Institute of the Americas

# Summary Report
# U.S. – Mexico Cross-Border Electricity Stakeholder Forum

***Given the wide range of ideas, opinions and discussion points set forth during the Forum, this report does not aim to convey all that was said. Rather, it intends to serve as an informational document and provide a summary of main issues and findings articulated during the major sessions of the event, along with input gleaned from the Mexican and United States governments after the event.***

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# ACRONYMS

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|---|---|
| CEQ | U.S. Council on Environmental Quality |
| CFE | Comisión Federal de Electricidad<br>(Federal Electricity Commission – Mexico's national electric utility) |
| DOE | U.S. Department of Energy |
| FACA | Federal Advisory Committee Act |
| FERC | Federal Energy Regulatory Commission |
| IDB | Inter-American Development Bank |
| ISO | Independent System Operator |
| LORS | Laws, Ordinances, Regulations and Standards |
| MW | megawatt |
| NEPA | National Environmental Policy Act |
| NERC | North American Electric Reliability Corporation |
| NREL | National Renewable Energy Laboratory |
| PPA | Power Purchase Agreements |
| REC | Renewable Energy Credit |
| RPS | Renewable Portfolio Standard |
| SENER | Mexican Energy Secretariat/ Ministry of Energy |
| USAID | United States Agency for International Development |
| WECC | Western Electricity Coordinating Council |

# EXECUTIVE SUMMARY

The U.S.-Mexico Cross-Border Electricity Stakeholder Forum was organized to bring together experts from federal and state government agencies, industry, and renewable energy associations from both Mexico and the United States to discuss issues pertinent to the fostering of increased electricity trade with an emphasis on renewable energy. These discussions were held in direct response to the creation of the Cross-Border Electricity Task Force announced by Presidents Barack Obama and Felipe Calderón during the Mexican President's State Visit to Washington in May 2010. The Forum was hosted by the Institute of the Americas at its facilities at the University of California, San Diego, which is located in La Jolla, California. The Institute is an independent organization that gathers industry leaders, policy makers and academics for frank and open discussions to improve the economic, political, and social well-being of people in the Americas.

The two-day event brought together more than 70 stakeholders from both Mexico and the United States. The first portion of the workshop was an open dialogue among all participants, including the private sector and non-governmental organizations, designed to encourage a vigorous discussion of the barriers and potential solutions to promoting regional renewable energy markets between the two countries. In subsequent, facilitated break-out sessions, discussions were focused on four key themes: policy, financing, regulatory, and technical issues. The challenges and solutions discussed by the participants in these break-out sessions were intended to provide context and inform the Task Force's effort to foster increased renewable-generated electricity trade.

The second portion of the workshop was a closed session for U.S. and Mexican state and federal officials to digest stakeholder input and discuss the development and implementation of an organizational structure that will effectively address challenges and identify solutions to foster greater electricity trade. Specifically, participants in the closed session discussed the formation of a managerial Steering Committee and topic-area working groups to identify and pursue joint activities. Both portions of the workshop were conducted in English and Spanish with simultaneous translation.

## Break-out Sessions

Key suggested strategies developed by the participants in the four break-out sessions were:

***Technical***

- Develop a new, strong, coordinated, and integrated transmission planning process.
- Access proper authorities and determine if federal and state permitting processes can be streamlined to preserve their intent but facilitate faster turnaround on both sides of the border.
- Increase coordination for transmission interconnection of new resources between operation centers and Independent System Operators (ISOs).
- Address the issue of policy-driven transmission from the viewpoint of both the U.S. and Mexican federal governments.
- Include electrical grid operational considerations as part of the new, robust system planning process to account for intermittency of renewable resources and local ancillary services.
- Consider electrical grid codes and standards harmonization in accordance with the transmission planning efforts to address how codes and standards will be applied to operations on both sides of the border.

***Policy***

- Establish regional and local bilateral groups to address state and local issues more directly and efficiently.
- Educate policy makers on what is needed to increase transmission development and private-public sector cooperation to transport renewable generation across the border.
- Put key policies in place to establish a long-term renewable energy sector at the border. These policies should address the following, among others:

  - Regional Policies Across the Border
  - A Price on Carbon
  - National Renewable Portfolio Standards
  - Market-driven Imports with No Limitations
  - Workforce Development
  - Certainty of Cost-allocation Rules
  - Streamline the Cross-Border Permitting Process
  - Smart Grid Technology Integration
  - A Joint High-Level Commitment on Climate Change
  - Long-term Value of Environmental Benefits
  - Real Life-cycle Cost of Alternative Fuel Sources
  - Clarity on Providing Ancillary Services

***Regulatory***

- Create a clearinghouse of regulatory information to increase understanding of the permitting processes in general and the environmental review processes in particular on both sides of the border, both at the state and federal levels.
- Develop recommendations to more efficiently develop and utilize the environmental reviews for cross-border renewable energy projects and their associated transmission.
- Review the unintended consequences of tradable Renewable Energy Credits (RECs) across different markets and their corresponding different regulations.
- Explore the possibility of establishing the Comisión Federal de Electricidad (CFE) as its own reliability council to address applicability and compatibility of reliability standards in Mexican markets.

- ***Market/Finance***Develop financing mechanisms or incentives for the private sector to build transmission for new renewable generation, including the concept of developing transmission corridors that span both Mexico and the United States along the border.
- Develop a financing mechanism for potential cost-sharing to encourage the building of new transmission in the border region.
- Develop cost recovery mechanisms with the opportunity for the private sector to enter into long-term Power Purchase Agreements (PPAs) beyond a five- or ten-year period to enable price certainty.
- Perform sink- or demand-market identification and renewable generation source assessments in the border region.
- Find additional and creative mechanisms to stimulate renewable generation and transmission market development.

## Government-only Session and Outcome

In the closed session, government participants identified potential topic areas to be addressed by working groups that would be directed by the Task Force Steering Committee. The Steering Committee will charge the working groups to further investigate opportunities for collaboration and coordination with the intent of enabling increased electricity trade between Mexico and the United States. Working group members will include representatives from relevant U.S. and Mexican federal and state agencies. Non-governmental participation will be provided on an as-needed basis and will be governed by the relevant legal and legislative requirements of each country, such as the Federal Advisory Committee Act (FACA) for the United States.

