

Summary of the 9th Meeting of the Energy Resiliency Task Force

Monday, 14 October 2019
Antofagasta, Chile (EWG58)

1. Welcome/Introductions

ERTF Co-Chairs Lilian Fernandez (PH DOE) and Ari BenAissa (US DOE) welcomed EWG delegates to the meeting. The ERTF approved the agenda for ERTF9. The ERTF next approved the meeting minutes from the 8th ERTF meeting held in Manila, Philippines at EWG57.

2. APEC Energy Resiliency Response since ERTF8

Representative were asked to report on significant weather/national electricity disruption events since ERTF8 and their energy resilience response including potential lessons learned for APEC.

United States: The United States reported that from January-July 7, 2019 there have been 6 weather and climate disaster events with losses exceeding US\$1 billion each occurring across the United States. These included 2 flooding events and 4 severe storm events. Overall, these events resulted in the deaths of 15 people and had significant economic effects on the areas impacted. The 1980-2018 annual average is 6.3 events per year. The U.S. next reported on the new North American Energy Resiliency Model (NRERM) which is being developed by the U.S. DOE Office of Electricity. The NAERM will provide a comprehensive resilience modeling system for the North American energy sector and its associated infrastructures. NAERM is being developed in two phases, with Phase 1 being long-term planning with offline data and Phase 2 being situational awareness and operational energy planning with streaming data. The U.S. will continue to report the status of NAERM at future ERTF meetings.

Philippines: The Philippines noted the status of the implementation of actions resulting from their January 2019 Department Circular titled “Adoption of Energy Resiliency in the Planning and Programming of the Energy Sector to Mitigate Potential Impacts of Disasters,” which was signed by the Philippine Energy Secretary.

Australia: Australia reported that there had been over 12,000 bush fires in South Australia.

Japan: Japan reported that typhoon Hagibis, which hit Japan on October 12, 2019, was responsible for a power blackout of over 500,000 residences in Tokyo.

3. Completed APEC Energy Resiliency Projects

United States: APEC Workshop on Integrated Energy-Water Planning and Policy Formulation (EWG 13 2018A). This project brought together representatives and practitioners from all APEC economies to exchange experiences on local energy-water issues and challenges, and on measures that have or could be taken to enhance energy-water resilience and sustainability. The goal of the workshop was to promote a greater understanding of energy-water interdependencies and potential impacts on energy system and water system operation and performance, and ways to minimize the potential economic and

social impacts of new energy projects. The project workshop was held in Honolulu, Hawaii May 7-9, 2019. The final report has been developed and approved by the EWG.

4. APEC Energy Resiliency Project Updates

United States: Ethanol for Reliable Energy Access (EWG 02 2018S)

Status: The project has been withdrawn.

United States: APEC Energy Resilience Smart Grid Workshop (EWG 09 2019S). Under the U.S.-Philippines co-chaired APEC Energy Resiliency Task Force (ERTF), this project aims to bring together representatives and practitioners from all economies to exchange experience on methodologies for evaluation and planning for natural disaster risks to power system resources, infrastructure, and communities. This project will promote greater energy resilience in power systems and project-level planning. The workshop will also provide an opportunity to demonstrate how cutting-edge smart grid technologies can enhance reliability and resilience of electric grids in the APEC region.

Status: The project workshop was held in the Philippines September 19-20, 2019. [The final report was approved on January 28, 2020.]

China: Establishment of a Cloud-based Sharing Platform of Multi-Energy Microgrids for APEC Economies (EWG 03 2018S). This self-funded project was approved by the APEC EWG at the end of June 2018. Currently, the Cloud-based Sharing Platform of Multi-Energy Microgrids, named CM2, has been fully tested with functionalities of real-time monitoring, data sharing among partners, energy management system visualization, historical data analysis etc. So far, 15 existing microgrid projects have been connected on the platform including Tohoku University microgrid, Japan; Cardiff University microgrid, UK; Environment and Energy Research Institute microgrid, Qatar; and several microgrids from mainland China. China is targeting to connect 100+ multi-energy microgrids across the world.

Status: Plans for the next stage include contacting additional potential APEC partners and organizing a workshop regarding microgrid design, planning, energy management and optimal operation and control.

Chile: Lessons Learned from Promotion Mechanisms Focused on Boosting Energy Solutions in Remote Areas (EWG 17 2018A). The main objective of this project is to identify and learn from international experience on promotion mechanisms that have allowed economies to increase the penetration of energy solutions in isolated locations. This project will build the capacity of APEC members through knowledge transfer from experts that have designed or implemented promotion mechanisms for increasing the rural or remote electrification to policy makers of economies that are looking for new ways to increase the energy access to the people.

Status: The project workshop was held October 9-11, 2019 in Santiago, Chile and the final report has been circulated to the EWG for approval.

Chile: Technological Challenges and Opportunities to Supply Flexibility to Electric Systems (EWG15 2018A). This project intends to review the experience of APEC economies regarding the deployment of the latest technological tendencies aimed to improve electric

system flexibility, particularly given scenarios with a high share of variable renewable energy, baseload power plant decommissioning and with changes in energy consumption patterns due to new forms of energy demand, such as electric mobility.

