

# Energy 2030

*on the road*

A State and Local Campaign to Double  
U.S. Energy Productivity by 2030



*Using less. Doing more.*



INVEST



MODERNIZE



EDUCATE

# ENERGY 2030

## ALLIANCE COMMISSION ON NATIONAL ENERGY EFFICIENCY POLICY

Led by Senator Mark Warner (D-Va.) and National Grid US President Tom King, the Alliance Commission on National Energy Efficiency Policy was created in 2012 to identify solutions for increasing U.S. energy productivity and aid in jumpstarting the economy. When we improve our energy productivity we are able to produce more goods and services using less energy – and that can save money, increase jobs, and cut down on wasted energy. In economic terms, it means getting more GDP out of every unit of energy consumed.

Based on findings from the Commission's initial research reports, the Commissioners established an ambitious goal of doubling U.S. energy productivity by 2030 – if reached, this goal could save \$327 billion annually and add 1.3 million jobs.

## ENERGY 2030 RECOMMENDATIONS

With a dynamic group of energy thought leaders from business, academia, government, and the non-profit sector, the Commission worked for a year to identify the most impactful bipartisan energy policy solutions to move America forward and achieve the goal of doubling U.S. energy productivity by 2030.

The result of their effort is Energy 2030, a set of over 50 consensus recommendations that urges federal, state, and local governments as well as the private sector to take action in three key areas:



**INVEST** in energy productivity throughout the economy—well over a trillion dollars in cost-effective energy savings opportunities are available in the United States, but achieving the savings will require investment of hundreds of billions of dollars;



**MODERNIZE** regulations and infrastructure to improve energy productivity—investments by governments, businesses, and individuals to modernize our nation's infrastructure and other capital (buildings, equipment, vehicles) provide tremendous opportunity to improve energy productivity; and



**EDUCATE** and engage consumers, workers, business executives, and government leaders on ways to drive energy productivity gains—to succeed we need to develop human capital throughout the economy.

# ENERGY 2030 ON THE ROAD

## A STATE & LOCAL CAMPAIGN TO DOUBLE ENERGY PRODUCTIVITY

As part of the Energy 2030 initiative, the Alliance to Save Energy will launch **Energy 2030 on the Road** – an education, outreach and action campaign aimed at getting communities and states across the nation to adopt the Energy 2030 goal of doubling energy productivity by 2030. We are currently laying the groundwork and building a partnership network, anticipating an early 2014 launch, to coincide with the one-year anniversary of the Energy 2030 recommendations release.

## CAMPAIGN STOPS

**Energy 2030 on the Road** has begun making campaign stops in key cities across the nation to engage local stakeholders – policy makers, businesses and advocates – in a discussion on the economic and environmental benefits that accrue from improving energy productivity. Campaign stops will seek to garner written commitments from state and local officials to adopt the Energy 2030 goal and implement policies, programs and initiatives that will aid in doubling energy productivity. The Alliance also will galvanize a grassroots advocacy effort urging federal lawmakers to provide the policies, funding, and technical assistance needed for states and local governments to reach the Energy 2030 goal. Each campaign stop will feature private meetings with local and state officials, media interviews and a cornerstone briefing where local leaders will discuss the potential impact of the Energy 2030 goal on their region and detail the investment, infrastructure and education strategies required to achieve the goal.

## ONLINE PLEDGE DRIVE

To truly be impactful, **Energy 2030 on the Road** must reach beyond the multi-city campaign tour. This will be done via an online pledge drive, which will not only look to secure additional commitments from elected officials, civic leaders, businesses, and other organizations, but also to serve as a clearinghouse for locating and securing resources – human, technical, financial – to help pledge participants achieve the Energy 2030 goal. In return for taking the Energy 2030 pledge, communities together will:

- » Become a national voice on the importance of the Energy 2030 goal;
- » Gather a network of implementors to expand the campaign and provide a platform for discussion; and,
- » Gain access to expert assistance.

In order to create awareness for the campaign and reach the broadest possible audience, the Alliance seeks to garner support and partner with a host of national groups, as well as state and local organizations. Efforts already have begun successfully with the adoption of a US Conference of Mayors Resolution calling on Congress to provide cities with the tools and funding needed to reach the goal of doubling energy productivity.

## STATE & LOCAL RECOMMENDATIONS

Outlined in the subsequent pages are the Energy 2030 recommendations geared towards state and local governments, which represent nearly half of the full set of consensus recommendations. These recommendations are intended to be used as a guide for states and local governments to take action locally to meet the goal of doubling energy productivity by 2030. The recommendations were selected based on an assessment of their potential impact, their political viability, and the possibility of implementation.