# 1. BACKGROUND

In April 2009, as part of President Obama's first trip to Mexico, President Obama and President Calderón announced plans to strengthen and deepen bilateral cooperation by establishing the *U.S.-Mexico Bilateral Framework on Clean Energy and Climate Change*. The Bilateral Framework was envisioned as a mechanism for political and technical cooperation and information exchange, as well as a means of facilitating common efforts to develop green economies and implement clean energy technologies.

In May 2010, during the state visit of Mexican President Calderón to Washington, and under the auspices of the overarching Bilateral Framework announced the previous year, the two presidents announced the creation of a *Cross-Border Electricity Task Force* between the United States and Mexico. The stated goal of the Task Force is to promote regional renewable energy markets between the two countries, specifically by reviewing opportunities and obstacles to cross-border trade in renewable energy; advancing options on standards, electricity transmission, grid connections; and creating market incentives for investment and trade in renewable energy technologies. The Leaders also committed to increasing electricity grid reliability and resiliency, including through collaboration on smart grid standards and technology, to make energy use more efficient and reliable in both countries.

In August 2010, Mexican and U.S. government officials met to determine the most effective ways of facilitating and advancing cooperation and ultimately obtaining results under the Cross-Border Electricity Task Force. This was the first implementation meeting, which was to be followed by a broad stakeholders meeting.

On October 18-19, 2010, a U.S.-Mexico Cross-Border Electricity Stakeholder Forum was held at the Institute of the Americas in La Jolla, California. The Forum identified opportunities and barriers to the development of cross-border regional renewable energy markets and charted the process for the Cross-Border Electricity Task Force. More than 70 experts from federal and state government agencies, industry, and renewable energy associations from both Mexico and the United States participated (See Annex A for a participant list).

During the Forum, a closed session was held to allow U.S. and Mexican state and federal government officials to discuss the development and implementation of a Steering Committee that would manage working groups to be established under the Task Force. These working groups will explore joint activities in areas that are expected to include relevant issues identified

during the open stakeholder sessions.

## 2. STAKEHOLDER FORUM

As a first step in the Task Force's effort to identify opportunities and mitigate barriers to the development of regional renewable energy markets, the Cross-Border Electricity Stakeholder Forum gathered more than 70 experts from federal and state government agencies, industry, and renewable energy associations from across both Mexico and the United States.

The purpose of the Forum was to obtain input from these stakeholders on barriers to and solutions for enhanced cross-border electricity trade that could be addressed by the Task Force. With the intent of fostering discussion and drawing out critical issues related to cross-border electricity trade, participants were presented the following scenario:

*A private developer is planning to construct a 200 megawatt (MW) wind farm on the Mexican side of the United States–Mexico border. The company is proposing to transmit the generated electricity to the United States market via one of the four states on the U.S. border. An additional variable the company is considering is to either construct the transmission line directly from the renewable facility to the U.S. market or connect the renewable project to the Comisión Federal de Electricidad (CFE) and transmit the power to the United States through new or existing CFE transmission ties with U.S. systems.*

The discussion that followed was open to the entire Forum and led to a comprehensive review of how to approach the many hurdles and challenges inherent in such a project. The issues were categorized into four categories:

- Technical
- Policy
- Regulatory
- Market/Finance

Participants were then assigned to participate in one of four break-out sessions focused on each of these categories. The remainder of this report describes challenges and potential solutions identified by the stakeholders in each of these sessions.

## 2.1 TECHNICAL

The Technical Breakout Session concentrated on issues related to electricity transmission planning, permitting, and the important technologies, equipment, and transmission infrastructure needed to enable a more robust bilateral electricity trade. The group focused its discussion on how to create major grid interconnections along the border to facilitate a regional renewable energy market, improve reliability, and stimulate electricity trade. The group identified the core issues that drive stakeholder decision-making, discussed the relevant challenges to large-scale transmission interconnections, and developed strategies and actionable solutions for overcoming these challenges. Participants noted that there were no technical innovations needed to increase electricity trade, and that construction of additional transmission ties will not be driven by the development of renewable resources but rather by grid reliability, differences in load shape, and market diversity The group postulated that there are many economically feasible opportunities for the development of renewable generation capacity in Mexico, and that transmission interconnections at the border would allow for profitable trade. Additionally, participants agreed that grid integrations made possible by additional cross-border ties could also enable grid operators to better manage renewable intermittency.

### Transmission Planning

To enable increased cross-border interconnection and transmission, unprecedented levels of cooperation and coordination will be required at all levels in the institutional transmission planning processes on both sides of the border. There are a host of organizations that participate in transmission planning in the United States and Mexico. The key stakeholders vary significantly by geography and include regional institutions; utilities; official commissions; and federal, state, and local governments. These institutions have disparate planning processes and often even have different goals. Group participants were quick to identify that a fundamentally new process that involves both sides of the border, in a holistic fashion, is needed for future planning, financing, and technical design.

Transmission planning is handled very differently on each side of the border. In Mexico, electricity transmission is a public service organized by the federal government; conversely, in the United States, public/private utility partnerships can work together on a local, state and/or regional level. As a first step, participants agreed that stakeholders in these processes would benefit from a general homogenization of planning processes and optimization of remedial actions. Additionally, increased dialogue and improved cross-border information sharing will

provide the foundation for successful cooperation in transmission planning. It was noted that the U.S. Department of Energy (DOE) has managed the development of coordinated transmission plans in Texas and could provide a model for international coordination.

