

Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Program



A bilateral program to accelerate the deployment of clean energy in India via policy support, capacity building, pilot projects, innovative financing and partnerships.



GOVERNMENT OF INDIA
MINISTRY OF NEW
AND RENEWABLE ENERGY



GOVERNMENT OF INDIA
MINISTRY OF POWER

Overview

Partnership to Advance Clean Energy (PACE) is the flagship program on clean energy between the U.S. and India to jointly work on a range of issues related to energy security, clean energy and climate change. PACE seeks to accelerate inclusive, low-carbon growth by supporting research and deployment of clean energy technologies and policies. PACE combines the efforts of several government and non-government stakeholders on both the U.S. and Indian sides and includes three key components: Research (PACE-R), Deployment (PACE-D), and Off-Grid Energy Access (PEACE). PACE-D includes a USD 20 million five-year technical assistance (TA) program which is led by the U.S. Agency for International Development (USAID) and the U.S. Department of State and implemented in partnership with the Ministry of Power (MOP) and the Ministry of New and Renewable Energy (MNRE).

PACE-D TA Program

The PACE-D TA Program focuses on energy efficiency (EE), renewable energy (RE) and cleaner fossil technologies, with cross-cutting activities on institutional strengthening, capacity building and training, and clean energy finance.

The overall aim of the PACE-D TA Program is to accelerate the deployment and use of clean energy produced, expand U.S.-India trade and investment linkages, and facilitate exchange of information and best practices. The Program works with policy makers, regulators, state agencies, private companies, investors, clean energy associations, and other stakeholders to create an enabling environment to increase the uptake of EE and RE technologies in India.

Program Partners

State Agencies: Haryana Renewable Energy Development Agency; Haryana Electricity Regulatory Commission; Uttar Haryana Bijli Vitran Nigam Ltd.; Dakshin Haryana Bijli Vitran Nigam Ltd.; Madhya Pradesh Urja Vikas Nigam Ltd.; Karnataka Renewable Energy Development Ltd.; Bangalore Electricity Supply Company Ltd. (BESCOM); Tripura State Electricity Corporation Ltd.; Rajasthan Renewable Energy Corporation Ltd.; Rajya Vidyut Prasaran Nigam Ltd.; Urban Development and Housing Department, Rajasthan; Jaipur Development Authority; Jaipur Vidyut Vitran Nigam Ltd.; Ajmer Vidyut Vitran Nigam Ltd.; and the Energy Departments of Karnataka, Haryana and Rajasthan.

Public Sector Agencies: Bureau of Energy Efficiency (BEE); NTPC; National Smart Grid Mission Project Management Unit; National Institute of Solar Energy (NISE); Solar Energy Corporation of India; Indian Oil Corporation Ltd.; Indian Railways; Indian Renewable Energy Development Agency; Nalanda University; and Energy Efficiency Services Ltd. (EESL).

Private Sector Agencies: Tata Cleantech Capital Ltd. (TCCL); The Climate Group; BASIX; India Infrastructure Finance Company Ltd. (IIFCL); ESAF; MSF; Sarala; Swayamshree; Ujivan; Vayam; SVCL; Saija.

The PACE-D TA Program also serves as the Secretariat to the overall PACE initiative.

At a Glance: Key Activities



Provided support for the development of Smart Grid regulatory framework

Assisting BEE in the technical update of the Energy Conservation Building Code

Supporting the Nalanda University and Uttar Haryana Bijli Vitran Nigam headquarter to become net-zero

Supporting the development of Waste Heat Utilization policy

Promoting market transformation activities for Heating, Ventilation and Air-Conditioning



Providing TA to Indian Railways and Indian Oil for solar rooftop deployment

Assisted BESCOM in the design and implementation of solar rooftop program, and solar-based pumping pilot

Supporting the development of the National Energy Storage Demonstration Program and a Roadmap for its implementation

Supporting the development of a compliance mechanism for Renewable Energy Purchase Obligation (RPO) in Rajasthan

Deployed a shared service model for decentralized solar irrigation



Improved the heat rate in two utilities

Established the Indian Heat to Power Alliance

Improved NTPC's capacity on supercritical technologies via technical reports, software pilots and study visit to the U.S.

