

Grid Integration Of Variable Renewable Energy: Innovative Solutions at the Transmission and Distribution Levels

Deep Dive Workshop, Asia Clean Energy Forum (ACEF)
5 June 2018, 09:00-17:30
Asian Development Bank Headquarters, Manila, Philippines



Gain knowledge and tools to enable a clean, modern, flexible, and affordable power system

With the costs for solar and wind energy technologies continuing to fall, an increasing number of countries have shifted from planning for the integration of variable renewable energy to actually implementing changes. This Deep Dive Workshop, organized by USAID, GIZ and NREL, will draw from these experiences to provide the most up-to-date information on emerging solutions for efficiently integrating variable renewable energy to both the transmission and distribution systems. Expert speakers from diverse power systems around the world will highlight case studies and provide participants with insights on solar and wind grid integration strategies that can be adapted to power systems of any size and market structure.

Learn how decision makers in the Asia region (and beyond!) are addressing common grid integration questions

- Which **decision support tools** are available to enable power system flexibility?
- What strategies are effective in creating an enabling environment for **thermal plant flexibility** to support solar and wind integration?
- What considerations and approaches can help policy makers understand the type, size, and location of **energy storage** to best benefit their power systems?
- How can innovative approaches to interconnection processes, compensation mechanisms, and planning address the technical challenges that

arise as large amounts of **rooftop solar PV** are interconnected to the distribution system?

- What will the role of **emerging technologies** be in systems with high levels of variable RE?

Participation is free for ACEF attendees

Registration for ACEF is a prerequisite for participation in the Deep Dive Workshop. Apart from the ACEF fee, there are no additional costs to attend this workshop. **Please indicate your participation in this Deep Dive Workshop when registering online for ACEF at <http://www.asiacleanenergyforum.org/registration-2018/>.**

Contact us

For the latest agenda and information, please visit the Deep Dive Workshop section of [ACEF website](#). For any other questions, please contact the organizers:

- Jaquelin Cochran (jaquelin.cochran@nrel.gov)



- Jennifer Leisch (jleisch@usaid.gov)
- Kerstin Linden (kerstin.linden@giz.de)

Agenda

Time	Activity
9:00-9:20 am	Opening: Welcome remarks <ul style="list-style-type: none"> • Mr. Helmut Fischer, Executive Director for Austria, Germany, Luxembourg, Turkey and the United Kingdom, Asian Development Bank • Ms. Carrie Thompson, Deputy Assistant Administrator, USAID Bureau for Economic Growth, Education and Environment
9:20-9:45am	Morning Keynote - Grid Integration and Power System Flexibility: Challenges and Trends <ul style="list-style-type: none"> • Dr. Jaquelin Cochran, NREL
9:45-10:30am	Decision Support Tools to Enable Power System Flexibility <i>Identify methods and tools that can help planners understand the power system-specific issues that might arise as the penetration of solar and wind on the power system grows, as well as the flexibility strategies that are most likely to be cost-effective.</i> <p><u>Speakers:</u></p> <ul style="list-style-type: none"> • Overview: "Grid Integration Studies and Identifying Flexibility Solutions," Ms. Jessica Katz, NREL • Thailand case study: Dr. Peerapat Vithayasrichareon, International Energy Agency (IEA) • Sri Lanka case study: Dr. H. M. Wijekoon and Mr. Randika Wijekoon, Ceylon Electricity Board
10:30-11:00am	Break
11:00-11:50am	Overcoming Barriers to Flexibility in the Generation Fleet <i>Communicate the range of issues that policymakers will likely confront when addressing how to create an enabling policy, regulatory, and market environment for thermal plant flexibility.</i> <p><u>Speakers:</u></p> <ul style="list-style-type: none"> • Overview: "Creating an Enabling Environment for Conventional Power Plant Flexibility," Dr. Peerapat Vithayasrichareon, IEA • Germany case study: Ms. Claudia Weise, VGB PowerTech e.V • India case study: Mr. Anjan Kumar Sinha, NTPC
11:50am-12:30pm	Utility-Scale Storage: If, When, What Type, How Much, and Where? <i>Provide an overview of the considerations and tools that will support policymakers in making cost-effective decisions about the deployment of storage as the penetration of variable RE grows.</i> <p><u>Speakers:</u></p> <ul style="list-style-type: none"> • Overview "Storage services in a high-RE power system, and the state of the industry," Jaquelin Cochran, NREL • Hawai'i case study: Mr. Leon Roose, Hawai'i Natural Energy Institute
12:30-2:00pm	Lunch
2:00-2:30pm	Afternoon Keynote - Grid Integration At The Distribution Level: Challenges and Trends <ul style="list-style-type: none"> • Dr. Thomas Ackermann, CEO, Energynautics
2:30-3:30pm	Solutions to Facilitate Successful RE Integration on the Distribution System <i>Support policy makers in identifying and navigating the range of institutional strategies (including policy, regulations, compensation mechanisms, and planning) that will help mitigate technical challenges (e.g., 2-way power flow, voltage control) that arise as large amounts of rooftop PV are interconnected to the distribution system.</i> <p><u>Speakers:</u></p> <ul style="list-style-type: none"> • Overview: "Institutional mechanisms to enable efficient integration of rooftop PV," Ms. Jessica Katz, NREL • India case study: Mr. Jörg Gäbler, Indo-German Energy Programme, GIZ • Hawai'i case study: Mr. Marc Matsuura, Hawai'i Natural Energy Institute
3:30-4:00pm	Break
4:00-5:15pm	Panel: Where Do We Go From Here?
5:15-5:30pm	Summary, Additional Resources, and Closing



Preparation / Additional Information for Participants

For more information and advance reading about variable RE grid integration issues, please see the resources at <http://greeningthegrid.org>.

About the Organizers

The **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)** provides services worldwide in the field of international cooperation for sustainable development. GIZ has over 50 years of experience in a wide variety of areas, including energy and the environment, economic development and employment, and peace and security. The diverse expertise of this federal enterprise is in demand around the globe, with the German Government, European Union institutions, the United Nations and governments of other countries all benefiting from our services. The German Federal Ministry for Economic Cooperation and Development (BMZ) is the main commissioning party, but GIZ also works with the private sector, fostering successful interaction between development policy and foreign trade.

The **United States Agency for International Development (USAID)** is the lead U.S. Government agency that works to end extreme global poverty and enable resilient, democratic societies to realize their potential. USAID's work safeguards this mission and puts countries on a path to pursue clean energy growth and resilient, low-carbon development. Countries around the world are feeling the effects of climate change, from more intense heat waves, droughts, floods and storms to slower-moving changes like ocean acidification. USAID is sharing world-class knowledge, data and tools to ensure countries can predict, prepare for and adapt to change. USAID also helps countries lay the foundations for sustainable growth powered by clean energy and healthy landscapes.

The U.S. Department of Energy's **National Renewable Energy Laboratory (NREL)** focuses on creative answers to today's energy challenges. From breakthroughs in fundamental science to new clean technologies to integrated energy systems that power our lives, NREL researchers are transforming the way the world uses energy. NREL analysis informs policy and investment decisions as energy-efficient and renewable energy technologies advance from concept to commercial application to market penetration. With objective, technology-neutral analysis, NREL aims to increase the understanding of energy policies, markets, resources, technologies, and infrastructure and connections between these and economic, environmental, and security priorities.

For any questions, please contact:

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