

# **United States-ASEAN Energy Cooperation Work Plan 2012-2014**

## **I. PREAMBLE**

Recognizing the cooperation between the United States and the Association of Southeast Asian Nations (ASEAN) on energy issues completed under the *2006-2011 Plan of Action to Implement the ASEAN-U.S. Enhanced Partnership*,

Recognizing that the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> U.S.-ASEAN Leaders' Meetings reinforced the commitment to cooperate on energy issues, including cooperation to accelerate the deployment of clean energy technologies,

Recognizing the commencement of a phased approach to energy engagement between the United States and ASEAN following the 1st U.S.-ASEAN Senior Officials Meeting (SOME) in 2010,

And recognizing the commitment made in the *2011-2015 Plan of Action to Implement the ASEAN-U.S. Enhanced Partnership* to support ASEAN institutional capacity building in implementing the ASEAN Plan of Action on Energy Cooperation 2010-2015,

The United States and ASEAN at the 3<sup>rd</sup> U.S.-ASEAN SOME stated their intention to implement this three year U.S.-ASEAN Energy Cooperation Work Plan.

## **II. FOUR AREAS OF U.S.-ASEAN ENERGY COOPERATION**

The ASEAN Plan of Action on Energy Cooperation 2010-2015 (APAEC 2010-2015) details seven Program Areas of Cooperation among ASEAN member countries to achieve their common energy goals. The U.S.-ASEAN Energy Cooperation Work Plan 2012-2014 focuses on four of the seven to accelerate the deployment of clean energy technologies: 1) Energy Efficiency & Conservation, 2) Renewable and Clean Energy, 3) Civilian Nuclear Energy, and 4) Natural Gas.

### **1. Energy Efficiency & Conservation**

The APAEC 2010-2015 notes that “*energy efficiency is viewed as one of the most cost-effective ways of enhancing energy security and addressing climate change as well as promoting competitiveness in the ASEAN Member States.*” The United States wholeheartedly shares this sentiment. The 1<sup>st</sup> U.S.-ASEAN SOME stated that the phased approach to our new energy cooperation would begin with a workshop focused on best practices of energy efficiency standards & labeling (EES&L). In addition to the ongoing cooperation on energy efficiency & conservation with ASEAN Member States bilaterally and through multilateral fora<sup>1</sup>, the United States would like to propose three cooperative activities with ASEAN:

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<sup>1</sup> See Appendix 2.

- **Energy Efficiency Education & Curriculum Development** – APAEC 2010-2015 states that it is an objective “to enhance institutional and human capacity emphasizing the development of energy efficiency technology.” Recognizing the indispensable role formal education will play in building that capacity, ASEAN specifically requested U.S. support in energy efficiency education and curriculum development.

In 2012, in conjunction with the 30<sup>th</sup> SOME, DOE and its partners will conduct a workshop in Phnom Penh, Cambodia, with the purpose of sharing ideas practiced in the United States regarding the teaching of energy efficiency concepts at the university level. The workshop will include, but not be limited to, the presentation of a curriculum for an energy efficiency course that is geared toward training university students to practice these lessons in their future work in engineering, architecture, and other fields. The universities that comprise the ASEAN University Network, and other universities in the ASEAN Member States will be welcome to adopt the ideas shared at the workshop into their own university curricula.

- **Vehicle Fuel Efficiency**—Since 1995, ASEAN has been a net oil importer and oil consumption is expected to grow 4.5 percent annually through 2030, with potentially serious economic, energy security, and environmental consequences for its members. The large share of liquid fuels for transport in ASEAN’s total energy demand makes transport energy a critical component of ASEAN’s energy present and future. For these reasons, the United States and ASEAN intend to expand their energy cooperation to promote vehicle fuel efficiency in ASEAN.

In 2013, in concert with the annual meeting of the ASEAN EEC-SSN, DOE and its partners both inside and outside of ASEAN plan to organize an information sharing activity for the benefit of the EEC-SSN focused on: 1) the lessons learned from the U.S. experience of setting minimum vehicle fuel efficiency standards; and 2) the lessons learned from the “Cash-for-Clunkers” program executed by the U.S. government to incentivize the removal of low-fuel efficient vehicles from U.S. motorways. Such an information sharing activity could include an in-person event such as a workshop or a digital video conference or a webinar.

