive packages is a sensible way to drive the market toward meeting energy efficiency goals. The possibility of future climate change regulation also offers a unique opportunity to send clear market signals to stimulate investments in energy efficiency.

There are countless opportunities to offer compelling incentive options. The federal government and many states currently award tax incentives for energy-efficient home features and upgrades. State and local governments could offer more incentives for near-zero energy homes and streamline plan review for the most efficient homes or LEED certified buildings, appealing to builders because of an expedited time of sale. An increasing number of utilities offer low-interest loan programs for retrofits and economic incentives for energy saving equipment.

The federal government, states, local jurisdictions and utilities should increase the number of incentive options available to consumers and builders who make energy-efficient choices.

4. Decouple rates and take on regulatory restructuring to remove utility impediments

Since profits for investor-owned utilities are directly tied to electricity sales, it is important to provide those utilities with rewards or incentives for promoting programs that will reduce energy consumption. State public utility commissions can encourage utilities to invest in energy efficiency and conservation programs by removing disincentives, for example, allowing the "decoupling" of total electricity sales and revenues. Such decoupling gives utilities the opportunity to compensate for lost sales through rate adjustments. In some states, public benefits funds have been successful in allowing utilities to levy small per-kilowatt hour surcharges that

create a funding source for large-scale energy efficiency programs that serve the public interest.

Decoupling and public benefits charges should be considered as mechanisms to fund large-scale energy efficiency programs in all Western states.

5. Expand demand-side management programs for energy efficiency results

Saving energy is a dynamic between utilities and consumers made possible by intersecting their abilities to manage energy demand on both ends of the transmission line. Upgrades to improve energy efficiency in new and existing homes can serve as first-line targets in demand-side management.

Further advances in smart infrastructure are emerging as demand-side management options that better analyze and control the demand for energy. These include technological advances increasingly being applied across the West, such as smart meters that detail energy use, complemented by time-of-use rates to reduce demand pressures during peak hours.

Develop demand-side management tools, such as near-zero energy use in homes, energy efficiency improvements in older homes, energy-saving programs offered through utilities and smart infrastructure across the grid.

6. Use innovative financing for public building projects

Public buildings must set a model example in energy-efficient and green building designs. Given the long, but often-tight financing schedules for public buildings, there are tremendous opportunities to utilize performance-based financing mechanisms that fund and service buildings with long-term energy savings that accumulate throughout the lifetime of a building. They offer a win-win scenario: performance-based contracts pay for themselves and often achieve 25 percent or greater energy savings than conventional construction projects.

States and local governments are encouraged to use performance contracting and energy service companies to finance public building projects that have the ability to recoup costs with energy savings.

Introduction

Energy efficiency has long been an underutilized resource, ripe for development in every state and community throughout the West. With that in mind, the Western Governors' Association convened a broad range of stakeholders for an Energy Efficient Buildings Workshop in July 2007 to develop recommendations on ways public and residential building practices could conserve 30 percent more energy than is required by the International Energy Conservation Codes (IECC).

Among the workshop participants were representatives from government, home builders, the building industry, public interest groups and utilities. Their comprehensive policy recommendations and best practices are presented in this report.

Public and residential buildings are good targets for improved energy efficiency because they represent roughly one-third of national energy consumption. Buildings of all types are the single largest contributor of greenhouse gases, which total nearly half of all U.S. emissions. These numbers demonstrate how buildings serve as a logical starting point for reducing energy demand and improving environmental quality.

While there were a variety of opinions on the ideal course of action, participants generally agreed that the following categories of recommended actions had the greatest potential to generate energy efficiency gains:

- Improving energy efficiency education
- Strengthening code performance
- Rewards and incentives for energy-efficient practices
- Manage energy demand for efficiency results
- Decoupling and regulatory restructuring to remove utility impediments
- Innovative financing for public building projects

The multifaceted approach outlined in this report will help guide policymakers as they continue to make strides toward greater savings with energy efficiency.

"The cheapest watt of energy is one that isn't consumed at all."

– Colorado Governor Bill Ritter

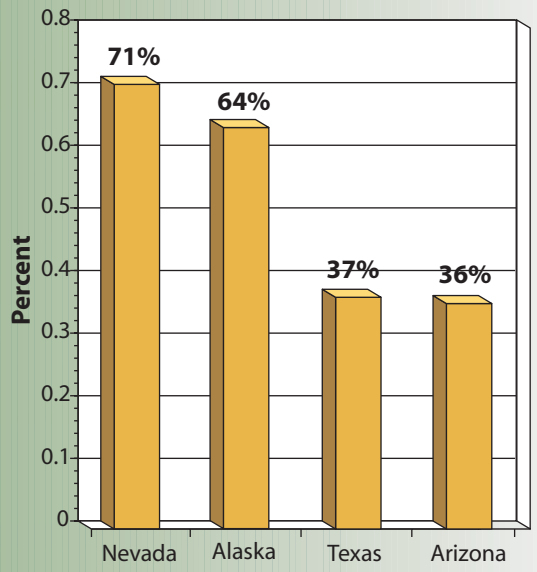
Colorado Gov. Bill Ritter (right) accepts on behalf of WGA the Alliance to Save Energy's Charles H. Percy Award for Public Service. Colorado Sen. Ken Salazar presented the award, which recognized WGA's work on energy efficiency.

Improving Energy Efficiency Education

In a September 2007 American Institute of Architects survey, 91 percent of U.S. voters said they would be willing to pay an additional $5,000 for an energy-efficient home. However, a Shelton Group poll taken just two years earlier found that only 48 percent of U.S. consumers knew whether their local home builders or architects included energy efficiency features, and only nine percent of recent homebuyers had purchased an energy-efficient home.

Focused regional and national educational efforts are the cornerstone for energy efficiency practices to gain wider acceptance and to make energy efficiency more accessible to homeowners. Educational outreach has the ability to strengthen vital partnerships between sectors and shape consumer behavior to be mindful of conservation. Governors, energy offices, state agencies and regulatory commissions are encouraged to strengthen outreach and education programs.

Increasing Participation in ENERGY STAR® for Homes



Three of the top five fastest growing states in 2006 - Arizona, Nevada and Texas - plus Alaska had the greatest market penetration nationally for Energy Star Homes for that year.

Energy Star: A National Program for Energy Efficiency Outreach

The Energy Star® program for energy efficiency outreach and education is a joint effort between the U.S. Department of Energy and U.S. Environmental Protection Agency. Initiated 15 years ago, the program is preparing to surpass one million labeled homes nationally by the end of 2007. ENERGY STAR® has enjoyed success in many Western states, serving as a voluntary, market-based program for motivating builders to strive for above-code results. Boosting the energy efficiency awareness of consumers and builders is an important benefit of the ENERGY STAR® label.

