

Summary of the 7th Meeting of the Energy Resiliency Task Force

Monday, November 5, 2018
Lima, Peru (EWG56)

1. Welcome/Introductions

ERTF Co-Chairs Patrick Aquino (PH DOE) and Ari BenAissa (US DOE) welcomed EWG delegates to the meeting. The ERTF approved the meeting minutes from the 6th ERTF meeting held in Hong Kong, China at EWG54. The review of the revised implementation plan was postponed until ERTF8.

2. APEC Energy Resiliency Response since ERTF6

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

United States: The United States reported that since 9 October 2018 there have been 11 weather and climate disaster events with losses exceeding US\$1 billion each occurring across the United States. These included 1 drought event, 6 severe storm events, 1 tropical cyclone event, 1 wildfire event and 2 winter storm events. During 2018, the U.S. has experienced the fourth highest total number of events, only behind the very active years of 2017, 2011, and 2016. Lessons learned for APEC include that for resiliency to natural disasters, communities often need major infrastructure and social needs covered for commonly 7-10 days and that almost all the services identified by communities need energy in terms of either electricity or fuels.

Philippines: The Philippines reported that they had experienced two major category 3 and 4 typhoons. They reported that they were able to restore 90% of those that lost power in 5 days due to planning ahead and pre-positioning critical response assets. Two important resiliency policies were also reported. One is on the “Adoption of Energy Resiliency in the Planning and Programming of the Energy Sector to Mitigate Potential Impacts of Disaster” which aims to institutionalize the development of a comprehensive Resiliency Compliance Plan (RCP) to strengthen the capacity, promote safety culture and disaster preparedness and improve response mechanisms of the energy sector. As of October 2018, it was reported that the Department received 109 RCPs from various energy companies detailing their programs, plans and actions. As way forward, an Energy Resiliency Standards and Energy Resiliency Roadmap will be developed.

Another update shared was on the National Electrification Administration’s (NEA’s) Policy on Electric Cooperatives’ (ECs’) Vulnerability and Risk Assessment (VRA) and Emergency Restoration shall identify critical assets, probable vulnerabilities and proactive measures needed. Meanwhile, the Policy on EC’s Resiliency Program (ERP) shall provide mechanism on how to efficiently restore the EC’s system in the event of a major disaster and define the chain of command of EC officers and employees including allocation of resiliency funds.

3. Completed APEC Energy Resiliency Projects

USA: APEC Workshop on Promoting Resilience in the Energy Sector (EWG 092017A)

This project supported a three-day workshop focusing on capacity-building training on the methodology for evaluating climate change risks to energy infrastructure, with guidelines on policymaking, for all relevant stakeholders. Specific focus areas included integrated resource and *resilience* planning (IRRP) and a recently developed climate risk assessment framework for hydropower projects to support climate-resilient energy decision-making. A major goal of the project was to incorporate ideas and lessons learned from past experiences into national disaster resource plans and government procurement systems.

The workshop took place over three days, from 31 July 2018 through 2 August 2018 in Cebu, Philippines and was hosted by the Philippines Department of Energy. Seven expert speakers and 29 delegates representing 9 APEC economies attended the workshop, with an additional 54 participants from the host economy. The APEC economies represented include Malaysia, Thailand, Viet Nam, Indonesia, the Philippines, Chile, China, and the United States. The project final report is available on the APEC website at:
<https://www.apec.org/Publications/2018/11/Promoting-Resilience-in-the-Energy-Sector>

4. APEC Energy Resiliency Project Updates

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

The workshop will focus on the important role that increased ethanol use holds for improving energy access in member economies and in supporting environmental and human health benefits. The goal of the workshop is to further the dialogue around the expanded use of ethanol as member economies seek to improve energy access and to meet APEC's ambitious 2030 goals of doubling the share of renewables in their energy mix. This workshop builds off previous work completed by the Energy Working Group in developing a roadmap for best practices in developing an ethanol industry in member economies, and individual economy case studies of challenges and opportunities of developing ethanol policies. The workshop will also foster collaboration across relevant APEC member officials and industry representatives to consider and share the benefits and opportunities ethanol holds for achieving energy access for APEC member economies.

Status: The U.S. hopes to hold the workshop in mid-2019.

USA: APEC Workshop on Integrated Energy-Water Planning and Policy Formulation (EWG 13 2018A)

This project will bring 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 is 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.

Status: The project workshop will be held in Honolulu, Hawaii in the second quarter of 2019.

Australia: Integrated energy system planning for equitable access to sustainable energy for remote communities in the northern regions of North Sulawesi (EWG 13 2017A)

The project commenced in November 2017 and a July workshop was planned to share best practices for attracting private investment to special economic zones in remote areas. A goal of the project is to deliver an innovative low carbon energy roadmap with the next level of granularity to provide practical information which local government, energy providers (Pertamina and PLN), local businesses and finance institutions can use to support investment decisions, implementation of projects, and policy development.

Status: The final project workshop is being held 5 November 2018 and the project is on track for completion in 2018.

