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PACE-D TECHNICAL ASSISTANCE PROGRAM

Annual Report (June 01, 2012 – June 30, 2013)

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PARTNERSHIP TO ADVANCE CLEAN ENERGY
DEPLOYMENT (PACE-D)

Technical Assistance Program

Annual Report
(2012-2013)

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ACRONYMS

Acronym	Definition
ACEEE	American Council for Energy Efficient Economy
ACEF	Asia Clean Energy Forum
ACORE	American Council on Renewable Energy
AEEE	Alliance for an Energy Efficient Economy
AMI	Advanced Metering Infrastructure
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ATEEF	Advisory Team for Energy Efficiency Finance
ATREF	Advisory Team for Renewable Energy Finance
AWP	Annual Work Plan
BEE	Bureau of Energy Efficiency
BEEP	Building Energy Efficiency Project
BESCOM	Bangalore Electricity Supply Company Ltd.
CEA	Central Electricity Authority
CEAP	Corporate Energy Audit Program
CenPEEP	Centre for Power Efficiency and Environmental Protection
CERC	Central Electricity Regulatory Commission
CETC	Continuing Education & Training Centre
CIBSE	Chartered Institution of Building Services Engineers
CLEEO	Clean Energy & Environment Office
CLIN	Contract Line Item Number
COP	Chief of Party
COR	Contracting Officer's Representative
CPPRI	Central Paper and Pulp Research Institute
DCOP	Deputy Chief of Party
DESL	Development Environenergy Services Limited
DHBVNL	Dakshin Haryana Bijli Vitran Nigam Limited
DPR	Detailed Project Report
DR	Demand Response
DSM	Demand Side Management
EBRD	European Bank for Reconstruction and Development
ECBC	Energy Conservation Building Code
EDS	Environmental Design Solutions Pvt. Ltd.
EE	Energy Efficiency
EEC	Excellence Enhancement Center
EECS	Energy and Environment Consultancy Services
EEO	Energy Efficiency Obligation
EESL	Energy Efficiency Services Limited
EMMP	Environment Mitigation and Monitoring Plan
EVI	Emergent Ventures India Pvt. Ltd.

GDC	Global Development Centre
GERMI	Gujarat Energy Research & Management Institute
GHG	Greenhouse Gas
GOH	Government of Haryana
GOI	Government of India
HAREDA	Haryana Renewable Energy Development Agency
HERC	Haryana Electricity Regulatory Commission
HVAC	Heating, Ventilation and Air-Conditioning
IDFC	Infrastructure Development Finance Company
IGBC	Indian Green Building Council
IGEN	Indo-German Energy Programme (IGEN)
IIAPL	IDAM Infrastructure Advisory Pvt. Ltd.
IIHS	Indian Institute of Human Settlements
IREDA	Indian Renewable Energy Development Agency Limited
IREF	Indian Renewable Energy Federation
IREP	Indian Renewable Energy Platform
ISGF	India Smart Grid Forum
ISGTF	India Smart Grid Task Force
ISO	International Organization for Standardization
JNNSM	Jawaharlal Nehru National Solar Mission
KERC	Karnataka Electricity Regulatory Commission
KREDL	Karnataka Renewable Energy Development Limited
LTI	Leonardo Technologies Inc.
M&E	Monitoring & Evaluation
M&V	Measurement & Verification
MERC	Maharashtra Electricity Regulatory Commission
MFI's	Microfinance Institution
MNRE	Ministry of New and Renewable Energy
MOP	Ministry of Power
MPUVNL	Madhya Pradesh Urja Vikas Nigam Limited
MSA	Master Service Agreement
NAPCC	National Action Plan on Climate Change
NBFC's	Non-banking Finance Companies
NCEF	National Clean Energy Fund
NEDO	New Energy & Industrial Technology Development Organisation
NETRA	NTPC Energy Technology Research Alliance
NTPC	NTPC Limited (formerly National Thermal Power Corporation)
NVI	New Ventures India
NZEB	Net-Zero Energy Building
OPIC	Overseas Private Investment Corporation
P&P	Pulp and Paper
PACE-D	Partnership to Advance Clean Energy – Deployment
PAT	Perform, Achieve and Trade
PFAN	Private Financing Advisory Network

PGCIL	Power Grid Corporation of India Limited
PMP	Performance Monitoring Plan
PRGF	Partial Risk Guarantee Fund
PRSF	Partial Risk Sharing Facility
R-APDRP	Rapid Accelerated Development and Reform Program
RDMA	Regional Development Mission for Asia
RE	Renewable Energy
REC	Renewable Energy Certificate
RERC	Rajasthan Electricity Regulatory Commission
RESCO's	Renewable Energy Services Company
RPO	Renewable Portfolio Obligation
RRECL	Rajasthan Renewable Energy Corporation Limited
(S ³ IDF)	Small Scale Sustainable Infrastructure Development Fund
SDA	State Designated Agency
SECI	Solar Energy Corporation of India
SERC	State Electricity Regulatory Commission
SGES	Smart Grid Electric Systems
SI	Sponge Iron
SNA	State Nodal Agency
SOP	Standard Offer Program
TERI	The Energy Research Institute
TO	Task Orders
TOC	Table of Contents
TOR	Terms of Reference
UHBVNL	Uttar Haryana Bijli Vitran Nigam Limited
USAID	United States Agency for International Development
USG	U.S. Government
WHU	Waste Heat Utilization
WRI	World Resources Institute