- **Building Efficiency and Codes**—APAEC 2010-2015 lists “*promoting good energy management practices, especially for industrial and commercial sectors*” as one of its four energy efficiency and conservation strategies. Particularly as ASEAN member countries experience rapid economic growth and urbanization, and a growing share of energy consumption comes from buildings, DOE and its partners intend to lend their expertise and lessons learned from experience to build capacity within ASEAN in support of this far-sighted plan.

In 2014, in concert with the annual meeting of the ASEAN EEC-SSN, DOE and partners plan to organize an information sharing activity for the benefit of the EEC-SSN focused on: 1) real-life examples of “green design” in tropical climates in which energy saving designs for institutional and commercial buildings have been cost-effectively implemented; 2) best practices and lessons learned from state-based building codes to

enhance building energy efficiency; and 3) the experience of voluntary green building efforts internationally, notably Leadership in Energy and Environmental Design (LEED) building certification. Such an information sharing activity could include an in-person event such as a workshop or a digital video conference or a webinar.

## 2. Renewable Energy

The APAEC 2010-2015 states that “*renewable energies are needed to increase the diversity of energy supply and to reduce the environmental impact of energy use in the ASEAN region. And, sensible deployment of renewable energy will accelerate the economic and social development of the ASEAN Member States.*” In support of ASEAN’s renewable energy goals and in support of the commitments made at the senior level to support the accelerated deployment of renewable energy technologies in ASEAN, renewable energy cooperation is the second critical component of the U.S.-ASEAN Energy Cooperation Work Plan 2012-2014. In addition to the ongoing cooperation on renewable energy with ASEAN Member States bilaterally and through multilateral fora<sup>2</sup>, the United States would like to propose three cooperative activities with ASEAN:

- **Solar Power**—Rural electrification is a serious challenge for many ASEAN countries. Building traditional, centralized, thermal power plants to provide electricity for small rural communities is often both unsuitable and cost-prohibitive. As the cost of photovoltaic cells and small-scale electricity storage systems continue to fall sharply, a new model of cost-effective, rural electrification through distributed renewable energy generation is possible.

DOE and partners both inside and outside of ASEAN plan to organize an information sharing activity, perhaps in 2012, in concert with the annual meeting of the ASEAN Renewable Energy-Sub-Sector Network (RE-SSN), which will share the lessons learned from rural electrification programs using renewable energy in the developing world. Additionally, industry partners could demonstrate commercially available solar power generation and storage technologies that can be used today to cost-effectively electrify rural communities. Such an information sharing activity could include an in-person event such as a workshop or a digital video conference or a webinar.

- **Bioenergy**—Bioenergy also can play an important role in the economic and social development of rural communities in ASEAN. Agricultural wastes, both plant and animal wastes, can be used to generate both gas (for cooking and heating) and electricity, often with locally available materials and using local labor.

In 2013, in concert with the annual meeting of the ASEAN Renewable Energy-Sub-Sector Network (RE-SSN), DOE and partners intend to organize an activity that shares lessons learned and success stories from tropical countries around the world in which the energy needs of rural communities were in part met through the use of locally-generated agricultural waste products. Technical discussions of how the systems work and at what

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<sup>2</sup> See Appendix 2.

cost could be a major part of the event. Such an information sharing activity could include an in-person event such as a workshop or a digital video conference or a webinar.

- **Hydropower**—Several ASEAN member states have experienced in recent years unusual weather patterns that can disrupt hydropower production, leading to blackouts and inhibiting economic development. The severe climate change impacts projected for Southeast Asia—and already being experienced—are predicted to have a substantial effect on ASEAN’s energy production and consumption in a multitude of ways, but arguably none more significant than the potential impact on hydropower production in the region.

Using the expertise of DOE’s national laboratories, DOE and its partners both inside and outside of ASEAN propose to seek funding and conduct a study on the potential climate change impacts on hydropower production for ASEAN member states and policy consequences. When completed in 2014, the study’s authors could share their findings with the RE-SSN at their annual meeting and answer questions about the consequences of their findings.

### **3. Civilian Nuclear Energy**

Noting that some countries in ASEAN are considering the use of nuclear energy for power generation as a long-term option, the APAEC 2010-2015 highlights a strategic goal of “*regional capacity building in nuclear energy for regulators, operators and relevant educational institutions, among other things through training, workshop, seminar and information exchange.*” In July 2011, Secretary of State Clinton also endorsed the 2011-2015 Plan of Action for Implementing the ASEAN-U.S. Enhanced Partnership which supports the same objectives.

