

Transportation Energy Efficiency Policies: Synthesis

Requested by

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Transportation Synthesis Reports (TSRs) are brief summaries of currently available information on topics of interest to WSDOT staff. Online and print sources may include newspaper and periodical articles, NCHRP and other TRB programs, AASHTO, the research and practices of other state DOTs and related academic and industry research. Internet hyperlinks in the TSRs are active at the time of publication, but host server changes can make them obsolete.

Request for Synthesis:

Brian Lagerberg, Assistant Director, Public Transportation Division, requested a Synthesis of all the State and International Transportation Policies related to energy efficiency. States generally have energy policies related to promoting bio-fuels, quasi-land use, and growth management planning, and other related policies. The question is, for what purpose should Washington focus its policies--transportation energy, energy security (reduced consumption from foreign sources), reduced cost (petroleum is expensive), to meet climate change objectives (reduced emissions) or others? The Governor has directed Washington State agencies to become carbon neutral. To help WSDOT and other agencies do this, this Synthesis includes possible transportation energy policies for the state.

Databases Searched:

- TRIS Online
- Research in Progress
- Previous Synthesis Reports
- Google
- Wisconsin DOT Transportation Synthesis Reports
- FTA website
- FHWA website

Energy Efficiency in Appalachia: How much more is available, at what cost and by when?

Authors: Marilyn A. Brown, John A. “Skip” Laitner, Sharon “Jess” Chandler, Elizabeth D. Kelly, Shruti Vaidyanathan, Vanessa McKinney, Cecelia “Elise” Logan, and Therese Langer - March 2009 Revised May 2009

Executive Summary

In 2006, the Appalachian Regional Commission (ARC) prepared a report – *Energizing Appalachia: A Regional Blueprint for Economic and Energy Development* – that articulates the ARC energy goal: —Develop the Appalachian Region’s energy potential to increase the supply of locally produced, clean, affordable energy, and to create and regain jobs□ (ARC, 2006). The report identified three strategic objectives that support this goal, one of which involved developing energy efficiency within the Region. To more fully articulate this strategic objective, ARC commissioned an assessment of —the potential long-term energy efficiency gains for the Appalachian Region over current baseline projections from introducing a range of advanced efficiency standards for each energy end-use sector, and to detail the economic and environmental impacts from the technologies and investment required to attain these objectives.

The transportation sector in the Appalachian Region shows enormous energy savings potential. Appalachian transportation energy consumption is forecast to increase to 2.54 quads by 2030 (EIA, 2008a). The stricter CAFE standards promulgated in 2007 alone should reduce primary energy consumption for the sector by at least 21 percent by 2030. If the standards are combined with other policies modeled in this report, total primary energy savings could reach 35 percent by 2030. Future investments targeted at moving Appalachia’s freight more efficiently could bring about additional fuel savings not modeled in this analysis. The biggest contributor to total savings outside of the new fuel economy regulations is the extension of the Clean Car Standard program we propose in this analysis, which would bring about gasoline savings of 2.72 billion gallons a year by 2030 – approximately 13.5 percent of total primary transportation energy consumption in the Appalachian Region.

Numerous barriers to efficiency improvements are expected to limit the Region’s adoption of more efficient technologies and practices. Foremost among these is the first-cost or incremental cost, of more efficient products and materials; while high costs are a barrier across the nation, the higher rates of poverty and lower average incomes in Appalachia magnify this issue. Each of the policies proposed for the residential sector include an anticipated —incentive□ portion to help overcome this barrier.

The transportation policy options presented here are a cost-effective way of realizing energy-savings potential in Appalachia. The benefit/cost ratios indicate that the high cost of implementation associated with some of the transportation policies is far outweighed by the total benefits incurred. If all policy options were to be implemented in combination, participants would receive approximately \$2 for every additional \$1 spent. Similarly, every additional \$1 spent on implementation would reap \$3.14 in total benefit.

While implementation of such policies might depend on a variety of economic and political conditions, this report demonstrates that there is significant opportunity in Appalachia for large energy savings in the transportation sector. Carefully crafted policies that target vehicles fuel economy, vehicle-miles traveled (VMT) and driving behavior will lead to increased energy efficiency in the transportation sector.

The transportation sector policy package is cost-effective with a benefit-to-cost ratio of about 3.2 for participants and about 3.7 for total resource costs. With \$0.4 billion in program spending and an additional \$27.6 billion in customer investments over the 2010-2030 period, the Appalachian Region could see net cumulative savings of \$80.4 billion in energy bills by 2030 and \$167.1 billion by 2044. This is the equivalent of about 30.1 percent of the EIA’s forecast consumption in 2030 or 172.4 percent of forecast growth from 2010-2030 (EIA, 2008a).

<http://www.aceee.org/transportation/arcfinalreport.pdf>

New Mexico Energy Efficiency Strategy: Policy Options

Authors: Howard Geller - Project Director, Patti Case, Steve Dunn, Tammy Fiebelkorn, Therese Langer, and Shruti Vaidyanathan - November, 2008

Executive Summary

On November 14, 2007, Governor Bill Richardson announced the goals of reducing energy use per capita in New Mexico 10 percent by 2012 and 20 percent by 2020, relative to energy use per capita in 2005. The goal applies to all forms of energy use in the state, including electricity, natural gas, gasoline, and other petroleum products. It is intended to make New Mexico one of the nation's most energy-efficient states, thereby lowering energy bills paid by consumers (including low-income households), enhancing energy security and reliability, improving business profitability and competitiveness, and reducing greenhouse gas emissions.

In order to help the state examine options for achieving the energy efficiency goals, the Energy, Mineral, and Natural Resources Department (EMNRD) asked the Southwest Energy Efficiency Project (SWEET) to prepare a state energy efficiency strategy. The primary objectives of the strategy are to explore what could be done to achieve the Governor's goals, examine the feasibility of achieving the goal for different types of energy, and estimate what the economic and environmental impacts of achieving the goals would be.

The New Mexico Energy Efficiency Strategy contains 25 major policies, programs, or initiatives that could be implemented in order to accelerate energy efficiency improvements in the state and achieve the goals where possible. The policies save electricity, natural gas, or gasoline. These energy sources account for 77 percent of primary energy consumption in the state and 65 percent of energy consumption on a secondary (site) basis. We do not consider diesel fuel use in the main part of this study because a significant fraction of the diesel consumed in New Mexico is due to trucks passing through the state. However, we provide an appendix presenting an option for increasing the efficiency of heavy-duty trucks.

Specific Energy Efficiency Proposal

The 2007 Energy Independence and Security Act (EISA), enacted in December 2007, established a CAFE standard of 35 miles per gallon for cars and light trucks combined by 2020, a 40 percent increase over today's fuel economy standard. Each manufacturer will need to meet an average fuel economy requirement that reflects the mix of vehicles it sells. Fuel economy targets for smaller vehicles will be more stringent than those for larger vehicles. This policy will significantly reduce gasoline use in all states, including New Mexico.

Gasoline savings in New Mexico, which can be attributed to the increase in fuel economy standards to 35mpg by 2020, are shown in Table 21. Gasoline savings amount to 3,113 barrels per year by 2020 under the new CAFE regulations, a 10.7 percent savings over gasoline consumption projected under business-as-usual conditions. Gasoline savings grow to 4,992 barrels per year by 2025, a 16.6 percent reduction compared to gasoline consumption in our baseline scenario.

<http://www.aceee.org/transportation/nmeeststrategy.pdf>

Utah Energy-efficiency Strategy: Policy Options

Authors: Howard Geller – Project Director SEEP, Sara Baldwin, Kevin Emerson, Sarah Wright – Utah Clean Energy, Patti Case – Intermountain CHP Center, Therese Langer – American Council for an Energy-Efficient Economy – October 2007

Executive Summary

Governor Jon Huntsman announced on April 26, 2006 a goal of increasing energy efficiency in the state of Utah 20 percent by 2015. The goal covers all sectors and applies to all forms of energy use in the state, including electricity, natural gas, gasoline, and other petroleum products. It is intended to make Utah one of the nation's most energy-efficient states, thereby lowering energy bills paid by consumers, enhancing energy security and reliability, improving business profitability and competitiveness, and reducing air pollutants and greenhouse gas emissions.

In order to help the state achieve the energy efficiency goal, the Governor's Office invited the southwest Energy Efficiency Project (SWEET) and Utah Clean Energy (UCE) to prepare a Utah Energy Efficiency Strategy, in collaboration with state officials and other stakeholders. The primary objective of the strategy are to examine the feasibility of achieving the goal for different forms of energy, develop and evaluate specific options for increasing the energy efficiency in Utah, and estimate the economic and environmental impacts of achieving the goal.

The Utah Energy Efficiency Strategy contains 23 major policies, programs, or initiatives that could be implemented in order to accelerate energy efficiency improvements in the state and contribute to achieving the energy efficiency goal. The policies will save electricity, natural gas, motor vehicle fuels, and other petroleum products. These energy sources represent about 85 percent of primary energy use in the state (excluding energy used as an industrial feedstock). We do not consider options for increasing the efficiency of jet fuel use, LPG use, or coal used directly by industry.

Some of the transportation options include:

- Adopt clean car standards for new cars and light trucks.
- Adopt incentives to stimulate purchase of more efficient cars and light trucks.
- Adopt pay-as-you-drive auto insurance.
- Reduce the rate of growth in vehicle-miles traveled.
- Improve enforcement of highway speed limits.
- Improve the efficiency of heavy-duty trucks and goods movement system.
- Replacement tire efficiency standards.

http://www.aceee.org/transportation/UT%20EE%20Strategy_Executive%20Summary_Low%20Resolution_1.pdf

Vehicle Efficiency Incentives: An Update on Feebates for States

Author: Therese Langer, Sept. 2005

Executive Summary

A lack of federal initiative on global warming and oil dependence has led states to consider their own options to address these problems. An approach that has been considered many times in the United States over the past fifteen years, but never implemented is a feebate program, i.e. a sliding scale of fees and rebates for the purchase of new vehicles based on fuel consumption or emissions of greenhouse gases. The simplest structure sets the fee or rebate in proportion to the amount of fuel consumed by the vehicle per mile driven.

Feebates shift the market towards green vehicles by providing an incentive for manufacturers to adopt cost-effective efficiency technologies; by mitigating the market failure arising from consumer undervaluation of the fuel savings associated with efficient vehicles; and by raising consumer awareness of the relationship between fuel efficiency and greenhouse gas emissions. Market-based mechanisms and regulatory approaches each have advantages for reducing vehicle emissions and fuel consumption.

There is little experience on which to base a prediction of the outcome of feebate policy, although various analyses have been done based on modeling of consumer choice and manufacturer behavior. The findings of these analyses support the conclusions that: (1) the effect of national feebate could be quite large (over 20% reduction in vehicles' CO₂ emissions and fuel consumption, using technologies available today); (2) the dominant response to a national feebate would be on the part of the manufacturers, who would put more vehicle efficiency technologies into their new offerings; and (3) consumer response through changes in buying preferences would be limited. The models used may not capture all of the elements of manufacturer and consumer behavior, however.

Much less analysis has been done of the effects of a state-level feebate. Consumer response may dominate in this case, especially if the state is small, as manufacturers will be less responsive to an incentive program that affects only a limited part of the vehicle market. A state feebate could nonetheless have a major impact by promoting other states, or the nation, to adopt similar programs. Several states, many of them in the Northeast, are not actively considering feebates as a tool for greenhouse gas reduction, as in Canada.

