Proposed Work Plan for 2012: APEC Energy Working Group

Proposed Work Plan in Response to Priorities and Decisions of Leaders, Ministers, Senior Officials and Steering Committee on ECOTECH and to Recommendations of the APEC Business Advisory Council

The Energy Working Group (EWG) Work Plan recognizes the directions of APEC Economic Leaders, Ministers and Energy Ministers as a solid foundation for the EWG work program. The themes of energy security, clean energy development and deployment, and sustainable growth raised by Energy Ministers and Leaders are prominent in the Energy Working Group’s activity.

In 2006, APEC Ministers and Economic Leaders reinforced their support and commitment to addressing energy security issues. In their 2007 Declaration on Climate Change, Energy Security and Clean Development, Leaders set forth an APEC-wide target of reducing energy intensity by at least 25 percent by 2030. In 2011, Leaders declared that we “aspire to reduce APEC’s aggregate energy intensity by 45 percent by 2035” and said we should “promote energy efficiency by taking specific steps related to transport, buildings, power grids, jobs, knowledge sharing and education in support of energy-smart low-carbon communities.”

In 2008, Ministers and Leaders noted that “access to adequate, reliable, clean and affordable energy resources is vital to sustaining economic prosperity in the region.” In 2009, they reiterated the need in discussing “Sustaining Growth, Connecting the Region”. In 2010, Leaders adopted a Growth Strategy that is balanced, inclusive, sustainable, innovative and secure. For sustainable growth, they agreed to “enhance energy security and promote energy-efficiency and low-carbon policies” while working “to develop a low-carbon energy sector,” “improve access for environmental goods and services,” “promote green jobs, education and training,” and “promote private investment in green industries and production processes.” In 2011, Leaders agreed to develop a list of environmental goods on which tariffs should be reduced to 5 percent or less, to incorporate low-emissions development strategies into economic growth plans, and to set up a voluntary reporting mechanism on progress in rationalizing and phasing out inefficient fossil-fuel subsidies that encourage wasteful consumption while providing essential energy services to those in need.

At the 7th Energy Ministerial Meeting (EMM) in Korea in 2005, Energy Ministers concluded that rising oil prices and import dependency should be addressed through a balanced approach including increased exploration and development, more fuel-efficient transport, and greater use of alternative transport fuels. In 2007, at EMM-8 in Darwin, Australia, they noted the importance of a diversified mix of power supply sources and more efficient buildings, industry and transport for achieving the region’s security and sustainability goals.

In 2010, meeting at EMM-9 in Fukui, Japan, Energy Ministers noted that “energy-efficient buildings and appliances are key to a sustainable future because the building sector accounts for two-fifths of energy use in the region” and that “smart grid technologies...can help to integrate intermittent renewable power sources and building control systems that let businesses and consumers use energy more efficiently.” Pointing out that “introduction of low-carbon technologies...is vital to manage rapidly growing energy consumption in urban areas,” they asked EWG to establish a Low-Carbon Model Town Task Force “to encourage creation of low-carbon communities.” They also asked the EWG to focus on “the potential fuel and carbon savings from electrification of the transport sector, energy efficient freight, transit-oriented development and other energy-efficient transport strategies,” At the Transportation and Energy Ministerial Conference in San Francisco in 2011, they requested specific actions from EWG and the Transportation Working Group (TPTWG) to advance energy-efficient urban transport and freight transport, and alternative fuels including electric vehicles.
ESCI – Energy Smart Communities Initiative for the Asia-Pacific

In view of APEC Leaders’ focus on sustainable growth with steady employment growth and economic expansion combined with reduced energy intensity, as well as the interest of Energy Ministers in more efficient transport, buildings and smart grids, Japan and the United States launched – the Energy Smart Communities Initiative for the Asia-Pacific (ESCI) that will be implemented through the APEC Energy Working Group. The ESCI effort has four key components – Smart Transport, Smart Buildings, Smart Grids and Smart Jobs – which echo and implement the priorities of Leaders and Energy Ministers. There are also two cross-cutting elements – Low Carbon Model Towns (LCMT) and a Knowledge Sharing Platform.

Smart Transport

Smart transport embodies a variety of practices to reduce the energy use, costs, and carbon emissions from the transport of people and goods. ESCI will develop a network of APEC towns and cities to document and spread best practices for energy-efficient urban transport, including transit-oriented development, bus rapid transit, and congestion management. ESCI will also develop a network of APEC businesses to spread best practices for energy-efficient freight transport, including intermodal strategies to substitute fuel-efficient ships, barges and rail for trucks and logistical strategies to ensure that vehicles travel fuller. Finally, ESCI will examine best practices for the development of infrastructure for alternative fuels, including biofuel and electric vehicles, which can reduce carbon emissions and oil use.