The PACE-D Technical Assistance (TA) Program is a part of the overall Partnership to Advance Clean Energy (PACE) program announced by the U.S. Government and the Government of India in 2009. The five year PACE-D TA Program aims to accelerate India's transition to a high performing, low emissions, and energy secure economy by development, deployment and transfer of innovative clean energy technologies. It will help develop and strengthen Energy Efficiency (EE) and Renewable Energy (RE) policy and regulatory frameworks, program designs, and financial incentives at the national and state levels. The three key components of the project are:

- **Development Result 1:** Improved end use of energy efficiency by scaling up and deployment of energy efficiency technologies.
- **Development Result 2:** Increased supply of renewable energy through scaling up renewable energy technologies.
- **Development Result 3:** Adoption and accelerated deployment of cleaner fossil technologies and management practices to achieve greater supply side efficiency from existing fossil power generation.

This annual report covers the progress made by the PACE-D TA Program for the period June 2012 - June 2013 (Year 1). The key activities covered in this year include:

CLIN 1: Energy Efficiency

- Develop work plan and implementation strategy for Year-1.
- Organize two smart grid capacity building workshops.
- Develop a conceptual framework for the ECBC technical update.
- Conduct awareness seminars on Net-Zero Energy Buildings and identify pilot projects.
- Assess the market for the potential of energy efficient HVAC technologies in India.
- Develop draft normalization protocol for select sectors.
- Conduct WHU market assessment.
- Select three focal states for focused capacity building and institutional support.
- Develop draft EE financing report.

CLIN 2: Renewable Energy

- Develop work plan and implementation strategy for Year-1.
- Select three focal states for focused capacity building and institutional support.

- Develop draft report on off-grid RE energy delivery models for rural electrification.
- Launch of ACORE-IREF partnership for apex RE body in India.
- Develop draft report on energy storage technologies and their potential applications in India.
- Meet finance stakeholders to identify barriers to financing of RE projects.
- Develop draft RE financing report.
- Develop draft concept note on revolving fund for microfinance.

CLIN 3: Cleaner Fossil Technologies

- Develop work plan and implementation strategy for 18 months period for the clean fossil technology tasks.
- Select utilities for heat rate improvement and benchmarking tasks.
- Organize the visit of U.S. experts to focal utilities.
- Organize the training workshops on heat rate improvement at focal utilities.
- Develop draft "Best Practices Manual" for utilities.
- Explore linkages for a Service Provider Network.
- Collaborate with NTPC and CenPEEP to prepare for the international conference.

CLIN 4: Other Management

- Develop PACE-D TA Program website and include pages for the U.S. agencies.
- Develop marketing collateral.
- Participate in the fourth Clean Energy Ministerial (CEM4).
- Coordinate secretariat meetings.
- Explore linkages for partnerships between ACORE-IREF and AEEE-ACEEE.

2.1 CHRONOLOGY OF PROJECT PROGRESS

The CLIN and task wise progress during the quarter is presented below.

2.1.1 Chronology of Project Progress



2.1.2 CLIN Briefs

The PACE-D TA Program was initiated by a series of key meetings including the Project Advisory Committee meetings held on June 18, 2012 and March 22, 2013; consultative meetings with the Executive Committees for finalization of Year 1 activities; and the U.S. interagency meeting held on June 20, 2012. The meetings provided valuable input for the development of PACE-D TA Program's Annual Work Plan (AWP) and Implementation Strategy.

2.1.2.1 CLIN 1: Improved end use of Energy Efficiency by Scaling up and Deployment of EE Technologies

While preparing the Annual Work Plans for Year 1, it was agreed that the PACE-D TA Program will support BEE in the implementation of the Energy Conservation Building Code (ECBC) and the Perform, Achieve and Trade (PAT) scheme. The PACE-D TA Program will also focus on the deployment of EE technologies such as Net-Zero Energy Buildings (NZEBs), Waste Heat Utilization (WHU) and Advanced Heating, Ventilation and Air-Conditioning (HVAC) systems. In addition, it was agreed that the PACE-D TA Program will support the Indian Smart Grid Task Force (ISGTF) and Power Grid Corporation of India limited (PGCIL) in the implementation of smart grids in India. The details of Year 1 activities and the progress made in the individual tasks are mentioned below.