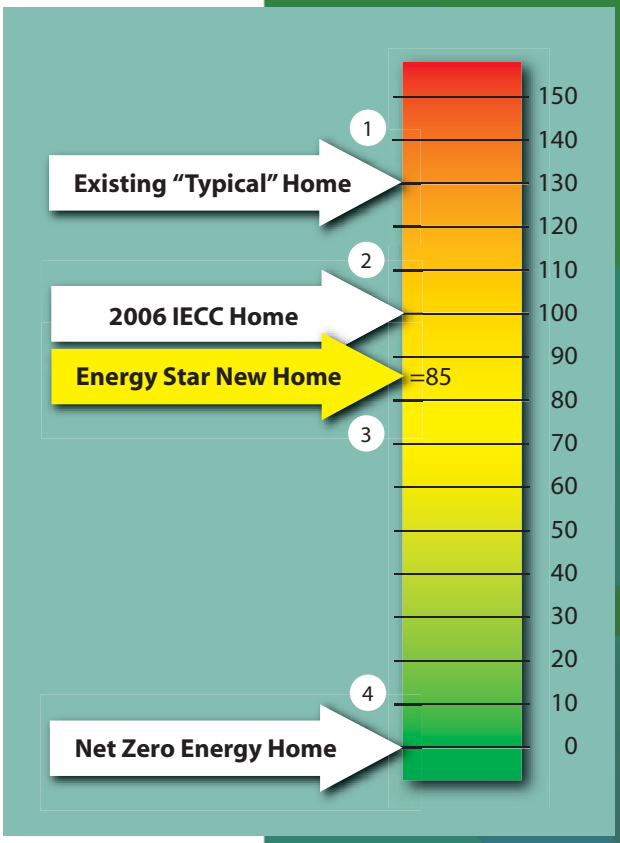
Homes that qualify for the ENERGY STAR® label have superior energy efficiency performance compared to standard homes by going at least 15 percent over the 2004 International Residential Code. They have the potential to exceed conventional home performance by 20 to 30 percent by encouraging builders to install high performing insulation, heating and cooling systems, windows and appliances with an ENERGY STAR® label. The program also offers extensive outreach by connecting homeowners and builders with third-party home energy inspectors, qualified lenders offering mortgages for energy-efficient buildings and a wealth of online educational resources.

The penetration of Energy Star labels into Western housing markets is a promising sign that energy-efficient home building is becoming more common. In 2006, seven WGA states (Alaska, Arizona, California, Hawaii, Nevada, Texas and Utah) were among the 15 leading states certifying the highest percentage of newly constructed homes with ENERGY STAR® ratings for superior energy efficiency performance. Nevada - consistently ranked among the fastest growing states in the country - led the nation by qualifying 71 percent of its new homes. Alaska followed close behind with 64 percent. Since 2001, utility-sponsored new-home programs in Texas have supported the construction of more than 60,000 ENERGY STAR® Homes with a statewide market penetration rate of 37 percent. By building on the success of ENERGY STAR® in the West and encouraging high involvement from all levels of government, the home building industry and utilities could continue improving the adoption of energy efficient building practices in the marketplace for new homes.

Home Energy Rating Systems

Educational outreach could focus on expanding the existing home energy-rating systems to showcase above-code performance of homes on the market. New and existing homes could use energy ratings for code compliance and as an educational tool for improving the energy efficiency market.

Workshop participants agreed that state and local governments could accelerate energy efficiency gains by supporting measures to expand the Home Energy Rating System and other programs that label new or existing homes with valuable energy efficiency information. As an objective measure of home energy efficiency, home energy rating systems represent tangible education-based efforts that are easily expandable. The benefits of home energy rating systems are manifold: raising consumer awareness, encouraging above-code compliance and rewarding builders and homeowners with market incentives.



A number of states have instituted HERS programs that reveal to consumers the energy efficiency performance ratings of new homes. Third-party professionals typically conduct HERS ratings by measuring home energy efficiency performance in various construction features and translating the overall efficiency performance into numerical scores. These ratings rank homes on a scale ranging from 100 to 0, ranging from a model 2006 IECC home (100) to a net-zero home (0). The lower the score, the more efficient the home; each point reduction reflects a 1 percent reduction in energy consumption compared to that of the model home. ENERGY STAR® homes require a minimum HERS certification of 85 in warmer climate zones or 80 in colder climates.

As of 2007, 16 states nationwide have approved a HERS component for new home construction to comply with energy building codes. In a model piece of legislation passed in June 2007, New Mexico approved a residential green building tax credit that requires a HERS rating of 60 or lower for buildings to qualify.

The following recommendations outline priority education and outreach actions using rating and labeling systems for energy efficient homes:

- Expand the use of labeling systems, such as ENERGY STAR, LEED, or BUILT GREEN, to provide consumers with information about the energy features and benefits of highly efficient homes, thus enabling the consumer to differentiate energy efficiencies and comprehensive total operating costs of various homes on the market.
- Expand the Home Energy Rating System Program infrastructure and encourage involvement of the National Association of Building Inspectors to provide extensive educational resources for consumers to determine energy efficiency performance of new homes.
- Develop technical college programs to expand the HERS network and increase the number of inspectors.
- Expand the scope of national programs, such as ENERGY STAR, to provide essential educational outreach to meet the concerns of consumers in the market for a new home.
- Encourage more involvement, funding and training opportunities for energy efficiency from the federal government.

The Educational Role of Local Governments and Home Builders

As local governments exercise their ability to send strong messages and form partnerships to promote energy efficiency, it leads to energy-saving practices. Local jurisdictions hold the key to achieving greater energy efficiency because of their unique ability to collaborate with local home builders, home buyers and utilities. In conjunction with home builders and utilities, county and municipal governments serve important roles in spearheading educational efforts tailored to their constituencies.

The benefits of energy efficiency reach far and wide across the community spectrum. Local government officials could highlight the array of benefits coming from energy-efficient practices by actively enlisting residents and home builders in grassroots energy-saving initiatives. To broaden its appeal, energy efficiency can also be emphasized as an element of home safety and comfort. Utilities can contribute to these efforts by using demand-side management as an educational tool to promote energy-saving practices around the home. This is discussed in greater detail in a later section of this report.

Home builders and local governments should continue to form more collaborative partnerships to expand the use of energy efficiency. A recent National Association of Home Builders study showed 90 percent of home builders are now practicing elements of green building construction, the cornerstone of which is energy efficiency. The NAHB is expected to launch new national green building standards and guidelines in February of 2008. Additionally, many state and local home builders associations have highly marketable, voluntary programs and labels they award to industry leaders in green building. These programs serve as market drivers and create a valuable nexus between the home building industry and public sector in pursuing an above-code performance level.