The building of new electric generation facilities, transmission, and interconnection capacity is very capital- and land-intensive; thus, extensive planning is essential at every stage to ensure engineering and environmental requirements are met and due diligence is performed. Participants noted that the current status quo for transmission planning in the border region is fragmented and acts as an impediment to building new transmission infrastructure. Additionally, large tracts of land will be needed to build this infrastructure, and securing the necessary real estate can be challenging because of zoning issues, land rights issues, federal land use, and the potential for environmental impacts. It was recommended that both governments work together to set aside land for the building of cross-border energy corridors for electrical transmission infrastructure.

| Transmission Planning Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Ineffective communication exists in the planning process —there are many players on both sides of the border, but little formal coordination between the US and Mexican entities | • A new, strong, coordinated and integrated planning process is needed<br>– Initiate effort to address cross-border planning issues ASAP<br>– Establish new/improved cross-border planning process |
| | • Information sharing and understanding of each other's processes is important<br>– Establish mechanism to share information on the individual State/ISO planning processes<br>– Continue the information sharing and collaboration. |
| Barriers to remove | Strategies to Overcome |
| There is no formal process for identifying and evaluating candidate selecting interconnection locations | • Establish logical interconnection locations based on loads and resource locations<br>– Conduct a complete mapping of resources and loads as first step<br>– Map resources—coordinate the gathering of critical information<br>– Study potential interconnection corridors based on technical feasibility and buildable areas<br>– Select/identify interconnection corridors |
| | • Set aside specific, government-approved tracts of land for transmission corridors—within these corridors permitting approval could be streamlined |

| | |
|---|---|
| | – Investigate land set-aside consideration issues on federal and state levels as needed<br>– Determine if land set-asides can be used to streamline the approval process<br>– Further consideration of land set-aside issues, if relevant |
| Barriers to remove | Strategies to Overcome |
| Intermittency of renewable resources creates operational issues that can be mitigated during the planning stage<br>- NERC rules apply regarding balancing within each control area<br>- These issues must be addressed specifically in contracts, tariffs, and interconnection agreements<br>- The location and amount of regulating capacity installed can reduce the cost of responding to variability in the planning stageElectricity storage is not an economic solution in the short term | • Commercial arrangements between buyers, sellers, and transmission operators will determine the responsible parties; work is necessary to ensure that tariffs and interconnection rules allow the implementation of the most cost-effective solutions<br>– Operational considerations must be part of new, robust system-planning<br>– ISOs looking at these challenges; challenges also need to be included in pre-planning activities<br>– Limits may emerge on how much renewable supply can be integrated into the system; however, with optimal coordination these limits will not be caused by the existence of an international border<br>– The optimal resource mix may be different once the need to match renewable generation variability is considered; planning procedures must allow these optimal mixes to be identified and tariffs must allow the recovery of their costs |

## Transmission Permitting

Building large-scale cross-border transmission infrastructure requires extensive permitting applications and processes on both sides of the border. Often, stakeholders must gain approval from municipal, state, regional, and national entities. Different areas and activities have different permit requirements, restraints, and timelines, and permitting processes are often difficult and expensive.

Forum participants underscored that permitting requirements need to be shared between regulators on both sides of the border to streamline the entire process. They also noted that U.S. local, state, and national institutions need to prioritize the coordination of permitting timelines with their Mexican counterparts. Certain state and federal permitting processes would need to be amended or reformed to reduce complexity and cost for the private sector and ultimately the consumer. The disparities and complexities that the various layers of permitting present for project developers were cited as challenges that could be addressed through the harmonization of

regulatory frameworks and permitting processes. Participants suggested that a possible Task Force output could be a concise and simple chart or roadmap on the myriad of steps required to complete a cross-border transmission project. With respect to the U.S. Presidential Permitting process, which includes the National Environmental Policy Act (NEPA) determinations, group participants asked if the permitting process could be streamlined and faster turnaround times facilitated while preserving the intent of the process.

Participants also noted that this regulatory complexity slows down cross-border transmission proposals and prevents projects from breaking ground.

| Transmission Permitting Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Presidential permitting process takes too long, is expensive<br>- NEPA<br>- 6- month Public Comment Period<br>- Other requirements | • Tap proper authorities to determine if and how the permitting process can be streamlined to preserve its intent but facilitate faster turnaround<br>– Seek information and opportunities to streamline the federal permitting process |
| State permitting process impacts costs on downstream equipment that is not often considered | • Try to influence a broader consideration of impacts throughout the various systems in permitting process<br>– Seek broader consideration of impacts in state permitting process |

## Transmission Operations and Renewable Power Generation

Large cross-border interconnections may enable the development of utility-scale wind power plants in Mexico for power exports to U.S. markets. However, the intermittent nature of renewable resources creates balancing problems that need to be addressed to ensure the reliable and efficient transmission of this power to load centers in accordance with North American Electric Reliability Corporation (NERC) standards. These issues may limit the integration of renewables into the existing generation portfolio, even before considering the additional issues that result from cross-border projects. They must be addressed specifically in contracts, tariffs, and interconnection agreements.

Both Mexico and the United States must coordinate operational rules and cost-recovery

mechanisms for transmission and balancing with appropriate buy-in from operation centers, ISOs, and balancing authorities. This coordination needs to include the specification of requirements and procedures for the pre-scheduling of expected power flows, and the implementation of dynamic interchange, consistent with NERC Standards, additional standards required by reliability councils, and the tariffs and business practices of regional market operators.

It also was noted that large-scale energy storage options are already being discussed as a means to capture excess intermittent electricity for dispatch to the grid when needed. This technology would decrease the magnitude of balancing services required of traditional generators and, depending on its location, could increase or decrease the amount of balancing services that are "exported" across international boundaries. Policies should be developed with these technologies in mind, although it is not expected that they will be commercially feasible in the short term.

| Transmission Operations and Renewable Power Generation Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Transmission of new resources impacts transmission balancing | • Increased coordination between system operators is needed<br>– Harmonize scheduling practices<br>– Clarify and harmonize procedures for the implementation of dynamic interchange resources<br>– Develop mechanisms for intra-hour interchange scheduling |
| | – Evaluate the possibility of combining existing balancing authorities into larger, regional balancing authorities, (with respect to the real-time operational function only) |

## Financing of Transmission Projects

The commercial development of new transmission and distribution infrastructure is very capital-intensive, and the return on these investments typically has a very long recovery period. Because of this, many of the participants noted that there is a need for the U.S. and Mexican federal governments to consider "policy-driven" transmission and infrastructure development. For example, Mexican authorities require congressional approval for budgeting, and operate under strict project financing controls that require the domestic Mexican benefits of cross-border

electricity trade to justify the expenditures. This is viewed as a transmission project constraint. The challenge of intermittency that is associated with renewable power generation also will create problems for investing large amounts of capital in transmission because the infrastructure will not always carry the full capacity for which it was built.