Task 1: Market Driven Energy Efficiency Technology Deployment

Smart Grid Electric System (SGES)

Under the SGES activity, the PACE-D TA Program is supporting the MoP and the ISGTF for the implementation of 14 Government of India (GoI) pilot projects. It is focusing on capacity building of pilot project teams and facilitating ISGTF in monitoring pilot implementation. Under this initiative, the PACE-D TA Program provides strategic direction to the power industry for smart grid implementation via technical reports, studies and opinion papers. An Inception Report covering policy, regulatory, institutional and technology aspects together with existing initiatives was prepared by the program. This report also formed the basis to conduct the following activities which were completed in Year 1:

- **Opinion Papers:** The PACE-D TA Program prepared and presented two opinion papers at the GRIDTECH 2013. GRIDTECH is an international conference organized by PGCIL which provides a platform to manufacturers, suppliers, academicians and consultants to showcase their state-of-the-art products and technologies in the field of transmission, distribution, smart grids, RE sources integration, load dispatch and communication. The knowledge papers were on the following topics:
 - ***Demand Response (DR) in the Indian Context:*** The paper provides details on the concept of DR and elucidates the key characteristics for designing a successful DR program and highlights the challenges in the Indian context.
 - ***Smart Imperatives for Grid Integration of Renewable Energy Sources of Electricity:*** The paper lists the challenges to grid integration of large scale variable renewable energy and details out the short and long term imperatives to address these issues.
- **Capacity Building Workshops:** The PACE-D TA Program delivered two smart grid capacity building workshops in April and May 2013.

- ***Introductory Workshop on Role of PACE-D TA Program and its Focus on Smart Grids:*** The workshop was conducted on April 12, 2013, in association with the MoP and ISGTF. This workshop established the beginning of a long-term working relationship between the smart grid pilots and the PACE-D TA Program. A survey form was distributed to the participants to assess their capacity building needs. The feedback received will help the PACE-D TA Program to design a comprehensive capacity building plan for the pilots. The summary report on the workshop was submitted to USAID/India.
- ***Capacity Development Workshop on Effective Smart Grid Pilot Planning and Implementation:*** The PACE-D TA Program delivered a two-day participant training workshop on “Effective Smart Grid Pilot Planning and Implementation” on May 27-28, 2013. Participants included personnel from the 14 utilities implementing the pilot projects, ISGTF, USAID/India, PGCIL, CEA and MoP. The workshop included technical sessions on regulatory issues for smart grids, international case studies, cyber-security and interoperability. The workshop also featured working group sessions with the pilots to help them strategically think about project planning and implementation. A site visit to Landis+Gyr Smart Grid test bed in Noida, Uttar Pradesh was also arranged for the participants to help them visualize the implementation of an Advanced Metering Infrastructure (AMI). The summary report of the workshop was submitted to USAID/India.
- **Roadmap on Communication and Application Interoperability:** The PACE-D TA Program developed a paper on the Communication and Application Inter-operability Roadmap for India. The paper compiled, analyzed and refined the different approaches to interoperability and standardization in the field of power distribution networks. The paper also defines an analysis framework or ‘Interoperability Matrix’ that acts as a reference, against which the different existing approaches are listed, categorized and compared. The paper has been peer-reviewed and will be released in a public platform in Year 2.

Building Energy Efficiency

Under the Building Energy Efficiency activity, the PACE-D TA Program is assisting BEE to develop the technical update of ECBC and support its implementation, promote Net-Zero Energy Buildings (NZEBS) and advanced Heating, Ventilation and Air-Conditioning (HVAC) systems. The following related activities were undertaken in Year 1:

- Energy Conservation Building Code (ECBC) Technical Update and Implementation:
 - The PACE-D TA Program developed a conceptual framework for the ECBC technical update which was presented at a stakeholder consultation workshop held on December 20, 2012.
 - The PACE-D TA Program developed the structure for the ECBC working groups and technical committees which will oversee the code update. The program, in collaboration with

BEE initiated the process of operationalizing these committees. The first meeting of the chairpersons of the five technical working groups was organized on May 9, 2013.