<http://www.aceee.org/transportation/statepolicy.htm>

Transportation Energy Efficiency Funding Opportunities in the 2009 American Recovery and Reinvestment Act (ARRA), May 2009

This is a fact sheet for states and municipalities that are eligible to apply for funding from the ARRA to address a variety of transportation-related needs, including those related to improving energy efficiency. <http://www.aceee.org/transportation/statepolicy.htm>

America's Transportation Energy Use

ACEEE Website, 2005

Transportation comprises 28% of total U.S. energy use. Oil provides nearly all of this energy. In the next two decades, the Energy Information Administration expects transportation energy consumption to rise faster than usage in the economy at large (1.8% per year vs. 1.4% per year). However, technical improvements in vehicles and reasonable government policies that encourage efficiency could substantially reduce or eliminate this increase.

<http://www.aceee.org/transportation/transoverview.htm>

ACEEE Transportation Program

ACEEE Website, 2009

Goal: Foster innovative technologies, programs, and policies for increasing motor vehicle fuel economy, reducing emissions, and enhancing overall transportation system efficiency.

ACEEE is a leader in efforts to improve the energy efficiency of cars and trucks. We conduct engineering and economic studies of the potential for efficiency improvement and provide advice regarding the development of programs and policies to realize this potential in the market. We advocate a balanced set of measures, including stronger Corporate Average Fuel Economy (CAFE) standards, federal and state incentives for greener vehicles, and consumer education and other market creation initiatives, as well as research and development of advanced technologies. We take an integrated approach to the issue, addressing how fuel efficiency relates to emissions, safety, clean production, and renewable fuels.

We seek to encourage manufacturers to produce high-efficiency, low-pollution vehicles and also to motivate consumers to purchase them. A cornerstone of this effort is ACEEE's Green Book®: The Environmental Guide to Cars and Trucks and its website: www.Greencars.com. We are directly engaging the auto industry concerning marketing challenges for efficient vehicles. We are collaborating with other public interest groups on a nationwide Clean Car Campaign. This effort includes promoting purchases of greener vehicles by government and private fleets as well as individual consumers and also advocating the simple, empowering message that people should "choose the cleanest and most efficient vehicle that meets their needs and fits their budget."

ACEEE is directing attention to transportation efficiency in freight movement as well, investigating both technologies to reduce the fuel consumption of trucks and opportunities to enhance the energy efficiency of the freight network as a whole. We are also beginning new work to assess the potential energy savings of travel demand management strategies, including land use policies, public transit investments, and market-based measures. We support reform of parking subsidies, equitable changes in taxation and transportation user fees, and creative strategies such as pay-as-you-drive auto insurance that can motivate more efficient mode and vehicle choices.

<http://www.aceee.org/transportation/about.htm>

ACEEE's State Energy Efficiency Policy Database on the Web

Website, 2009

For detailed information about energy efficiency initiatives at the state level, visit ACEEE's State Energy Efficiency Policy Database on the Web (www.aceee.org/energy/state/index.htm). Complementing the scorecard, the site serves as another resource for information on state energy efficiency policies. The online database is searchable by state or by policy, and documents state activities in the energy efficiency policy areas covered in the scorecard. The database includes policies and papers on energy

efficient vehicles.

<http://www.aceee.org/energy/state/index.htm>

Climate Change, Energy, and Transport

OECD.org Website, Information by Country, 2009

Recent phenomenal growth in energy and transport use has led to more pollution, resource depletion, congestion, and an increase in greenhouse gas emissions, which all contribute to climate change. The OECD analyses policies and their impacts on the environment and the economy. This website features the latest articles and news items related to climate change, energy, and transportation.

http://www.oecd.org/topic/0,3373,en_2649_34359_1_1_1_1_37459,00.html

Assessing State Long Range Transportation Planning Initiatives in the Northeast for Climate and Energy Benefits

Author: David Burwell, 2005

Executive Summary

This is the final report of a year-long study of state long-range transportation planning practice for climate protection and energy efficiency outcomes. The purpose of this study was to identify best national long range transportation planning (LRTP) practice in this area and how such practice could be improved, especially in the four states that were partners in this study: Massachusetts, Maine, New Jersey, and New York.

Oil is the source of more than 97 percent of total transportation energy in the U.S. and the transportation sector now represents over 70 percent of total domestic oil consumption. It is also responsible for more than 30 percent of total domestic emissions of greenhouse gases (GHG) and is the fastest growing source of such emissions. Given increased national policy attention to the national security associated with rapidly rising levels of domestic oil consumption and growing global attention to the challenge of GHG emissions, an analysis of strategic transportation planning initiatives to address how well energy and climate change issues are addressed in long range transportation planning is appropriate.

On the basis of interviews with LRTP professionals, a literature search, and a review of state long range transportation plans in the 29 states with Climate Action Plans or gubernatorial initiatives directing state agencies to coordinate planning for climate and energy efficiency outcomes, 15 state transportation plans were selected for further review. These plans were then studied to evaluate long range planning processes, policies and planning tools that contain both a specific intention to integrate climate and energy outcomes into long range transportation planning, and achieve best practice by a state Department of Transportation (DOT) in this area.

<http://climate.dot.gov/documents/final-bbg.pdf>

Understanding the size of the energy efficiency resource: Ten policy recommendations to accelerate more productive investments

Policy and Society Associates (APSS) Published by Elsevier Ltd.

Author: John A. "Skip" Laitner, American Council for an Energy-Efficient Economy, Washington, DC, 2009

Abstract

There is a huge potential for cost-effective investments in energy efficiency throughout all sectors of the U.S. economy: on the order of 46 billion barrels of oil equivalent between now and 2030. This is about 2.5 times bigger than what some have suggested might be available from off-shore drilling. That magnitude of further gains in energy efficiency could generate a significant downward pressure on oil prices, and increase both the resilience and robustness of the American and the international economies—if we choose to encourage those more productive investments. Policy solutions will play a pivotal role in strengthening the continued development, dissemination, and widespread adoption of energy-efficient industrial and transportation technologies and systems. With a focus on transportation systems, this

article recommends 10 near-term policy actions that might be undertaken to immediately provide that signal, and more critically, to change the direction of energy usage through increased energy efficiency.

References and further reading may be available for this article. To view references and further reading you must purchase this article.

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B8JK2-4VPCVVH-1&_user=3928936&_rdoc=1&_fmt=&_orig=search&_sort=d&_view=c&_acct=C000061806&_version=1&_urlVersion=0&_userid=3928936&md5=67bfd073db3c081b7db4ddc09aa4d991

ACEEE: Recession not dimming states' growing focus on energy efficiency as "first fuel," with CA, MA, and CT rated best on implementing energy efficiency

American Council for an Energy-Efficient Economy (ACEEE), 2009

Contact: Maggie Eldridge, (202) 507-4004

Press contact: Glee Murray, (202) 507-4010

WASHINGTON, D.C. (October 21, 2009): The current economic downturn is not sidetracking state-level efforts to make the most of energy efficiency as the cheapest, cleanest and quickest of all energy resources, according to a 50-state scorecard on energy efficiency policies, programs, and practices from the American Council for an Energy-Efficient Economy (ACEEE).

"By embracing a wide range of cost-effective energy efficiency strategies, the leading states are demonstrating that efficiency is their 'first fuel' to meet energy demands while growing their economies," said Maggie Eldridge, ACEEE research associate and lead author of the report. "States continue to raise the bar with comprehensive strategies to improve efficiency in their buildings, industry, and transportation systems. They are the 'living laboratories' of energy efficiency."

Several states have made strong moves up in the ranks from 2008 to 2009. "The most improved states are stepping up their efforts in several ways, such as adopting new building energy codes and setting aggressive new energy savings targets," said Eldridge. "By highlighting these most improved states, we hope to encourage others to step up their efforts to implement energy efficiency as their first-priority resource."

The 2009 report is ACEEE's third edition of its annual state-by-state ranking on the adoption and implementation of energy efficiency policies, which aims to recognize leadership among the states and identify best practices. The scorecard examines six state energy efficiency policy areas: (1) utility-sector and public benefits programs and policies; (2) transportation policies; (3) building energy codes; (4) combined heat and power; (5) state government initiatives; and (6) appliance efficiency standards. States can earn up to 50 possible points in these six policy areas combined.

ACEEE Executive Director Steven Nadel said: "The states continue to be leaders in advancing energy efficiency policies and programs. In fact, this growing and deepening commitment to energy efficiency is so strong that the current recession has not put a dent in the vast majority of state programs. And that is for good reason: Energy efficiency is the only resource that can actually reduce energy consumption while growing the economy – making efficiency the 'first fuel' states can use to balance their energy portfolios."

In 2009, energy efficiency has risen to a new level of recognition in the U.S. and is a resource that is increasingly being called upon at the state level. In the race for clean energy resources, states are adopting aggressive energy efficiency policies, increasing investments in efficiency programs, and improving efficiency in their own facilities and fleets. While some states have been making commitments toward energy efficiency for decades, others are just getting started in a big way, while still others have yet to tap this energy resource.

<http://www.aceee.org/press/e097pr.htm>

ACEEE's State Energy Efficiency Policy Database on the Web

American Council for an Energy-Efficient Economy (ACEEE), 2009

For detailed information about energy efficiency initiatives at the state level, the American Council for an Energy Efficient Economy State Energy Efficiency Policy Database on the Web (www.aceee.org/energy/state/index.htm). Complementing the scorecard, the ACEEE site serves as another resource for information on state energy efficiency policies. The online database is searchable by state or by policy, and documents state activities in the energy efficiency policy areas covered in the scorecard.

The 2009 State Energy Efficiency Scorecard, which ranks states in six categories, concludes that the 10 states doing the most to implement energy efficiency are: California (1); Massachusetts (2); Connecticut (3); Oregon (4); New York (5); Vermont (6); Washington state (7); Minnesota (8); Rhode Island (9); and Maine (10).

“By embracing a wide range of cost-effective energy efficiency strategies, the leading states are demonstrating that efficiency is their ‘first fuel’ to meet energy demands while growing their economies,” said Maggie Eldridge, ACEEE research associate and lead author of the report. “States continue to raise the bar with comprehensive strategies to improve efficiency in their buildings, industry, and transportation systems. They are the ‘living laboratories’ of energy efficiency.”

Several states have made strong moves up in the ranks from 2008 to 2009, including: Maine (up from 19 to 10); Colorado (up from 24 to 16); Delaware (up from 32 to 20); District of Columbia (up from 30 to a tie for 20); South Dakota (up from 47 to 36); and Tennessee (up from 46 to 38). “The most improved states are stepping up their efforts in several ways, such as adopting new building energy codes and setting aggressive new energy savings targets,” said Eldridge. “By highlighting these most improved states, we hope to encourage others to step up their efforts to implement energy efficiency as their first-priority resource.”

The 2009 report is ACEEE’s third edition of its annual state-by-state ranking on the adoption and implementation of energy efficiency policies, which aims to recognize leadership among the states and identify best practices. The scorecard examines six state energy efficiency policy areas: (1) utility-sector and public benefits programs and policies; (2) transportation policies; (3) building energy codes; (4) combined heat and power; (5) state government initiatives; and (6) appliance efficiency standards. States can earn up to 50 possible points in these six policy areas combined. <http://www.aceee.org/energy/state/index.htm>

ACEEE 2009 Energy Scorecard Report

American Council for an Energy-Efficient Economy (ACEEE), October 2009

Authors: Maggie Eldridge, Michael Sciortino, Laura Furrey, Seth Nowak, Shruti Vaidyanathan, Max Neubauer, Nate Kaufman, Anna Chittum, and Sarah Black – ACEEE, Colin Sheppard, Charles Chamberlin and Arne Jacobson - Humboldt State University, Yerna Mugica and Dale Bryk – NRDC

Executive Summary

In 2009, energy efficiency has risen to a new level of recognition in the U.S. It is a core component of the American Recovery and Reinvestment Act (ARRA) and is a resource that is increasingly being called upon at the state level. This heightened awareness demonstrates that energy efficiency – the kilowatt-hours and gallons of gasoline that we don’t use due to improved technology and practices – is accurately being recognized as the cheapest, cleanest, and quickest energy resource to deploy. In the race for clean energy resources, states are adopting aggressive energy efficiency policies, increasing investments in efficiency programs, and improving efficiency in their own facilities and fleets. While some states have been making commitments toward energy efficiency for decades, others are just getting started in a big way, while still others have yet to tap this energy resource. The authors present here a comprehensive state energy efficiency scorecard to document best practices and recognize leadership among the states. The scorecard can serve as a means of benchmarking state efforts, with the goal of encouraging states to continue to raise the bar in efficiency commitments and providing a roadmap for states that want to catch up to the leaders.