Information disclosure about home energy profiles is a vital asset for promoting consumer awareness. State and local governments could require mortgage lenders or realtors to provide point-of-sale disclosure of home energy-use. This action codifies energy efficiency education by making energy use information readily available to those in the market for a new home and creates a strong selling point for energy-efficient homes. An example of this action is a new requirement for realtors and home builders in Kansas to complete energy efficiency disclosure forms at the point of sale for potential homebuyers.

The following recommendations outline priority energy efficiency education actions for local governments and cross-sector partnerships to pursue:

- Illustrate to builders and sales staff the potential for profitability and competitive advantages that could be harnessed by implementing energy efficiency measures.
- Disclose energy costs at the point of sale by requiring mortgage lenders to inform potential homebuyers about energy efficiency benefits before new home purchases are made and reducing mortgage rates for energy-efficient homes.

Model State Green Building Programs

BUILT GREEN® Colorado started in 1995 and is now the largest green building program in the nation with over 100 builder members. The program encourages green building practices by offering a checklist of guidelines for constructing energy-efficient homes, reducing water usage and promoting conservation of natural resources. The program offers numerous opportunities for technical support and builder training.

Washington California, Hawaii, Nevada, New Mexico and Utah also have high participation in their voluntary, market-based green building programs. Some of these programs, such as those in Washington's King and Snohomish Counties, offer valuable star-rating scales that differentiate more efficient homes from others, and require independent verifications for higher star designations.

For more information on these programs visit *www.builtgreen.org* (Colorado) or *www.builtgreen.net* (King and Snohomish Counties, Washington)

Education for a New Generation of Energy Efficiency

University of Colorado House on the National Mall
The University of Colorado team, winner of the first two Solar Decathlon events, showcased its house on the National Mall at the 2007 competition. The house will be developed further by team sponsor Xcel Energy as a demonstration facility to educate customers about energy efficiency and demonstrate new technologies.
(Photo courtesy: University of Colorado)

Energy efficiency should broadly appeal to the next generation of stakeholders in the new energy economy. Primary and secondary educational efforts could be designed to instruct energy-efficient habits to children, while also generating enthusiasm for subject areas and careers that relate to the green technology sector. A public service announcement campaign could be established as way to broadly advertise energy efficiency as an integral part of a patriotic and healthy lifestyle choice for people of all ages.

The following recommendations create a launching point for energy efficiency education for present and future generations:

- Establish funding for a message campaign that highlights energy efficiency as part of a patriotic, healthier and greener lifestyle choice.
- Boost K-12 educational efforts that instruct energy-efficient behavior and generate enthusiasm for careers in sustainable technology.
- Host science fairs and secure the funding necessary to implement winning ideas.
- Create a coordinated research agenda to help recognize existing resources and to prioritize information needs to fuel innovation in "green" technology.
- Host future educational conferences that contribute tangible improvements in energy-efficient home building or best practices during meetings as a way to set an example for energy efficiency efforts.

Western Universities Fuel Bright Energy Efficiency Ideas

Innovation in energy-efficient building begins with bright young minds at top research universities. The U.S. Department of Energy promotes such innovation through its Solar Decathlon, first held in 2002. Teams of engineering students from across the world – and the West – compete to build innovative solar-powered homes. Homes are built along the National Mall in Washington, D.C., and teams compete in categories that include architecture, comfort, lighting and market viability. The Solar Decathlon provides a powerful public demonstration of energy efficiency, with over 100,000 people walking through home displays during the event.

The West was well represented in the 2007 Solar Decathlon with participation from public universities, such as the University of Colorado, University of Kansas, Kansas State University, Texas A&M University and the University of Texas. The winning ideas at the Solar Decathlon have attracted investments and donations from utilities and home builders, while also helping structure collaborative research agendas.

Strengthening Code Performance

States Requiring LEED Certification (2007)

Arizona
California
Colorado
Hawaii
Nevada
New Mexico
Oregon
Utah
Washington

Given differences in geography, climate and lifestyle, it is not surprising that building codes differ among local jurisdictions and across state lines. Workshop participants recommended that governmental leaders at the regional, state and local levels work together to advance building codes and strengthen enforcement. Coordinated code enforcement is seen as a key component for encouraging construction that meets above-code levels of energy efficiency performance.

On a state level, "greening of government" initiatives continue to demonstrate how executive, legislative and local government actions can substantially raise the energy code standard in publicly funded buildings. Many federal agencies have followed suit by implementing their own strategic plans for green buildings and energy conservation in new and existing buildings. These initiatives serve as a valuable model for energy efficiency practices in buildings of all types.

Many Western states have approved policies requiring state agency buildings to meet green building standards through the use of energy efficient technologies. These policies could be encouraged in states where they have not yet been implemented. California, New Mexico, Colorado, Utah, Arizona, Nevada, Washington, Oregon and Hawaii have explicit directives that require state buildings be constructed to meet – and in some cases to exceed - the Leadership in Energy and Environmental Design (LEED) certifications. The U.S. Environmental Protection Agency and Department of Agriculture, federal agencies with a strong presence in the West, both require LEED silver certification for all major building projects.

Efforts should be made to reach a regional and/or statewide consensus for minimum building code mandates. The International Code Council is a non-governmental organization that assembles sets of model home-building standards for adoption by local and state governments. Many states have codified mandatory statewide building standards in accordance with the most recent version of the IECC energy codes, last updated in 2006. Some states do not have statewide standards, but they have overseen promising jurisdictional improvements in building codes. In home-rule states, where building codes are adopted and enforced by local jurisdictions, special attention could be given to bringing codes up to standards that meet or exceed IECC.

Taking the LEED: Leadership in Energy and Environmental Design

The U.S. Green Building Council administers the Leadership in Energy and Environmental Design (LEED) rating system for buildings. The program began in 1999 and certified its one-thousandth building in the summer of 2007.

LEED ratings take a holistic approach and serve as a valuable measuring stick in assessing the environmental performance of buildings, including site development, water savings, energy efficiency, construction materials and a healthy indoor environment.

Many cities and counties in the West offer incentives for LEED certified buildings, such as expedited plan review, grants and density bonuses. Long-term energy savings, often achieved through performance contracting, can quickly pay off up-front costs.