- The PACE-D TA Program, in close collaboration with BEE developed a document which identified key priorities for initiating the process of the ECBC Technical Update. The document identified technical specifications of ECBC 2007 that are no longer relevant and should be removed. It also identifies the technical areas that need to be updated. The ECBC Update Priorities document was shared with the chairpersons of the working groups for their review and input and it will be released to the general public for comments in Year 2.
 - The PACE-D TA Program developed a framework and associated rules and regulations for the nationwide implementation of ECBC. The framework includes the legal provisions to enforce the code on the construction industry; the eligibility criteria to define the set of eligible buildings for mandatory ECBC compliance; the administrative provisions for code enforcement and compliance; and proposed penalties and dispute resolution to legally bind the construction industry with mandatory ECBC compliance.
 - The PACE-D TA Program conducted an assessment to identify the institutional, technical, market-based and financial capacity building requirements in the buildings industry, which will be critically needed to successfully implement ECBC at the national scale. Input from the ECBC capacity assessment was used to develop a Capacity Building and Training Action Plan. The action plan identifies the training needs for different stakeholder groups in the building industry and lays out the detailed approach. The workshops, webinars and seminars to build the technical capabilities of the building industry and enable successful implementation of the ECBC will be conducted as per the action plan.
- Net-Zero Energy Buildings (NZEBs):
 - **NZEB Awareness:** The PACE-D TA Program conducted a two day awareness seminar on Net-Zero Energy Buildings in India on May 16-17, 2013, in New Delhi. The seminar featured prominent national and international experts for discussions on NZEB policies and regulations, case studies, and advanced energy efficient and renewable energy technologies that are critical for achieving net-zero energy status for buildings. The seminar received positive feedback from the participants that included representatives from the government sector, architects, engineers, consultants, academia, technology and service providers and other relevant stakeholders from the building industry.
 - **NZEB Pilot Projects:** The PACE-D TA Program developed the criteria for the selection of NZEB pilot projects. Based on the determined criteria, Nalanda University in Rajgir, Bihar and Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL) headquarters at Panchkula, Haryana were selected to participate as NZEB pilot projects under the PACE-D TA Program. A MoU with Nalanda University was signed on May 17, 2013. The PACE-D TA Program provided technical assistance to Nalanda University in Year 1 by making a presentation to senior management on NZEB feasibility, developing the campus design and technical evaluation criteria for their NZEB campus master plan design competition and providing technical members for the evaluation of their design completion entries. Nalanda University has selected

Vastu Shilpa Consultants as the design architects for their campus. The PACE-D TA Program will continue to provide technical assistance to the university and its design team to ensure the successful design and implementation of their NZE campus. A MoU with UHVBN is expected to be signed with UHVBN to officially include them as a PACE-D TA Program pilot project.

- Heating, Ventilation and Air-Conditioning (HVAC):

- **Expert Group Workshop on Low Energy Comfort Systems:** The PACE-D TA Program organized a workshop on February 28 - March 1, 2013 in New Delhi to deliberate on the key barriers to the adoption of low energy comfort systems in India. It included discussions on the latest research and technological advancements and helped stakeholders understand the potential of energy reductions by adoption of low energy comfort systems for building heating and cooling. The expert group provided critical inputs and guidance on areas of interventions, approaches, and methodology for the deployment of energy efficient comfort systems in three climate zones in India. The program has identified a few building projects that have deployed advanced HVAC systems in various climate zones in India. In year-2 the team will work with CEPT University and the PACE-R team to develop a plan to conduct Measurement & Verification (M&V) studies to demonstrate the energy savings achieved through deployment of these advanced systems.
- **Energy Efficiency in Existing Buildings:** The PACE-D TA Program researched energy-efficient retrofit strategies, policies and market barriers for energy efficiency in existing buildings in the European Union and the U.S. Findings from this research will be used to prepare a strategy paper to promote energy efficiency in existing buildings for the Indian building industry.

HVAC Market Assessment: In Year 1, the PACE-D TA Program initiated a market assessment survey to understand the potential of energy efficient HVAC technologies¹. The assessment will help in understanding the HVAC market (existing vendors, technology types, market size, etc.) and also examine deployment barriers in the Indian market. The identification of deployment barriers will be further examined for the development of an HVAC market transformation strategy which will lay out an action plan to increase the deployment of advanced EE HVAC systems and technologies in the Indian buildings industry. The market assessment study and market transformation strategy will be completed in the first quarter of Year 2.

Industrial Energy Efficiency

The PACE-D TA Program focused on supporting the BEE to:

- implement the Perform, Achieve and Trade (PAT) scheme by developing the normalization protocol for select sectors; and

¹ Examples include radiant cooling (concrete core cooling, chilled ceilings, active chilled beams, etc.); geothermal cooling (ground-source heat pumps, thermal piles, earth air tunnels, and water source heat pumps); solar cooling (solar air conditioners, solar desiccant cooling); combined heat and power (CHP, trigen, pentagen, etc.), absorption/ adsorption cooling, waste-heat systems; district cooling and heating; and heat recovery and free cooling (economizer).

- promote the deployment of Waste Heat Utilization (WHU) technologies for the industrial sector.

The program developed selection criteria and conducted background research and analysis to select the target sectors for its activities. The Sponge Iron (SI) and Pulp and Paper (P&P) sectors were selected as the focus area for PAT implementation and WHU promotion for the PACE-D TA Program. The Central Paper and Pulp Research Institute (CPPRI) was identified as a partner for conducting the PAT implementation work for the P&P sector. The work in the SI sector will be led by DESL.

