



25x'25 Monthly Feature
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Efficiency Remains Key in 25x'25 Vision of New Energy Future

Editor's note: The following is the latest in a series of monthly feature stories from 25x'25 that highlight the challenges and opportunities presented by the pursuit of a renewable energy future. We encourage all partners to use all or any part of this feature in your internal or external communications. Media recipients should feel free to use this material in your efforts to cover this vastly complex issue.

In developing a strategy two years ago for achieving the goal of meeting 25 percent of the nation's energy needs with renewable resources by 2025, the National 25x'25 Steering Committee made clear that while renewable energy development was essential, efficiency would always remain the option of first choice.

"Energy efficiency always should be America's highest-priority energy resource and the energy option of first choice," states the *25x'25 Action Plan: Charting America's Energy Future*. Efficiency plays a crucial role in the 25x'25 renewable energy strategy simply because a reduction in the overall energy demand growth through strong energy efficiency measures would make it easier to meet the 25x'25 renewable energy objective.

Furthermore, the Steering Committee believes that agriculture and forestry can play a leadership role in seizing energy efficiency opportunities. Steering committee members have long told policymakers that they must align regulatory incentives so the investments in energy efficiency receive a higher rate of return than investments in energy supply and infrastructure.

Last December, 25x'25 offered Congress and the then-incoming Obama administration a number of recommendations that would not only boost a slumping national economy, but would help create a clean energy future, in large part through enhanced efficiency programs. One of the recommendations called for increased funding for the Rural America Energy Program (REAP), a successor to the former Section 9006 energy programs administered by USDA. Another efficiency-based recommendation called for funding for the Smart Grid Investment Matching Grant Program, which improves electricity transmission by reimbursing 20 percent of investments made in qualifying Smart Grid Investments.

The stimulus package recently adopted by Congress principally focused on "shovel-ready" projects, earmarking \$25 billion for helping low-income families weatherize one million homes, helping governments at all levels retrofit public buildings, and other ventures needing little more than manpower and tools. Energy efficiency advocates say they will continue their efforts to convince Congress that additional funding through the normal appropriations process will jump-start innovative programs that save energy, improve the nation's energy security and improve our environment.

The benefits of REAP funding are obvious when taking into account a 2005 report from the American Council for an Energy-Efficient Economy. The ACEEE analysis of motor systems, lighting, water heating, dry and curing, on-site transportation and machinery, heating and cooling, and other on-farm energy uses showed the potential energy and cost savings achieved through commercially available technology and production practices

amount to a conservative estimate of more than 34 trillion Btus and 1 billion dollars per year, about 10 percent of total energy expenses for the sector nationwide. Given that the U.S. agriculture sector is about the size of the residential home appliance market in terms of energy use, "this is a significant savings number and deserves further consideration on the part of policymakers and program implementers," states the report (<http://www.aceee.org/pubs/ie053.htm>).

Meanwhile Smart Grid funding advocates say an estimated 300GW of wind power are awaiting grid connection. In order for the wind industry to expand, 12,000 miles of new transmission lines are needed, as well as a smart grid management system. The DOE says transmission is the number one barrier preventing rapid long-term expansion of wind energy use. The Smart Grid grant program is designed to help provide a more efficient, reliable transmission grid, which could also reduce electricity costs to consumers in states with high peak rates.

Taking energy efficiency from the universal scenarios of agricultural production and transmission down to the home front, a future that optimizes residential energy efficiency could soon come about with the click of a key on a personal computer. The world's largest Internet search-engine company is working on a tool called Google PowerMeter, software which will show consumers their electricity consumption in near real-time.

Google cites figures from their testing that shows consumers who visually see real-time energy use through the PowerMeter are cutting electricity use 5-15 percent through behavioral changes. They cite one test case, a Google engineer who is testing the software, was able to reduce his electricity use 64 percent over the past year, saving \$3,000, by replacing inefficient refrigerators and running his pool pump at scheduled intervals.

The Google software is now in private beta testing and joins dozens of smart-grid trial programs now underway through utilities. A recent report from the Federal Energy Regulatory Commission (FERC) notes that demand response and advanced metering programs are rapidly gaining ground throughout the United States. These technological aspects of the "smart grid" push the goal of adding Internet-like communication technologies and control technologies to the nation's electrical grid. Advanced meters can provide two-way communication between customers and their electric utility, giving utilities detailed information about electrical loads and power outages while giving customers the option to adjust their energy use in response to real-time utility rates.