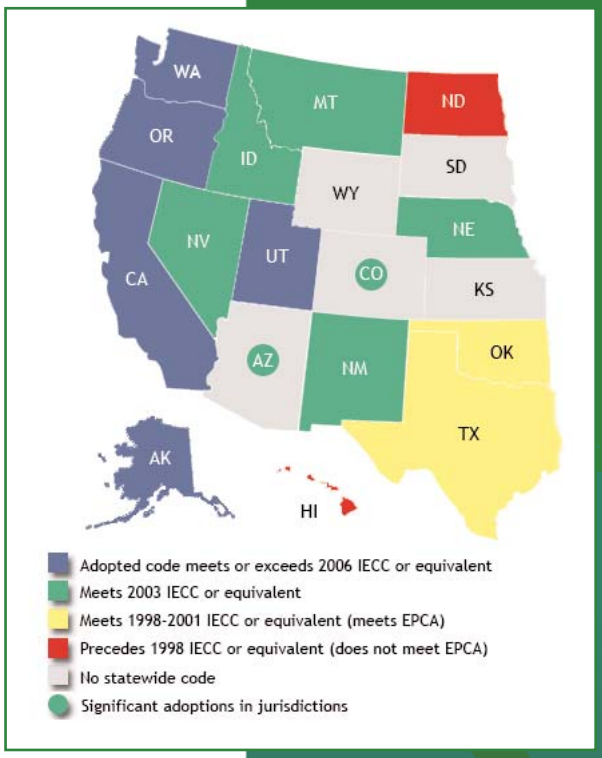
Residential Code Status across the Western States

A map of WGA states reveals a patchwork of vastly different state residential building energy codes across the region. In states where minimum codes are out of date or voluntary, state legislation or local actions will be needed to achieve higher performing standards.

Washington, California, Oregon, Idaho, Alaska and Utah require compliance with mandatory, statewide minimum residential building energy-code standards that meet the highest current standard, 2006 IECC or equivalent. In April 2007, Alaska approved a state-sponsored building code based on the 2006 IECC. The three West Coast states lead the region with their own versions of advanced, statewide building codes that well exceed the 2006 IECC.

Montana, Nevada, Nebraska, Texas and New Mexico have statewide minimum residential codes that meet the 2003 IECC. Oklahoma has a statewide minimum of the 2003 International Residential Code.

Colorado and Arizona have historically been "home rule" states, where codes often differ among local jurisdictions. In July 2007, Colorado passed legislation that requires 2003 IECC at minimum within any jurisdiction that has adopted building codes.



Source: Building Codes Assistance Project www.bcap-energy.org

There was broad sentiment among the workshop participants that a regional code collaborative should be established to develop a comprehensive long-term strategy for updating building energy codes. In many cases, local jurisdictions have not kept up with the latest changes in the IECC. The regional-code collaborative could regularly convene key stakeholders for discussions about the best methods for updating jurisdictional standards. It could also serve as a good sharing opportunity for states and municipalities to learn the best methods of code enforcement and effective approaches to energy efficiency education.

Following is a summary of recommended actions and initiatives to make code performance consistent and comparable across all Western states.

- Form a Western Regional Code Coalition to seek uniformity, where appropriate, in building code performance among the states. The coalition could:
  - Serve as a collaborative body to gather input on successful strategies for beyond-code energy efficiency. It would also provide a sharing opportunity for the states to learn from each other and collectively update building codes.
  - Consider actions states may want to take collectively on energy-efficient building design standards, in addition to promoting best conservation practices and sponsoring educational efforts to improve compliance throughout the Western region.
  - Collectively influence the IECC development process to improve energy efficiency.
- Governors' can consider executive orders should be considered to raise state building performance standards.
- State legislatures can consider laws that will raise minimum energy efficiency building code levels and promote cooperation with local jurisdictions to ensure consistent code enforcement.
- Above-code performance standards for state and public buildings should be sought.
- The Governors and state legislatures are encouraged to lead by example with "greening of government" initiatives and especially require the use of the most efficient equipment in public buildings.

The Role of Local Governments and Home Energy Audits

The more local jurisdictions can mobilize organized, well-funded and technologically equipped audit inspection programs to actively pursue above-code levels of energy efficiency performance, the more likely it is energy efficiency gains will accelerate across the West. More emphasis on home energy audits as part of code enforcement programs at a local level may coax greater investment in energy efficiency improvements for existing homes.

Thermal Infrared image of residential inspection energy audit. Note the cold air infiltrating (Black/blue areas)

Image courtesy of SPI CORP www.imaging1.com

First among important monitoring tools to ensure greater code compliance within local jurisdictions is home energy auditing. It enables homeowners and inspectors to evaluate energy-efficiency performance of home features and identify appropriate improvement measures. Information for do-it-yourself audits is often available on the Internet, which empowers homeowners to identify simple home improvements that save energy. Professional audits and energy ratings performed by third-party contractors provide more detailed calculations of building energy-efficiency data.

Finding ways to offer simple energy audits for free or at a low cost will make information readily available to help local jurisdictions properly enforce the code and create cost saving opportunities for homeowners. This is especially effective when complimented by a full host of incentives for translating audit information into improvements. An example of this is a state-sponsored program for residents of Oregon offering free energy audits for homeowners who wish to take advantage of a statewide energy tax credit. Home reviewers scope the features of single and multi-family homes for eligibility and make suggestions for improvements. This audit program is cost effective because it focuses on a basic level of home improvement without requiring more expensive analysis.

Professional audits that go a step further by using the best available technology, such as infrared cameras, can reveal startling energy losses and moisture problems in buildings, and have the ability to translate this information into effective solutions for improving home energy efficiency. Audits can also utilize a "blower door test" to measure air infiltration of the home envelope. Home ownership transfers and weatherization programs can require validation from more advanced energy audits. Experience has shown that audit-only weatherization programs must be combined with financial incentives to increase the probability that homeowners follow through with improvements.

Following these steps could make available a vast wealth of site-specific energy efficiency information in a cost-effective manner and establish improved compliance assistance within local jurisdictions:

- Amplify appropriate energy conservation messages at the local level by interpreting the constructive intent of codes for builders and homeowners.
- Prioritize energy efficiency in code enforcement and as a way to boost the health and safety performance of codes.
- Fully fund building code programs to ensure that requirements are enforced and properly implemented.
- Conduct more detailed, voluntary or mandatory energy audits to provide energy efficiency information for all potential home transfers.
- Offer cost-free, energy audits as opportunities to provide advice for improving home energy efficiency performance.

- Initiate a utility-backed audit program for collaborating with local governments to seek above-code, energy-saving performance in existing buildings and homes.
- Promote use of advanced technology in home energy audits, such as infrared cameras that pinpoint deficiencies in the thermal envelope.

Rewards and Incentives to Builders and Consumers for Energy-Efficient Practices

Cost effectiveness is clearly one of the most important factors for selecting measures that lead to more energy-efficient buildings. Economic incentives often shift the preferences of consumers, builders and utilities. Many home builders are equally or even more interested in incentives that expedite time of sale. Prospecting for greater cost effectiveness and other incentive-based tools makes the practice of energy efficiency far more attractive for all stakeholders.

Advanced insulation technologies enable builders to prevent heat sinks and produce long term energy savings.
Photo: Johns Manville

Utilities should be encouraged to offer a series of rebates, incentives and programs for customer or builder energy-efficiency improvements. Many utilities offer low-interest loan programs or rebates to residential customers when they make energy-efficient improvements to their homes; examples include rebate credits for new high-efficiency water heaters or heat pumps. Incentives are often offered for improvements in new construction projects and retrofits in low income, multifamily residential buildings.