- PAT Implementation

- In Year 1, the PACE-D TA Program prepared a roadmap for developing the normalization approach for the SI and P&P sectors, and has discussed the same with BEE. The approach follows PAT guidelines as well as a review of international best practices (especially the Superior Energy Performance Program of U.S.-DOE). It hinges upon identification of key variables for each sector: quantifying the band width of variability, and assigning weight factors for each variable by regression analysis which will form the basis for developing the normalization manual. The PAT roadmap will be discussed with industry stakeholders in Year 2 and the PACE-D TA Program will proceed with the implementation of the roadmap and development of the normalization protocol for both sectors.

- Waste Heat Utilization

- In Year 1, the PACE-D TA Program conducted a WHU market assessment study, under which 55 Sponge Iron (SI) units in the states of Orissa and West Bengal were contacted for data collection. Of these, 17 units already had WHU installations. Of the remaining 38, only 12 units agreed to provide data for macro-assessment of WHU potential. Data from only 5 of these 12 units was found to be of good quality to make the assessment. With engineering analysis of the good quality data from 5 units, it was projected that the aggregate potential for power generation from the remaining 38 units was 127 MW while the overall potential in the segment was estimated at 700 MW. It was also determined that the payback from the investments would depend on the revenue from export of surplus power and at existing tariff levels, this is estimated to range between 2-4 years where surplus power is exported to the grid. The study also helped identify several barriers that limit the large scale deployment of the WHU technologies.
- In Year 1, the PACE-D TA Program developed a strategy outline for the increased market penetration of WHU technologies in India. The strategy has been prepared after review of current market penetration of high, medium and low temperature WHU technologies. The report also includes a review of global experiences on WHU policies; and identified critical success factors, challenges and barriers to wide scale deployment of WHU technologies. Finally, the report put forward an analysis and recommended a roadmap for WHU promotion in India. The report has been completed and also discussed with the BEE for further action. Based on the feedback received, the program will conduct a more detailed and structured market assessment as per terms of reference developed in consultation with BEE (after further

discussions with USAID) and provide technical support for the implementation of a pilot. This will help in better understanding the barriers and appropriate strategies to address them.

- In Year 1, the PACE-D TA Program also completed a detailed WHU feasibility study for a 300 TPD sponge iron unit. The team identified a 7.3 MW WHU plant for meeting part of the unit's power demand and exporting surplus power to the state utility at a cost of INR 398 million. No further action on this will be taken as per the discussions with USAID. Year 2 efforts of the PACE-D TA Program will focus on the development of a WHU Alliance in India.

Task 2: Institutional Development and Strengthening of Policy Framework for EE Deployment

Under this task, the PACE-D TA Program will work with the State Development Agencies (SDAs) and the State Electricity Regulatory Commissions (SERCs) to create a policy framework that is conducive for the promotion of EE programs and activities. The PACE-D TA Program will also provide the SDAs and SERCs with the required capacity building and training for the design, deployment and successful implementation of new and existing EE programs. The focus will remain on ECBC and PAT implementation and the deployment of WHU and HVAC technologies in the market.

In Year 1, the PACE-D TA Program developed a report for the selection of three focal states to provide focused support for institutional, policy and regulatory development. The PACE-D TA Program focused on EE improvement in commercial and industrial sectors, with ECBC and the PAT scheme being top priorities. As such, 16 states that have been proactive in implementing ECBC or offer considerable potential for improving EE in the industrial sector were initially short-listed for the selection of two focal states. The program did a comparative analysis and ranking (across nine parameters) of these 16 states. Based on this analysis, Haryana, Rajasthan and Karnataka were shortlisted as the three focal states for institutional development and technical assistance. The related activities for Year 1 include:

- Multiple meetings in Karnataka with Karnataka Renewable Energy Development Limited (KREDL) and Karnataka Electricity Regulatory Commission (KEREC) to discuss current energy efficiency activities and collect relevant data and information on Karnataka's EE initiatives. This was followed by preparation of a State Action Plan Development Strategy document and work-plan.
- Multiple meetings with Bangalore Electricity Supply Company Limited (BESCOM) to discuss the potential for a grid automation study to promote the integration of renewable energy to the grid in Karnataka. The PACE-D TA program team initiated the study in June 2013.
- Multiple meetings in Rajasthan with Rajasthan Renewable Energy Corporation Ltd (RRECL) and Rajasthan Electricity Regulatory Commission (RERC) to obtain relevant data and inputs to prepare an "Approach Note for State Action Plan Development Strategy" highlighting tentative areas for the support to RRECL and RERC along with a tentative work plan.
- The PACE-D TA Program met senior officials of the Department of Energy, Haryana Renewable Energy Development Agency (HAREDA) and Uttar Haryana Bijli Vitaran Nigam Limited (UHBVNL) and Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL) in June 2013. The

objective of the visit was to introduce the PACE-D TA Program activities and team to the senior management of Haryana's energy sector and identify the key priority areas for HAREDA and the Government of Haryana to be taken up as a part of the PACE-D TA Program. A preliminary analysis of the compiled data and identification of key activities for TA support to HAREDA are currently underway