Smart Buildings

Smart buildings incorporate a variety of innovative technologies in energy management, energy-efficient walls, roofs, and windows; improved heating, cooling and ventilation systems; and solar hot water heating and solar cells for electricity generation. ESCI will develop a registry of low-energy buildings, including new buildings that reduce energy use by at least half compared with buildings of similar types in similar climates and retrofitted buildings that reduce energy use by at least one quarter, in order to document and disseminate best practices for improving building energy performance APEC-wide. ESCI will also establish a building materials testing and rating center to provide accurate, consistent performance data on the energy efficiency of roofs, windows and insulation so that consumers and businesses can confidently purchase energy-efficient building components throughout the APEC region. Further, ESCI will conduct demonstration projects for cool roofs that reflect sunlight and possibly for other energy-efficient building components.

Smart Grids

Smart grids utilize a wide range of technologies and practices to make the operation of electric power systems more efficient, facilitate more efficient energy use in buildings and industry, and enable the greater penetration of intermittent renewable power sources. ESCI will develop a network of smart grid test beds that are open to firms in all APEC economies, in order to accumulate performance data that will allow smart grid technology to be widely marketed and traded across the APEC region. In addition, ESCI will help to develop smart grid best practices, including road maps for smart grid technology development and common standards for smart grid interoperability – promoting trade in both the technologies themselves and the electricity that is transported and distributed across borders.

Smart Jobs

Smart jobs revolve around the skills needed to put smart transport, buildings and grids in place – and the consumer awareness and education that will create the demand for them. ESCI will assemble examples of energy efficiency curricula for elementary and secondary schools, which will serve as an information base to develop best practices that economies can use to educate their children and adults to be responsible energy consumers. ESCI will also collect training materials for smart jobs, supporting the development of skills and
qualifications for operating smart grids, conducting energy audits, and installing energy-efficient appliances, equipment, insulation and energy management systems.

**Low-Carbon Model Towns**

Energy Ministers noted at EMM-9 that “introduction of low-carbon technologies in city planning to boost energy efficiency and reduce fossil energy use is vital to manage rapidly growing energy consumption in urban areas.” EMM-9 therefore instructed EWG “to establish a Low-Carbon Model Town (LCMT) Task Force to “develop the concept of a Low Carbon Town, conduct feasibility studies to encourage creation of low-carbon communities in urban development plans, and share best practices for making such communities a reality.” The LCMT Task Force met for the first time in July 2010 in Tokyo and then in June 2011 in Tianjin, China (the first town selected for the first feasibility study) and in October 2011 in Chinese Taipei at EWG 42. More meetings are planned on the margins of upcoming EWG meetings, and Thailand’s Samui Island will be the location of the second feasibility study. LCMT efforts are also a vital cross-cutting component of the Energy Smart Communities Initiative (ESCI), combining elements of smart transport, buildings, power grids and jobs.

**ESCI Knowledge Sharing Platform**

A Knowledge Sharing Platform, including a dedicated website, has been developed with support from Chinese Taipei to facilitate the assembly and exchange of information on smart transport, buildings, grids and jobs, as well as Low Carbon Model Towns, throughout APEC.

**Implementation of the EWG Energy Security Initiative**

The Energy Security Initiative (ESI) is the principal mechanism through which the EWG addresses the short and long term energy security challenges in a sustainable manner in APEC. The ESI comprises a series of short-term measures to respond to temporary energy supply disruptions and longer-term policy responses that are practical and achievable to address the broader challenges facing the region’s energy supply. Short term measures include the Joint Oil Data Initiative (JODI), maritime security, real-time emergency information sharing system, and energy emergency responses (including oil stocks). Long term measures include natural gas trade, energy investment, energy efficiency, renewable energy, clean fossil energy, alternative transportation fuels, nuclear energy, hydrogen and fuel cells, methane hydrates, and petroleum infrastructure and crude and refined products. ESI measures are implemented through expert groups on energy data and analysis, clean fossil energy, energy efficiency and conservation, and new and renewable energy technologies, as well as task forces on biofuels and energy trade and investment. A major support role is also played by the Asia-Pacific Energy Research Centre (APERC) in Tokyo.

**SHORT-TERM MEASURES**

**Joint Organizations Data Initiative (JODI)**

APEC’s contribution to JODI is managed by the Expert Group on Energy Data and Analysis (EGEDA). APEC member economies submit data to JODI in eleven product categories. There has been a continuing improvement in the timeliness and completeness of data reported under JODI. JODI has recently been extended to include natural gas data.