Stakeholders underscored that regional planning should take into consideration the full life-cycle cost of a project, as well as economic considerations, particularly for international transmission of renewably-generated electricity. They also suggested that the United States needs a uniform national policy on promoting renewable generation; i.e., a national renewable portfolio standard (RPS) would enable private developers to make the appropriate investments without the risk of regulatory uncertainty. Another point of concern among participants was compensation or realized benefits for citizens impacted by the development of these projects in the border region.

| Financing of Transmission Projects Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Project financing hurdles<br>- Financing is dependent on its return on investment to generate sufficient income and cover all costs<br>- Public policy, i.e., RPS create policy-driven transmission needs/projects | • Government could provide financing or financing guarantees for projects where future income is sufficient to pay costs in the long term, if the uncertainty of near-term income is the barrier to construction<br>• Regulated utilities could use estimates of unspecified, opportunistic energy transactions in the future to justify the inclusion of these projects in rate base; work would be required to develop a framework for this type of analysis and win approval from regulatory agencies<br>• Private developers could be pooled into joint projects to spread out costs and risks<br>– |
| | • |

## Codes and Standards

It was noted that all parties need to understand the appropriate codes and standards on their respective sides of the border since these are not consistent on either side. Participants agreed that efforts to streamline or harmonize the existing electricity codes and standards in the United States and Mexico would help to ensure efficient electricity trade. Currently, operators on either side of the border adhere to different codes and standards related to grid management, with the

exception of Mexico´s Baja California system, which adheres to WECC standards. Harmonization of rules may be of value, as the directly relevant standards are those related to interchange, which are mostly irrelevant for the asynchronous ties that interconnect Mexico´s principal electric system to the US system. To achieve the most reliable and secure transmission systems, consistent operational rules should be established in order to maintain the grid system and mitigate the risk of blackouts. Collaboration and cooperation between stakeholders in this area will enable significant cross-border transactions while maintaining the reliability and security of the established infrastructure. Uniform rules for local ancillary services are not well defined and will also need to be included in the overarching planning and coordination talks.

| Codes and Standards Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| United States/Mexico both need to address how to apply applicable codes and standards to transmission operations on both sides of the border | • Codes and standards should be considered in accordance with the planning efforts<br>– Utilities are actively engaged in their respective Coordinating Councils to incorporate appropriate standards and codes<br>– Include codes and standards in a new/ improved cross-border planning process |

## 2.2 POLICY

Policy can be both a driver and a challenge when it comes to developing new renewable energy projects and transmission along the border. Participants in the policy break-out session focused their discussion on the role for policy and policymakers in dealing with bi-national efforts, specifically critical issues including cost recovery, national renewable portfolio standards, transparency, and the longer-term issue of a carbon price. They agreed that transparency and consistency among policies developed by both nations related to cross-border generation and transmission will help establish a long-term renewable energy sector.

### Key Challenges

To prioritize challenges and solutions, the group looked at the need for a long-term renewable energy sector at the border and discussed short-, medium-, and long-term issues; the relevant

challenges and possible policy support; and strategies for overcoming these challenges. To develop a long-term renewable energy sector at the border, participants suggested that key policies should address the following challenges:

- Calculating a price for carbon in a carbon market to address environmental and financing questions
- Setting national renewable standards to address environmental and financing questions
- Allowing market-driven imports with no limitations
- Workforce development to address labor needs and worker migration
- Developing certainty of cost-allocation rules
- Streamlining permitting process on both sides of the border to address time requirements and duplication of efforts
- Integrating Smart Grid technology
- Securing a joint high-level commitment on climate change to show the long-term value of environmental benefits
- Quantifying the real life-cycle cost of alternative fuel sources
- Clarity on providing ancillary services
- Addressing land rights and sovereign nation issues
- Developing larger interconnection ties
- Transmission ownership to address regulated vs. private transmission, as well as private and distributed generation
- Cultivating incentives to level the playing field for generation and transmission
- Supporting cost recovery with a variable energy resource distribution rule

## State and Local Coordination

The key to establishing a robust renewable energy sector at the border requires creating a structure for dialogue to communicate information between the two nations. Energy generation and transmission impact local areas; therefore, state and local coordination is essential. In order to facilitate this type of coordination, participants agreed that local and regional bi-lateral groups should be established to address state and local issues more directly and efficiently.

## Educating Policy Makers

Participants highlighted the need to better educate policy makers on the processes and entities involved in the development of cross-border electricity generation and transmission projects, as

well as the associated obstacles and existing mechanisms designed to address key issues. The consensus was that this would help policy decision-makers develop more consistent, favorable, and responsible policies aimed at developing a renewable energy market at the border. Fora such as this one provide interested parties and industry experts with avenues to share with decision-makers key information to inform their policy decisions.

| Policy Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Need for a long-term renewable energy sector at the border, regardless of current policies and drivers | Develop bi-national efforts that will address such issues as cost recovery, national renewable portfolio standards, transparency, and how to set the price of carbon |
| Lack of information and communication to, and among, the public, policy-makers, and the private sector | Create structures for dialogue between:<br>• State and local groups and governments<br>• Regional groups on both sides of the border |
| Educating policy makers | Provide key information from the private sector and NGOs to government policy makers |

## 2.3 REGULATORY

The regulatory break-out session dealt with a wide range of issues associated with cross-border renewable energy development. The group focused on three broad themes: environmental regulation, regulatory frameworks and standards. Participants agreed that these are the core issues that affect stakeholders and that they need to be addressed in order to develop a robust renewable energy market in the border region.

**Environmental Regulation** ***Clearinghouse***: A critical first step toward achieving more efficient coordination between regulations and their implementation is to have a good understanding of both systems. A proposed solution is to create a regulatory clearinghouse, with the objective of providing a clear and transparent understanding of the rules for developing and obtaining approval for renewable energy and cross-border electric transmission projects. The information to be entered into the clearinghouse should be available online in both Spanish and English and include existing regulations, codes, standards, procedures, and incentives in both

countries, including those in the border states. This recommendation can also apply to the regulatory frameworks and standards sections below. Having both countries coordinate their regulatory/permitting activities to achieve efficiency and expedited regulatory decisions was viewed by participants as being more achievable in the long-term. A significant constraint to addressing these challenges is the autonomy of state regulatory bodies in the United States. For example, there are several differences across states, such as procedural timing, interpretation of the laws, and jurisdiction by agency, as well as the extent of jurisdiction. This clearinghouse would assist in resolving some of the challenges of environmental regulation, including: the transparency of different processes, procedural time requirements within each country, coordination across and within different levels of the government, and differences in the implementation of various processes. Another benefit of the clearinghouse would be the ability to address misinformation, such as the nature and strength of environmental regulations in Mexico and the United States.