Status: This project workshop was held October 21-22, 2019 in Castro, Chile.

Chile: Distributed energy resources regulation and rate design (EWG 17 2018A). This project intends to conduct a seminar and workshop where expert speakers and participants will discuss distributed energy resource integration issues, which will help build a base for the discussions on new tendencies in distribution sector regulation.

Status: This project workshop was held October 23-24, 2019 in Santiago, Chile.

5. New/Planned APEC Energy Resiliency Project Proposals

Australia: This project supports a three day workshop focusing on capacity-building and training for further deployment of pumped storage hydropower as an ‘off the shelf’ technology for large scale electricity storage. The Bangkok or Hanoi workshop will help participants identify opportunities to modify existing infrastructure for pumped storage, such as disused mine sites and existing ‘run of river’ hydropower facilities. Sustainability protocols to reduce environmental and social impacts of such infrastructure will be presented. Finally, the workshop will provide a networking and capacity building opportunity for APEC members, pumped storage hydropower experts and international development institutions to identify ways of using existing programs to enhance pumped storage development.

Status: This project is in early implementation with the planned workshop in Bangkok, Thailand the third or fourth quarter 2020.

United States: This project supports a two-and-a-half-day workshop focusing on energy storage technologies applied for energy resiliency. The workshop will gather international experts from multiple U.S. national labs, ES industry leaders, and regional utility and financing experts to present on topics including ES technologies, financing, valuation, procurement, commissioning, operations, and safety. An emphasis will be placed on legislative and regulatory policy innovations required to launch and maintain widespread ES systems.

China: Demonstration and Promotion of Energy Resilience Tool Based on Solar Powered Emergency Shelter Solutions (SPRESS) for Natural Disaster in APEC. This project will carry out outcomes of EWG 22 2015A and provide technical support, establish workshops and technical training to engage key APEC stakeholders, and establish demonstration projects in China and other economies susceptible to natural disasters.

6. Energy Resilience Work Program

Energy Resilience Principles: Japan presented a summary of the Energy Resilience Principles that had been developed based on the initial discussion of the Energy Resilience Principles at ERTF8. The Energy Resilience Principles were planned to be submitted through the ERTF to the EWG. The purpose of the Principles is to provide an exhaustive list of elements necessary for considering energy resilience, while recognizing that not all the items and elements are necessary for all economies. The Principles are intended to be used as

a resource for promoting efforts on appropriate resilience improvement according to the circumstance of each economy based on these Principles. Following the general presentation on the Principles, China asked if comments about the Principles had been fully addressed. Japan and China said they would further discuss the comments prior to the EWG58.

Grid Resilience: The U.S. noted the success and importance of the ongoing grid resilience projects discussed earlier in the meeting.

Strengthening Infrastructure: The chairs noted that several ongoing projects were related to strengthening infrastructure and that there was close linkage between this workstream and the Energy Resilience Principles proposed by Japan.

Energy-Water Nexus: The United States noted that they had provided a review of their recently completed project *APEC Workshop on Integrated Energy-Water Planning and Policy Formulation (EWG 13 2018A)* earlier in the meeting.

Energy Access: China presented the results of their questionnaire on energy access of the Asia-Pacific Region that includes the present situation of development, demand, success cases and experience. Feedback was received from 14 economies and 2 research institutes. The survey found that 81% of respondents felt that energy access should be improved in APEC as a whole, while 53% felt that energy access was satisfactory in their own economy. Respondents felt that future cooperation between the EWG and relevant international organizations on energy access should focus on technical innovation and should call on all sides to strengthen their attention to investment in energy access while addressing the obstacles in financing. Exchange and sharing of policies, technologies and best practices, capacity building and training as well as improving financing capability are believed to be the most effective approaches to accelerate the process of global energy access. It was also noted that most respondents are willing to participate and organize energy access related work under the APEC framework. Such work mainly includes energy access training and sharing of experiences, technologies and best practices in energy access.

Ideas for collaboration with EPWG, other APEC and non-APEC fora: There was a general discussion of ideas for collaboration with other APEC fora. The Lead Shephard noted that he had talked to the EPWG, however, they had an issue with not having a quorum at previous meetings, but since they did have a quorum at their last meeting, so the issue of their status is approved for now. Dr. Chern reported that he discussed potential cooperation with the EPWG Chair, it was decided that ERTF should invite the EPWG Chair to the next ERTF meeting.

7. Next Steps/Wrap Up

The chairs invited all members to provide updates on the workshops and efforts discussed at the meeting. The 10th meeting of the ERTF will be held in Surabaya, Indonesia in March 2020, alongside EWG58.

The task force members thanked the Chile Ministry of Energy for hosting the meeting. The co-chairs asked if there was any other business. There being none, the co-chairs closed the 9th

meeting of the Energy Resiliency Task Force. Meeting minutes will be distributed out of session and approved at ERTF10.