The United States already conducts significant civilian nuclear cooperation activities bilaterally, regionally, and through the International Atomic Energy Agency. A detailed description of these ongoing activities can be found in Appendix 3 of this Work Plan.

Given its unrivalled expertise and experience with nuclear power, the United States can assist ASEAN and its Member States in achieving this strategic goal. This engagement would include capacity-building activities in which the United States and ASEAN as a whole participate. In addition to the ongoing civilian nuclear cooperation with ASEAN Member States bilaterally and through multilateral fora<sup>3</sup>, the United States would like to propose two new cooperative activities with ASEAN:

- **Nuclear Safety and Security**- In concert with an annual meeting of the ASEAN Nuclear Energy Cooperation-Sub-Sector Network (NEC-SSN) or at another opportunity, the U.S. Government could convene a workshop for the ASEAN Member States on the essential elements of developing a safe and secure nuclear power program. U.S. nuclear industry representatives could answer questions about the latest technological developments to

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<sup>3</sup> See Appendix 3.

promote safety and security at nuclear power plants and future visits to U.S. nuclear facilities could be arranged.

- **New and Upcoming Technologies-** In concert with an annual meeting of the ASEAN Nuclear Energy Cooperation-Subsector Network (NEC-SSN) or at another opportunity, the U.S. Government and U.S. industry representatives, could conduct a seminar on the state of the new and upcoming technologies such as Small Modular Reactors (SMRs) and additional safety features. The seminar would enable ASEAN representatives to ask questions about their particular circumstances and receive answers about the potential appropriateness of these promising technologies in the long-term.

#### **4. Natural Gas**

The APAEC 2010-2015 notes that a strategic goal of the Trans-ASEAN Gas Pipeline Sub-Sector Network is “*to further explore and secure additional gas supply from nonconventional source, i.e. Coal Bed Methane (CBM)*”. The environmentally sound development of natural gas would offer ASEAN member states the opportunity to switch from high carbon-intensity fuels to gas, while at the same time addressing the demand for energy to sustain economic growth. In the United States, the development of tight gas and shale gas has allowed the United States to increase significantly the production of natural gas. Other nations also have significant gas potential. Yet the environmental benefits from the development of natural gas also depend on ensuring sound environmental practices, including the implications for air emissions, water quality and availability, and the operational impacts drilling activity. The United States has accumulated significant experience in this area and continues to develop further experience on environmental and regulatory practices.

- **Unconventional Gas--**In 2012, ASEAN and/or its member states and the U.S. Department of State and its partners will develop a schedule of seminars or exchanges to share experience and address prospects for the increased and environmentally sound development of natural gas resources, prospects for switching from higher-carbon intensity fuels to natural gas, and experience on environmental standards and regulations for the development of unconventional gas resources (*e.g.*, tight gas, shale gas and coal bed methane). Those schedules will lead to follow up workshops and exchanges that will be implemented through the U.S. Department of State and its partners over the period of this work plan.

### **III. ENERGY COOPERATION THROUGH MULTILATERAL FORA**

The United States and ASEAN can also have very productive cooperation by leveraging the activities of multilateral fora that address energy issues of mutual interest. In the interest of avoiding redundancy, in instances where robust vehicles for internationally energy cooperation already exist, the United States and ASEAN should seek to cooperate with them on specific activities. For example, the APEC Energy Working Group, the International Framework for Nuclear Energy Cooperation (IFNEC), the International Energy Agency (IEA), and the International Partnership for Energy Efficiency Cooperation (IPEEC) are all multilateral fora through which the United States and ASEAN leverage fruitful energy cooperation.