Many utilities now offer incentive programs for improving the efficiency profile of the home. For example, Rocky Mountain Power in Utah offers financial incentives to builders who qualify for ENERGY STAR® certifications with $350 per single-family home, and $250 per multifamily home. The program provides additional advertising and marketing support to participating builders, along with training programs to educate staff, realtors and home-buyers about the features and benefits of ENERGY STAR® homes.

Municipal and Cooperative Utility Rebate and Incentive Programs

Several municipal and cooperative utilities around the country have demonstrated forward thinking with their rebate and incentive programs, especially for tailoring them to a local customer base.

Austin Energy (Texas) is a publicly owned municipal utility that offers a full slate of energy conservation programs, including free insulation, basic repairs of air distribution systems, caulking around plumbing fixtures and weather stripping around doors for qualifying low-to-moderate income homes. Austin Energy also offers low-cost diagnostic tests to spot

poor home air distribution, programmable thermostats for participation in AC cycling programs, and cash incentives for safely disposing and recycling of inefficient refrigerators. They also operate the oldest and one of the most successful voluntary residential green building programs in the country.

Another municipal utility with an exemplary energy conservation program is Seattle City Light (Washington). Their BUILT SMART program offers incentives for home upgrades that systematically push the level of performance above the state minimum building energy code. Incentives are offered for a variety of home efficiency features, such as highly efficient heating and cooling systems, insulated walls, windows and ceilings and energy-saving lighting. Seattle City Light also offers free insulation and window improvements as part of energy efficiency retrofits for qualifying low-income, multi-family residential buildings.

For more information visit: *www.austinenergy.com*; *www.seattle.gov/light*

Builders can get a $2,000 tax credit for homes that consume 50 percent less energy than those built to IECC standards.

State Tax Credits and Loan Incentives for Energy Efficiency Performance

States and the federal government can offer more robust tax incentive packages to drive the market toward energy efficiency and conservation. To help establish a baseline incentive for above-code energy efficiency improvements, the WGA has encouraged the the federal government to extend federal energy-efficiency tax credits. Tax credits expiring at the end of 2007 cover up to 10 percent of home improvement costs for insulation, roofing or windows. Through 2008, builders are offered a $2,000 tax credit, for constructing homes that consume 50 percent less energy than homes built to IECC code standards.

Aiming to utilize an abundance of solar energy resources, an increasing number of public utilities commissions across the West have authorized net metering as an incentive for home installations of solar energy systems. For Example, in Colorado a net metering rule was enacted in 2005 to credit or compensate customers of investor-owned utilities for loading renewable energy onto the grid. Net metering backs a state renewable portfolio standard that requires four percent of state renewable output from solar energy, half of which is expected to come directly from net metering in home PV installations. Montana, Wyoming, New Mexico, Utah, Nevada, Washington, Oregon, Idaho and California have also adopted net-metering policies for varying kilowatt loads and utility types.

Various states across the West offer good examples of add-on incentives or tax credits available to builders and homeowners who opt for installations of energy-efficient features:

- In Montana, home improvement investments that promote energy efficiency and conservation are awarded tax deductions up to $1800 per residence.
- Legislation passed in April 2007 now offers New Mexico home builders a tax credit for sustainable buildings, scaling the amount of credit given per building to the level of efficiency achieved.
- The owners of new Arizona homes that exceed the 1995 model energy code by at least 50 percent receive an income tax deduction equal to five percent of the home sale price, capped at $5,000.

- Idaho homes built before 1976 qualify for a 100 percent income tax deduction for homeowners who install additional insulation. The state also offers loan options that include low-interest loan programs for insulation and heating system upgrades.
- Oregon offers a wide variety of tax incentives for appliances and heating and cooling systems that maximize efficiency. Homeowners using fossil fuels to heat their homes can participate in a weatherization program that awards rebates for energy conservation improvements in the home. The state also has a no maximum low-interest loan program available for small-scale energy efficiency improvements in buildings of all types.

For more information about state incentives visit the Database of State Incentives for Renewables and Efficiency at *www.dsireusa.org*.

Expedited plan or permit review for energy-efficient homes can reward builders with faster sales and a competitive edge in the housing market.

Photo: Harvard Communities, Denver Near-zero energy home

Incentive-based Regulatory Mechanisms

State and local governments are encouraged to formulate incentive-based regulatory mechanisms that favor homeowners and builders who make energy-efficient choices. Many home builders have a high interest in expedited plan review that reduces the time of sale. Local jurisdictions and states aiming for greater gains in energy efficiency can also capitalize on consumer and builder preferences for sustainable home designs.

Local building officials have the power to prioritize plan review for homes with the most energy efficiency potential. In turn, home builders are rewarded with faster sales and given positive market signals for building the most efficient buildings on the market.

An expedited permitting process at a statewide or local level has shown to be instrumental for advancements in energy-efficient homebuilding. A recently enacted provision in Hawaii streamlines building permit applications that feature home designs with a LEED silver or equivalent rating. Municipalities throughout the West have also taken a lead by offering expedited plan review for green buildings. Some of the largest cities in California (Los Angeles, San Diego, Sacramento and San Francisco) have adopted model expedited permitting processes for buildings that qualify with sufficient LEED certifications.

Climate Change and Energy Efficiency

The possibility of future climate change regulation could serve as an incentive for greater investment in energy-efficient infrastructure today. In a poll published in September of 2007 by the American Institute of Architects, just seven percent of U.S. voters knew that buildings contributed the most to national greenhouse gas emissions. Greater educational efforts and more visible market signals could have an enormous impact on public perception and, in turn, spur far greater investment in energy efficiency.

Potential climate-change regulation presents an opportunity for energy efficiency measures to be integrated into any future, carbon-constrained economy. The systems under consideration to regulate carbon dioxide emissions could use energy efficiency as

One approach for making energy efficiency more affordable is for state and local governments to partner in offering financial incentives.

a mitigation strategy for lowering greenhouse gas emissions by tying energy efficiency gains in buildings with a carbon dioxide footprint. Signaling this in the near future could offer a new set of incentives for home builders and utilities to undertake broader-scale energy efficiency initiatives.