**Maritime Security**

The EWG and the Transportation Working Group (TPTWG) have agreed to share information on maritime security issues associated with LNG and oil tankers in port.
Real-time Emergency Information Sharing System (RTEIS)

The Real Time Emergency Information Sharing System (RTEIS), developed by Japan, is a secure web-based tool for sharing information in the event of energy emergencies and disruptions that may have a flow-on effect to other APEC Economies. A newsletter about the RETIS activities is issued bimonthly; it is available at www.ieej.or.jp/egeda/real-time/.

Energy Emergency Responses, including Oil Stocks

Host economies to EWG meetings report their energy emergency response arrangements on a voluntary basis. Economy reports are available on the EWG website. At EMM-9, Energy Ministers instructed the EWG “to develop joint programs with the International Energy Agency (IEA) to improve response to oil and gas emergency situations in the APEC region, such as energy response workshops and exercises.” An Emergency Response Training (ERT) exercise was hosted by IEA in Paris on September 13-17, 2010, with training for officials from non-IEA APEC economies on IEA oil and gas security policies and practices, emergency preparedness policy, legislation and response structures, emergency planning and preparation, bilateral emergency preparedness programs between IEA and partner economies, data gathering for oil and gas markets, and data analysis to assess the impact of supply disruptions. In coordination with IEA, the First Regional Emergency Response Activity workshop for APEC and the Association of South East Asian Nations (ASEAN) was organized in Bangkok on May 2-3, 2011 with a focus on contingency planning for oil and gas supply disruptions.

LONG-TERM MEASURES

Energy Investment

In response to Leaders’ directives to promote open trade and investment, as well as EMM-8 instructions to facilitate investment and trade in oil markets, to attract energy investment, and facilitate cross-border trade, an APEC Energy Trade and Investment Task Force (ETITF) has been organized, and projects related to energy investment have been undertaken. An Australian-funded APEC Energy Trade & Investment Roundtable (Cairns, 30 September–2 October 2008), developed a Plan of Action for removing barriers to energy trade and investment and contributing to greater regional economic integration which was refined and presented to EWG members at EWG36 (Philippines, December 2008). The ETITF met at EWG37 (Chile, April 2009), EWG38 (Indonesia, November 2009), EWG39 (Japan, March 2010), EWG40 (Brunei, November 2010), EWG41 (Canada, April 2011), and EWG42 (Chinese Taipei, October 2011).

Australia chairs the ETITF and has funded a ‘Survey on Climate Change Policies and Other Approaches to Reducing Greenhouse Gas Emissions in APEC Economies’ in response to the observation at the ETI Roundtable that the lack of a predictable carbon value in the market place may serve as a significant barrier to clean energy investment. Projects to promote trade in clean energy goods and services through improved information on standards and testing methods for appliances and building components are also anticipated. Details on these projects are offered in the description of energy efficiency activities below.

Natural Gas Trade

The LNG Public Education and Communication Information Sharing Initiative, endorsed by EMM-8 and implemented by Chinese Taipei, is a mechanism for APEC member economies to disseminate information to the public on the benefits of LNG and gas as a safe, reliable and cleaner fuel source. The Expert Group on Clean Fossil Energy has produced a report on Case Studies of Public Education and Information Campaigns in APEC Economies, and Development of Best Practice Guidelines.
Energy Ministers noted at EMM-9 that "enhanced natural gas production and trade, drawing upon new discoveries, can ease the transition to a low-carbon economy since gas has a far lower carbon footprint than other fossil fuels for power production and enables greater use of intermittent renewable energy sources." Unconventional gas resources can also boost the region’s energy security by making it more self-sufficient. EMM-9 asked EWG “to conduct an Unconventional Gas Census to evaluate the potential of unconventional resources and to recommend cooperative actions which could increase natural gas output, boost natural gas trade and use, and moderate natural gas prices to the extent appropriate both for producers and consumers in the APEC region.” A concept note for the Unconventional Gas Census was considered at EWG-40 in November 2010, and a project is underway to scope the extent of planned and existing unconventional gas surveys in the APEC region. Statistics on gas production, stocks and trade in APEC are compiled from APEC economies on a monthly basis through the Expert Group on Energy Data and Analysis (EGEDA).

**Energy Efficiency**

APEC Leaders have recognized that improving energy efficiency is a "cost-effective way to enhance energy security and address greenhouse gas emissions while promoting economic growth and development." They have aspired to reduce APEC-wide energy intensity by 45 percent by 2035 (with 2005 as the base year); encouraged all APEC economies to set individual goals and action plans for improving energy efficiency; and agreed to facilitate and review progress through the voluntary APEC Peer Review of Energy Efficiency (PREE). Energy efficiency efforts are therefore high on the EWG’s agenda. The Expert Group on Energy Efficiency and Conservation (EGEEC) has a wide variety of projects on policies and best practices for promoting energy efficiency and on energy efficiency standards and testing methods. The APEC Support Fund (ASF) Sub-fund for Energy Efficiency provides resources for this work.