This report is the third edition of ACEEE’s *State Energy Efficiency Scorecard*, which provides a comprehensive approach to score and rank states on the adoption and implementation of energy efficiency policies and programs. The Scorecard examines six state energy efficiency policy areas and

presents these results in six chapters: (1) utility-sector and public benefits programs and policies; (2) transportation policies; (3) building energy codes; (4) combined heat and power; (5) state government initiatives; and (6) appliance efficiency standards. State can earn up to 50 possible points in these six policy areas combined, with the maximum possible points in each area weighted by the magnitude of its potential impact on energy savings.

<http://aceee.org/pubs/e097.pdf?CFID=4451326&CFTOKEN=20473199>

Transport, Energy and CO2: Moving towards Sustainability

International Energy Agency, 2009

Transport accounts for nearly one-quarter of global energy-related CO2 emissions. To achieve the necessary deep cuts in greenhouse gas emissions by 2050, transport must play a significant role. However, without strong global action, car ownership worldwide is set to triple to over two billion by 2050. Trucking activity will double and air travel could increase four-fold. These trends will lead to a doubling of transport energy use, with an even higher growth rate in CO2 emissions as the planet shifts toward high-CO2 synthetic fuels. How can we enable mobility without accelerating climate change?

Transport, Energy and CO2: Moving toward Sustainability provides answers to this question. It finds that if we change the way we travel, adopt technologies to improve vehicle efficiency and shift to low-CO2 fuels, we can move onto a different pathway where transport CO2 emissions by 2050 are far below current levels, at costs that are lower than many assume. The report discusses the prospects for shifting more travel to the most efficient modes and reducing travel growth rates, improving vehicle fuel efficiency by up to 50% using cost-effective, incremental technologies, and moving toward electricity, hydrogen, and advanced biofuels to achieve a more secure and sustainable transport future. If governments implement strong policies to achieve this scenario, transport can play its role and dramatically reduce CO2 emissions by 2050.

This publication is one of three new IEA end-use studies, together with industry and buildings, which look at the role of technologies and policies in transforming the way energy is used in these sectors.

http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2133

With help from Sweden, 4 Northern Virginia families are 'Climate Pilots'

By Juliet Eilperin, Washington Post Staff Writer, January 2, 2010

There's even an official name for the Stokeses, along with three other households in Northern Virginia: They are [Climate Pilots](#), guinea pigs in a Swedish experiment aimed at helping U.S. citizens understand that a lifestyle that curbs greenhouse-gas emissions is not necessarily oppressive, just different. Whether Americans are willing to follow their example is part of the political calculation lawmakers have to make as they consider imposing nationwide limits on emissions in legislation making its way through Congress. The Climate Pilots program exemplifies the broader dynamics at play in the international climate debate: Europeans impatiently nudging the United States and other countries toward a less carbon-intensive lifestyle.

Many Americans have adopted small eco-friendly measures, such as recycling and installing compact fluorescent light bulbs. A number of Washington area residents have made more significant lifestyle shifts, commuting by public transportation or bicycle and adopting high-efficiency or renewable-energy systems for their homes. But it remains unclear whether there is enough grass-roots support for a dramatic change in U.S. climate policy, especially during an economic crunch, considering that many environmental changes yield long-term, rather than immediate, financial benefits.

<http://www.washingtonpost.com/wp-dyn/content/article/2010/01/01/AR2010010101987.html>

Napa Countywide Climate Action Framework Draft (NCTPA WEBSITE)

Napa County Transportation and Planning Agency (NCTPA), December 2009

Executive Summary

Climate change is a major challenge for the 21st century. Scientific evidence increasingly shows that climate protection targets considered bold even a few years ago may now be inadequate: climate change is happening faster and on a broader scale than the world's scientists predicted just two years ago. Millions of people may experience the effects of climate change on public health, national and local economies, sea level rise and changing food, water and energy supplies.

No action—business as usual—is not an option under current State law. Although the regulatory environment is changing rapidly, it is likely that actions will be required by State Law at all levels of government.

This Community Climate Action Framework provides a consensus-based context for further more detailed planning efforts. It outlines a package of 53 actions that, when translated into locally specific programs and projects countywide, *will* help meet climate protection targets. This Policy Framework will be followed by locally appropriate implementation plans, designed for each jurisdiction, focusing on specific programs and projects.

Transforming our energy infrastructure from fossil fuels to renewables, using less energy overall and generating less waste and fewer emissions will require a unity of purpose, innovation, and commitment.

This Framework is based on a sound analytic process, uses internationally accepted greenhouse gas emissions (GHG) modeling, incorporates input from each of Napa's Cities, Town and the County, and is geared for swift implementation. Every action included met four criteria:

1. It is under local control
2. It will result in significant GHG emission reductions
3. It is cost effective
4. It is politically feasible

<http://sites.google.com/site/nctpaweb/site/draft-napa-countywide-climate-action-framework>

Michigan Climate Action Plan Website, 2009

The Michigan Climate Action Council (MCAC) is a broad-based group of Michigan stakeholders charged with making a comprehensive set of state-level policy recommendations to the Governor in a Michigan Climate Action Plan. On March 1, 2009, the MCAC completed the Climate Action Plan which identifies 54 policy recommendations for reducing greenhouse gas (GHG) emissions. These actions to reduce GHG emissions can have positive economic and environmental benefits for Michigan including increasing energy efficiency, conserving natural resources, improving air quality, reducing water pollution, saving costs, creating jobs, and diversifying Michigan's economy. These policy recommendations are estimated to reduce 987 million metric tons of carbon dioxide equivalent between 2009 and 2025 and generate a net cumulative savings of about \$10 billion during the same time period.

<http://www.michigan.gov/deq/0,1607,7-135-50990-213752--,00.html>

Financing Climate Change – The Organization for Economic Co-Operation and Development Website, no current date given

The OECD is ready to assist countries in their efforts to find lasting solutions to finance action on climate change, building on the long-standing work of the organization to share country experiences and identify lessons learnt and policy recommendations for good practice:

The OECD works with government representatives from finance ministries, environment ministries and development co-operation agencies, as well as with other international organizations on key issues concerning financing climate change. We are examining key questions on post-2012 financial architecture:

Overall financial architecture: What are the goals and objectives of financial support for climate action? How to track relevant streams of public finance and monitor/assess progress in a transparent and accurate manner?

Securing necessary financing flows: How much international public financing is needed? How to reliably generate sufficient financing (public and private) for climate-friendly investments?

Governance of funds and experience to date: What goals of public finance and how to use limited public finances in an environmentally-effective, economically-efficient, and equitable manner? Priorities for disbursement and eligibility for funding?

http://www.oecd.org/document/16/0,3343,en_2649_34361_43577616_1_1_1_1,00.html

California Department of Transportation Energy Conservation Program

Website, Dec. 2009

An Overview

Supported by the Department of Transportation (Department) directives, policies, executive orders and statutory mandates, the Department continues its leadership role in the stewardship of the State's resources with a proactive energy conservation effort and development and deployment of alternative energy generation since the mid-1970s.

Over the years, a number of the Department's energy projects have won state and national awards; such as the Department's continuing light emitting diode (LED) traffic signals upgrade program. The Department's leadership in the development and deployment of the technology has helped to create new jobs and resulted in new LED-based products coming to market.

The primary function of the Department's energy program is to identify, develop, and implement cost effective conservation opportunities for any energy consuming activity within the Department. Currently, the Department is tracking energy usage and potential on-site generation to reduce the State's consumption impact upon the power grid. The Department is considering the deployment of solar energy systems, wind power generation, hydrogen fuel cells for stationary and mobile applications, distributive generation, and hybrid and dual fuel vehicles.

In 2007 and 2008, the Department's Energy Conservation Program started to share energy data with departmental Climate Change and green house gas reduction efforts, and incorporated into the Department's Climate Action report to the California Climate Action Registry (CCAR). Caltrans became a certified member of CCAR in the spring of 2009.

In the summer of 2009, the Department's Energy Conservation Program was merged with the Department's Climate Action Team (Currently located in the Division of Transportation Planning.)

As the Department moves into 2010, there are a number of activities that have moved forward in development, deployment, or completion. The following information has been updated to reflect those changes.

<http://www.dot.ca.gov/hq/energy/>

The Power to Reduce Full Emissions Report

Authors: Revis James, Richard Richels, Geoff Blanford and Steve Gehl, August 2007

Introduction

The large-scale CO₂ reductions envisioned to stabilize, and ultimately reverse, global atmospheric CO₂ concentrations present major technical, economic, regulatory and policy challenges. Reconciling these challenges with the continued growth in energy demand highlights the need for a diverse, economy-wide approach.

This Discussion Paper provides stakeholders with a *framework* for developing a research, development, and demonstration (RD&D) Action Plan that will enable sustainable and substantial electricity sector CO₂ emissions reductions over the coming decades. The technology development pathways and specific research activities discussed in this paper provide a basis for a detailed Action Plan to be published later this year incorporating input from participants in the 2007 EPRI Summer Seminar.

The analyses summarized in this paper address the technical feasibility for the sector to achieve large-scale CO₂ emissions reductions, the technology development pathways and associated RD&D funding needed to achieve this potential, and the economic impact of realizing emissions reduction targets. Given the 20- to 30-year lead-time needed to fully research, develop, and commercially deploy technologies, it is critical for the industry to define priorities and initiate RD&D activities.

The assessment involves three related EPRI studies:

- The *PRISM analysis*, which determined the U.S. electricity sector's potential for reducing CO₂ emissions from a purely technical perspective, based on deployment of a portfolio of advanced technologies.
- A *technology development pathways analysis*, which identified the sequence of research, development, and demonstration (RD&D) steps needed to achieve the necessary technology performance and deployment levels, and developed preliminary estimates of the RD&D investment required.
- The *MERGE analysis*, which assessed the economic value of deploying the full technology portfolio analyzed in the PRISM analysis, and projected the least-cost combination of technologies needed to meet a specified CO₂ emission reduction requirement.

<http://mydocs.epri.com/docs/public/DiscussionPaper2007.pdf>

Arizona Energy Summary

US Department of Energy website, Oct. 2008

This page provides a summary of energy in Arizona. Here you will find an overview of energy consumption, listing of energy efficiency goals under the Energy Policy Act of 2005 (EPAct), a summary of the status of renewable energy and energy efficiency policies, and a list of political leaders and state agency administrators who shape energy policy for Arizona.

http://apps1.eere.energy.gov/states/energy_summary.cfm/state=AZ

Minnesota Statewide Transportation Policy Plan 2009-2028

Policy 9: Energy and the Environment Summary

Improve the energy efficiency and environmental sustainability of Minnesota's transportation system. Mn/DOT and other transportation agencies will continue to protect and enhance the environment by integrating environmental stewardship in the planning, development, and construction phases of transportation projects as well as in system operations. Working in close coordination with other transportation system providers, Mn/DOT will also strive to reduce emissions and improve energy efficiency through the promotion of travel modes with high occupancy and/or low emission vehicles, increased use of alternative fuels, and adoption of property and right-of-way management practices more capable of offsetting greenhouse gas (GHG) emissions.