Demand response is more of a control technology, allowing utilities to turn off, delay, or cycle the customer's use of electrical equipment (such as air conditioners) during times of peak demand. But demand response is also a communication technology, because it sometimes includes a capability to notifying customers of power cutbacks and may allow customers to override the utility controls. Both technologies are baby steps toward an eventual smart grid, which would include improved utility control of power flows through the grid and may also include ways for plug-in hybrids to interact with the grid, using so-called "vehicle to grid" technologies.

The third annual FERC report (<http://www.ferc.gov/legal/staff-reports/12-08-demand-response.pdf>) on these technologies notes that 4.7 percent of the electrical meters in the United States are now advanced meters, up from less than 1 percent in 2006. Likewise, 8 percent of energy consumers in the United States are now participating in some type of demand response program. The total electrical demand that can be shed through demand response programs is now at 5.8 percent of U.S. peak demand, or close to 41,000 megawatts, a more than tenfold increase from the 2006 estimate of about 3,400 megawatts, the report shows. That means that utilities can draw on demand response to achieve the equivalent of bringing 82 mid-sized (500-megawatt) coal-fired power plants online, but without causing any pollution.

Drawing on findings such as these, a recent DOE report concluded that by 2025, smart grid technologies could cut U.S. electricity consumption by 10-15 percent, cut peak power demands by 25 percent, cut greenhouse gas emissions by 20 percent, drastically reduce power disturbances for businesses, and enable the delivery of high-quality power for digital electronic needs.

Whether it's finding a way to cut back power expenditures on the farm, in the home, or by optimizing the peak consumption capabilities of the transmission system, the potential savings that come with focusing on efficiency are considerable, says the Electric Power Research Institute. EPRI says energy efficiency programs in the United States could realistically reduce the rate of growth for electricity consumption by 22 percent over the next two decades. The think-tank says that if key barriers are addressed, the potential energy savings in 2030 would be 236 billion kilowatt hours, equivalent to the annual electricity consumption of 14 New York Cities.

According to an analysis recently released by EPRI, the demand for electricity over the next two decades could be reduced from the 1.07 percent annual growth rate projected by the U.S. Energy Information Administration (EIA) in its 2008 Annual Energy Outlook down to 0.83 percent, a drop in the rate of increase by approximately 22 percent.

Arshad Mansoor, vice president of Power Delivery and Utilization for EPRI, says the analysis comes at a time when utilities, regulators, and policymakers are aggressively seeking ways to meet growing electricity demand while reducing the nation's carbon footprint. The key challenge, he says, is to maximize potential gains in energy efficiency while ensuring adequate new electric generation to maintain reliability and meet future demand.

The "barriers" to improved efficiency cited by the EPRI analysis include market, societal and attitudinal hurdles, along with regulatory and program funding barriers. The study makes the case that consumers must be educated, noting that the barriers could reflect customers' resistance to doing more than the minimum required or a rejection of the attributes of the efficient technology.

The EPRI report, which can be downloaded at www.epri.com, "is well suited to inform utilities, policymakers, regulators, and other stakeholder groups," said Mansoor. "Estimates of energy efficiency potential affect forecasts of electricity demand, and electric utilities must make prudent investments in generation, transmission, and distribution infrastructure to reliably and cost-effectively address this demand."

He notes that utilities and policymakers face the challenges of managing energy resources wisely, maintaining low-cost reliable power service, and reducing carbon emissions, and are looking to energy efficiency as a means to achieve these objectives.

Closing a national "electric productivity gap" could curtail up to 30 percent of current electric power consumption nationwide, according to another report, this one recently by the Rocky Mountain Institute (RMI). The energy-related think-tank's analysis determined that among U.S. states, the electric productivity - a measure of how much gross domestic product is generated for each kilowatt-hour consumed - varies greatly. RMI says the finding is extremely significant because if laggard states achieved the electric productivity of the top 10 performing states by adopting best practices for energy efficiency, more than 60 percent of coal-fired generation could be displaced in the country. The report, *Assessing the Electric Productivity Gap and the U.S. Efficiency Opportunity*, and a companion interactive map that ranks the electric productivity of each of the 50 states, can be accessed at <http://ert.rmi.org/research/cgu.html>.