**Projects Related to Energy Efficiency Policies and Best Practices in 2012**

- APEC Peer Review on Energy Efficiency (PREE)
- APEC Cooperative Energy Efficiency Design for Sustainability (CEEDS)
- Energy Saving Window Thermal Performance Simulation Training (proposed)
- Energy, Transport and Environmental Benefits of Intermodal Freight Transport
- Energy, Transport and Environmental Benefits of Transit-oriented Development
- Combined Heat and Power (CHP) Technologies for Distributed Energy Systems (proposed)

**Projects Related to Energy Efficiency Standards and Testing Methods in 2012**

- Survey of Market Compliance Mechanisms for Energy Efficiency Programs
- Development and Harmonization of Standards for Indoor Light-Emitting Diodes
- Engagement by APEC Economies in International “Smart Appliance” Standards for Air Conditioners and Other Appliances
Energy Efficiency Project Activity Highlights

APEC Energy Peer Review Mechanism on Energy Efficiency (PREE)

EWG members at EWG35 (Peru, March 2008) endorsed Japan's proposal for the PREE, incorporating the following objectives:

- sharing information on energy efficiency performances as well as on policies and measures for improving energy efficiency;
- providing opportunities for learning from other APEC economies’ experiences and for broadening the network among energy efficiency policy experts;
- exploring how energy efficiency goals on an overall and/or sectoral basis and action plans could be effectively formulated in the APEC economies under review, taking into account the diversity of possible strategies that could be used, according to the circumstances of individual member economies;
- monitoring progress toward attaining the energy efficiency goals on an overall and/or sectoral basis and action plans, if such goals and action plans have already been formulated at the time of the review; and
- providing recommendations (for voluntary implementation) on how the implementation of the above action plans could be improved with a view to achieving energy efficiency goals.

The first four voluntary Peer Reviews of Energy Efficiency, conducted by visiting teams at the request of interested economies, were held in 2009: Chile, New Zealand, Thailand and Viet Nam. Three more Peer Reviews were conducted in 2010: Malaysia, Peru and Chinese Taipei. Another two took place in 2011: Indonesia. Another is anticipated in 2012, in the Philippines, as well as the first follow-up PREEs for Thailand and Viet Nam to review their success in implementing the recommendations that were made by the PREE review teams in 2009. APERC conducted a survey of energy efficiency policies which was published as a compendium in early 2010. A revised compendium of energy efficiency policies in APEC was published by APERC in 2011, and another will appear in 2012.

APEC Cooperative Energy Efficiency Design for Sustainability (CEEDS)

The CEEDS projects aim to provide a series of intensive looks at energy efficiency opportunities in key energy-consuming sectors. In each project, a group of experts from APEC economies first conducts a workshop to discuss key issues, then conducts follow-up analysis of these issues, and finally conducts a concluding workshop to endorse key findings. The first CEEDS exercise, conducted in 2009-10, was focused on energy efficient appliances. It has identified lighting, refrigerator-freezers, air conditioners, motors, electronic standby as the five most important energy-intensive appliance types on which attention should be focused – for example in terms of developing efficiency standards and harmonized testing methods to promote trade. The second CEEDS exercise, conducted in 2010-11, was focused on energy-efficient building components. The third CEEDS exercise, taking place in 2011-12, is focused on energy-efficient urban passenger transport. The fourth CEEDS exercise, anticipated for 2012-13, might focus on energy-efficient freight.
APEC Energy Standards Information System (APEC ESIS)

APEC ESIS facilitates the exchange of information, knowledge and experience through the comprehensive APEC ESIS website, providing government and industry stakeholders with information on testing standards, minimum energy performance standards and labelling requirements for a range of equipment traded in the APEC region and provides links to other international data (website is www.apec-esis.org). Energy Ministers at EMM-9 instructed EWG to strengthen APEC ESIS in cooperation with the Major Economies Forum (MEF), and support is being provided by the Super-efficient Equipment and Appliances Deployment (SEAD) initiative of the Clean Energy Ministerial that is implementing MEF technology plans.

Collaborative Assessments of Standards and Testing (CAST)

Energy Ministers at EMM-9 instructed EWG “to conduct a series of Collaborative Assessments of Standards and Testing (CAST)” for energy-intensive appliances identified by CEEDS. The Super-efficient Equipment and Appliances Deployment (SEAD) initiative of the Clean Energy Ministerial has agreed to provide support for the CAST exercise. The first CAST exercises will likely focus on room air conditioners and refrigerators.