9A.Environmental Stewardship in Project Development: Mn/DOT and local transportation authorities will continue to integrate environmental stewardship throughout the transportation project development and system operations processes.

9B.Emissions and Energy Consumption: Mn/DOT will advance the emissions reduction objectives put forward by the Next Generation Act and increase the use of alternative fuels.

<http://www.dot.state.mn.us/planning/stateplan/Final%20Plan%20Documents/Policy%20Plan/Word/7%20P9%20Energy%20and%20Env.doc>

2009 New York State Energy Plan

New York State Energy Plan Website, 2009

Executive Summary

The 2009 New York State Energy Plan (Plan or Energy Plan) sets forth a vision for a robust and innovative clean energy economy that will stimulate investment, create jobs and meet the energy needs of residents and businesses over its 10-year planning horizon. To that end, the Plan provides the framework, within which the State will reliably meet its future energy needs in a cost-effective and

sustainable manner, establishes policy objectives to guide State agencies and authorities as they address energy related issues and sets forth strategies and recommendations to achieve these objectives.

The Plan's strategies and recommendations have been designed to meet five policy objectives:

- Assure that New York has reliable energy and transportation systems;
- Support energy and transportation systems that enable the State to significantly reduce greenhouse gas (GHG) emissions, both to do the State's part in responding to the dangers posed by climate change and to position the State to compete in a national and global carbon constrained economy;
- Address affordability concerns of residents and businesses caused by rising energy bills, and improve the State's economic competitiveness;
- Reduce health and environmental risks associated with the production and use of energy across all sectors; and
- Improve the State's energy independence and fuel diversity by developing in-state energy supply resources.

Five strategies are outlined in the Plan, which simultaneously achieve these multiple policy objectives. The strategies are: (1) produce, deliver and use energy more efficiently; (2) support development of in-state energy supplies; (3) invest in energy and transportation infrastructure; (4) stimulate innovation in a clean energy economy; and (5) engage others in achieving the State's policy objectives.

<http://www.nysenergyplan.com/stateenergyplan.html>

Rules, Regulations, & Policies for Energy Efficiency

DSIRE Website Database by State, 2009

This summary table provides a snapshot of federal, state, and local rules, regulations, and policies that promote energy efficiency in the United States. This table allows viewers to quickly compare the number and types of programs in each state. (The DSIRE glossary includes a description of each policy type.)

<http://www.dsireusa.org/summarytables/rrpee.cfm>

MIT: Assessment of U.S. Cap-and-Trade Proposals

Authors: Sergey Paltsev, John M. Reilly, Henry D. Jacoby, Angelo C. Gurgel, Gilbert E. Metcalf, Andrei P. Sokolov and Jennifer F. Holak, MIT, April 2007

Introduction

A number of alternative approaches to greenhouse-gas mitigation are under consideration in the United States, but the policy instrument now receiving greatest attention is a national cap-and-trade system. Several bills have been filed in the Congress or are under development. In this report, the authors assess the economic and energy system implications of these proposals, not comparing particular bills in detail but studying synthetic versions that span their main features and illuminate the differences among them. To carry out the economic aspects of the assessment they rely on the MIT Emissions Prediction and Policy Analysis (EPPA) model. The implications of different emissions paths for atmospheric greenhouse gas concentrations and potential climate change are explored using the earth science portions of the MIT Integrated Global System Model (IGSM) of which EPPA is a component.

The term "cap-and-trade" is used to describe a policy that identifies greenhouse-gas-emitting entities covered by the system, sets caps on their emissions and allows trading in the resulting emissions allowances. The "entities" are the points of responsibility for emissions and they may be defined at various levels in the economic system from the coal mine and refinery gate (upstream) to the firm or gasoline station (downstream). At these points the emissions accounting is carried out. Emissions allowances (actually entries in an electronic bookkeeping system) are distributed such that the total is equal to the national cap, and covered entities must surrender allowances equal to their emissions, or the emissions that result when the fuel they supply is burned. Market trading in these allowances establishes a price on emissions that in turn creates economic incentives for cost-effective abatement. It is common practice to distribute allowances to the entities that are the point of regulation, but this procedure is not a

requirement of the system. Allowances could be distributed without charge to any persons, firms or other organizations in the economy, or they could be auctioned.

The authors begin the assessment of current proposals in Section 2 by laying out aspects of system design, and conditions external to the U.S., that influence the performance of cap-and-trade systems. In Section 3, the economic model used in the analysis is described and the assumptions underlying a set of “core” policy cases are identified, including the relative stringency of abatement, the emissions allowance paths, and mitigation undertaken abroad. Section 4 then presents results for the core cases, including price and welfare effects, impacts on energy markets and revenue potential if allowances are auctioned. It is worth noting that, although the focus is on a cap-and-trade system, many of the results are directly applicable to a carbon tax with the same coverage and emissions target. In Section 4, it becomes evident how dependent the results are on assumptions about mitigation undertaken in other countries, through terms-of-trade effects, and Section 5 explores this phenomenon in greater detail.

Of necessity, the comparison of the core cases requires a common set of system definitions so in Section 6 we investigate various alternative specifications including differences in banking, sectoral coverage, revenue recycling, the provision of a safety valve and international permit trading. One important difference among cases is the role of bio-fuels, and Section 7 provides a more detailed look at this option and its implications for land use.

The proposals under study specify targets only to 2050, which is too short a period for consideration of the climate impacts. Therefore, in Section 8 assumptions are made for the latter half of the century and estimates are provided of the resulting reduction in atmospheric CO₂ concentrations and in projected global temperature change. Section 9 offers some conclusions.

http://web.mit.edu/globalchange/www/MITJPSPGC_Rpt146.pdf

Climate Change Legislation Design White Paper

Appropriate Roles for Different Levels of Government, Feb. 2008

Executive Summary

Sorting out the appropriate roles of each level of government in addressing climate change is far more complicated than the specific question of whether State climate change programs should be preempted. This Paper raises more comprehensive and complex questions that the Committee must consider: what roles are best played by each level of government as we marshal our country’s resources to address climate change and how should these roles be reflected in Federal legislation.

Many State and local governments have begun to address climate change, as the Subcommittee heard last year in testimony from State and local witnesses.² Activity by State and local governments has helped reduce greenhouse gas emissions, has helped build a consensus that we need to address climate change nationally, and is helping to develop and test different policies.

The country is now at the difficult and familiar stage of transitioning from multiple, often unconnected, State and local climate change programs to a comprehensive, national approach to addressing the global problem of climate change. For a variety of reasons, State and local environmental programs have often led to enactment of Federal environmental legislation.

Industry is often interested in Federal legislation to avoid or replace a patchwork of State regulations, which helps reduce the burden on companies involved in interstate commerce. Federal environmental standards create a level environmental playing field among States (i.e., Federal legislation will ensure that all citizens in all States can enjoy a basic level of public health and environmental protection without fear of driving industry and jobs to States with lower environmental standards). Another major reason for Federal environmental programs is to address situations where pollution released in one State causes environmental or public health problems in another State. Federal programs can also provide resources for environmental protection where State and local programs are insufficient.

This national approach will need to include a variety of programs at each level of government. A quick look at differing governmental roles in existing programs illustrates that it is typical for a given program to have separate and distinct roles for Federal, State, Tribal, and/or local governments. For example, in one

of the most federally-oriented air pollution control programs, the Acid Rain Trading Program, State, and local governments have the authority to inspect power plants to determine whether they are in compliance with monitoring requirements. On the other hand, economic development and land use decisions are typically left to local, Tribal, and State governments, but the Federal Government may provide grants or other incentives to encourage smart growth development.

Addressing climate change will require employing a variety of tools. The primary tool at the Federal level will be a national, economy-wide cap-and-trade program that reduces greenhouse gas emissions by 60 to 80 percent by 2050. Other tools that could be used include appliance efficiency standards, building codes, land use decisions, performance standards, public transit, and incentives to increase efficiency. Some tools will be more effective and appropriate in the hands of State, Tribal, or local governments; others will work better in Federal hands.

A comprehensive, national approach to climate change will require a melding of different governmental roles and tools. Given the breadth of actions that will be necessary to reduce greenhouse gas emissions and to adapt to climate change, Federal, State, Tribal, and local governments will need to play a variety of roles.

This White Paper is intended to explore the key factors that the Committee will need to consider and balance as it constructs a national greenhouse gas control program and seeks to rationalize the roles of different levels of government.

[http://energycommerce.house.gov/images/stories/Documents/PDF/selected_legislation/white%20paper%](http://energycommerce.house.gov/images/stories/Documents/PDF/selected_legislation/white%20paper%20.pdf)

The Power to Reduce CO2 Emissions - The Full Portfolio

Authors: Revis James, Richard Richels, Geoff Blanford and Steve Gehl, Aug. 2007

Introduction

The large-scale CO2 reductions envisioned to stabilize, and ultimately reverse, global atmospheric CO2 concentrations present major technical, economic, regulatory and policy challenges. Reconciling these challenges with the continued growth in energy demand highlights the need for a diverse, economy-wide approach.

This Discussion Paper provides stakeholders with a *framework* for developing a research, development, and demonstration (RD&D) Action Plan that will enable sustainable and substantial electricity sector CO2 emissions reductions over the coming decades. The technology development pathways and specific research activities discussed in this paper provide a basis for a detailed Action Plan to be published later this year incorporating input from participants in the 2007 EPRI Summer Seminar.

The analyses summarized in this paper address the technical feasibility for the sector to achieve large-scale CO2 emissions reductions, the technology development pathways and associated RD&D funding needed to achieve this potential, and the economic impact of realizing emissions reduction targets. Given the 20- to 30-year lead-time needed to fully research, develop, and commercially deploy technologies, it is critical for the industry to define priorities and initiate RD&D activities.

<http://mydocs.epri.com/docs/public/DiscussionPaper2007.pdf>

Environmental Climate Change Analyses

U.S. Energy Information Administration

Analysis Reports and Papers related to environmental climate change (most current first)

<http://www.eia.doe.gov/oiaf/1605/climate.html>

Transportation for America

Policy Papers, 2009

Transportation for America produced a series of short policy briefs to accompany their webinar series. Each of these briefs are a quick four-page overview examining how transportation investments affect a range of issues that are important to our coalition partners and affect each of us. In the webinars and

these briefs we are looking at issues including health, housing, equity, and climate change, and what policy reforms we recommend.

For more information, view the Transportation for America policy briefs:
Transportation, Economic Opportunity and America's Future Transportation,
Small Towns and Rural Regions Transportation,
Health and Public Safety
Transportation Drives Land Development
Transportation + Housing: A Double Burden or Shared Opportunity?
Transportation and Climate: A Critical Linkage
Transportation and Social Equity: Opportunity Follows Mobility
<http://t4america.org/policy-papers/>

2009 Green Government Challenge - Go Green Virginia

Take the 2009 Green Government Challenge!

The Green Government Challenge is a friendly competition designed to encourage implementation of specific environmental policies and practical actions that reduce the carbon emissions generated by both the local government and the broader community. Cities, towns, and counties can become a certified "Green Government." Many of these actions can save local governments money. A sample copy of the Challenge, and the criteria is provided, and among other policies, includes energy efficiency policies and programs for local and state governments.