Completed software pilots on coal blending and advanced pattern recognition

Developed Best Practices Manual for supercritical power plants



Assessing the training needs of the Indian solar sector

Providing training to 14 Smart Grid pilots and detailed TA to two pilots

Developing Smart Grid training course for utility professionals

Designed, developed and rolled out a training program on solar rooftop for distribution utilities

Supporting NISE in the establishment of Solar Energy Training Network (SETNET) for building skilled manpower



Providing policy, regulatory and technical support to state agencies in Rajasthan and Karnataka for solar rooftop and EE initiatives

Supported the development of Demand-side Management (DSM) regulations in Haryana

Supporting the development of solar rooftop policy and Interconnection Framework for distribution utilities in Madhya Pradesh

Providing support to the National Smart Grid Mission for institutional and operational framework

Supported the development of Vendor's Manual for improving the clean energy products procurement process in Madhya Pradesh



Developed the solar rooftop evaluation tool for financial institutions

Mainstreaming energy efficiency finance in corporate loans via the Corporate Energy Audit Program with TCCL

Assisting EESL to make investments in ten substations to make them energy efficient

Assisting IIFCL in facilitating launch of Infrastructure Debt Fund – Mutual Fund

Working with seven microfinance institutions to make them market ready for clean energy lending

Energy Efficiency

Renewable Energy

Cleaner Fossil

Capacity Building

Institutional Strengthening

Clean Energy Finance

Key Components

Developing an Enabling Ecosystem for Clean Energy Deployment



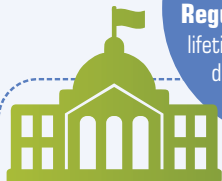
Implementation Team

Nexant, Inc. leads the implementation team for the PACE-D TA Program. Nexant is supported by a consortium of Indian and U.S. companies to implement the various components of the Program. These include: Arc Finance, Chemonics International, Confederation of Indian Industry, Continuing Education & Training Centre, Development Environenergy Services Ltd., Emergent Ventures India Pvt. Ltd., Environmental Design Solutions Pvt. Ltd., GSES India Sustainable Energy Pvt. Ltd., Idam Infrastructure Advisory, KPMG Advisory Services Pvt. Ltd., Leonardo Technologies, Inc., Mercados Energy Markets India Pvt. Ltd., SEE-Tech Solutions Pvt. Ltd., Small Scale Sustainable Infrastructure Development Fund, SRC Global Inc., and Stephen Storm Inc. Individual Consultants include: Arvind Karandikar, Bibek Bandhopadhyaya, Depankar Bishnoi, Manab Chakarborty, Pat Abbot, Radha P Krishnan, Tom Dreesen, V Amarnath, and Warren Ashton.

Key Outcomes

(As of January 2016)

Policy and Regulatory Support

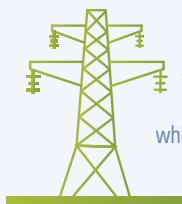


Assisting Karnataka and Rajasthan to develop **state level EE policies**, targeting energy savings of 63 MW and 100 MW respectively by FY 2018-19

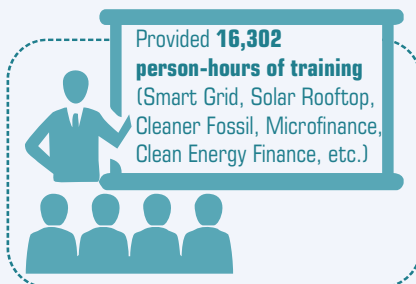
Supported Haryana in developing and implementing **DSM Regulations** to achieve a lifetime saving of 20 MW during the Program period

Assisting Madhya Pradesh to develop **solar rooftop policy** that has a target of 2.2 GW by FY 2021-22

Supported the Forum of Regulators in finalization of **Smart Grid Model Regulations** which will assist in achieving India's goal of reducing losses to below 10% by 2027



Capacity Building of Stakeholders



Microfinance Support Program

Supported focal microfinance institutions in the sale of **71,621 clean energy products**



Cleaner Fossil

Facilitated **heat rate improvements of 0.2% and 5.6%** in Chandrapur and Panipat thermal power stations owned by MAHAGENCO and HPGCL respectively

Solar Rooftop Deployment

Supporting **BESCOM** in the deployment of its solar rooftop program that has a target of **200 MW**



Assisting **Indian Oil** to set up solar rooftop on its refineries and installations, targeting **5 MW**

Assisting **Indian Railways** in the procurement of **150 MW** of solar rooftop power



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