Task 3: TA and Capacity Building to Develop and Implement Innovative Financing Mechanisms

The PACE-D TA Program initiated the EE finance activities by meeting stakeholders in Mumbai, Bangalore and New Delhi during July and December 2012. The stakeholders included senior representatives of debt and equity providers including Indian Renewable Energy Development Agency (IREDA), Tata Capital, Global Environment Fund, Standard Chartered Project Finance, and IDFC, amongst others. The key objective of these meetings was to identify the existing barriers to clean energy financing in India and explore potential solutions/mechanisms to address them. The program evaluated several global financing mechanisms for energy efficiency and identified key mechanisms that have the potential to be deployed in India. The draft report on EE finance provides details of each of the proposed financial mechanisms and makes recommendations for their implementation as part of the PACE-D TA Program.

The program also set up an Advisory Team for Energy Efficiency Finance (ATEEF) in March 2013. The ATEEF members provide collective expertise on different technologies and financing sources including debt, equity, and mezzanine, among others to the PACE-D TA Program. The ATEEF members include:

- Representative from Ministry of Power, Government of India
- Representative from Bureau of Energy Efficiency, Government of India
- Mr. Debashish Majumdar, Chairman & Managing Director, IREDA
- Mr. Rajiv Kumar, Deputy General Manager, SIDBI
- Mr. Jaisingh Dhummal, Chief General Manager (Technology Finance Group), ICICI Bank
- Mr. Ashish Khanna, India Energy Team Leader, World Bank
- Mr. G C Dutta Roy, CEO, Dalkia Energy Services Ltd.

The PACE-D TA Program also organized roundtables with project developers and financial institutions in April 2013 in New Delhi and Mumbai. Each roundtable sought to deliberate and identify measures including innovative business models, incentives, regulations and capacity building to scale up EE deployment in India.

Similarly, the first meeting of ATEEF was held in April 2013 in Mumbai. The PACE-D TA Program discussed the different proposed financing mechanisms in detail with the ATEEF members and deliberated on the barriers and challenges for each. The members also identified the next steps required for the design and roll out of the selected EE financing mechanisms.

The PACE-D TA Program incorporated the feedback received from the ATEEF members and roundtable meetings into its draft report on EE Financing. The EE Financing report is now being finalized and is expected to be launched by end of August 2013.

Task 4: Capacity Building, Education, Training, Public Outreach Programs

The following activities were conducted in the past year:

- Public Outreach
 - Awareness seminar on Net-Zero Energy Buildings.
 - Preparation and release of opinion papers on various smart grid issues at GRIDTECH 2013.
 - Expert group workshop on Low Energy Comfort Systems.
 - Round-table with developers and financial institutions on EE project financing.
- Trainings
 - Introductory workshop on the role of PACE-D TA Program and its focus on Smart Grids.
 - Capacity development workshop on Effective Smart Grid Pilot Planning and Implementation.
 - Evaluation, Monitoring & Verification of Demand Side Management Projects for Discoms, CMVPs & DSM Verifiers (in association with AEEE)

2.1.2.2 CLIN 2: Increased Supply of Renewable Energy through Scaling Up RE Technologies

Task 1: Institutional Development and Strengthening of Policy and Regulatory Framework at the State Level for RE Deployment.

With increased RE development, the onus of RE development is shifting to the states, which are now the key actors in the promotion of RE. These agencies need to enhance their capacity to facilitate and create an enabling environment for RE development in their states.

This task was initiated with the shortlisting of three focal states. The shortlisting was done based on an index which ranked the key RE potential states on 13 distinct parameters. Based on this ranking the top six states were shortlisted as potential candidates. After detailed discussions with USAID and MNRE, the list was further shortlisted and the states of Rajasthan, Madhya Pradesh and Karnataka were identified for capacity-building activities.

The three focal states were agreed on a joint meeting with MNRE. Subsequently introductory meetings were organized with the stakeholders from SNAs, state power departments and SERCs in each of the three states to apprise them about the program and to understand their priorities and expectations. The meetings also helped the PACE-D TA Program to collect the preliminary data and discuss the strategy for state action plans for the key institutions. The strategy for each institution was shared with relevant stakeholders including USAID for their review and approval. Following this, the program developed detailed strategy documents elucidating the work plans, methodology and timelines for various tasks and activities involved in the preparation of the action plans for all RE

relevant institutions.