<http://gogreenva.org/?/challenge/participate/id/1/p/score>

Other Sources

National Framework for Energy Efficiency - Delivering economic, environmental and social benefits through enhanced energy efficiency - Australian Government website, no date given

In August 2004, the Ministerial Council on Energy announced a major advance nationally for energy efficiency, productivity and the environment, by agreeing a comprehensive set of measures comprising the first stage of the National Framework for Energy Efficiency (NFEES).

In December 2007, Ministers agreed to the second stage of NFEES. NFEES Stage Two comprises a package of five new energy efficiency measures for delivery.

Implementation committees have been set up to deliver NFEES. The implementation committees cover energy efficiency measures relating to Buildings; Commercial and Industrial; Appliances and Equipment; Government; Trade and Professional Training and Accreditation; Consumer Information; Green Leases; Hot Water; Inefficient Lighting; Heating Ventilation and Air-Conditioning; and Data Gathering.

On 2 July 2009 the Council of Australian Governments, signed the National Partnership Agreement on Energy Efficiency, which will deliver a nationally-consistent and cooperative approach to energy efficiency

<http://www.ret.gov.au/Documents/mce/energy-eff/nfee/default.html>

G8 Hokkaido Toyako Summit Leaders Declaration

Hokkaido Toyako, July 2008

This declaration covers topics including the World Economy, Environment and Climate Change, Development and Africa, International Institutions, and Political Issues

http://www.mofa.go.jp/policy/economy/summit/2008/doc/doc080714_en.html

Meeting of the Governing Board Ministerial Level Press Release, May 2007

International Energy Agency, 2007

We, the Ministers of the Member countries of the International Energy Agency (IEA), convene in Paris to review the state of global energy markets and to provide guidance to the Agency, a leading international organization in energy market and policy analysis and energy crisis management. We highly value the contribution of the Agency in these matters and commit to further strengthening its role and capability. http://www.iea.org/Textbase/press/pressdetail.asp?PRESS_REL_ID=225.

International Energy Agency, Energy Charter Secretariat Energy Efficiency Initiative, 1998

Energy Efficiency

Energy efficiency offers a powerful and cost-effective tool for achieving a sustainable energy future. Improvements in energy efficiency can reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness, and improve consumer welfare. Environmental benefits can also be achieved by the reduction of greenhouse gases emissions and local air pollution. Energy security can also profit from improved energy efficiency by decreasing the reliance on imported fossil fuels. For these reasons, energy efficiency is one of six broad focus areas of IEA's G8 Gleneagles Program. The IEA has submitted 25 policy recommendations to the G8 for promoting energy efficiency that could reduce global CO₂ emissions by 8.2 gigatonnes by 2030.

The IEA promotes energy efficiency policy and technology in buildings, appliances, transport and industry, as well as end-use applications such as lighting. Our analysis identifies best-practice, highlighting the possibilities for energy efficiency improvements and policy approaches to realize the full potential of energy efficiency for our Member countries.

The IEA also maintains a Database of national energy efficiency policies. The new International Partnership for Energy Efficiency Co-operation (IPEEC) aims to facilitate actions to yield high energy efficiency gains and is hosted at the International Energy Agency in Paris. They are currently looking for a Head of the IPEEC Secretariat. Click here for more information.

http://www.iea.org/subjectqueries/keyresult.asp?KEYWORD_ID=4122

Transport, Energy and CO₂: Moving Toward Sustainability – Slide Presentation

Author: Lew Fulton, IEA/SPT IEA Side Event, December 2009, Copenhagen

Slide presentation summarizing the recently released book from IEA by the same title. Includes policy ideas on the last slide.

http://www.iea.org/work/2009/cop15/Fulton_IEA_Day.pdf

IEA - Cross Sectoral Policy -- energy efficiency - 2009

Enhancing energy efficiency requires sectoral as well as cross-sectoral policies. Cross-sectoral policies work across sectors to lay the foundation for enhanced energy efficiency. Important cross sectoral policy activities include:

- . Investment in Energy Efficiency
- . National Energy Efficiency Strategies
- . Compliance Enforcement, Monitoring and Evaluation
- . Energy Efficiency Indicators
- . Monitoring and Reporting Progress with Implementing Energy Efficiency Policies

In order to support the policy development in these areas the IEA is embarking on an ambitious project titled "Energy Efficiency Governance" (hyperlink to a proposal).

<http://www.iea.org/subjectqueries/crosssectoral.asp>

Assessment of Greenhouse Gas Analysis Techniques for Transportation Projects

Transportation Research Board Annual Meeting 2008

Authors: Michael D Grant, Anne Choate, Lauren Pederson

Abstract

The transportation sector is one the fastest growing sources of greenhouse gas (GHG) emissions, accounting for 28 percent of national emissions in 2005. As states and local governments attempt to reduce emissions of GHGs that contribute to climate change, they are increasingly interested in understanding the linkages between transportation activities and GHG emissions. Because there are no regulations addressing GHG emissions from transportation sources – California being the notable exception – state departments of transportation (DOTs), metropolitan planning organizations (MPOs), and other transportation agencies have limited experience analyzing the GHG emissions impacts of transportation plans and projects. Developing credible baseline information is a critical first step in addressing GHG emissions from transportation activities at any level. Policymakers and planners may also be unfamiliar with available tools and techniques to facilitate analyses of GHG impacts for various policy options. Moreover, some transportation agencies are concerned that the available techniques may not be sufficient to conduct the types of analyses necessary to strategically address GHG emissions at the project, local, and regional levels. This paper summarizes the findings of a recent project for the National Cooperative Highway Research Program (NCHRP) that involved identification and review of 17 tools or methods available to analyze the GHG implications of transportation projects. It identifies the tools most suitable for four kinds of transportation/GHG analyses: state-level transportation GHG inventory development; state-level transportation GHG inventory projections; regional transportation plan or program analysis; and transportation project and strategy-specific analyses. In addition, this paper summarizes the gaps identified in existing methodologies.

This paper can be ordered at <http://pubsindex.trb.org/paperorderform.pdf>

The Long and Winding Road: Automotive Fuel Economy and American Politics

Author: Pietro S Nivol -, 2009

Abstract

The regulation of fuel economy for motor vehicles, in the United States, has been in existence for over 30 years. Nevertheless, drivers in this country are actually using more fuel per capita than they used, on average, in the larger less fuel efficient vehicles of 1975. There are many reasons why the efforts to ameliorate the use of oil in transportation have fallen so short. This paper discusses some of those reasons. Energy regulation is discussed in detail. Impacts on greenhouse gas emissions are also described. The paper also relates the ways in which other advanced countries have attained much better fuel economy than the United States. Political reasons for the failure of fuel efficiency regulation, in this country, are presented. The paper concludes with a more enlightened energy policy proposal.

Paper can be requested from <http://www.wsdot.wa.gov/Library/>

U.S. Energy Policy: The Need for Radical Departures

Author: Vaclav Smil - 2009

Abstract

An understanding of the nature of technical innovation is needed if a realistic view of the time and commitment required for a massive overhaul of United States energy policy is to happen. The author argues that current goals are illusory. Five years is not long enough for any large-scale changes in how affluent economies secure energy supplies and use electricity and fuels to be expected. Five years, however, is long enough to offer: a minimalist agenda combining a no-regrets approach with bold departures from the existing policy prescriptions for deliberate long term action; engage in an intensive education effort that would clarify the true nature and requirements of the transition as a complex, protracted, and nonlinear process with unpredictable eventual technical and managerial details; and create a broad consensus on the need for embarking on the protracted process involved in phasing out fossil fuels. The author briefly outlines an advocated approach based on more than four decades of interdisciplinary energy studies.

Paper can be ordered at <http://worldcat.org/issn/07485492>

Are Consumer or Fuel Economy Policies Efficient?

Author: Carolyn Fischer – 2009

Abstract

This chapter describes how recent increases in oil prices, concern about energy security, and apprehension over global climate change have turned attention to fuel economy policy in the United States (U.S.). The primary mechanism to reduce oil use in the U.S. is the set of corporate average fuel economy (CAFE) standards. Paralleling current concerns of more than three decades ago, the U.S. Congress was worried in 1975 about increasing imports on crude oil, especially from politically and militarily unstable parts of the world. One response was the Energy Policy and Conservation Act of 1975, in which Congress mandated for the first time that passenger cars and so-called light-duty trucks—pickup trucks, minivans, and sport utility vehicles (SUVs)—had to meet fleetwide CAFE fuel economy standards. Working in concert with sharply increasing gasoline prices in the early years of the program, the CAFE standards resulted in significant improvements in fuel economy for both passenger cars and light-duty trucks. In evaluating the costs and benefits of these policy actions regarding fuel economy, the key question is whether consumers or fuel economy policies are economically efficient. If policies to address the problems associated with fuel consumption are inefficient, they can be altered for improvement. Moreover, if consumers exhibit inefficient behavior in their choice of fuel economy in vehicles, those inefficiencies have important effects on the efficiency of fuel economy policies. Either way, the value of the current approach in regulating fuel economy in new vehicles as a cost-effective policy depends on whether or not consumers make inefficient choices

This paper can be ordered at <http://worldcat.org/isbn/9781402069789>

Alternative Fuels and Advanced Technology Vehicles: Issues in Congress

Author: Brent D. Yacobucci - 2009

Summary

Alternative fuels and advanced technology vehicles are seen by proponents as integral to improving urban air quality, decreasing dependence on foreign oil, and reducing emissions of greenhouse gases. However, major barriers—especially economics—currently prevent the widespread use of these fuels and technologies. Because of these barriers, and the potential benefits, there is continued congressional interest in providing incentives and other support for their development and commercialization. Alternative fuels and advanced technology vehicles have been addressed early in the 111th Congress, as both the House and Senate versions of the American Recovery and Reinvestment Act of 2009 (H.R. 1) contained provisions supporting their development and deployment. While some of these provisions were removed in conference, the final version still contains provisions for tax incentives, federal grants and loans, and other federal support for alternative fuels and advanced vehicles. The 111th Congress is likely to further discuss alternative fuels and advanced technology vehicles as it addresses other key topics. These include their role in any federal policy to address climate change, and their role in federal energy policy. The 111th Congress may also play an oversight role in the development of major regulations: the Environmental Protection Agency's implementation of the renewable fuel standard enacted in 2005, and expanded in 2007; the Department of Transportation's implementation of new fuel economy standards enacted in 2007; and the Department of Agriculture's implementation of a new Farm Bill enacted in 2008. In the 110th Congress, alternative fuels and advanced technology vehicles received a good deal of attention, especially in discussions over U.S. energy security. In his January 24, 2007, State of the Union Address, President Bush called for the increased use of renewable and alternative motor fuels to 35 billion gallons annually by 2017. U.S. consumption was roughly five billion gallons in 2006. Therefore, such an initiative would mean a seven-fold increase in the use of these fuels over 11 years. On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140). EISA requires an increase in renewable fuel consumption to 9.0 billion gallons in 2008 and 36 billion gallons in 2022. Further within the 36-billion-gallon requirement, by 2022 the law mandates the use of 21 billion gallons of "advanced biofuels," defined as fuel derived from renewable biomass other

than corn starch, with 50% lower lifecycle greenhouse gas emissions compared to petroleum fuels. The 110th Congress also enacted the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill, P.L. 110-246)—which expanded and extended incentives for biofuels—as well as the Emergency Economic Stabilization Act of 2008 (EESA, P.L. 110-343)—which modified existing fuel tax credits, and established a tax credit for the purchase of plug-in vehicles. This report supersedes CRS Report RL33564, *Alternative Fuels and Advanced Technology Vehicles: Issues in Congress*, by Brent D. Yacobucci.
<http://ncseonline.org/NLE/CRSreports/09Mar/R40168.pdf>

Alternatives to Traditional Transportation Fuels 2007

Abstract

This report presents data on alternative fuels and alternative fuel vehicles available for transportation in 2007. Some of the data tables represent the number of on road alternative fuel vehicles (AFVs) and hybrid vehicles made available by both the original equipment manufacturers and aftermarket vehicle conversion facilities for 2007 and projected for 2008. These data include gasoline-electric and diesel-electric hybrids, which are published separately from electric fuel type categories because they fall outside the Energy Policy Act of 1992 (EPACT92) definition of an AFV. Other data tables displayed represent data on the use of alternative fueled vehicles (AFVs) and the amount of fuel they consume. The Energy Information Administration (EIA) collects data on the following items: 1) The number of AFVs supplied each year; i.e., new AFVs and conventionally fueled vehicles converted to operate on an alternate fuel; 2) For a limited set of fleet user groups, the number of AFVs in use and the amount of alternate transportation fuel consumed.

