

Going forward, these training programs will be rolled out with support from partner institutions by establishing a network of these institutions (Smart-NET) that will work with the National Smart Grid Knowledge Centre under the NSGM. The proposed training programs will facilitate dissemination of tools, approaches and methodologies used for planning and designing Smart Grid projects, and build the capacity of utility professionals.



## Awareness Film

The Program, in collaboration with the MOP and NSGM, has developed a short film on “Smart Grid and its Transformative Impact on Utility Operations and Customer Energy Empowerment”. The film, shown during Smart Grid training programs, provides an overview of what is a Smart Grid and how it can transform the way we generate and use electricity.

# Capacity Building & Training



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### June 2017

This brochure is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this brochure are the sole responsibility of Nexant Inc. and do not necessarily reflect the views of USAID or the United States Government. This brochure was prepared under Contract Number AID-386-C-12-00001.



## Overview

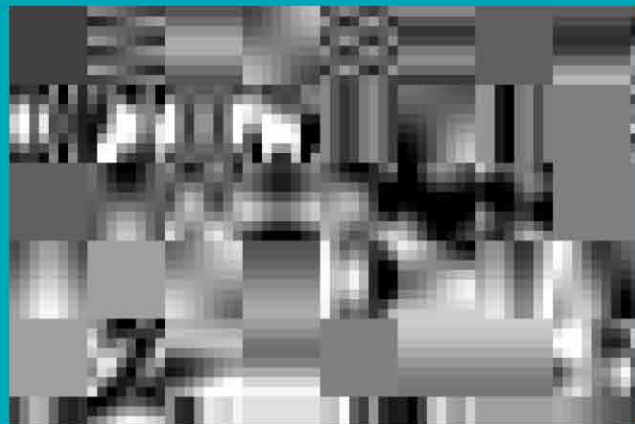
Smart Grids encompass a wide range of technologies, procedures, substation automation, software and hardware. Utility engineers not only need to know how to operate the new systems but also how to maintain and monitor them for higher efficiency.

Training and capacity building has been identified as one of the key strategic areas under the National Smart Grid Mission (NSGM) with a target of training 10 percent of utility technical staff on Smart Grid technologies.

The U.S.-India bilateral Partnership to Advance Clean Energy – Deployment Technical Assistance (PACE-D TA) Program provided support to the Ministry of Power (MOP) and NSGM to build the capacity of utility engineers and facilitate knowledge transfer of industry best practices and project implementation methodologies. The training interventions aimed to equip the utility participants with the technical, commercial and regulatory knowledge essential to effectively plan and implement their respective Smart Grid projects.

## Capacity Building

As a part of its capacity building initiative, the Program organized several training programs with specific themes such as issues faced by utilities during the pre-award stage and the importance of communication technology in the successful deployment of Smart Grid projects. In all, five workshops were organized which also included field trips to Tata Power Delhi Distribution Limited, Puducherry Electricity Department, Paschimanchal Vidyut Vitran Nigam Limited, and the smart meter manufacturing facility of Secure Meters which helped the participants (nodal officers of the Smart Grid pilot utilities) to understand the practical issues faced during the conceptualization and implementation phase of Smart Grids. The Program also organized a study tour to the U.S. in January 2014 to facilitate knowledge transfer of best practices and first-hand experience of the latest Smart Grid technologies. The study tour, comprising key officers of the distribution utilities that are directly responsible for carrying out the Smart Grid pilot programs, provided a better understanding of implementation strategies of Smart Grids and facilitated networking opportunities between the U.S. and Indian stakeholders.



## Smart Grid Training Network

The PACE-D TA Program, in collaboration with the MOP and NSGM, has developed a basic Smart Grid course for utility personnel. The course ensures relevance to the Indian Context and has a mix of lecture and practical insights and cases, both national and international. The objective of the course is to develop a foundation course that would provide a well-rounded exposure to the utility participants on varied aspects of Smart Grid planning and deployment. The course is designed at two levels:

- A half-day orientation module for the top management (Chairmen, Managing Directors and Directors) of the distribution companies. *The orientation, held in January 2016, sensitized the senior-level managers on the planning and implementation of Smart Grid projects, as well as benefits of such projects to both the utilities and their customers.*
- A three-day Smart Grid foundation course for utility professionals to sensitize them on Smart Grid technologies and related operational issues. *The Program provided assistance to the NSGM to organize two training programs for utility professionals. The first three-day training was held in July 2016 at CENPEID campus of Tata Power, Delhi and the second three-day training was held in December 2016 at the Central Power Research Institute campus in Bengaluru.*

### Smart Grid Foundation Course Modules

DAY 1	DAY 2	DAY 3
Introduction to Smart Grids	Loss reduction, asset monitoring & optimization, and outage management system	Cyber security
Building blocks of Smart Grid	Grid integration of renewables & energy storage	Customer engagement and participation
Peak load management & demand response	Smart Grids and quality of supply and service	Smart Grid analytics and data management issues
Smart Grid readiness assessment and maturity model	Communications technology	Smart Grid and its role in smart city context