Based on the strategy documents, the PACE-D TA Program organized meetings with different stakeholders and studied programs, systems and processes at each of the institutions; and is currently developing a detailed gap analysis for each institution. The gap analysis and the state action plan for the Madhya Pradesh Urja Vikas Nigam Limited (MPUVNL) has been prepared, shared and approved by both MPUVNL and USAID. The program is in the process of finalizing the gap analysis for the other institutions (the SERCs of MP, Rajasthan and Karnataka and SNAs of Rajasthan and Karnataka).

Task 2: Market-driven RE Technology Deployment

The task on market-driven RE technology deployment focused on the following activities in Year 1:

- RE-based off-grid business models for rural electrification,
- Identification and development of a support strategy for an ACORE-like institution in India,
- RE-based off-grid business models for commercial and industrial applications, and
- Storage technologies for India.

These activities started with detailed analysis of the existing market, key constituents, challenges and opportunities. This was followed by the development of a detailed approach or a strategy which shall be converted to implementation programs in the second year.

- **Development of an Approach for Deployment of off-grid Renewable Energy in India for Rural Energy Access:** Market driven deployment of off-grid renewable energy is one of the key focus activities of the PACE-D TA Program. As part of this strategy, the program aims to develop an implementation framework for supporting the deployment of off-grid renewable energy programs in rural areas.

The PACE-D TA Program participated in a number of events on off-grid rural energy delivery models. The events included the USAID-TERI roundtable on innovation alliance to scale-up rural energy access through off-grid RE and the USAID-supported off-grid alliance stakeholder consultation. The program also consulted industry experts such as Dr. Harish Hande, Managing Director, SELCO and held meetings with Haryana-based Urja Unlimited and Rajasthan-based Frontier Markets to discuss support for the rural off-grid program. Based on these interactions the PACE-D TA Program developed a detailed draft report which mapped the critical parameters for the viability, replicability and scalability of off-grid RE energy delivery models for rural electrification. The report was based on the analysis of the experience of nine renewable energy based business models operating in the off-grid space in India. These parameters allowed the program to identify the key constituents of a scalable, replicable, and viable model for the development of an off-grid RE-based business model. These factors were used to develop a programmatic approach to design a state-sponsored program for off-grid renewable energy deployment in India. This approach will be used in Year 2 to further develop a program for off-grid RE-based rural electrification.

- **Launch of ACORE-IREF Partnership:** One of the key objectives of the PACE-D TA Program is

to support the development of an ACORE-like apex body in India. The PACE-D TA Program made a preliminary assessment of existing ACORE-like initiatives in India and identified the Indian Renewable Energy Federation (IREF) as the most capable institution to take on the role of an apex body. Subsequently the team organized a half day workshop with the IREF to understand its business model and explore PACE-D TA Program's support for the proposed apex body in India.

The partnership for collaboration between ACORE and IREF was launched at an official side event of the fourth Clean Energy Ministerial held in New Delhi. The launch event was attended by several delegates along with members of IREF and the PACE-D TA Program. Prior to the launch an introduction meeting between members of ACORE and IREF was organized by the PACE-D TA Program to discuss collaboration modalities. The PACE-D TA Program also developed a strategy paper which shall form the basis of assistance that will be channeled from ACORE to IREF for scaling up its activities and institutional development. The paper was developed based on a number of interactions between the PACE-D TA Program and IREF management.

- **Mapping the Development of Storage technologies:** The PACE-D TA Program was requested by MNRE to provide technical assistance on energy storage technologies. The PACE-D TA Program prepared a status report on current energy storage technologies and their potential applications in the Indian context. The report analyzed various energy storage technology options and highlighted their benefits such as time shift, grid stabilization, peak shaving of demand, improved generation efficiency, reduction in carbon emissions and improved transmission capacity utilization. This was followed by a presentation on the storage technology options made to the Joint Secretary and other officials of MNRE.
- **Report and Approach for Deployment of off-grid RE applications in the Commercial and Industrial Sectors in India:** The PACE-D TA Program is also developing an implementation framework to support the deployment of off-grid renewable energy programs in commercial and industrial applications. The program undertook a detailed analysis of the development of the sector and market for RE-based off-grid applications in the commercial and industrial space. Based on this analysis, it prepared a report outlining the potential applications of renewable energy for commercial and industrial use in India. The report also suggests a model for deployment through the use of RESCOs and recommended an approach for their deployment in Year 2.

Task 3: Technical Assistance and Capacity Building to Develop and Implement Innovative Finance Mechanisms

The RE finance activities under the PACE-D TA Program began with a series of meetings with key stakeholders in Mumbai, Bangalore and New Delhi between July and December 2012. The stakeholders included senior representatives of debt and equity providers including Indian Renewable Energy Development Agency (IREDA), Yes Bank, Tata Cleantech Capital, Global Environment Fund, and IDFC, amongst others. The key objective of these meetings was to identify the existing barriers to renewable energy financing in India and explore potential solutions to address them. The program evaluated several global financing mechanisms for renewable energy and identified key mechanisms that have the potential to be deployed in India. The draft report on RE finance provides details of each

of the proposed financial mechanisms and makes recommendations for their implementation as part of the PACE-D TA Program.