<http://www.eia.doe.gov/cneaf/alternate/page/atftables/afv-atf2007.pdf>

Consumer Choice of E85: Lessons from Minnesota's Experience

Authors: David Greene, Jason Zhou, W T Wilson - 2009

Abstract

A key objective of U.S. energy policy is to increase biofuel use by highway vehicles to 36 billion gallons per year by 2022. The Energy Independence and Security Act envisions that nearly all of this target will be met by gasohol (E10) or neat ethanol (E85). Since the market for blending ethanol with gasoline at 10% by volume will saturate at about 15 billion gallons, most of the ethanol will need to be sold in the form of E85 unless higher order blends are approved by automakers and the Environmental Protection Agency. The demand for E85 is likely to be very sensitive to the relative prices of E85 and gasoline and to the availability of E85 at retail outlets. The key objective of this study is to estimate the sensitivity of aggregate demand for E85 to the relative availability of E85 versus gasoline at retail outlets, as well as the sensitivity of E85's market share to the prices of E85 and gasoline. Monthly data from the state of Minnesota for the period 1997 to 2008 are used to estimate a model of E85 choice by owners of flexible fuel vehicles. The results indicate that E85 availability at 10% to 20% of retail outlets might be sufficient to achieve a very substantial market share given an appropriate price advantage for E85.

This paper can be ordered at <http://pubsindex.trb.org/orderform.html>

The Future of Energy Use

Authors: Phil O'Keefe, Geoff O'Brien, Nicola Pearsall - 2008

Abstract

The second edition of *The Future of Energy Use* will provide essential analysis of the use of different forms of energy and their environmental and social impacts. Using relevant case studies and providing a vital link between technology and related policy this edition will examine conventional, nuclear, and renewable sources and technologies. The second edition has been developed and updated, including new text, diagrams, and tables, with entire new sections that reflect the significant changes that have occurred since the first edition. New material included in this edition are: (1) a stronger focus on climate change policy and energy security; (2) a discussion of the long run marginal costs of oil; coverage of the biofuels debate in both the developed and developing worlds; (3) an outline of developments in the built

environment (including transport issues); (4) and the relationship between behavior and energy use. It reviews policy shifts with relation to energy efficiency, carbon capture and storage, combined heat and power, and combined cycle gas turbines. This edition will also present new information of nuclear waste, storage and proliferation, as well as new material on micro generation and biofuels, as well as essential new information on carbon markets and the hydrogen economy.

This paper can be ordered at <http://worldcat.org/isbn/9781844075041>

Incorporating transport energy into urban planning

Authors: Michael J. Saunders, Tobias Kuhnimhof, Bastian Chlond, Bastian, Antonio Nelson Rodrigues da Silva – 2008

Abstract

Transport energy resources are largely finite, subject to constraints and a major cause of pollution. Transport-energy planning is not currently included in traditional transport and urban planning. However, transport energy is related to both land use and transport systems therefore transport-energy policy has the ability to positively influence urban design. A new tool has been created, the transport energy specification, which is intended for use within existing local government urban planning frameworks. In order to use this tool, a transport-energy limit is first defined by planning authorities that sets a quantifiable design boundary for urban and transport system development. The transport energy specification is then used to ensure development occurs within the defined design boundary. A case study was performed to demonstrate the required process to achieve a transport energy specification for an urban region. Karlsruhe, Germany was selected for the case study and the results showed that a minimal 0.97 MJ of transport energy per person per week was required, the equivalent energy a 60 W light bulb uses in four and a half hours. This was largely due to high residential density, many activities located within the residential area and the ease and safety of active transport (cycling and walking).

<http://www.sciencedirect.com/science/a...PJ4-1/1/e5088f1ccd0a751b30f769ebb30dabc5>

Tax Credits for Hybrid Vehicles

Author: Salvatore Lazzari – 2008

Abstract

Hybrid vehicles are propelled by a standard gasoline (or diesel) internal combustion engine in combination with an electric motor (and battery storage system), which improves fuel economy. The Energy Policy Act of 2005 replaced a \$2,000 deduction for hybrids with a system of tax credits that vary according to fuel efficiency and estimated lifetime fuel savings, compared with a 2002 comparable gasoline-only model. These credits, which range from \$250 to \$3,400 per vehicle, went into effect on January 1, 2006, and are available through December 31, 2009. However, there is an approximately 60,000-per-manufacturer limit on the number of hybrid vehicles that would qualify for the full credit. Toyota reached its limit in the second quarter of 2006, and the credits for those vehicles are being phased out and will not be available after October 1, 2007. Honda reached its limit in the third quarter of 2007. U.S. manufacturers (primarily General Motors and Ford) produce mostly SUV hybrids, which have seen slower demand. The tax credits for hybrids were enacted to promote energy conservation in the transportation sector by encouraging the demand for fuel-efficient alternative-technology vehicles. The 60,000-vehicle limit was imposed to limit the benefits accruing to foreign hybrid manufacturers, which currently dominate the hybrid market.

<http://ncseonline.org/NLE/CRSreports/08Mar/RS22558.pdf>

The History of Alternative Fuels in Transportation: The Case of Electric and Hybrid Cars

Author: Karl Georg Hoyer – 2008

Abstract

The article describes and presents a critical analysis of the long history of alternative fuels and propulsion technologies, particularly in automobile applications. Cases are electric and hybrid cars. The term "critical analysis" refers to the analysis of the various alternative technologies in relation to their societal contexts.

In particular, these are the varying contexts of energy security, energy policy, environmental problems, sustainability, and also the later more explicit climate change context. This approach gives some knowledge with relevance to the current discussions on implementation issues. The work is first of all founded on the knowledge field of "Social Studies of Technological Systems."

<http://www.sciencedirect.com/science/a...HMY-1/1/2b2092a4510d56234ceba8a4c248f5f9>

Mitigating Greenhouse: Limited Time, Limited Options

Authors: Patrick Moriarty, Damon Honnery – 2008

Abstract

Most human-caused climate change comes from fossil fuel combustion emissions. To avoid the risk of serious climate change, very recent research suggests that emission reductions will need to be both large and rapidly implemented. We argue that technical solutions—improving energy efficiency, use of renewable and nuclear energy, and carbon capture and sequestration—can only be of minor importance, mainly given the limited time available to take effective climate action. Only curbing energy use, perhaps through social efficiency gains, particularly in the high-energy consumption countries, can provide the rapid emissions reductions needed. The social efficiency approach requires a basic rethinking in how we can satisfy our human needs with low environmental impacts. Large cuts in emissions could then occur rapidly, but only if resistance to such changes can be overcome. Particularly in transport, there are also serious potential conflicts between the technical and the social efficiency approaches, requiring a choice to be made.

<http://www.sciencedirect.com/science/a...K2B-3/1/5f9be1dafb108bd3d816d1c48b655c3e>

Folk Quantification of Transportation Energy: An Initial Investigation of Perceptions of Automobile Energy Use

Authors: Julia Leighty, Wayne Silvis, Alex Karner – 2007

Abstract

In this paper the authors seek to document what, if any, divergences exist between how experts and 'lay' people conceptualize the energy used in automobiles, motivated by previously-documented divergences in the home energy sector. From a total of 15 interviews with 19 individuals, we identify several common ways 'lay' people think about automobile energy use, and draw a number of conclusions relevant to the development of transportation energy policy. Our informants thought of automobile efficiency almost exclusively as fuel economy and were aware of it, albeit based on inconsistent methods and varying degrees of rigor. They measure fuel economy almost exclusively in miles per gallon and demonstrated easy familiarity with this measure—they were very comfortable comparing their present cars with past cars, or with other cars in terms of fuel economy. However, the prevalence of this volumetric, more-is-better measure may present challenges for communication as alternative fuels (e.g. electricity) gain market share because such fuels may not comport with this measure in an intuitive way.

http://pubs.its.ucdavis.edu/download_pdf.php?id=1103

Toward a Policy Agenda for Climate Change: Changing Technologies and Fuels and the Changing Value of Energy

Author: Duncan Eggar – 2007

Abstract

This chapter discusses global societal trends and future energy challenges that, on a business as usual basis, indicate a major increase in CO₂ and other greenhouse gas emissions (GHG) by mid-century. The chapter then discusses transport energy policy trends and technology trends in transportation offering an alternative energy future that could significantly reduce the contribution of transportation emissions to climate change.

This paper can be ordered at <http://worldcat.org/isbn/9780123694959>

Transportation and Energy: Policy Dilemmas for the Twenty-First Century

Author: Mary M. Timney – 2007

Abstract

This chapter examines the policy issues that are related to transportation in the United States. It provides an overview of transportation and energy policy in the twentieth century and their relationship with other policy areas, especially air pollution, regional development, and foreign policy. Current policy issues will then be identified and analyzed in a comprehensive way to develop a set of factors that public managers can use to address transportation needs in the future. Transportation provisions of the 2005 Energy Policy Act and other legislation sponsored by the Bush Administration will be examined and future concerns and proposals for innovations in transportation are offered in the conclusion of the chapter. This paper can be ordered at <http://worldcat.org/isbn/ISBN9781574445657>

Lighting the Way: Toward a Sustainable Energy Future

Authors: 1000 GC Amsterdam Netherlands – 2007

Abstract

This report calls upon the expertise of the world's scientists and engineers to help solve the barriers to achieving a worldwide sustainable energy policy. It describes the current state of affairs and predictions for the future; reviewing climate change, global warming, and the impacts these conditions are having and will have on the world. It offers recommendations for action, too. The table of contents lists the following headings: 1. The sustainable energy challenge; 2. Energy demand and efficiency; 3. Energy supply; 4. The role of government and the contribution of science and technology; and 5. The case for immediate action.