***The National Environmental Policy Act (NEPA)****:* Other proposed solutions include developing categorical exclusions for certain categories of renewables and associated transmission projects. Suggested solutions also include the possibility of conducting joint U.S. federal/state/Mexican federal environmental reviews for all cross-border projects. Finally, the break-out group suggested that the U.S. Council on Environmental Quality (CEQ) consider revising NEPA guidelines to allow the use of substantially equivalent environmental documents from other jurisdictions for use as NEPA compliance documents. Participants suggested that these actions would help reduce the duplication of efforts during environmental review and reduce lead time.

| Environmental Regulation Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Need a full and transparent understanding of environmental regulations and how federal and state agencies interpret their provisions<br>– Need better communication of environmental regulations on both sides of the border<br>– Complexity of environmental regulations between different levels of government in the United States<br>– Regulations are implemented differently | • Develop a regulatory clearinghouse |
| | • Initiate a process for developing categorical exclusions for certain categories of renewables and their associated transmission projects |
| | • Task Force should recommend the use of joint U.S. federal/state/Mexican federal environmental reviews for ALL cross-border projects |
| | • Task Force should develop recommendations for CEQ for revised NEPA guidelines to allow the use of substantially equivalent environmental documents from other jurisdictions for NEPA compliance |

## Regulatory Frameworks

***Clearinghouse***: An electronic regulatory clearinghouse would be a valuable resource to help address the current constraints of multiple levels of environmental regulation, and to demonstrate the differences in regulations, taxes and incentives for transmission projects. Understanding both the U.S. and Mexican regulatory landscapes is critical to achieving coordination. One example cited was the ongoing effort between the United States and Canada with regard to managing bi-national regulatory processes.

***Incentives***: One major challenge identified by the group vis-à-vis regulatory frameworks was the differences in incentives such as tariffs and renewable energy credits (RECs). Tariffs have an intrinsic barrier in that different markets generally indicate different regulations. There is a strong need to integrate RECs across both systems. A deeper assessment of the consequences of tradable RECs must be realized in order to achieve a better incentive system for the industry.

***Technology***: With regard to technology, there is a need to design a regulatory framework that responds to the intermittency of renewable sources and solves the question of cost recovery for the development of transmission infrastructure, including interconnections.

| Regulatory Frameworks Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| – Different markets equal different regulations<br>– Need to integrate with RECs<br>– Need to revamp certain regulatory provisions to deal with renewable intermittency<br>– Regulatory delay uncertainty<br>– Market constraints (tariffs)<br>– Regulatory collaboration (assessment and overlap with regulations)<br>– Different regulatory frameworks depending on connection point | • Develop a regulatory clearinghouse (LORS-law, ordinance, regulation, standards)<br>• Review unintended consequences of tradable RECs |

## Standards

***Clearinghouse***: Participants suggested that the foregoing proposed solution of a regulatory clearinghouse should be coupled in this area with consideration by CFE that it establish its own

formal reliability council for its main interconnected system. The main problem for electricity standards is making them compatible within existing regulations. This could facilitate greater dialogue and more complete documentation of the standards applied in the main interconnected system, eventually leading to the adoption of "best practices" for reliability on both sides of the border. Reliability and operational standards must be enforced, and CFE should designate an authority to be responsible for enforcement. Currently, the industry has found a way to satisfy both systems by following the stricter rules in each country. CFE has its own reliability norms that have similarities, but also differences, with the U.S. system.

| Standards Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Applicability and compatibility of reliability standards in the Mexican market | • Develop a regulatory clearinghouse (LORS-laws, ordinances, regulations, standards) |
| – Who holds enforcement authority? | • Consider having CFE become its owncreate a formal reliability council for its main interconnected system |

## 2.4 MARKET/FINANCIAL

The financial/market break-out session identified four key challenges to overcome in order to turn opportunities into mutually beneficial cross-border energy projects. Although addressing all issues will be crucial, the challenges were listed in the following order: cost recovery, market research, market stimulation, and imports and exports. At the outset of the discussion, challenges were identified for overall electricity trade in the border region. The group stated that a larger financial incentive/regulatory solution would be needed beyond a project-by-project, piece-meal approach. This summary elaborates on those challenges and incorporates the session's core insights regarding how best to move forward.

### Cost Recovery

***Transmission and Interconnections***: The most important economic consideration deals with financing transmission corridors for new generation and potential investment-sharing for building new transmission capacity. Transmission corridors, coupled with investment-sharing

contracts between companies as allowed by both nations and state governments, could increase incentives and spur construction of infrastructure. The group outlined four key recommendations with respect to transmission corridors:

(1) Identify potential transmission corridors on both sides of the border where the transmission project regulatory process could be consolidated or streamlined;
(2) Determine the respective regulatory bodies that are responsible for issuing the necessary permits for the project;
(3) Know the ownership of the land for the U.S.-based project, as this determines how long it will take and how much it will cost to complete; and
(4) Build private transmission lines and connect to the CFE system, if possible, according to Mexican regulations.

It should be mentioned that transmission projects have encountered significant problems crossing states within the United States, let alone crossing an international border.

Participants noted that a developer in Mexico can build a private transmission line with no connections to the CFE grid and feed electricity directly to the U.S. market (several examples already exist). This solution increases the cost of the investment, but for a large project close to the border, the cost would not be very significant in relation to the overall investment. Within this reality, however, smaller developers are clearly at a disadvantage. To overcome this disadvantage, an open-season could be facilitated for cross-border transmission/interconnection for multiple projects. In Mexico, Oaxaca's clean energy open-season is a useful example. In Oaxaca, CFE kept property open, using the least-cost approach to cover its portion of the investment.

The role of the Federal Energy Regulatory Commission (FERC) in cost allocation was also noted. Discussion focused on the June 2010 Notice of Proposed Rulemaking by FERC which sought input on a proposal to reform its electric transmission planning and cost allocation requirements for public utility transmission providers. According to FERC, the proposed reforms are intended to correct deficiencies in transmission planning and cost allocation processes so that the transmission grid can better support wholesale power markets and thereby ensure that FERC jurisdictional services are provided at rates, terms and conditions that are just and reasonable and not unduly discriminatory or preferential.