# JOIN THE CAMPAIGN

Join the Energy 2030 on the Road campaign and gain access to a host of valuable tools including online pledge and endorsement submission forms, an advocacy portal and a campaign toolkit to include an organizational resolution, template press release and other materials. Additional benefits include:

## INTERFACE WITH KEY NATIONAL POLICY AND DECISION MAKERS

The campaign will provide three avenues for local and state stakeholders to inform and advocate national policy and decision makers. First, the Alliance is organizing a series of briefings in Washington, D.C. where state and local governments can update federal officials on their "on the ground" efforts and advocate for national policies to help achieve the goal.

Second, the Alliance will organize "field trips" for key congressional and administration staff to visit localities to see first-hand how energy efficiency is affecting local economies and to meet with local and state stakeholders to discuss collaboration and needs. Finally, state and local stakeholders can join the Alliance's grassroots advocacy campaign to reach their Members of Congress on key issues and votes.

## BASELINE AND BENCHMARKING TOOLS

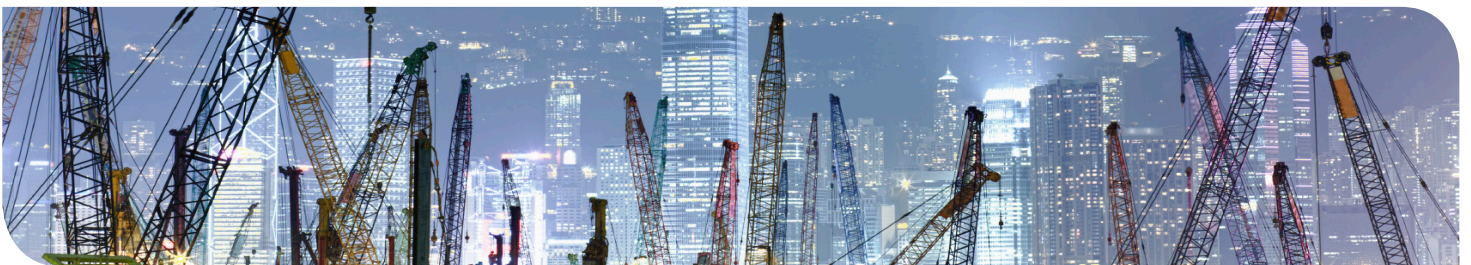
The Alliance plans to provide support to communities and states who participate in the campaign, including tools to help them determine their energy productivity baseline and track their progress toward meeting the Energy 2030 goal.

## COORDINATION WITH RELEVANT ORGANIZATIONS, PROGRAMS AND INITIATIVES

**Energy 2030 on the Road** is designed to complement, not compete with, the growing number of efforts in communities and states to drive energy efficiency and clean energy. The Alliance has begun outreach to coordinate with other synergistic efforts. We also will continue to work with organizations "on the ground" at the local and state levels.

## TECHNICAL ASSISTANCE

The program will provide a webinar series for participants that will connect state and local government staff and technical experts on specific topics for Q&A, information sharing, etc.



# ENERGY 2030 IMPACT

## A SNAPSHOT OF THE U.S. IF ENERGY PRODUCTIVITY DOUBLES BY 2030

America could save

**\$327 BILLION**  
IN 2030

These statistics are based on an independent analysis of the economic, employment, environmental, and security implications of doubling American energy productivity by 2030, which was conducted by the Rhodium Group (RHG). A summary of RHG's findings is available at [www.energy2030.org](http://www.energy2030.org); details on the methodology used for the analysis, as well as detailed results, are available at [www.rhgroup.net/ase](http://www.rhgroup.net/ase).

**\$95 BILLION** in Buildings



**\$139 BILLION** in Transportation



**\$94 BILLION** in Industry



# INVEST

## MAKE FINANCING MORE EASILY AVAILABLE FOR ENERGY EFFICIENCY PROJECTS

Convenient and affordable financing is vital in order to provide the hundreds of billion dollars in investment needed to double energy productivity and to overcome the barrier posed by the high initial cost of many measures. But there currently is little financing specifically for energy efficiency investments other than the Energy Savings Performance Contracts and Utility Energy Service Contracts, which are used mostly for government buildings (discussed later in this section). In particular there is a need for a "secondary market" for energy efficiency loans and other financial obligations, essentially selling the obligations wholesale to investors to free up capital for more projects. There is an additional need for better valuation of the cost savings from energy efficiency that enable borrowers to pay back loans.