Energy Intensity Reduction Indicators

Development of consistent and reliable energy efficiency indicators is key to gauging progress towards Leaders’ aspiration to reduce APEC’s aggregate energy intensity by 45 percent by 2035. Following workshops on energy indicators in 2006 and 2007 (Japan, 26–27 October 2006; Australia, 7–8 November 2006; Singapore, 17–21 September 2007), the EGEE&C will continue to share information with the IEA on development of energy indicators. EGEE&C and EGEDA will also collaborate in the development of energy indicators, and met jointly in New Zealand on 3 February 2010 to explore the possibilities. Both groups will follow through on development of energy efficiency indicators in 2012.

Energy and Transport

At the Transportation and Energy Ministerial Conference in San Francisco in 2011, Energy and Transport Ministers directed the EWG and Transportation Working Group to:

(1) Assess the measures APEC economies could take in the transportation sector to be more energy efficient, and to identify additional areas of collaboration.

(2) Develop performance measures for gauging the impact of livability-driven interventions to reduce transport times, energy use and carbon emissions, with initial measures available for review by Energy Ministers in 2012 and Transportation Ministers in 2013. (This challenge will be taken up by EGEEC in cooperation with TWG and EGEDA.)

(3) Develop activities and best practices for reducing energy consumption and carbon emissions from urban transport, building upon the LCMT Project, promoting the ESCI, and obtaining expert advice through the CEEDS project. (The ESCI project on energy efficient urban transport is relevant in this regard, as well as LCMT and CEEDS.)

(4) Identify and study appropriate strategies, approaches and best practices for promoting efficient and alternative-fueled vehicles, including electric drive vehicles, based on life cycle assessments. (ESCI activities on electromobility roadmaps and electric drive vehicle demonstrations were noted in this regard.)

(5) Cooperate on best practices for the development of aviation biofuels, in coordination with the International Civil Aviation Organization (ICAO). (Such best practices might be considered by the Expert Group on New and Renewable Energy Technologies.)
(6) Consider strategies and best practices for energy efficiency improvement in freight transportation, in consultation with industry. (The ESCI project on energy efficient freight transport was noted in this regard.).

**Renewable Energy**

Leaders have welcomed international partnerships on renewable energies, and EMM-8 encouraged the development of clean renewable technologies for power generation. The EWG’s Expert Group on New and Renewable Energy Technologies (EGNRET) has a variety of projects underway to facilitate use of renewable energy technologies in the APEC region.

Energy Ministers at EMM-9 noted that “smart grid technologies, including advanced battery technologies for highly-efficient and cost-effective energy storage, can help to integrate intermittent renewable power sources and building control systems that let businesses and consumers use energy more efficiently, and they can also help to enhance the reliability of electricity supply, extend the useful life of power system components, and reduce system operating costs.” EMM-9 instructed EWG “to start an APEC Smart Grid Initiative (ASGI) to evaluate the potential of smart grids to support the integration of intermittent renewable energies and energy management approaches in buildings and industry.” A concept paper for ASGI was approved at EWG-40, and a work plan was elaborated at EWG-41 and -42. Smart grid road maps are being considered for development of interoperability standards between smart grids, advanced metering infrastructure to boost use of renewable and energy conservation, electric vehicle charging infrastructure, support of distributed energy sources like small renewable power plants, and microgrids for small or isolated communities. These road maps are being elaborated through a variety of current and proposed projects. A network of smart grid test beds is being developed, in cooperation with the ESCI smart grid test bed task and the International smart Grid Action Network (ISGAN). Interoperability standards are being encouraged through the APEC Regulatory Cooperation Advancement Mechanism on Trade-Related Standards and Technical Regulations (ARCAM) as well. EGNRET members are monitoring the smart grid projects in cooperation with EGEEEC.

**Renewable Energy Projects in 2012**

- Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in the APEC Region (jointly with EGEEEC)
- Solar Photovoltaic Standards and Conformance Measures – Survey and Workshop (with Subcommittee on Standards and Conformance, Committee on Trade and Investment)
- Prospects for Marine Current Energy Generation in the APEC Region
- APEC Workshop on Paths toward Sustainable Low Carbon Economies Based on Rational Use of Renewable Energies

**Smart Grid Projects in 2012**

- Addressing Challenges of Advanced Metering Infrastructure (AMI) Deployment in APEC
- Piloting Smart Microgrid Projects for Insular and Remote Localities in APEC Economies
- Promotion of Energy Efficiency and Renewable Energy in Low Carbon Model Town of APEC through Distributed Energy Sources – Identification of Potential, Challenges and Solutions
- Study of Demand Response’s Effect in Accommodating renewable Energy Penetration in the Smart Grid (proposed)
- Small Hydro and Renewable Grid Integration Workshop (proposed)
- Christchurch Smart Energy Grids: Earthquake Recovery Project (proposed)
Clean Fossil Energy

The Expert Group on Clean Fossil Energy (EGCFE) undertakes research and shares timely information regarding technical, economic, and policy aspects of fossil energy production and the promotion of clean fossil energy options. Broadly speaking, the EGCFE projects relate to natural gas trade, cleaner use of coal for power, and carbon capture and storage.