***Power Purchase Agreements (PPAs)****:* Developers of generation projects need long-term PPAs

with buyers of the resultant capacity and energy (which could include private firms or even municipal governments) to make long-distance transmission line projects viable. The typical utility-scale renewable energy project lasts 20 years, and developers typically seek at least a 10-year PPA. As a seller of capacity and energy, CFE is generally restricted to export only the excess energy that is available from its generation, imposing a practical limit of approximately two years on the duration of power imports into the United States sourced from CFE. Therefore, generation projects directed at the export of energy from Mexico to the United States, in order to have the duration necessary to justify a transmission investment, would need to be financed by private investors.

The group noted that there are already electricity imports into Mexico, both for purchases by CFE and by the Mexican private sector, but these imports are not specifically derived from renewable generation. CFE is permitted to enter into long-term contracts to buy capacity and energy from private producers, although to date all of these projects have been sited within Mexico. Additionally, Mexican law permits CFE to buy a portion of a generator's capacity and energy, with the developer free to use the remaining capacity and energy for export. It may be helpful if cross-border long-term PPAs in which generators sell to both CFE and U.S. buyers become institutionalized, in order to produce a deeper market and a more stable expectation of prices This type of project is already permitted in both Mexico and the US, however, is has only been used for one project (La Rosita / Azteca X), in which the exportation is delivered from units that are interconnected directly to California, while CFE takes power from other units that are connected to the CFE Baja California network.

Participants mentioned other ideas, including the need for flexibility in asset transactions and greater participation by CFE (beyond WECC in Baja California) in the North American Electric Reliability Corporation (NERC). Cost recovery strategies should also include identifying the ultimate energy consumer and price, and conveying the key understanding that price largely depends upon the foregoing PPA. Loan guarantees also are possible through 18-year guarantees for renewable energy projects utilizing 100 percent U.S. equipment.[1] The loans should be longer-term loans with flexible terms related to interest, materials, labor, and exposure fees.

[1] On the financing side, the U.S. Export-Import Bank offers up to 18-year, 100 percent loan guarantees for U.S.-made equipment, and low-interest loans (less than 3.9 percent for 18 years) if the project appears financially viable. The exposure fee is 10 percent for long-term projects (i.e. 18 years). Interestingly, in order for the Mexico-side of a project to be funded, the company only needs to be registered in Mexico; not Mexican-owned

| Cost Recovery Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| How can the cost of the project be rate-based? | • Need greater participation in NERC |
| | • Need market-based incentives in Mexico to facilitate transmission tie-in |
| | • Need a value proposition for large-scale projects<br>– Taxes, Jobs, etc.<br>– Long-term vision<br>– Need to identify how these projects address least-cost scenarios |
| Lack of Transmission corridors and investment sharing | • Identify the corridors and regulatory bodies (Tribal, Municipality, etc.) |
| | • Know the ownership of land |
| | • Know how long and how much the project will cost |
| | • Build private transmission lines that can connect to the CFE |
| Project financing issues tied to existing infrastructure | • Identify who is the consumer and what is the price, and understand that the price depends on the PPA<br>• Facilitate an "open season" for cross-border renewable energy projects |
| Create backstop financial mechanisms specifically for interconnection projects | • Need long-term PPAs |
| | • PPAs must be economically viable in the long-term |
| | • Need financially viable partners with purchasing power |
| | • Demonstrate long-term price stability |
| Loan guarantees and other cost recovery mechanisms | • 18-year guarantee for renewable energy projects with 100 percent U.S. equipment |
| | • Give longer-term loans with flexible terms (i.e. interest, materials, labor, and exposure fees) |
| | • Need 20 percent of total project cost financed |
| Federal Energy Regulatory Comission (FERC) policy on investment return | • Pool resources for smaller projects to limit risk and be cost-competitive for smaller companies |
| Why did shippers' example work? | • Long-term PPA and market-driven |

## Market Research

| Policy Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| How do countries stimulate market competition? | • Level the playing field on subsidies<br>– RPS as a driver<br>– Kyoto Protocol on recovery on renewable energy projects<br>– Scalability issues<br>– How do we stimulate long-term power purchase agreements<br>– Price of carbon<br>– Legislative issues dealing with long-term PPAs<br>– Long-term pricing |

***Market Identification and Resource Assessment:*** The group concluded there is a need to understand objectives at the highest level and look at capacity on both sides of the border. For example, DOE and the United States Agency for International Development (ISAID) sponsored a project to help accelerate the widespread use of wind energy technologies in the Mexican state of Oaxaca. DOE's National Renewable Energy Laboratory (NREL) led the project in collaboration with USAID and several Mexican state and federal government entities. NREL also has performed high-resolution wind mapping for some other areas of Mexico, including border areas of northwestern Mexico. On the other hand, very little has been researched regarding wind development or other renewable energy development such as solar around the border region, outside of private studies. As a complement to increasing green jobs, supporting bi-national research and development also should be considered as part of the value proposition of cross-border deals. In addition, the issue of distributed generation, a tangential piece of the discussion of a vibrant cross-border renewable energy market, was referred to vis-à-vis solar energy.

***Information and Transparency:*** There is no single solution, but it was widely agreed that renewable energy development would benefit from greater transparency regarding available transmission capacity in CFE's grid. Additionally, the group suggested making more and detailed information available on requirements and procedures for private sector transmission and generation project development in Mexico.

| Market Research Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| Identify markets and look at existing capacity | • Need to fully understand the permitting process on both sides of the border and by state |
| | • Facilitate an "open season" for cross border renewable energy projects |
| | • Need to clearly understand the U.S., Mexican and state objectives pertaining to cross-border energy developmen |
| Lack of transmission capacity on both sides of the border | • Go Beyond the hub and turfs and find creative ways to deal with capacity |
| | • Provide transparency on transmission capacity |
| Economic feasibility of wind (capacity factor) and solar | • Look at long-term financing issues and the price of competing sources (i.e. natural gas, coal etc.) |
| | • Clarify whether projects that export clean energy from Mexico to the U.S. market can qualify for U.S. tax breaks and production tax credits |
| | • Invest in R&D jointly and build off the example of the NREL wind siting |