**Make more capital available by enabling institutional investors to buy energy efficiency financial obligations on a large scale using securities based on uniform contract structures and better performance data:**

» State and local governments should work to aggregate and resell loans in secondary capital markets, such as in the Warehouse for Energy Efficiency Loans (WHEEL) program.

**Establish state and local programs for financing of efficiency measures, which may use repayment on utility bills or on property tax bills (the capital could be provided by institutional investors):**

» States and local governments should work with utilities, the private sector, and the federal government to establish effective energy efficiency financing mechanisms for residential and commercial buildings (including loans, leases, energy services agreements, power purchase agreements). Repayment on utility bills or property tax bills can reduce risk by encouraging timely payment and by allowing an obligation to stay with the building when it is sold. (Of course administrative costs and any impacts

on payment of the bills would need to be addressed.) Such financing mechanisms may include:

- *On-bill repayment (OBR) programs administered by utilities but with capital provided by third parties, including banks and other investors;*
- *On-bill finance programs with capital provided by utilities from ratepayer or shareholder funds; and*
- *Property assessed clean energy (PACE) financing with repayment on property tax bills. The capital is usually obtained by local or state governments issuing bonds for residential buildings and by third parties working directly with the building owner for commercial buildings.*

## SUPPORT ENERGY PRODUCTIVITY INNOVATION & MARKET ADOPTION

Private R&D budgets are small in many sectors related to energy productivity in part due to the fragmented markets and industry structures and to the spillover of knowledge. Market barriers also prevent adoption and commercialization of new innovations. Thus government support both for R&D and for a wide range of deployment programs has been critical to advances in energy productivity. Often these programs have been most effective in concert: R&D support helps develop technologies, technical assistance and incentives assist early market introduction, information programs spur broad commercialization, and standards ensure that all consumers benefit and push markets forward toward further innovation.

**Increase federal investment in basic and applied research, development, demonstration, deployment, and technical assistance:**

» Federal, state, utility, and other technical assistance providers should coordinate activities to offer companies a unified array of services across energy and non-energy areas. Congress and the states should include energy productivity in manufacturing and agricultural extension services and other technical assistance.

» Federal, state, and local governments should coordinate their efforts to offer, and encourage the private sector to offer, the use of buildings

and other facilities as test beds to demonstrate and validate emerging energy productivity technologies and practices, and as early markets for the innovations.



## GOVERNMENTS LEAD BY EXAMPLE

The federal government is the largest single energy user, responsible for just over 1% of energy use, in the United States. State and local governments combined own one fifth of commercial building space, with much larger energy use.<sup>1</sup> But beyond their own energy use, governments can serve as highly visible test beds and early adopters of innovative technologies and practices. They also can influence their large base of contractors and suppliers to increase their energy productivity.

### Apply innovative best practices to government buildings and vehicle fleets:

» Federal, state, and local agencies should apply innovative best practices to government buildings and vehicle fleets, including (several of these already are required for federal buildings):

- *Setting targets for efficiency improvement;*
- *Implementing energy management systems, including under the ISO 50001 standard;*
- *Benchmarking, rating, and disclosing of building energy use and efficiency;*
- *Conducting ongoing or periodic recommissioning to ensure buildings are performing as they were designed;*
- *Considering location efficiency when siting facilities;*
- *Procuring innovative high-efficiency equipment and vehicles; and*
- *Encouraging energy management in supply chains.*



### REFERENCES

<sup>1</sup>U.S. Energy Information Administration. "Annual Energy Review." Released Oct. 19, 2011, last updated August 2012, Tables 1.3 and 1.12, <http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0306>.

D&R International, Ltd. *2011 Buildings Energy Data Book*. U.S. Department of Energy, Energy Efficiency and Renewable Energy, 2012, Table 3.2.3, <http://buildingsdatabook.eren.doe.gov/>.

For more information on the Energy 2030 on the Road Campaign visit [energy2030.org](http://energy2030.org)

# MODERNIZE

## CREATE A "RACE-TO-THE-TOP" STYLE ENERGY PRODUCTIVITY COMPETITION

State policies including building energy codes, regulation of utility demand-side management, and transportation and land use planning are key drivers of energy productivity. Recently, cities have taken the lead on building energy disclosure, community-based building energy upgrade programs, and other areas. But the best practices need wider dissemination. An energy productivity "Race to the Top" competition that provides federal resources and rewards states for progress toward becoming more energy productive could spur significant advances in efficiency throughout the nation.