Natural gas projects focus especially on the benefits of liquefied natural gas (LNG) as an option for reducing carbon emissions in the power sector by displacing coal, as gas has roughly half the carbon emissions of coal per kilowatt-hour of electricity production.

Clean coal projects focus on efficiency and design options for reducing emissions of conventional pollutants such as sulfur dioxide, nitrogen oxide and particulates, which can have major consequences for public health. Energy Ministers at EMM-9 instructed EWG “to develop an initiative for deploying advanced clean coal technologies … to make coal-fired power plants more efficient.” EGCFE is drafting such an initiative for EWG consideration.

Carbon capture and storage projects focus on technical options for separating carbon from emissions streams of coal-fired power plants on which many APEC economies rely for a large proportion of their electricity production, as well as on safe, reliable means of storing carbon dioxide for long periods of time. Energy Ministers at EMM-9 instructed the EWG “to extend and reinforce it analysis of technology options for CCS and its dissemination of best practices for applying these technologies to new and existing power plants.” A project on planning and cost assessment guidelines for making new coal-fired power plants carbon-capture ready was completed in 2010. Capacity building on CCS technology has been undertaken in China, Mexico, and Indonesia based on training materials developed by EGCFE, and will continue in 2011 with workshops in Malaysia, Thailand, and Viet Nam.

Leaders declared in 2009 a commitment “to rationalize and phase out over the medium term fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of proving those in need with essential energy services. Energy Ministers reiterated this commitment in the Fukui Declaration issued at EMM-9 and instructed EWG to work with IEA “to analyse remaining inefficient fossil fuel subsidies that encourage wasteful consumption with a view to their rationalization and phase out;” this analysis was completed in 2011. In addition, EWG has pursued a study on best practices that economies have used to reduce fossil fuel subsidies while protecting the poor, which should be completed in early 2012. Further, pursuant to Leaders’ instructions in 2011, EWG has set up a voluntary reporting mechanism on progress in reducing such subsidies, along lines endorsed at EWG-42, and economies will be encouraged to volunteer their progress reports beginning in 2012.

Projects on Fossil Fuel Subsidy Reduction in 2012

Phasing Out Fossil Fuel Subsidies to Reduce Waste and Limit CO₂ Emissions While Protecting the Poor (in progress)

Projects on Natural Gas Trade in 2012

APEC Unconventional Gas Census: Evaluating the Potential for Unconventional Gas Resources to Increase Gas Production and Contribute to Reduced CO₂ Emissions

APEC Unconventional Gas Expert Workshop

Projects on Efficient Coal Use and Carbon Capture and Storage in 2012

Increasing the Knowledge and Awareness of Carbon Capture and Storage: CCS Capacity Building in the APEC Region (Phase V)

Permitting Issues Related to New Coal-Based Power Plants, including Carbon Capture and Storage, in Developing APEC Economies
Feasibility of Accelerating the Deployment of Carbon Capture, Utilization and Storage (CCUS) in APEC Developing Economies

Maximizing the Energy efficiency and Clean Utilization of Low Rank Coals through Innovative Technologies in APEC Economies

Promoting the Technologies of Low-Carbon Power Generation and Low-Cost CO₂ Capture in APEC Developing Economies (proposed)

**Alternative Transportation Fuels**

The APEC Biofuels Task Force was established at EWG31 (Singapore, May 2005) with a remit to focus on biofuel resource potential, infrastructure, vehicles, economics and trade and instructions to report consensus findings to APEC Energy Ministers at EMM8. Seventeen Member economies have participated in the Biofuels Task Force. At EMM8, the Task Force reported that biofuels from a wide variety of crops were cost-competitive at current oil prices; that biofuels can reduce greenhouse gas emissions and that biofuels can displace a substantial share of petroleum use over time. More detailed analyses sponsored by the Task Force have found that biofuels from farm and forest residues could potentially displace as much as one-fifth of the region’s crude oil imports, while biofuels such as grasses that are grown on marginal lands that are poorly suited to food production might displace another fifth of crude oil imports if they could be economically developed. A survey of sustainable biofuel development practices documented a wide variety of planning and research activities, as well as regulatory and voluntary initiatives. The Task Force completed its work at the end of 2011, but follow-on analyses may be considered by EGNRET which has also begun monitoring projects on electric vehicles and the use of electricity as a fuel.