The following recommendations summarize actions that could be taken by federal, state and local governments to devise an incentive-based approach for making gains in energy efficiency:

- States can encourage utilities to establish a reward mechanism for lowering utility bills with positive incentives for high performance or additional payments for homes that are highly efficient.
- The federal government should be encouraged to extend the federal energy efficiency tax credit for new net-zero or energy-efficient homes.
- States or local jurisdictions can encourage commitments from builders or lenders to offer market-based initiatives, such as:
  - Reduced interest rate mortgages
  - Low-interest micro-loans
- States or local jurisdictions can consider offsetting builder costs for upgraded energy efficiency upgrades by reducing or delaying home hook-up fees.
- Local jurisdictions can make energy efficiency more affordable for homeowners by reducing property taxes for energy efficient homes, and in partnership with state government leadership, offering financial incentives for energy efficiency.
- Formulate regulatory mechanisms and other incentives at the appropriate level that encourage builders to construct highly efficient or near-zero homes, which could include:
  - An expedited plan review schedule, including reviewing the most energy-efficient homes first
  - Education to boost demand
  - Fee deferral
  - Reduced fees
  - Local public relations recognition
  - Business energy tax credits
  - Rebate the cost of energy ratings
  - Density bonuses

Decoupling and Regulatory Restructuring to Overcome Utility Impediments

Traditionally, utilities' profits are coupled with total sales of electricity or natural gas. Under this fixed revenue structure, it is especially difficult for investor-owned utilities to encourage energy efficiency while maintaining returns for their shareholders. States can remove this disincentive to utility investment in energy efficiency by establishing ratemaking policies that decouple utility revenues from sales volume and provide a positive incentive mechanism for exceeding efficiency savings targets.

Current ratemaking schemes pose a barrier to using some of the most valuable kilowatts in the West - those not used at all due to energy efficiency improvements. State legislatures and public utilities commissions could establish policies and incentives that allow utilities to earn a fair return for investing in energy efficiency, and not merely for expanding supply-side generation, transmission and distribution resources. The regulatory paradigm could make a dramatic shift by including new concepts, such as "negawatts," to represent energy saved.

Making energy efficiency programs more practical and profitable for utilities should become a priority issue for public utilities commissions and state legislatures. Cost-effective rate adjustments with "decoupling" and integrating performance-based factors in the regulatory structure are essential to incentivize more energy efficiency actions by utilities. Frequent rate cases by public utilities commissions could establish a review schedule more favorable to cost recovery and less susceptible to price swings. Additionally, weatherization programs can offer rebates to utilities funding energy efficiency upgrades.

Decoupling in California

A few Western states have experimented with decoupling mechanisms, led by the efforts of California. After an earlier decoupling stint and before a wave of deregulation in the mid-nineties, the California PUC implemented a mechanism to replace 10-year forecasts of electricity sales in establishing rates with actual electricity sales in 2001. This shift in the ratemaking formula has opened opportunities for California investor-owned utilities to support massive-scale energy efficiency gains through demand-side management programs. The adoption of energy efficiency goals for investor-owned utilities are expected to cut the growth of electricity and natural gas consumption in California by more than half by 2013, with net savings of $10 billion.

Progress with Decoupling in Western States

Decoupling utility sales from revenues has high potential to stimulate utility investment in energy efficiency programs and demand-side management. Many Western states have experienced progress toward an implementation phase for decoupling mechanisms. Arizona, Colorado, California, Idaho, New Mexico and Nevada are considering the removal of disincentives for utilities, but decoupling still needs more attention from PUCs in every Western state.

Several states are already implementing decoupling mechanisms, including California, Oregon, Utah and Washington. In 2002, Oregon implemented a partial decoupling mechanism for one of its utilities, Northwest Natural Gas. The program showcases the energy efficiency gains that are made possible by decoupling, without shareholders sustaining losses from lower generating outputs.

Utah recently began a three-year pilot program with Questar Natural Gas Production Company to activate a conservation-enabling tariff that decouples volume of natural gas sales from sales revenues. Similarly, a tariff rider mechanism enables the lone investor-owned utility in the state, Rocky Mountain Power, to receive dollar-for-dollar cost recovery for its DSM programs.

The Oregon Energy Trust

The Oregon Energy Trust, an innovative example of a state public benefits fund, finances energy efficiency, conservation, and renewable projects across the state with a budget of $52 million.

The trust provides a wide array of incentives to residential customers for energy efficiency. Free home energy audits are performed to determine which features are incentive-worthy and to recommend areas of improvement, while installing up to four free compact fluorescent light bulbs per home. Incentives include rebate offers for a multitude of energy-efficient features and appliances.

The passage of the Oregon Renewable Energy Act in 2007 enables utilities to collect fees beyond the standard 3 percent public benefits surcharge to fund renewable energy. This will re-channel $10-15 million in additional funds to projects dedicated solely to energy efficiency.

Washington is in the process of launching a decoupling mechanism. Two decoupling pilots for natural gas utilities have been authorized by the state PUC and are currently in the development phase.

Public Benefits Charges

Public benefits charges, also referred to as system benefits charges, could be considered by Western states as a funding mechanism to support energy efficiency projects. Small fees are levied on consumer electricity bills in per kilowatt-hour surcharges that reduce the financial burdens utilities must face in funding public interest energy efficiency projects. Public benefits charges could also be considered as a financial transition point to back state efficiency goals by having the option to expire once goals are met. Three WGA states currently have noteworthy examples of public benefits systems:

- The Oregon PUC collects a three percent public benefit charge on electricity sales of the state's two largest utilities to fund energy the efficiency and renewable energy programs statewide. A nonprofit organization, the Oregon Energy Trust, was set up to distribute these funds in 2002, and it allocates $52 million annually to support a variety of energy efficiency programs.
- The New Mexico legislature approved the Efficient Use of Energy Act in 2005, charging a public benefit tariff of no more than 1.5 percent of commercial, industrial and residential energy bills to fund statewide energy conservation programs.
- The California PUC directs three of its largest investor-owned utilities to collect a public benefits surcharge on electricity sales that totals $228 million annually to fund energy efficiency programs. These funds create an array of incentive packages in energy efficiency plans that utilities are required to draft on an annual basis.

The following recommendations could reduce disincentives for utility investment in energy efficiency programs:

- Develop an electric rate adjustment mechanism (ERAM) using the total resource cost test to encourage greater energy savings.
- Initiate weatherization programs that offer rebates to the utilities that pay for upgrades.
- Allow and encourage the consideration of social and environmental benefits in the rate structure.
- Encourage PUCs to overcome regulatory lag by doing the following:
  - Developing rates based on foresight of future test years.
  - Encouraging public utilities to increase the number of rate cases and conduct the regulatory review process more frequently.
  - Allowing greater cost recovery for utilities by charging new rates while plants are being constructed, rather than after their completion, enabling utilities to pay for projects with an ongoing balance.
  - Considering different requirements for different classes of customers to differentiate between industrial and residential customers.
  - Developing and expand public benefits charges by setting a state energy efficiency goal that could have the option of dropping once a goal is met; use these funds for audits and marketing.

Managing Energy Demand for Efficiency Results

Energy use patterns are based fundamentally upon consumer behavior. Enhancing the ability of electric and gas utilities to shape consumer energy consumption and use the most efficient equipment on both ends of the transmission line could create an effective energy-saving dynamic. With an added boost from decoupling mechanisms, demand-side management (DSM) can serve as a vehicle to reduce strains on the grid during peak demand and advance energy efficiency goals across the West.