**Incentivize innovation and adoption of best practices by state and local governments based on energy productivity improvements, investments, and regulatory reform. States would receive technical assistance and funding based upon policy and regulatory reforms like those recommended in this report on building energy codes and disclosure, efficiency programs and financing, utility reform, and transportation planning and investments.**

» DOE should help states and local governments implement innovative policies and programs, and should develop scoring criteria on energy productivity improvements in the jurisdiction, increased effectiveness of efficiency codes and programs, transportation infrastructure investments, and regulatory reform (because of wide differences between the states, they should be graded on improvements, not on an absolute scale).

## STRENGTHEN BUILDING, EQUIPMENT & VEHICLE EFFICIENCY STANDARDS

Standards and codes have been among the most effective energy efficiency policies, setting a performance floor for equipment, buildings, and vehicles. They protect consumers (especially some renters and buyers who pay the energy bills but cannot choose the products), lower prices, and spur innovation. They also have enormous potential: New appliance standards could save an estimated 3% of all energy use by 2035 and save consumers a net \$170 billion.<sup>2</sup> Potential savings from building codes are similar if they were to be adopted and enforced nationwide. And new vehicle standards are projected to save another 3% of energy use by 2030.

**Steadily and aggressively increase the stringency of building energy codes, with quick adoption and effective compliance measures:**

» State and local governments should quickly adopt these updates or more stringent "stretch" codes, and should deploy the resources needed (including resources from building permit fees) to achieve full compliance with the codes.

**End delays and update federal appliance and equipment, vehicle, and manufactured housing efficiency standards to maximum technologically feasible and economically justified levels:**

» Both the federal government and states should set new standards for electronics, industrial equipment, and other products when justified by the energy savings.

## USE ENERGY PRODUCTIVITY TO ACHIEVE REGULATORY & PLANNING GOALS

A wide range of regulations and government investments affect energy use in every economic sector. Increasing energy productivity can be an important way to meet the goals of those regulations and investments. Electric and natural gas state and utility programs funded by ratepayers are the primary delivery vehicle for energy efficiency in our nation, with budgets over \$8 billion in 2011.<sup>3</sup> The programs avoid much larger investments in power plants, transmission lines, and gas pipelines. Transportation and land-use planning can help reduce the need to drive by creating walkable communities and transportation alternatives. Industrial efficiency measures such as combined heat and power (CHP) can reduce air pollution while lowering costs. And investments in water and wastewater systems can reduce water losses, thus reducing the power needed to pump and treat the water.

### REFERENCES

<sup>2</sup> Lowenberger, Amanda, Joanna Mauer, Andrew deLaski, Marianne DiMascio, Jennifer Amann, and Steven Nadel. *The Efficiency Boom: Cashing in on Savings from Appliance Standards*, pages 3, 5. American Council for an Energy-Efficient Economy, March 2012, <http://www.appliance-standards.org/content/efficiency-boom>.

<sup>3</sup> Wallace, Patrick and Hillary Jane Foster. "State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts 2011", page 15. Consortium for Energy Efficiency, March 14, 2012, <http://www.cee1.org/files/2011%20CEE%20Annual%20Industry%20Report.pdf>.





**Adopt utility policies that make full use of all cost-effective demand-side management (end-use energy efficiency and demand response) as a resource. Such state-level policies may include broad and targeted savings goals, financial incentives for utilities, time-variant customer rates, fair treatment of CHP and other distributed resources, and harmonized program evaluation:**

» State public utility commissions (PUCs) and municipal and cooperative utilities should adopt policies that make full use of all cost-effective end-use energy efficiency and demand-response resources. Recognizing differences between states, such policies may include:

- *Set energy savings and demand reduction goals based on the available cost-effective potential, measure progress toward the goals, and provide incentives to achieve them;*
- *Set goals, metrics, and incentives to achieve the enhanced benefits of demand-side resources enabled by smart grid technologies;*
- *Use time-variant rates where appropriate to create actionable price signals to customers based on the real-time cost of energy, accompanied by effective customer education;*
- *Adopt utility rate structures that remove financial disincentives to use end-use energy efficiency and demand response resources that benefit customers and create earnings opportunities;*
- *Ensure that demand-side management programs are available to all customers, including low-income customers; and*
- *Encourage CHP and other distributed resources where they enhance energy productivity and reliability, are cost-effective, and meet efficiency criteria. Adopt interconnection rules and rates and fees for CHP and other distributed resources that are fair and reasonable (including utility recovery of associated costs and avoidance of cost shifting) and ensure reliability and safety.*

» DOE should strengthen its State and Local Energy Efficiency Action Network to convene states, utilities, evaluation professionals, industry, consumer and environmental organizations, and other stakeholders to develop nationally harmonized evaluation, measurement, and verification (EM&V) approaches and protocols that are credible, transparent, reasonable in cost, and adaptable to regional and state jurisdictional contexts. DOE should also provide technical assistance to states to facilitate adoption of these approaches and protocols.