**Electric Vehicle Projects in 2012**

Status, Potential, Barriers and Opportunities of Electric Vehicles (Cars and Buses) in APEC

Stock-take of Electric Vehicle Interface with Electricity and Smart Grids Across APEC Economies and the Potential for Harmonization

APEC Workshop on Energy and Green Transport Benefits of Electric Vehicles

**Nuclear Energy**

In the "Declaration on Climate Change, Energy Security and Clean Development", Leaders said: "for those economies which choose to do so, the use of nuclear energy, in a manner ensuring nuclear safety, security and non-proliferation in particular its safeguards, can also contribute." Energy Ministers noted at EMM-9 that "A growing number of interested economies are using nuclear power to diversify their energy mix and limit carbon emissions. These economies are reaffirming their international commitment to safety, security and non-proliferation as the fundamental elements for the peaceful use of nuclear energy." EMM-9 instructed EWG “to undertake a Nuclear Power Emissions Reduction Potential Study (NUPERPS) on the potential for existing and planned nuclear power plants in interested APEC economies to reduce carbon emissions.” A concept note for NUPERPS was considered at EWG-40 in Brunei in November 2011. As a first step, interested economies were invited to share their internal analyses of the emissions reductions from nuclear power. Following the tragic accident at Fukushima in March 2012, there has been renewed interest in considering safety and resiliency of nuclear facilities in response to natural disasters.
Hydrogen and Fuel Cells

A number of APEC Economies, including Australia, Canada, the People’s Republic of China, Japan, the Republic of Korea, Malaysia, New Zealand, Singapore, Chinese Taipei, Thailand and the United States, have programs or projects focused on developing and demonstrating hydrogen and/or fuel cell technologies. EWG delegates report on relevant developments. APEC members of the International Partnership for the Hydrogen Economy (IPHE), whose goal is to "efficiently organize and coordinate multinational research, development and deployment programs that advance the transition to a global hydrogen economy, include Australia, Canada, China, Japan, Korea, New Zealand, Russia and the United States.

Methane Hydrates

Several APEC economies are actively developing techniques to detect and produce methane from hydrates. These include Canada, Chile, China, Japan, Korea, New Zealand and the United States. Significant research and development is still needed. No one in the world has produced commercial-scale volumes of methane from hydrate. Methods to locate and define potential methane hydrate volumes before drilling are needed. Concerns about methane release to the atmosphere also must be defined and mitigated.

Petroleum Infrastructure and Crude & Refined Products

In their "Declaration on Strengthening our Community, Building a Sustainable Future", APEC Leaders "recognised the ongoing economic risks associated with high and volatile energy prices and affirmed that rising energy demand in the Asia-Pacific can best be met by expanded trade and investment to boost supply and greater efficiency in use". EMM-8 noted the importance of facilitating investment and trade in upstream and downstream oil markets, through transparent, credible, equitable, effective legal and regulatory frameworks.

Cross-Cutting Projects Relating to Long-Term Measures

Building upon the highly successful Peer Review of Energy Efficiency, which has already engaged voluntary reviews of energy efficiency policies in one third of all APEC economies, APEC member economies agreed at EWG-40 in November 2010 to commence a parallel APEC Peer Review on Low-Carbon Energy Policies (PRLCE). This responds to Energy Ministers’ instruction at EMM-9 to explore mechanisms to encourage APEC economies to set individual goals and action plans for introducing low-emissions power sources. It will complement PREE and have a focus on the supply side, including renewable energy options. The PRLCE will be launched in 2012 with reviews of Malaysia and Thailand.

Cross-Cutting Green Energy Projects in 2012

APEC Peer Review on Low-Carbon Energy Policies (PRLCE) – Phase 1
APEC Low-Carbon Model Town Forum – Phase 2

ASIA PACIFIC ENERGY RESEARCH CENTRE (APERC)

APERC's primary objective is to foster understanding among APEC economies of global, regional and domestic energy demand and supply trends, energy infrastructure development, energy regulatory reform and related policy issues in view of regional prosperity. APERC advocates rational energy policy formulation and enhances capacity building in energy research in the region. In making draft project proposals, APERC consults
with the Expert Group on Energy Data and Analysis (EGEDA). APERC reports to EWG regarding its activities, achievements and budget for EWG’s review and its guidance.