## Market Stimulation

Generators on both sides of the border face completely different markets. It is necessary to find mechanisms to level the playing field for generators, specifically for generators in Mexico wanting to export to the United States. Participants identified several near-term actions that could be taken, including standardizing import and export mechanisms between the two countries and simplifying permitting and reporting requirements. Some of the long-term solutions might include carbon pricing and cross-border energy banking, which could support projects on both sides of the border. Also, the ability for generation projects located in Mexico to take advantage of U.S. tax law incentives was identified as a potential market stimulator.

| Policy Barriers and Strategies | |
|---|---|
| Barriers to remove | Strategies to Overcome |
| How do countries stimulate market competition? | • Level the playing field on subsidies<br>– RPS as a driver |

| | |
|---|---|
| | – Kyoto Protocol on recovery on renewable energy projects<br>– Scalability issues<br>– How do we stimulate long-term power purchase agreements<br>– Price of carbon<br>– Legislative issues dealing with long-term PPAs<br>– Long-term pricing |

# CONCLUSION

The Stakeholder Forum hosted by the Institute of the Americas was carried out mindful of the issues pertinent to both presidents' desire to foster increased electricity trade with an emphasis on renewable energy. Indeed, the Forum served to encourage a vigorous discussion of the barriers and potential solutions to promoting regional renewable energy markets between the two countries and afford guidance for next steps in the creation of the Cross-Border Electricity Task Force announced by the presidents in May 2010.

Throughout the course of the two-day Forum and the topical break-out sessions, participants directly addressed myriad constraints, impediments and obstacles. Solutions and recommendations were proposed for future work and bilateral efforts. The discussion reflected a consensus that both nations require an institutionalized structure to identify priority areas for action, improve coordination and carry out coherent and integrated planning.

In sum, the Forum produced an extremely varied set of points for further consideration and important inputs from a diverse set of stakeholders. Strong arguments were made for the need of a broader structure across both nations to foster coordinated and integrated planning. The need for improved information sharing and understanding across all players in the market was mentioned often and cited as a critical – and appropriate – role and area for the Task Force to focus. Indeed, it was underscored that the Task Force should be the venue for tabling policy recommendations to better the coordination and development of a cross-border renewable energy market. The Cross Border Electricity Task Force concept was roundly embraced.

# Appendix A: Forum Participants

## MEXICO

| Name | Title | Company |
|---|---|---|
| Tim Kessler | Chief of Party | Abt Associates, Inc |
| Enrique Velasco | Mexico Representative | Cannon Power Corp. |
| Jonathan Pinzón | Director, Clean Energy | Casals & Associates, Inc. |
| Marcos Valenzuela | Subgerente de Transacciones Comerciales en el Área de Control Baja California | Centro Nacional de Control de Energía (CENACE) |
| Nemorio González | | Centro Nacional de Control de Energía (CENACE) |
| Eduardo Flores | Desarrollo de Nuevos Proyectos | Comexhidro, S.A. de C.V. |
| Josef Camhaji | | Comexhidro, S.A. de C.V. |
| Mario Vázquez | Director of Planning and Technical Assistance | Comisión de Cooperación Ecológica Fronteriza (COCEF) |
| Mario Modesto | Project Engineer | Comisión de Cooperación Ecológica Fronteriza (COCEF) |
| David Muñoz | Director General | Comisión Estatal de Energía de Baja California |
| Filedgar Montoya | | Comisión Estatal de Energía de Baja California |
| Florencio Aboytes | Gerente de Programación de Sistemas Eléctricos | Comisión Federal de Electricidad (CFE) |
| Alejandro Peraza | Director General de Electricidad y Energías Renovables | Comisión Reguladora de Energía (CRE) |
| Jorge D'Garay | President | D'Garay Public Relations Mexico SC & PR Mexico-USA |
| Diego Corredor | Business Development | Enel Green Power - Latin America |
| Carlos Blanco | Commercial and Business Development Director | InterGen |
| Esmeralda Viramontes | Legal Manager | InterGen |
| Rosa Bisteni | Gerente de Proyectos Sustentables | PEMSA |
| Francisco Acosta | Director General for Generation, Electricity Transmission and Transformation | Secretaría de Energía (SENER) |
| Aldo Flores | Director General de Asuntos Internacionales | Secretaría de Energía (SENER) |
| Rolando Fuentes | Director de Cooperación Internacional | Secretaría de Energía (SENER) |
| Claudia Hernández | Directoria de Energía y Medio Ambiente | Secretaría de Energía (SENER) |
| Jeff Pavlovic | Director of Electric Operations | Secretaría de Energía (SENER) |
| Benjamín Contreras | Subsecretario de Electricidad | Secretaría de Energía (SENER) |

| | | |
|---|---|---|
| Jaime Ramírez | Director General Adjunto, Generación Conducción y Transmisión de Energía Eléctrica | Secretaría de Energía (SENER) |
| Alberto Abreu | Director of Generation | Sempra Generation |
| Eleanore Fox | Deputy Economic Counselor | U.S. Embassy, Mexico |
| Fritz Jacobson | President | Wind Power de Mexico S. A. De C. V. |

## USA

| Name | Title | Company |
|---|---|---|
| Laurence Chaset | Consultant (Former CPUC Attorney) | |
| Eliot Peper | Rapporteur | |
| Jarrod Russell | Rapporteur | |
| Lila Petersen | Rapporteur | |
| David Kidd | Senior Planning Engineer, Texas Transmission Planning | American Electric Power (AEP) |
| Tim Raphael | Western Representative | American Wind Energy Association (AWEA) |
| Ernest Johnson | Executive Director | Arizona Corporation Commission (ACC) |
| Laura Furrey | Electricity Specialist | Arizona Corporation Commission (ACC) |
| Nicolas Puga | Partner | Bates White, LLC |
| George Kervitsky | Assistant Group Manager | BCS, Incorporated |
| Roy Tiley | Manager, Facilitation Services | BCS, Incorporated |
| Karen Wood | Research Analyst | BCS, Incorporated |
| Robert Naranjo | Analysis Group Manager | BCS, Incorporated |
| Tim Olson | International Program Manager | California Energy Commission |
| David Le | Regional Transmission - South | California Independent System Operator (California ISO) |
| Carol Brown | Chief of Staff to the President | California Public Utilities Commission (CPUC) |
| Iain Fisher | Technical Staff Member | California Public Utilities Commission (CPUC) |
| John Prock | Director of Mexican Affiliate of Companies | Cannon Power Corp. |
| Gary Hardke | President/Managing Director | Cannon Power Corp. |
| Remedios Gómez | Consul General | Consulado General de México en San Diego |
| Lydia Antonio | Cónsul para Asuntos Económicos y Enlace Interinstitucional | Consulado General de México en San Diego |
| Dan Woodfin | Director of System Planning | Electric Reliability Council of Texas (ERCOT) |
| Rob Guthrie | Business Initiatives Specialist, Office of Renewable Energy & Environmental Exports | Export-Import Bank of the United States |
| Christopher Melley | Director of Development | Gamesa Energy |
| Rafael Alcalde-Navarro | Commercial Leader for Latin America | GE Energy - Power and Water |