**Advance regional and local transportation and land use plans that promote energy productivity by improving access to work, services, school, and play, and by increasing transportation options including safe walking, biking and public transportation. Provide funding and technical assistance to enable efficient development patterns and transportation infrastructure that is consistent with the regional and local plans:**

- » Congress should direct the Department of Transportation (DOT) and the Environmental Protection Agency (EPA) to establish performance standards for long-range regional transportation plans, which are developed by Metropolitan Planning Organizations (MPOs), to achieve increases in energy productivity for the transportation sector and related environmental goals while improving mobility and connectivity for all transportation modes.
- » MPOs and other regional planning agencies should establish or update regional transportation plans and land use plans that meet the standards, and local governments should establish or update local transportation and land-use plans, codes, and zoning that are consistent with the regional plans (both with federal, state, and private sector assistance). This planning should seek to achieve energy-efficient mobility, connectivity, and accessibility.
- » Congress (together with and as a catalyst to state governments, local/regional governments, and the private sector) should provide resources and enable directed funding and incentives to promote efficient development patterns and transportation infrastructure that are consistent with the regional and local plans.

**Use energy efficiency as an emissions reduction strategy in environmental regulations:**

- » EPA, state, and local air regulators should, to the extent possible, encourage energy efficiency as an emissions reduction strategy and, as appropriate, allow and credit efficiency measures as compliance options in their regulations and procedures.
- » EPA, DOE, and other relevant agencies should collaborate with state and local authorities to facilitate recognition and crediting of energy efficiency in state and regional air quality plans, and should provide guidance and technical assistance to encourage regulated entities to implement energy efficiency as compliance and productivity strategies.

**Ensure major government and regulated infrastructure spending on energy grids, transportation infrastructure, and water and waste systems increases energy productivity.**

- » Utilities and state PUCs should use smart grid capabilities to increase energy productivity, including by targeting demand-side management, providing consumers with detailed use information, and improving system efficiency through better voltage control.
- » Congress, the DOT, and state transportation agencies should direct transportation funding to increase viable transportation options other than driving.
- » Congress, EPA, and state and local governments should ensure new water and wastewater infrastructure achieves both water efficiency and energy efficiency, including water use savings, leak reductions and efficient equipment. They also should increase recycling and more efficient collection of municipal solid waste.

# EDUCATE



## PROVIDE INFORMATION ON BUILDING ENERGY EFFICIENCY & ENERGY USE

Car drivers see fuel economy information in every advertisement and receive frequent feedback when they look at the dashboard (especially those with fuel economy gauges). But homeowners and commercial building managers often have no idea about the efficiency of a building. Major appliances are labeled in stores, but even whole tenant spaces in commercial buildings often are not submetered in operation. Better energy information may transform how buildings are designed and operated if it is made available at the right times and in useful ways. New smart technologies provide much more detailed information, while new policies are making the information more available to consumers.

**Develop effective building energy ratings, benchmarks, and disclosure methods for commercial and residential buildings; require periodic disclosure in commercial buildings and disclosure at time of sale or rental in residential buildings; and incorporate the information in building appraisals and real estate listings:**

» DOE and EPA should engage a stakeholder coalition to develop model building energy ratings, benchmarks, and disclosure methods for commercial buildings and for residential buildings that are based on the best existing systems and practices, user friendly, adjusted to climate regions, and universally available. The coalition should consider inclusion of location efficiency information. DOE should ratify the ratings/benchmarks/disclosure developed by the stakeholders as the national models, and ensure needed comparative data are available and up-to-date.

» State and local governments should require disclosure of energy information using the national models in commercial buildings and at time of sale or rental in residential buildings.

**Enable customers and third parties authorized by the customers to access their energy usage data, while ensuring customer privacy:**

» PUCs should develop rules and procedures that enable customers to access their energy usage data and to authorize third parties to access their data. The data should be accessible in a national standard data format such as Green Button. The rules and procedures should ensure effective privacy protections and address legacy data systems.