**APPENDIX 1:  
DRAFT U.S.-ASEAN Energy Cooperation Work Plan 2012-2014 Calendar**

	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Energy Efficiency &amp; Conservation</b>	Energy Efficiency Education	Vehicle Fuel Efficiency	Building Efficiency
<b>Renewable Energy</b>	Solar Power	Bioenergy	Climate Change Impacts on Hydropower
<b>Civilian Nuclear Energy</b>	Nuclear Safety and Security	New and Upcoming Technologies	To Be Determined
<b>Natural Gas</b>	Shale Gas	To Be Determined	To Be Determined

## **APPENDIX 2:**

### **Ongoing Renewable Energy and Energy Efficiency & Conservation Multilateral Cooperation with ASEAN Member States**

#### **Cooperation through the APEC Energy Working Group**

The APEC Energy Working Group (EWG) is a voluntary, regional-based forum operating under the APEC umbrella. EWG helps further APEC goals to facilitate energy trade and investment, and ensure that energy contributes to the economic, social and environmental enhancement of the APEC community. The EWG was launched in 1990 and seeks to maximize the energy sector's contribution to the region's economic and social well being, while mitigating the environmental effects of energy supply and use.

The United States is supporting the participation of ASEAN officials to participate at the *APEC-ASEAN Conference on Green Building* in Singapore 12-13 September 2011. This joint APEC-ASEAN event is to build a common understanding between APEC and ASEAN officials on green buildings via energy efficiency standards, rating systems, and green building technologies, including case studies from around the region.

#### **Regional Clean Energy Program**

USAID is planning to launch a new regional clean energy program in 2012 that builds off of the successes of its Environmental Cooperation-Asia Clean Development and Climate Program (ECO-Asia CDCP) during 2006-2011. The new program will work to scale up investment in clean energy in Asia's developing countries by increasing access to financing for clean energy, promoting policy and regulatory incentives and reducing market barriers, and promoting regional cooperation, knowledge-sharing, and replication of innovative practices and policies. The new program will engage approximately five ASEAN member countries.

#### **Low Emissions Asian Development (LEAD) Program**

USAID plans to launch a new regional program known as the Low Emissions Asian Development (LEAD) Program to assist Asian governments businesses, and others to improve greenhouse gas (GHG) accounting for public and private sector inventories, GHG market development, and, in selected countries, national-level low-emissions development strategies (LEDS), with significant focus on energy-based emissions. Targeted countries in ASEAN include Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, and Vietnam.

#### **ASEAN Clean Energy Trade and Investment Forum**

Working with the ASEAN Secretariat and the U.S. Department of State, the U.S. Trade and Development Agency (USTDA) funded a conference on clean energy development and investment to attract U.S. businesses to meet the clean energy development goals in ASEAN. The conference consisted of a series of plenary sessions and panels to address various aspects of regional clean energy development. The discussions included topics such as hydropower, biomass power, coal bed methane development, project financing, project management and energy efficiency. The conference also highlighted effective policies and financing options to attract interest in potential projects. This conference has led to the development of U.S. companies partnering with entities in ASEAN member countries to develop new energy projects, including a waste-to-energy feasibility study in the Philippines that USTDA is funding.

## **APPENDIX 3:**

### **Ongoing Civilian Nuclear Energy Cooperation with ASEAN Member States**

The United States currently conducts many civilian nuclear activities with ASEAN Member States and ASEAN collectively. This Appendix lists such current cooperation in order to provide context to the activities proposed in the Work Plan and to better define the nature of U.S.-ASEAN civilian nuclear cooperation as a whole.

#### **Cooperation through the IAEA**

Through the IAEA Technical Cooperation (TC) program, 25% of which is funded by U.S. contributions, IAEA Member States can access IAEA expertise in developing infrastructure and carrying out planning towards a nuclear power program. Seven of the ten ASEAN Member States currently participate in IAEA TC projects, and the United States would welcome the opportunity to work more closely with ASEAN Member States to maximize the value of their participation in the TC program.

Through the IAEA Peaceful Uses Initiative (PUI), Indonesia, Malaysia, and Vietnam have received funding for national power infrastructure projects. In addition, Singapore, Philippines, and Thailand have participated in regional projects to develop the infrastructure for safe and secure nuclear power capacity. The United States has pledged \$50M in extrabudgetary funding over five years for the implementation of the PUI.

The United States also provides assistance through its voluntary extrabudgetary contribution to the IAEA for nuclear safety. The IAEA provides regional and global projects that assist Member States in nuclear and radiological safety. The United States has provided almost \$10 million over the past four years to the IAEA through extrabudgetary contributions.