China: Off Grid Electrification Option for Remote Regions in APEC Economies (EWG 07 2016A) (through EGNRET)

This project is to study the off-grid electrification option in remote regions in APEC economies. The project team has on-site investigated at least three representative regions for the feasibility study, and to investigate the current off grid electricity option, the cost, problem and obstacles of providing electricity, and to assess the technology and economical advantages of adopting solar, battery, microgrid and DC microgrid to these regions. At the end of project, a one-day workshop is to be conducted to facilitate in-depth discussions, sharing ideas and developing strategies to implement clean and efficient energy solution in these regions. The project has met its proposed major objects. The first major indicator for this project is to complete the on-site study for at least three economies, which has been completed. Off-grid studies were completed in China, Chile, and Australia. The second major indicator is to complete the one-day workshop, which has been successfully completed on Sep 10, 2018. There were a total 12 speakers and more than 30 attendees came to the workshop. At the end of the workshop, a round table discussion produced valuable summary on common problems encountered to provide electricity to remote off grid regions, such as how to sustain the efficient electrification supply after the projects are completed, and suggestions on how to solve these problems.

Status: The project is on track for completion in 2018.

China: Establishment of a Cloud-based Sharing Platform of Multi-Energy Microgrids for APEC Economies Grid Off Grid Electrification Option for Remote Regions in APEC Economies (EWG 03 2018S)

This self-funded project on the Establishment of a Cloud-based Sharing Platform of Multi-Energy Microgrids for APEC Economies 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, about

10 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.

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.

5. New/Planned APEC Energy Resiliency Project Proposals

USA: APEC Energy Resilience Smart Grid Workshop

Under the US-Philippines co-chaired APEC Energy Resiliency Task Force (ERTF), this self-funded project will support the design and implementation of a workshop on smart grid technologies to enhance energy resilience with APEC partners. The workshop will highlight smart grid technologies, and share tools, techniques, and best practices from U.S. and other APEC member economy's grid modernization efforts. The workshop will provide an opportunity to demonstrate how cutting-edge smart grid technologies can enhance reliability and resilience of electric grids in the APEC region. A summary of the workshop will be presented at the Energy Resiliency Task Force (ERTF) meeting following the completion of the workshop.

6. Energy Resilience Work Program

The four energy resilience work programs were briefly reviewed.

Grid Resilience: The United States gave an overview of the Grid Modernization Initiative (GMI) which is a multi-year program which began in 2016. The program is based on obtaining greater *resilience* to hazards of all type, improved *reliability* for everyday operations, enhanced *security* from an increasing and evolving number of threats, additional *affordability* to maintain economic prosperity, superior *flexibility* to respond to the variability and uncertainty of conditions at one or more timescales, including a range of energy futures, and increased *sustainability* through additional clean energy and energy-efficient futures. A review was also presented of the Alaska Microgrid Partnership, which was a recent GMI project which had created a development pathway for islanded microgrids which could reduce imported energy by at least 50%.

Strengthening Infrastructure: Japan reviewed the highlights of their recent report on Guidelines for Electric Power Infrastructure.

Energy-Water Nexus: The United States provided a brief update on recent and new work on the energy-water nexus, which included their recently approved project *APEC Workshop on Integrated Energy-Water Planning and Policy Formulation (EWG 13 2018A)*.

Energy Access: China provided a brief review of work on energy access, noting that the program lead and 5-6 others from China were unable to attend the meeting due to not receiving their visas in time. China summarized 5 tasks that had been completed during the

last year supporting energy access including: (1) prepared a draft policy paper of Initiative to Enhance Energy Access in the APEC region; (2) in April 2018, a Chinese expert group visited six African countries to investigate their present energy access situation which can help serve as a reference to understanding solutions for energy access in areas with no power access; (3) in May 2018, China systematically organized and summarized their experience in and best practice in the improvement of energy access, edited these results and published the pamphlet of China's Success Story in Energy; (4) in May 2018, CREEI and ASEAN Centre for Energy (ACE) jointly organized the capacity building program themed with “Effective Utilization of Multiple Energy Resources” that brought together nearly 30 delegates from China and 10 ASEAN nations. This program lays the foundation of understanding the energy access situation of Southeast Asia and locally promoting micro-grid solutions on the basis of multi-energy complementation; (5) in August 2018, China kicked off the research on the present situation of energy access and popularization of best practice under the APEC framework that includes the investigation of the present situation and demand of energy access in the Asia-Pacific Region, clarification of solutions and best practice of improving energy access in different regions, etc. The research is to be completed in June 2019 and the relevant results will be shared with the economies when appropriate.

Future energy access plans include the development of a questionnaire of energy access of the Asia-Pacific Region that include the present situation of development, demand, success cases and experience, etc. (the initial draft was distributed to the delegates of all economies present at EWG56 and later the APEC EWG Secretariat will send the questionnaires to all economies for their feedback). Based on the feedback of questionnaires, the Chinese side will select an appropriate topic to apply for an APEC self-funded project to speed up the realization of regional 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 the ERTF had very broad work streams and thus there was a need to collaborate with others across APEC. Two specific examples mentioned were the Energy Preparedness Working Group, which was established after the great Southeast Asia tsunami, and the Private Partnership on Food Security (PPFS), which could have linkages with the energy-water nexus work stream.

7. Next Steps/Wrap Up

The chairs invited all members to provide updates on the workshops and efforts discussed at the meeting. The 8th meeting of the ERTF will be held in Manila, Philippines in May 2019, alongside EWG57.

The task force members thanked the Peru Ministry of Energy and Mines for hosting the meeting. The co-chairs asked if there was any other business. There being none, the co-chairs closed the 7th meeting of the Energy Resiliency Task Force. Meeting minutes will be distributed out of session and approved at ERTF8.