<http://www.interacademycouncil.net/CMS/Reports/11840/12039.aspx?returnID=11840>

Economic Instruments for Long-term Reductions in Energy-based Carbon Emissions - 2005

Abstract

Concerns about climate change will clearly be among the many factors driving a coherent energy strategy. The real debate is about how much weight should be given to climate change considerations in energy policy and about the appropriate tools for doing so. To provide more context for this critical issue, the National Round Table on the Environment and the Economy (NRTEE) has explored a scenario in which economic instruments are used as a key tool to promote long-term carbon emission reductions. The operating assumption of our Ecological Fiscal Reform (EFR) and Energy Program was that long-term reductions in energy-based carbon emissions will be one of the main priorities shaping energy strategy.

http://www.nrtee-trnee.ca/eng/programs...FR-Economic-Instruments_FullReport_E.pdf

How Will State Transportation Agencies Handle the Issue of Climate Change: A Case Study from the State of Maryland

Authors: Colleen Reitz Turner, J.A. Frazier, Robert G. Kaiser – 2009

Abstract

Climate change is caused by the accumulation of greenhouse gases (GHG), primarily carbon dioxide, methane, nitrous oxides, and fluorinated gases, in the Earth's atmosphere. While some GHG occurs naturally, there is now very strong evidence that anthropogenic emissions, emitted mainly through the combustion of fossil fuels, are the primary reason for the increase in global temperatures. Recognizing the harmful consequences of leaving GHG emissions unchecked, many states have begun to investigate options for reducing their GHG emissions and addressing the anticipated impacts of climate change. Approximately 38 states have developed or are in the process of developing climate action plans. This paper focuses specifically on the State of Maryland and outlines the State's current course of action and the role of the Maryland Department of Transportation (MDOT) has played up until this point and how the role may evolve given the challenges ahead.

You can order this paper at <http://worldcat.org/isbn/9780784410592>

Integrating Climate Change into State and Regional Transportation Plans

Authors: Frank Gallivan, Jeffrey Ang-Olson, Diane Turchetta – 2009

Abstract

This paper aims to advance the practice and application of transportation planning among state, regional, and local transportation planning agencies to address the relationship between transportation and climate change. The focus of the paper is on long range planning documents as tools for climate change planning. The authors reviewed federal regulations and statutes that govern transportation planning as well as a sample of current planning documents from state Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs). The authors also conducted interviews with four DOTs and eight MPOs that are incorporating climate change into long range transportation plans. The text of federal statutes provides opportunities to link climate change considerations with transportation planning. The current practice in transportation plans varies widely by agency. Climate change can appear in the vision, goals, policies, strategies, trends and challenges, and performance measures of planning documents. Some plans merely recognize that climate change is related to transportation and begin to relate existing plans and strategies to climate change. Other plans make climate change more central to their goals and policies. Some agencies are quantifying green house gases (GHG) emissions related to transportation plans and programs. Quantification will likely be a key component of plans in the future. This research highlighted several types of barriers and needs for agencies considering climate change in transportation plans. The authors review these barriers and provide some simple recommendations for how state DOTs and MPOs can address them.

This paper can be ordered at <http://pubsindex.trb.org/orderform.html>

Assessing State Long Range Transportation Planning Initiatives in the Northeast for Climate and Energy Benefits

Author: David Burwell – 2005

Abstract

This paper discusses long term transportation planning processes being engaged in by state departments of transportation. It specifically analyzes how well these planning processes work to address states' greenhouse gas emissions and energy consumption.

<http://www.climate.dot.gov/publications/docs/final-bbg.pdf>

Climate Change and Transportation in Maine

Maine Department of Transportation, October 2009

Purpose

This document meets two distinct, but related needs. First, it prepares Maine's Department of Transportation (MaineDOT) to respond to the challenges presented in LD 460, Resolve to Evaluate Climate Change Adaptation Options for the State, passed during the First Regular Session of the 124th Maine State Legislature. LD 460 directed the Maine Department of Environmental Protection to "establish and convene a stakeholder group to evaluate the options and actions available to Maine people and businesses to prepare for and adapt to the most likely impacts of climate change." The resulting stakeholder group is comprised of representatives of business, industry, and trade associations; non-governmental organizations; and state agencies with a current interest in these concerns and likely involvement in the implementation of recommendations, including Maine DOT. The LD 460 stakeholders were directed via the legislation to focus on the climate impact assessment, *Maine's Climate Future* (Jacobson et al., 2009), completed by the University of Maine at the Governor's direction. According to this report, climate change is already manifesting itself in Maine as a result of greenhouse gases in the atmosphere. This document summarizes the best available science on observed and projected climate patterns in Maine and is part of the flow of activity following the legislature's passing of LD 460.

Second, this document positions Maine DOT to receive support for its proactive approach from funding and policy agencies such as the Federal Highway Administration (FHWA) because it constitutes a commitment to action. As is summarized in more detail in subsequent sections, climatic variation is felt

through changing weather patterns, which are having increasingly acute effects on Maine's transportation infrastructure. Acute risk occurs as a result of events, such as storms and flooding, while chronic risk surrounds longer range changes due to climate over time. It is acute risk that results in an increased need for disaster designation and response, increased risk of collateral property damage, and threats to the safety of the traveling public. It is this type of risk that can be mitigated by early preparation, and the risk that FHWA seeks to limit proactively through responsible transportation planning. Because of the uncertainty about the future of climate and weather variability and about how people will respond in terms of emission reduction and other long term mitigation measures, chronic risk is much harder to gauge. This uncertainty can create paralysis in an agency charged with making and justifying long-term, fiscally-responsible decisions around the safety and efficiency of public travel. But the long lifecycles of most transportation infrastructure demand early preparation to protect significant taxpayer investments into a reasonably foreseeable future.

<http://www.maine.gov/mdot/environmental-office-homepage/documents/ClimateChangeandTransportationinMaine-Final.doc>

Oregon DOT Efforts On Climate Change – March, 2008

The Oregon Department of Transportation recognizes that the transportation sector in Oregon generates significant greenhouse gases. In fact, transportation sources are responsible for over a third of emissions in the state – roughly the same share as the electric power sector. The department understands that in order to meet the greenhouse gas reduction goals laid out by Governor Kulongoski and the legislature, the state will need to make major changes in the transportation sector. This document outlines the steps the ODOT must take to make these changes and some of the progress it has made to date.

<http://www.oregon.gov/ODOT/SUS/docs/EffortsOnClimateChange2008.pdf>

Briefing Paper: ODOT's Efforts on Climate Change – Nov. 2008

Introduction

Climate Change mitigation encompasses activities devised to reduce the emission of greenhouse gases and thereby limit associated climate change. Climate change adaptation includes actions that would be implemented to respond to the effects of climate change. In its recent background document on climate change and transportation, the Federal Highway Administration listed the four primary climate change mitigation strategies to reduce greenhouse gas emissions from transportation. They are: (1) vehicle technology, (2) low carbon fuels, (3) vehicle miles traveled, and (4) systems efficiencies. The first two strategies are not directly affected by most ODOT activities. The second two mitigation strategies however, can be directly affected by ODOT and along with adaptation strategies characterize the majority of the efforts discussed in this document.

The purpose of this paper is to provide a quick topical listing of ODOT's current climate change efforts to brief both internal parties (managers and staff groups) and external stakeholders interested in the issue. Following this introduction, the paper is organized into three major subgroups of climate change efforts:

- Internal and external efforts which are process-related,
- Efforts related to ODOT's internal operations,
- Efforts related to the external transportation system

<http://www.oregon.gov/ODOT/SUS/docs/BriefingPaperEffortsClimateChange.pdf>

California Department of Transportation Energy Conservation Program

CDOT Website – 2007

Overview

Supported by the Department of Transportation (Department) directives, policies, executive orders and statutory mandates, the Department continues its leadership role in the stewardship of the State's resources with a proactive energy conservation effort and development and deployment of alternative energy generation since the mid-1970s.

Over the years, a number of the Department's energy projects have won state and national awards; such as the Department's continuing light emitting diode (LED) traffic signals upgrade program. The Department's leadership in the development and deployment of the technology has helped to create new jobs and resulted in new LED-based products coming to market.

The primary function of the Department's energy program is to identify, develop, and implement cost effective conservation opportunities for any energy consuming activity within the Department. Currently, the Department is tracking energy usage and potential on-site generation to reduce the State's consumption impact upon the power grid. The Department is considering the deployment of solar energy systems, wind power generation, hydrogen fuel cells for stationary and mobile applications, distributive generation, and hybrid and dual fuel vehicles.

In 2007 and 2008, the Department's Energy Conservation Program started to share energy data with departmental Climate Change and green house gas reduction efforts, and incorporated into the Department's Climate Action report to the California Climate Action Registry (CCAR). Caltrans became a certified member of CCAR in the Spring of 2009.

In the Summer of 2009, the Department's Energy Conservation Program was merged with the Department's Climate Action Team (Currently located in the Division of Transportation Planning.)

As the Department moves into 2010, there are a number of activities that have moved forward in development, deployment, or completion. The following information has been updated to reflect those changes.

<http://www.dot.ca.gov/hq/energy/>

Minnesota Department of Transportation Energy Policy/ Climate Change Initiatives

Slide presentation by Frank Pafko, Director, Office of Environmental Services MN Department of Transportation, 2007

This is a slide presentation outlining the MDOT initiatives and goals addressing climate change in their state.

<http://www.dot.state.co.us/transconf08/presentations/Pafko2.pdf>

Center for Climate Strategies – Helping States and the Nation Tackle Climate Change

CCS Website – no date given

The Center for Climate Strategies (CCS) is helping many public officials and stakeholders in the United States and other countries respond to the challenges posed by global warming and related opportunities for economic development, clean energy, and a safer environment. The map below shows climate action plans underway or completed by U.S. states since 2000, many through CCS processes. The website lets you see current climate change work in select states.

<http://www.climatestrategies.us/>

Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA)

PEEREA Website, 2009

The importance of energy efficiency and its relation to a cleaner environment was already underlined in the 1991 Energy Charter Declaration. The subsequent Energy Charter Treaty, and in particular Article 19 of the Treaty, requires that each Contracting Party minimize, in an economically efficient manner, harmful environmental impacts arising from energy use.

The Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA) was negotiated, opened for signature and entered into force at the same time (16 April 1998) as the Energy Charter Treaty. Building on the provisions of the Treaty, PEEREA requires its participating states to formulate clear policy aims for improving energy efficiency and reducing the energy cycle's negative environmental impact.

By way of contrast to other activities in the Charter process, the emphasis in the work on energy efficiency is not on legal obligations but rather on practical implementation of a political commitment to

improve energy efficiency. This is promoted through policy discussions based on analysis and exchange of experience between the member countries, invited independent experts and other international organizations.

Through the implementation of PEEREA, the Energy Charter provides its member countries with a menu of good practices and a forum in which to share experiences and policy advice on energy efficiency issues. Within this forum, particular attention is paid to such aspects of a national energy efficiency strategy as taxation, pricing policy in the energy sector, environmentally-related subsidies and other mechanisms for financing energy efficiency objectives.

The Charter's Working Group on Energy Efficiency and Related Environmental Aspects

The Working Group on Energy Efficiency and Related Environmental Aspects is the institutional body in the Energy Charter process for the discussion of all matters related to energy efficiency. The Working Group has developed into a valuable forum for policy debate and exchange of experience, and many of the transition economies have used this cooperative process to develop policies, legislation and other measures supporting improvements in energy efficiency.

In November 2008, the Energy Charter Conference appointed Dr Victor Shakhin from Russia Chairman of the PEEREA Group. Dr Shakhin is Counselor at the Permanent Mission of the Russian Federation to the EC. The Group's Vice-Chairmen are Mr. Johan Vetlesen from Norway and Mr. Wolfgang Stinglwagner from Germany.

<http://www.encharter.org/index.php?id=4&L=0>

Green Paper - A European Strategy for Sustainable, Competitive, and Secure Energy.

European Strategies

European Energy Commission, March 2006

Europe is entering a new energy landscape. Our import dependency is 50% today, and certain to rise. Our hydrocarbon reserves are running down. Energy is becoming more expensive. Our infrastructure needs improving; EUR 1000 billion is needed over the next 20 years to meet expected energy demand and replace ageing infrastructure. And global warming has already made the world 0.6°C hotter.

These challenges are common to all of Europe. They require a European response. At the end of 2005, European Heads of State and Government reunited at Hampton Court (United Kingdom) call for a true European Energy Policy.