| | | |
|---|---|---|
| Enrique Marroquin | Vice President | Hunt Transmission Services, LLC |
| Noe Gutiérrez | Senior Energy Resources Planner | Imperial Valley Irrigation District (IID) |
| Jeremy Martin | Director, Energy Program | Institute of the Americas |
| Cecilia Aguillon | Director, Business Development & Government Relations | Kyocera Solar, Inc. |
| Jim Noel | Cabinet Secretary, Energy, Minerals and Natural Resources Department | New Mexico Public Regulation Commission |
| Miguel Romero | Origination / Commercial Development | Sempra Generation |
| Manal Yamout | Special Advisor to the Governor for Renewable Facilities | State of California |
| Soll Sussman | Border Coordinator - Renewable Energy Specialist | Texas General Land Office |
| Lisa Colquitt-Muñoz | Regional Coordinator | The Paso del Norte Group |
| Rhiannon Davis | International Relations Specialist, Office of American Affairs, Office of Policy and International Relations | U.S. Department of Energy (DOE) |
| Anthony Como | Director, Permitting and Siting, Office of Electricity and Energy Reliability | U.S. Department of Energy (DOE) |
| Erika Benson | Senior Advisor for the Americas, Office of American Affairs, Policy and International Affairs | U.S. Department of Energy (DOE) |
| Christopher Lawrence | Electricity Industry Specialist | U.S. Department of Energy (DOE) |
| Jonathan Elkind | Principal Deputy Assistant Secretary, Office of Policy and International Relations | U.S. Department of Energy (DOE) |
| Patricia Hoffman | Assistant Secretary, Office of Electricity and Energy Reliability | U.S. Department of Energy (DOE) |
| Kathleen Deutsch | Senior Advisor, Office of American Affairs, Office of Policy and International Relations | U.S. Department of Energy (DOE) |
| Steve Rodgers | Director, Division of Electric Power Regulation-West | U.S. Federal Energy Regulatory Commission (FERC) |
| Saeed Farrokhpay | Energy Industry Analyst (Detailee for CAISO) | U.S. Federal Energy Regulatory Commission (FERC) |
| Thom Sheets | General Counsel | U.S. Federal Energy Regulatory Commission (FERC) |
| Tim Meeks | Administrator | Western Area Power Administration (WAPA) |
| David Godfrey | Director, Standards Development and Planning Services | Western Electric Coordinating Council (WECC) |

# Appendix B: Forum Agenda

**Agenda**

**U.S. – Mexico Cross-Border Electricity Stakeholder Forum**

*Meeting Energy Needs and Protecting the Environment*

October 18-19, 2010
Institute of the Americas
La Jolla, CA

**Day One:**

8:00 AM **Registration and Coffee**

8:30 AM **Welcoming Remarks**

- Introductions and opening remarks – *Jeremy Martin, Director, Energy Program, Institute of the Americas* (10 minutes)
- Opening remarks and perspective – *Aldo Flores-Quiroga, Assistant Secretary of International Affairs, México, Secretaría de Energía (SENER)* (10 minutes)
- Opening remarks and perspective – *Jonathan Elkind, Principal Deputy Assistant Secretary, Office of Policy and International Affairs, United States, U.S. Department of Energy (DOE)* (10 minutes)

9:00 AM **Potential Sources of Value from International Cooperation on Cross-Border Electricity Development**

- *Patricia Hoffman, Assistant Secretary, Office of Electricity Delivery and Energy Reliability, DOE*
- *Francisco Acosta, Director General, Electricity Generation, Transmission, and Transformation, SENER*

9:15 AM **Facilitation Process Overview**

- *Roy Tiley, Facilitator, BCS, Incorporated*

9:30 AM **Coffee Break**

9:45 AM **Facilitated Session: Discussion of Renewable Energy Project-**

**Development Scenarios and Related Issues**

12:30 PM **Working Lunch**

2:00 PM **Breakout Sessions:** Participants will be divided into four breakout sessions (Technical, Regulatory, Policy, and Market/Financial) to discuss the challenges and issues outlined in the morning sessions.

3:00 PM **Coffee Break**

3:15 PM **Breakout Sessions Continued**
What are the strategies to overcome key challenges identified in previous discussions?

5:00 PM **Closing and Set-Up for Day Two**

6:00 PM **Networking Reception**

**Day Two:**

8:30 AM **Summary of Day One Facilitated Sessions**

10:15 AM **Coffee Break**

10:30AM **Final Thoughts, Participant Take-Aways, Wrap-Up and Next Steps**

10:15 AM **Closing Remarks - Stakeholder Session**

- *Jeremy Martin, Institute of the Americas* (5 minutes)
- *Jonathan Elkind, DOE* (5 minutes)
- *Aldo Flores-Quiroga, SENER* (5 minutes)

12:00 PM **Adjourn Stakeholder Session**

**Government-only Steering Committee Planning Session (Closed)**

1:30 PM **Opening Remarks for Government Session**

- *Aldo Flores-Quiroga, SENER* (5 minutes)
- *Jonathan Elkind, DOE* (5 minutes)

1:45 PM **Facilitated Session I: Task Force Development and Implementation**

3:45 PM **Coffee Break**

4: 00 PM **Facilitated Session II: Candidate Nomination for the Steering Committee**

4:45 PM **Final Thoughts, Wrap-Up, and Next Steps**

- Facilitation sessions wrap-up, BCS
- *Jonathan Elkind, DOE* (5 minutes)
- *Aldo Flores-Quiroga, SENER* (5 minutes)
- *Jeremy Martin, Institute of the Americas* (5 minutes)

5:30 PM **Adjourn**