Encouraging utilities to draft comprehensive plans for demand-side management and energy efficiency programs could stimulate greater regional savings. In a region where the demand for energy outpaces population growth rates in some areas, an increasing number of utilities are actively pursuing demand-side management programs to reduce load growth. For example, in the high growth state of Arizona, the Arizona Public Service Company proposed to offset 20% of anticipated load growth with DSM programs. With the aid of a cost-recovery mechanism and incentives for exceeding goals, legislation passed in Texas requires utilities to save 20% of residential demand growth by 2009 with DSM programs.

Compact fluorescent lights are a bright idea.

Turning off Incandescent Lights

In 2007, Nevada Governor Jim Gibbons signed into law a bill (AB 178) to phase out the use of incandescent light bulbs across the state. The law represents the first in the country that effectively bans incandescent light bulbs. The Southwest Energy Efficiency Project estimates the Nevada law will generate 1,200 gigawatts in saved energy and $1.3 billion in total net economic benefits for Nevadans and a reduction in CO_2 emissions equal to removing 160,000 passenger cars from the road.

Replacing inefficient incandescent light bulbs with compact fluorescent lights (CFL's) is one of the simplest methods for improving the home energy efficiency profile. CFL's use a fraction of the electricity consumed by incandescent light bulbs and last ten times longer, saving money on energy bills and reducing greenhouse gas emissions.

The first, most basic steps in demand-side management involve measures to improve the home energy efficiency profile. These steps could include retrofits to existing homes that install high performance appliances and cooling equipment, and high-efficiency lighting, windows or thoroughly sealed thermal envelopes. There are excellent opportunities for homeowners to receive incentives or loan options from state governments and utilities for these and other types of energy efficiency upgrades. Builders have opportunities to adopt near-zero energy homebuilding techniques that achieve 50 percent or greater reductions in home energy demand. Advances in smart infrastructure also are emerging as a DSM practice for utilities and consumers to better analyze and control energy demand.

Chilling Demand for Air Conditioning with Evaporative Cooling

In the hot, dry West, air conditioning is the single largest contributor to summer electricity demand. Newer evaporative cooling technologies offer a sensible demand-side management approach for reducing residential energy consumption across the region. Advanced evaporative cooling units are a perfect fit for arid climates because they use the power of evaporation to cool air, often with less water usage and one-fourth the energy required to operate a central-air conditioning system.

Indirect or direct evaporative cooling systems have yet to capture a substantial share of the air conditioning market across the Western states due to policy, consumer and builder preferences favoring traditional AC systems. The market for these emerging evaporative cooling technologies could be expanded by providing incentives to further reduce their cost, boosting certification programs and making more inclusive building codes. See the Southwest Energy Efficiency Project's report on evaporative cooling by visiting: *www.swenergy.org*

Near-zero Energy Homebuilding

Near-zero energy homes are built, operated and maintained to achieve at least a 50 percent or greater improvement in energy performance over conventionally built homes through a combination of energy efficiency improvements and the use of on-site renewable energy systems, such as photovoltaic (PV) panels and solar thermal hot water systems to produce as much energy as the home consumes on an annual basis. They feature comfortable and traditional-looking home designs that perform well and require only standard maintenance.

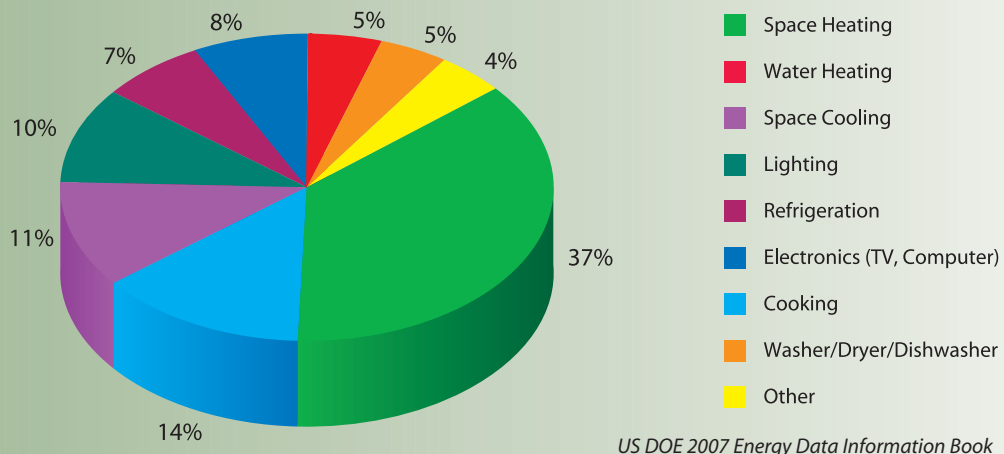
In 2004, The Sacramento Municipal Utility District partnered with Premier Homes to construct a community featuring near-zero energy production homes.

Near-zero energy homes are growing in their potential to become more cost-effective for homeowners. PV panels often present a significantly higher initial cost by adding up to $25,000 to the price of a new home. However, according to the Building Industry Research Alliance, near-zero homes have demonstrated energy savings that reduced homeowner utility bills by 60 percent or more, offsetting higher mortgage payments. In Arizona, California, New Mexico, Oregon and Utah state tax credits and utility incentives are available to reduce the initial cost of efficiency features and renewable energy systems for builders and/or homeowners. To encourage greater investment and savings returns in near-zero homes, states can offer compelling incentive options to stimulate investment in near-zero energy homebuilding.

Smart Infrastructure

Smart meter devices are emerging as a demand-side management method to motivate energy-saving behavior. These devices are installed into home electricity systems, giving utilities and customers the ability to analyze and control electricity consumption around the home. More advanced in-home smart meters show displays with detailed, real-time home energy use information. In some cases, these devices can show itemized energy-use details for individual appliances and associated carbon footprints.

2005 Residential Energy End-Use Expenditures



US DOE 2007 Energy Data Information Book

Concentrated efforts should be encouraged to develop smarter infrastructure across the grid. The number of smart meter installations is on the rise nationally, but the technology still remains vastly underutilized. An assessment by the Federal Energy Regulatory Commission in 2006 estimated that while only six percent of meters nationwide were advanced metering devices, some of the highest, advanced-meter market penetration was occurring in the WGA states of Idaho and Kansas. Having a greater number of smart meters in operation could benefit utilities and influence consumer energy use when combined with programs that charge time-of-use rates. The added awareness of personal energy-use trends from in-home meters would also help consumers form better habits.

The benefits of smart metering are twofold: consumers save money and demand pressures on the grid are eased, directly reducing the likelihood of blackouts. Utilities are able to better predict consumer demands and have the ability to remotely pinpoint and control individual connections to the grid. With expanded projects to increase demand for smart meters, long-term savings on energy bills could easily cover up-front unit costs.