**Expert Group on Energy Data and Analysis - Ongoing Project**

Operation of the APEC Energy Database

**Recently Completed APERC Publications** [available from www.ieej.or.jp/aperc/]

- Understanding Energy in China
- Energy Efficiency in the APEC Region
- Urban Transport Energy Use in the APEC Region
- APEC Energy Overview 2010
- APEC Energy Statistics 2009
- Understanding International Energy Initiatives in the APEC Region
- APEC Energy Demand and Supply Outlook 4th Edition
- Understanding Energy in China (Geographies of Energy Efficiency)
- APEC Peer Review on Energy Efficiency – 2009 (Chile, New Zealand, Thailand, Vietnam)
- APEC Peer Review on Energy Efficiency – 2010 (Malaysia, Peru, Chinese Taipei)
- APEC Peer Review on Energy Efficiency – 2011 (Indonesia, Philippines)

**ANTICIPATED ACTIVITIES WITH OUTSIDE ORGANISATIONS**

In their "Declaration on Climate Change, Energy Security and Clean Development", APEC Leaders welcomed work underway in international partnerships. At EMM-8, Energy Ministers noted that cooperation and partnership are essential to addressing energy security and environmental challenges that extend beyond the sphere of any single economy or the APEC economies as a group. Energy Ministers directed EWG to advance collaboration with the International Energy Agency (IEA) and other international energy fora. The EWG has accorded guest status to the International Energy Agency (IEA). EWG/IEA collaborative activities have focused on emergency preparedness, energy indicators, clean coal technology, renewable energy, and study of the benefits of reducing fossil fuel subsidies.

The EWG is also cooperating with the Super-efficient Equipment and Appliances Deployment (SEAD) initiative of the Clean Energy Ministerial on the Cooperative Assessment of Standards and Testing (CAST) and strengthening of APEC-ESIS, as noted above.

**CROSS-CUTTING ISSUES AND COORDINATION ACROSS FORA**

The EWG is progressing collaboration with the APEC Transportation Working Group to follow up on the Transportation and Energy Ministerial Conference. Projects on transit-oriented development and intermodal freight will be completed in 2012 as noted above. We will work together to initiate ESCI efforts on efficient urban transport and freight transport.

Cooperation with the Committee on Trade and Investment, Subcommittee on Standards and Conformance is taking place on various EGEEC-sponsored projects as well as SCSC-sponsored projects on energy managements systems, energy efficiency certification for green buildings, and standards and testing methods for photovoltaic power cells.
EXPECTED OUTCOMES/DELIVERABLES FOR 2012

Strengthen the Energy Smart Communities Initiative (ESCI) with clearer and more specific commitments from more economies to participate actively in agreed activities on smart transport, smart buildings, smart grids and smart jobs, as described above.

Continue implementing the Peer Review of Energy Efficiency (PREE) through APERC, following four reviews performed in 2009 (Chile, New Zealand, Thailand and Viet Nam), three in 2010 (Malaysia, Peru and Chinese Taipei), and one in 2011 (Indonesia) with a PREE in the Philippines and “follow-up” PREEs in two economies on how they have carried out PREE recommendations made earlier (Thailand and Viet Nam) in 2012. Publish an updated Compendium of Energy Efficiency Policies of APEC Economies through APERC with economy inputs. Initiate a new Peer Review on Low Carbon Energy (PRLCE) in two economies (Malaysia and Thailand).

Continue implementing the Cooperative Energy Efficiency Design for Sustainability (CEEDS). Complete work on CEEDS Phase 3 on energy-efficient urban transport. Commence work on CEEDS Phase 4 on energy-efficient freight transport or other sector.

Intensify work on standards and testing methods for key energy-intensive appliances and building components, through cooperation with the committee on Trade and Investment (CTI) and its sub-fora such as the Sub-Committee on Standards and conformance, so that all APEC economies can count on the energy efficiency of equipment they import, thereby boosting trade and helping economies to meet APEC’s energy intensity reduction target.

Implement projects on policies and best practices to promote energy efficiency in APEC economies, as well as projects on efficiency standards and testing methods, as detailed above, through the Expert Group on Energy Efficiency and Conservation (EGEEC).

Undertake projects on renewable energy, as detailed above, through the Expert Group on New and Renewable Energy Technologies (EGNRET).

Undertake projects on natural gas trade, cleaner production of coal-fired power, and carbon capture and storage, as described above, through the Expert Group on Clean Fossil Technologies (EGCFE).

Continue projects to address energy investment and trade barriers in the APEC region, pursuant to the APEC Energy Trade and Investment Study and Roundtable (Australia, September 2008) and the Energy Trade and Investment Action Plan endorsed at EWG37.

Further implement initiatives requested by the Ninth Energy Ministers Meeting (EMM-9) including the Low Carbon Model Town Task Force, APEC Smart Grid Initiative, APEC Unconventional Gas Census, and Nuclear Power Emissions Reduction Potential Study.

Follow up on directives from the APEC Transportation and Energy Ministerial Conference to move forward on energy-efficient freight and passenger transport and alternative fuels.

Encourage voluntary reports by economies on rationalization and phase-out of inefficient fossil fuel subsidies, utilizing the reporting mechanism that EWG has developed.