Underscoring the RMI findings is a "clean energy" proposal recently announced by Michigan Gov. Jennifer Granholm in her State-of-the-State address. Her plan calls for a 45-percent reduction in Michigan's use of fossil fuels by 2020 by dramatically expanding the use of in-state renewable resources - through both utility-scale applications and a proposed "feed-in tariff" for residential and business customers - and aggressively increasing energy efficiency efforts, in part by reforming regulation to "put our utilities in the energy efficiency business." (http://www.michigan.gov/documents/gov/SOS2009_265915_7.pdf)

At the federal level, President Obama recently issued a memorandum that instructs DOE to take all necessary steps to finalize new appliance efficiency standards as quickly as possible. The agency is required by law to set energy efficiency standards for a broad class of residential and commercial products, and in 2005, was sued for

allegedly failing to meet the deadlines and other requirements set by law. In November 2006, DOE entered into a consent decree, under which the agency agreed to publish the final rules for 22 product categories by specific deadlines, the latest of which is June 30, 2011. Also, the Energy Independence and Security Act of 2007 (EISA) directed the DOE to establish energy standard for additional product categories.

Obama directed DOE to focus its efforts on the five energy efficiency rules with deadlines prior to August 8, and then to prioritize its efforts, tackling first the standards that will result in the greatest savings, while still meeting all applicable deadlines. The president said the efficiency standards will avoid the use of "tremendous amounts" of energy. "We'll save through these simple steps, over the next thirty years, the amount of energy produced over a two-year period by all the coal-fired power plants in America," he said.

Elsewhere, the efficiency question is being approached from power suppliers who have created the Alliance for Universal Power Supplies (www.allianceforuniversalpower.org/home.php). The organization is working towards driving, developing and promoting standards for the power supply and electronics products industry – focusing on re-usable, efficient, and multi-port products that encourage innovation and market adoption. By promoting timely, relevant standards for the power supply industry, a more eco-friendly means of powering consumer electronics globally should result, the alliance says.

Meanwhile, the Washington, DC-based Energy Future Coalition has brought together more than thirty organizations, ranging from the AFL-CIO to The Real Estate Roundtable, to urge the federal government and states to make energy efficiency a frontline approach to addressing energy supply constraints and reducing global warming emissions. The broad-based group of industry and financial leaders, state treasurers, environmental groups and energy policy advocates urged the government to greatly ramp up its commitment to energy efficiency measures.

The coalition says energy efficiency should be prioritized to allow it to compete with power generation. The group also says Congress should provide incentives to grow clean energy manufacturing and installation industries here at home by establishing worker training programs.

Reid Detchon, executive director of the Energy Future Coalition (www.energyfuturecoalition.org), says "energy efficiency is the closest policy option to a silver bullet that we have. It can be deployed in short order, across wide fleets; and delivers savings to consumers, profits to businesses and relief to our climate." Detchon says "powering economic growth isn't about how much energy we produce, but how wisely we apply it."

"Energy efficiency is a critical component of our efforts to meet electricity demand growth, while helping consumers manage energy costs and addressing greenhouse gas emissions," says Tom Kuhn, president of the Edison Electric Institute, an association of shareholder-owned utilities. Addressing a theme raised by the EPRI analysis, Kuhn adds that significant efficiency improvements already are underway. "And even greater gains are possible if consumers are active partners and regulatory and other barriers can be overcome."

25x'25 is a diverse alliance of agricultural, forestry, environmental, conservation and other organizations and businesses that are working collaboratively to advance the goal of securing 25 percent of the nation's energy needs from renewable sources by the year 2025. 25x'25 is led by a national steering committee composed of volunteer leaders. The 25x'25 goal has been endorsed by nearly 800 partners, 30 governors, 14 state legislatures and the U.S. Congress through The Energy Independence and Security Act, which was signed into law by President Bush on December 19, 2007. 25x'25 is a special project of the Energy Future Coalition (EFC). The EFC is a broad-based non-partisan public policy initiative that seeks to bring about change in U.S. energy policy to address overarching challenges related to the production and use of energy.