Near-Zero Energy Communities

Several near-zero home communities have been built in cooperation with the Department of Energy's Building America Program. State and local governments that participate in the program assist in marketing those developments that consume 30 to 90 percent less energy than a standard development.

A large-scale, near-zero energy home development project opened in 2004 in a Sacramento area community. The 99 homes with highly efficient designs and 2 kW PV systems were built by Premier Homes in partnership with the Sacramento Municipal Utility District (SMUD). The community is the first of its kind to feature all near-zero production homes priced as part of the standard package for entry-level homebuyers.

SMUD has partnered with builders to construct over 1,900 solar-powered and energy-efficient homes in the Sacramento area by offering buy-down programs for energy efficiency equipment that maintains lower home costs, saving nearly 3 megawatts of electricity during peak demand.

A Smarter Approach to Energy Savings

Smart meters are proliferating as a technology to monitor energy conservation across Western states. To complement its successful decoupling mechanism, the California PUC approved $2 billion in expenditures and cost recovery between 2006-2008 to support a variety of demand-side management and energy efficiency programs for the state's four largest investor-owned utilities. As a component of these DSM measures, some major utilities across the state are in planning phases or currently have large-scale, smart-metering initiatives.

Southern California Edison has proposed outfitting homes and businesses with 5.3 million meters, which would alleviate 1,000 megawatts of electricity demand. Pacific Gas and Electric Company, serving the San Francisco Bay Area, is currently equipping many of its customers with a total of 5.1 million smart meters. Approximately 16.5 million new meter installations are projected statewide by 2012.

Smart infrastructure could be expanded to create a positive rate impact. In cases where utilities have the ability to charge time-of-use rates, many smart meters determine real-time price peaks, allowing residential customers to adjust their energy use to off-peak hours. An increasing number of utilities also offer voluntary "cycling" programs that deactivate electricity transmission to air-conditioning units by remote control as a way for customers to save energy during periods of peak energy demand without affecting home comfort. Time-of-use rate programs are encouraged to complement smart meter use.

Smart Meter
Smart meters are emerging as a useful tool to monitor home energy use and apply time-of-use rate structures

The following tools and actions could encourage building occupants to capture greater energy savings from demand-side management programs:

- Employ greater use of smart infrastructure and metering to shape consumer awareness of electricity consumption.
- Expand smart infrastructure to serve as the price driver, charging time-of-use or off-peak pricing and installing new meters to have a rate impact.
- Allow demand-side management to be utilized to the fullest extent possible by including it in the rate base.
- Meet long-term demand needs by including DSM considerations as an integral component of energy portfolios.
- Encourage utilities to write comprehensive energy efficiency plans.
- Create a report card of utility EE best practices to determine what programs are working and collaboratively develop a matrix for effective program delivery and evaluation.
- Formulate a simple, efficient and consistent method of tracking energy efficiency, such as quantifying DSM efforts in KWH per unit over time.
- Encourage utilities to put more energy efficiency information on utility bills to serve as important educational tools by including suggestions for reducing customer demand or statistics comparing electricity consumption to neighboring homes or normalized use.
- Include state energy efficiency goals as part of state renewable portfolio standards (RPS).
- Develop pilot programs within local governments that initiate and showcase construction efforts for near-zero homebuilding.

Innovative Financing for Public Building Projects

New and existing public buildings are often required to set the standard in sustainability while operating under limited financial resources. Bonds that are commonly used to fund energy efficiency improvements can move slowly. Government contracts that have low-bid requirements can create serious stumbling blocks for public buildings seeking higher performance. Performance-based funding mechanisms for public buildings result in much greater energy efficiency returns because of their long-term financing schedules and long building life.

Performance contracting is a funding mechanism that accounts for energy efficiency performance in a full range of building features, such as lighting, heating and air conditioning. Public building projects could greatly benefit from performance-based financing by contracting through energy service companies (ESCO's). ESCO's offer servicing for efficiency performance, technical expertise and maintenance needs of buildings during longer-term financing schedules that guarantee greater savings from start to finish. Projects typically pay for themselves, because funds normally spent on utility bills are able to subsidize energy efficiency improvements through lease-purchase agreements; and ESCO's are contractually bound to achieve energy savings benchmarks.

State and local governments should consider using performance contracting and energy service companies to finance public building projects. The National Association of Energy Service Companies has an accredited membership of 85 companies nationwide that offer performance contracts. One performance contract can often cover multiple building projects, and energy savings are often 25 percent higher than conventional construction projects.

Performance Contracting for the State Capitol

Renovations to the Colorado State Capitol Complex included a $13.6 million investment in energy efficiency improvements. The project, financed through performance contracting with an energy service company, installed upgraded systems into the 16-building complex.

The project improvements focused on installations of new lighting, heating and cooling and energy management systems. The performance contract used to finance improvements in these buildings emphasized comfort, water and energy savings and reduced maintenance costs over the project timeline.

The efficiency upgrades resulted in a 25 to 30 percent drop in energy costs, for an annual savings of $800,000. These cost-savings, projected to total $20 million over the next two decades, also helped fund the installation of a 10-kilowatt photovoltaic solar system in the Governor's mansion.

Solar Panels at the Colorado Governors' Office
Energy savings from a performance contract for the Colorado State Capitol complex helped fund the installation of a solar PV system in the Colorado Governor's Office.
Photo : Bellah Energy

The following recommendations could encourage greater use of performance contracting:

- Develop an extensive information network to advance performance contracting and highlight the benefits of working with energy service companies.
- Require school districts to be transparent about their energy use and consider how to reduce this demand through financing tools, such as performance contracts.
- Encourage financial institutions to consider the benefits of energy efficiency for stimulating more loans that subsidize energy efficiency improvements.
- Create statewide directives for using the most efficient equipment and energy service companies.

Leadership for an Energy-Efficient Future

Energy efficiency practices could become much more visible and common practice under the guidance of a highly visible, collaborative partnership organized by leaders of government, industry and public interest groups. The region is making progress, but much more can be done to make energy efficiency a more valued energy resource.

The following are recommended best practices and next steps for achieving greater energy efficiency results in the Western states:

- Formal endorsement by state and local governments of best practices outlined in the National Action Plan for Energy Efficiency.
- Convene leaders and key stakeholders at a high-level executive summit to discuss market-based incentives that can guide the business model for energy efficiency practices across the Western states.
- Establish the Western Regional Code Coalition to coordinate state and local building codes, clarify standards and promote energy efficiency education.
- Lead by example with executive orders and legislation that require energy-efficient and green-building standards for public facilities.
- Encourage extensions or expansions of federal tax credits for energy efficiency and solar photovoltaic systems.
- Improve coordination and use of labeling systems and home energy audits.
- Support greater investment in energy efficiency by electric and natural gas utilities through changes in ratemaking practices, such as decoupling.

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