#### **Regional Cooperation**

The U.S. Government is a strong supporter of the International Framework for Nuclear Energy Cooperation (IFNEC). IFNEC provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation. Participating states do not give up any rights and voluntarily engage to share the effort and gain the benefits of economical, peaceful nuclear energy. Indonesia, Malaysia, Singapore and Vietnam are IFNEC Observers and the Philippines has been invited to join IFNEC this year. Singapore has played a particularly active role. As IFNEC Participants/Observers, ASEAN Member States may participate in all IFNEC meetings, including the Working Groups on Infrastructure Development and Reliable Nuclear Fuel Services.

The United States, working with ASEAN partners has led the effort under the 27-participant ASEAN Regional Forum (ARF) to address, in a balanced manner, the three pillars of the nuclear nonproliferation regime: disarmament, nonproliferation, and peaceful uses of nuclear energy. Since 2009, the United States, in coordination with China and Singapore, initiated the yearly ARF Inter-Sessional Meeting on Nonproliferation and Disarmament (ISM-NPD). The 2010 meeting held in Singapore was devoted to an exchange of views on peaceful uses of nuclear



energy. This venue will be an important tool to build regional capacities to facilitate the development of civil nuclear programs. Under the ARF ISM NPD workplan, proposed future topics of work include nuclear forensics; UNSCR 1540; seismic monitoring; and nuclear safety, security, and safeguards, including the Additional Protocol.

The U.S. also provides significant funding for and participates in the Asian Nuclear Safety Network (ANSN) and Asia Pacific Safeguards Network (APSN). ASEAN Member States in ANSA and APSN include Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam, as well as the IAEA. The ANSN provides an instrument for establishing sustainable and autonomous national and regional nuclear safety activities through the best use of the shared information and discussions in the cyber communities provided by the Network. The United States provides experts and financial resources to facilitate cooperation in the areas of legal and governmental infrastructure, power and research reactor safety, emergency preparedness and response, waste management, and education and training. The United States also provided significant technical expertise in the construction of the network. The United States provides financial resources to the APSN, which works to improve the quality, effectiveness and efficiency of safeguards implementation in the Asia-Pacific region through capacity building, promotion of regional cooperation, facilitating technical assistance, and information sharing.

### **Bilateral Cooperation**

The United States also currently undertakes a broad variety of bilateral nuclear cooperative activities with ASEAN states. The U.S. National Nuclear Security Administration's (NNSA) International Nuclear Safeguards and Engagement Program (INSEP) currently cooperates with ASEAN states to strengthen the implementation of IAEA safeguards. Ongoing bilateral activities include assistance with implementation of the Additional Protocol, training on fundamentals in nuclear material measurements, and assistance establishing a radiation protection program. ASEAN partners include Thailand, Vietnam, Malaysia, Indonesia, and the Philippines. INSEP spends approximately \$1-1.5 million in the Asia-Pacific region annually.

The U.S. Nuclear Regulatory Commission (NRC) also maintains several nuclear cooperation programs with ASEAN partners. The NRC's New Reactor Program assists countries with new or expanding nuclear power programs in their efforts to establish and maintain an effective nuclear safety and security regulatory authority. Indonesia, Thailand, Malaysia, the Philippines, Vietnam and Singapore are all currently participating in the New Reactor Program. The NRC also undertakes outreach on Import and Export Licensing. This activity establishes closer working relationships with regulatory counterparts of countries to/from which U.S. vendors import/export radioactive sources and material. Thailand and Singapore are current import and export licensing ASEAN partners. The NRC also provides cooperation related to Nuclear Security. NRC works to engage with regulatory counterparts on security issues associated with regulatory oversight of radioactive sources and material. No ASEAN states have yet begun to participate in the NRC's Nuclear Security cooperative activities.

The U.S. Trade and Development Agency (USTDA) sponsored two Reverse Trade Missions which hosted delegates from ASEAN partner states to the United States. During these Reverse Trade Missions, delegates from Thailand and Vietnam learned about civil nuclear best practices through meetings with the U.S. Nuclear Regulatory Commission and other U.S. government

agencies to discuss matters and agreements related to non-proliferation, the Nuclear Energy Institute, and U.S. companies which supply technology used to safely implement civilian nuclear power. Vietnam has since signed a 123 Agreement with the United States and Thailand's Office of Atoms for Peace continues to collaborate with the NRC and is establishing the regulatory framework necessary to regulate nuclear power plants.