That is why the European Commission published on 8 March 2006 a Green Paper on developing a common, coherent European Energy Policy. If the EU can take a common approach on energy, and articulate it with a common voice, Europe can lead the global energy debate. The Green Paper will help the European Union lay the foundations for secure, competitive and sustainable energy.

http://ec.europa.eu/energy/strategies/2006/2006_03_green_paper_energy_en.htm

Moving Forward Together on Energy Efficiency

Commission of the European Communities, 2006

In its March 2007 conclusions, the European Council identified energy efficiency as an essential part of the comprehensive strategy on climate change and energy, and stressed the need to achieve the objective of a 20% saving of EU energy consumption by 2020. The European Council added that good use should be made of National Energy Efficiency Action Plans for this purpose. This was also underlined already in 2005 by the European Parliament.

Energy conservation and energy efficiency improvements are of increasing importance in the approach to sustainability and security of energy supply and efforts to reduce greenhouse gas emissions. The National Energy Efficiency Action Plans (NEEAPs) provide practical demonstration of the commitment of Member States. Importantly, the plans provide a means for the sharing of best practices among the many players in energy efficiency, at every level, and for developing synergies among the strategies and measures adopted.

Efficiency improvements already achieved have contributed to a decrease in energy intensity of the EU economy. However, despite this, total energy consumption in Europe is still increasing, with consequent increases in CO₂ emissions and fossil fuel import dependence.

This report is a response by the Commission to its obligation under the Directive on energy end-use efficiency and energy services to assess and report on the NEEAPs. It can only be a partial response at this stage because not all of the Member States have submitted their NEEAPs and few submitted in time to allow for sufficient assessment. Thus, more comprehensive reporting on each of the NEEAPs will be carried out as they are notified to the Commission.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0011:FIN:EN:PDF>

Energy Efficiency Action Plan for France

French Authorities, 2008

The Environment Round Table: A democratic process (presentation of the phases)

On 21 May 2007, the President of the Republic launched an original approach, the "Environment Round Table": the Environment Round Table brought together for the first time the State, the regional authorities and civil society representatives in order to define a roadmap for ecology and sustainable development. Its aim, in particular, is to draw up an action plan of concrete, quantifiable measures with as much agreement as possible from the participants. This plan, the measures of which will be assessed beforehand and afterwards, will be a starting point for mobilizing French society to develop in a sustainable manner.

The Environment Round Table aims to create favorable conditions for the emergence of this new French order for the environment.

http://ec.europa.eu/energy/demand/legislation/doc/neeap/france_en.pdf

Market Transformation Strategies to Promote End-Use Efficiency

Annual Review of Energy and the Environment

Geller, H. and S. Nadel, 1994

Available for purchase at

<http://arjournals.annualreviews.org/doi/abs/10.1146%2Fannurev.eg.19.110194.001505>

May be available through the WSDOT Library - <http://www.wsdot.wa.gov/library/>

Policies for energy efficiency: strategic priorities and challenges

Energy efficiency policy recommendations prepared by the IEA for the G8 under the Gleneagles Plan of Action - International Energy Agency (IEA)

Authors: Nigel Jollands*, Paul Waide, Mark Ellis, Takao Onoda, Jens Laustsen, Kanako Tanaka, Philippine de T'Serclaes, Ingrid Barnsley, Rick Bradley – January, 2009

Executive Summary

The IEA recommends that countries adopt and urgently implement the package of measures outlined in this paper to significantly enhance energy efficiency. This package was developed under the Gleneagles G8 Plan of Action, which mandates the pursuit of a clean, clever and competitive energy future.

All of the IEA recommendations in this package meet strict criteria. That is, a recommendation is justified if it:

- is likely to save a large amount of energy at low cost;
- addresses existing market imperfections or barriers;
- addresses a significant gap in existing policy;
- is supported by a degree of international consensus.

The IEA recommended policy measures to the G8 Summits in 2006, 2007 and 2008. The consolidated set of recommendations from these Summits covers 25 fields of action across seven priority areas: cross-sectoral activity, buildings; appliances; lighting; transport; industry and power utilities.
<http://www.uevf.com.tr/uevf1/sunumlar/pp03-01.doc>

World Energy Outlook

International Energy Agency (IEA) – 2008

IEA Website - 2009

The 2009 edition of the World Energy Outlook (WEO) was released on 10 November and it provides updated projections that take into account the implications of the global credit crisis, the economic slowdown and the recent slump in the prices of oil and other forms of energy. It also presents in-depth analysis of three special topics:

- Financing energy investment under a post-2012 climate framework
- Prospects for global natural gas markets
- Energy trends in Southeast Asia

<http://www.worldenergyoutlook.org/>

Ireland Action Plan under Directive 2006/32/EC

Ireland Department of Communications Energy and Natural Resources – 2007

Executive Summary

This Action Plan is Ireland's response to the requirements of Article 14(2) of the Energy End-Use Efficiency and Energy Services Directive (ESD) 1. The Department of Communications, Energy and Natural Resources is the lead Department in implementation of the ESD in Ireland. The ESD requires Member States to submit an action plan in 2007 setting out how they will achieve energy efficiency savings of 9% by 2016. The ESD envisages Member State's 2007 action plans as preliminary, with more advanced plans to be submitted in 2011 and 2014. Implementation of this Action Plan will be monitored and the Plan updated as needs be, but no later than 2011.

This Action Plan also sets out Ireland's plans for achieving a 20% (33% for the public sector) reduction in energy demand across the whole economy by 2020, including the electricity, transport and heating sectors, in line with Government commitments in the 2007 Government Sustainable Energy White Paper 'Delivering a Sustainable Energy Future for Ireland' and the Programme for Government and echoing the aims of the EU Energy Efficiency Action Plan, published in October 2006.

Energy efficiency is about achieving the same result with less energy. Energy efficiency is a central component of Ireland's sustainable energy policy, as set out in the Sustainable Energy White Paper. The White Paper sets out the energy policy framework for 2007-2020, designed to steer Ireland to a new and sustainable energy future. Energy efficiency helps us reduce greenhouse gas emissions and energy costs. Efficient energy use directly contributes to security of energy supply, sustainable transport, affordable energy, competitiveness and environmental sustainability. Developing energy efficiency products and services will also support jobs and growth in the energy sector. Energy efficiency is therefore a priority for Ireland, as it is for the European Union.

http://ec.europa.eu/energy/demand/legislation/doc/neeap/ireland_en.pdf

Working Paper: Innovations in National Energy Efficiency: Strategies and Actions

The International Energy Agency in association with the European Commission and the European Energy Network - Based on the workshop held at IEA, Paris, October 21, 2008

Authors: Nigel Jollands and Sara Pasquier, Energy and Environment Division, IEA – 2008

Introduction

The necessity to implement energy efficiency measures is now firmly on the political agenda. The G8, IEA member countries and European Union have clearly stated the importance of action on energy efficiency to address energy security, climate change and economic challenges.

IEA analysis shows the cost-effective potential for energy efficiency improvements is huge (2008, a) (2008, b). In order to capture this potential, many countries have developed, or are in the process of developing, national energy efficiency strategies (NEES) and action plans (NEEAP), collectively referred to hereafter as NEESAP. These strategies and action plans can help guide and encourage energy efficiency policy development and implementation by:

- placing energy efficiency policy within the broader policy context;
- prioritizing resource allocation across the energy efficiency portfolio;
- capturing synergies between policies and avoiding duplication;
- allocating responsibility for implementation, monitoring and evaluation.

Given the importance of NEESAP, in May 2007, the IEA Governing Board at the Ministerial Level called on the IEA to “promote the development of efficiency goals and action plans at all levels of government” (2007). In support of its commitment, the IEA, in partnership with the European Commission and the European Energy Network (EⁿR), developed a workshop on ***Innovations in national energy efficiency strategies and action plans***. This workshop provided countries, organizations and individuals involved in the NEESAP process with an important opportunity to share information and exchange innovative ideas. <http://www.iea.org/papers/2009/Innovations.pdf>

Energy efficiency requirements in building codes, energy efficiency policies for new buildings

Author: Laustsen, J. – 2008

Abstract

The aim of this paper is to describe and analyze current approaches to encourage energy efficiency in building codes for new buildings. Based on this analysis the paper enumerates policy recommendations for enhancing how energy efficiency is addressed in building codes and other policies for new buildings. This paper forms part of the IEA work for the G8 Gleneagles Plan of Action.

These recommendations reflect the study of different policy options for increasing energy efficiency in new buildings and examination of other energy efficiency requirements in standards or building codes, such as energy efficiency requirements by major renovation or refurbishment.

In many countries, energy efficiency of buildings falls under the jurisdiction of the federal states. Different standards cover different regions or climatic conditions and different types of buildings, such as residential or simple buildings, commercial buildings and more complicated high-rise buildings.

There are many different building codes in the world and the intention of this paper is not to cover all codes on each level in all countries. Instead, the paper details different regions of the world and different ways of standards. In this paper we also evaluate good practices based on local traditions. This project does not seek to identify one best practice amongst the building codes and standards. Instead, different types of codes and different parts of the regulation have been illustrated together with examples on how they have been successfully addressed.

To complement this discussion of efficiency standards, this study illustrates how energy efficiency can be improved through such initiatives as efficiency labeling or certification, very best practice buildings with extremely low- or no-energy consumption and other policies to raise buildings' energy efficiency beyond minimum requirements.

When referring to the energy saving potentials for buildings, this study uses the analysis of recent IEA publications, including the World Energy Outlook 2006 (WEO) and Energy Technology Perspective (ETP). Here, we based the estimates of potentials on the scenarios presented, in particular on the predictions of consumption in the residential and commercial sectors in the WEO 2006.

Finally, this paper recommends policies which could be used to realize these large and feasible energy saving potentials in new buildings, and the use of building codes by renovation or refurbishment.

The paper addresses as well experts as policy makers and interest groups with particular interest in energy efficiency in new buildings. Some parts might hence seem simplified and known for some experts, such as the discussions on barriers or the climatic impact on efficiency. Other parts might on the other

hand seem a little technical for the policy oriented reader or for some interest groups. But there are large and compelling opportunities, this is recognized by many experts as well as there is a will to act by many policymakers and governments. But still too little happen because there are barriers and low understanding also in the institutional parts or little communications between different layers of the implementation process.

The paper hence aims to bridge these gaps by addressing several different groups at the same time. So hopefully the reader will accept these inconveniences.

http://www.iea.org/g8/2008/Building_Codes.pdf

New Zealand Energy Efficiency and Conservation Authority

Website - 2010 New Zealand

About EECA

The Energy Efficiency and Conservation Authority (EECA) encourages, supports, and promotes energy efficiency, energy conservation, and the use of renewable sources of energy in New Zealand. Energy efficiency is about using less energy to achieve the same result. Energy conservation focuses on avoiding wasting energy. Both result in energy savings. Renewable energy is energy that is self restoring, such as wind or solar.

Our focus is on delivering significant energy savings to New Zealanders, and making wise use of our abundant renewable energy resources.

<http://www.eeca.govt.nz/about-eeca>

Balanced Score Card: Step-by-Step for Governments and Nonprofits

Authors: John Wiley & Sons, Inc. – April 2008

This book provides an easy-to-follow roadmap for successfully implementing the Balanced Scorecard methodology in small- and medium-sized companies. Building on the success of the first edition, the *Second Edition* includes new cases based on the author's experience implementing the balanced scorecard at government and nonprofit agencies. It is a must-read for any organization interested in achieving breakthrough results.

This book can be purchased at <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470180021.html>

It also may be available through the WSDOT Library <http://www.wsdot.wa.gov/library/>