## DEVELOP EDUCATED CONSUMERS & TRAINED TECHNICIANS

In order to succeed, all of these recommendations need people with the skills to implement them. We need government leaders and business executives who understand the importance of energy productivity to our economy, environment, and security. We need construction workers, building and plant managers, city planners, and many other kinds of workers skilled at implementing efficiency measures (and with credentials that prove it). We need consumers who understand what steps they can take to lower energy bills. In other words, we need to invest in human capital as well as physical capital.

**Develop school and university curricula on energy use and productivity, conduct consumer campaigns, develop technical certifications, and provide related workforce training and continuing education:**

» Companies, professional associations, labor organizations, secondary and higher educational institutions, government, and other stakeholders should collaborate to promote, improve, and develop technical training curricula and credentials to include energy efficiency technologies and practices. These could include training and credentials for energy management (such as energy auditing and building commissioning) as well as incorporating energy content into related technical and continuing education curricula (such as for building trades, vehicle repair, and equipment operation).

» Energy management and productivity should be incorporated in secondary and higher education curricula and continuing education programs, including vocational-technical, architecture, engineering, and business management programs.

» Governments, companies, non-governmental organizations, media, and educational institutions should collaborate to heighten consumer awareness, understanding, and motivation regarding actions to improve energy efficiency and productivity, using behavioral research to increase the effectiveness of the education.

# COMMISSION MEMBERS

## CHAIRMEN



**Sen. Mark Warner** (D-Va.)



**Tom King**  
President  
*National Grid US*

## MEMBERS



**Dr. Dan Arvizu**  
Director  
*National Renewable Energy Laboratory*



**Anthony Eggert**  
Executive Director  
*Policy Institute for Energy, Environment & the Economy, UC Davis*



**Michael P. Melaniphy**  
President & CEO  
*American Public Transportation Association*



**Frances Beinecke**  
President  
*Natural Resources Defense Council*



**Carol Eicher**  
Business Group Vice President  
*Dow Building & Construction*



**Former New York Governor George B. Pataki**  
*Pataki-Cahill Group / Chadbourne & Parke*



**Gregory Bridgeford**  
Executive Vice President of Business Development  
*Lowe's Company, Inc.*



**Sherri Goodman**  
Senior Vice President & General Counsel  
*CNA*



**Susan Story**  
CFO  
*American Water*



**Jorge Carrasco**  
Superintendent  
*Seattle City Light*



**Fred Krupp**  
President  
*Environmental Defense Fund*



**Don Sturtevant**  
Corporate Energy Manager  
*J.R. Simplot Company*



**General Wesley Clark (Ret.)**  
Chairman & CEO  
*Wesley K. Clark & Associates*



**Alex Laskey**  
President & Founder  
*Opower*



**Sue Tierney**  
Managing Principal  
*Analysis Group*



**Michael Eckhart**  
Managing Director & Global Head of Environmental Finance & Sustainability  
*Citigroup*



**Dr. J. Michael McQuade**  
Senior Vice President, Science & Technology  
*United Technologies Corporation*



**Eisuke Tsuyuzaki**  
Former CTO  
*Panasonic Corporation North America*

## TECHNICAL & INTERNATIONAL ADVISORS

**Hank Courtright**  
*Electric Power Research Institute*

**Bill Fulton**  
*Smart Growth America*

**Dr. Mark Alan Hughes**  
*Penn Design & EEB Hub*

**Dr. Lisa V. Wood**  
*Innovation Electricity Efficiency*

**Stefan Buettner**  
*Advisor, Scottish Parliament*

**Ron Edelstein**  
*Gas Technology Institute*

**Dr. Paula Gant**  
*U.S. Department of Energy*

**Steven Nadel**  
*ACEEE*

**Amit Bando**  
*IPEEC*

**Amb. Staffan Tillander**  
*Swedish Mission*

For more information on the Energy 2030 on the Road Campaign visit [energy2030.org](http://energy2030.org)

# Energy 2030 *on the road*

[energy2030.org](http://energy2030.org) or [#energy2030](https://twitter.com/energy2030)



*Using less. Doing more.*

**The Alliance to Save Energy** promotes energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. Founded in 1977, the Alliance to Save Energy is a non-profit coalition of business, government, environmental, and consumer leaders.

---

1850 M Street, NW : Suite 600 : Washington, DC 20036

**p** 202.857.0666 : **f** 202.331.9588

info@ase.org : [ase.org](http://ase.org)