The program also set up an Advisory Team for Renewable Energy Finance (ATREF) in March 2013. The ATREF members provide collective expertise on different technologies and financing sources including debt, equity, and mezzanine, among others to the PACE-D TA Program. The ATREF members include:

- Representative from the Ministry of New and Renewable Energy, Government of India
- Mr. Debashish Majumdar, Chairman & Managing Director, IREDA
- Mr. Pankaj Sindwani, Head (Green Cluster Finance), Tata Cleantech Capital
- Mr. Jayesh Modi, Senior Vice President, HSBC
- Mr. Satish Mandana, Head, IDFC Private Equity
- Mr. Vinayak Mavinkurve, Head (Project Finance), IDFC
- Mr. Shallabh Tandon, Portfolio Manager (South Asia), IFC
- Mr. Vivek Mehra, Aloe Private Equity Group

The PACE-D TA Program also organized roundtables with project developers and financial institutions in April 2013 in New Delhi and Mumbai. The roundtables focused on identifying innovative mechanisms, fiscal and financial incentives, regulations and capacity building measures to scale up RE deployment in India.

Similarly, the first meeting of ATREF was held in April 2013 in Mumbai. The PACE-D TA Program team discussed the different proposed financing mechanisms in detail with the ATREF members and deliberated on the barriers and challenges for each. The members also identified the next steps required for the design and roll out of the selected RE financing mechanisms.

The PACE-D TA Program incorporated the feedback received from the ATREF members and roundtable meetings into its draft report on RE Financing. The RE Financing report is now being finalized and is expected to be launched by end of August 2013.

Task 4: Capacity Building, Training, Outreach, Dissemination and Sharing of Best Practices

This task complements and supports other RE activities of the PACE-TA Program via capacity building efforts targeted at specific stakeholders involved in the grid and off-grid based RE applications, state support, micro-finance, finance and regulation. The program has identified potential collaboration with regulators, state nodal agencies, financiers, developers and technology suppliers to assess capacity building and training needs and design the same accordingly.

The PACE-D TA Program held several discussions with CETC, the lead sub-contractor for training programs for target groups like women entrepreneurs, engineers, RE technology incubators. The program also started the process of exploring key target groups which require capacity building and training support for the promotion of RE technologies in rural areas. The team initiated efforts to establish the partnership with Swayam Shikshan Prayog (SSP), which has been awarded USAID/India's Partnership on Women's Entrepreneurship in Clean Energy (wPOWER) program.

The program will also leverage MNRE's capacity building program and developed a concept note identifying key areas for collaboration between MNRE and the PACE-D TA Program. This note was discussed with the Joint Secretary, Ministry of New and Renewable Energy (MNRE) in order to evolve a capacity building strategy for RE under the PACE-D TA Program. The Joint Secretary, MNRE suggested that the PACE-D TA Program meet Dr. Pant, who is in-charge of capacity building at MNRE and finalize the strategy for capacity building. The PACE-D TA Program plans to meet with Dr. Pant early in Year-2 to discuss the future course of action.

Task 5: Regulator Partnership

The PACE-D TA Program met Dr. Pramod Deo, Chairman, CERC, to update him on project activities and understand the specific capacity building and technical assistance requirements of the SERCs. Dr. Deo suggested that the SERCs particularly require support on Renewable Portfolio Obligation (RPO) compliance verifications, Renewable Energy Certificate (REC) verifications and energy forecasting and scheduling techniques. The suggestions made by Dr. Deo have been included in the action plan to work with the states. The strategy for regulator partnership shall be finalized in Year 2 after discussions with the three focal states.

Task 6: Microfinance Support Program

The focus of the microfinance activities in Year 1 was to identify potential areas where MF based activities can be structured. This included mapping of the key actors operating in the MF space and lending for clean energy technologies, identifying other key agencies working on structuring similar programs and key gaps in the MF space which could be addressed through a revolving fund, capacity building and other technical support.

- **Meeting with Sa-dhan and IFC:** The PACE-D TA Program met with Sa-Dhan to map and identify Microfinance Institutions (MFIs) who were actively involved in small scale finance for energy and infrastructure services. The key objective of the meeting with Sa-dhan was to discuss the status of clean energy finance by MFIs in India. The PACE-D TA Program is developing a status report on clean energy microfinance and the meeting with Sa-dhan provided important inputs for the report. The PACE-D TA Program also met with IFC to map and identify IFC's initiative in this area and arrive at specific areas where PACE-D TA Program and IFC can pool resources and efforts.
- **Concept Note on Revolving Fund for Microfinance:** The PACE-D TA Program developed the first draft of the revolving fund note including suggestions on how the U.S. Embassy can contribute to the same as an anchor investor. The final draft of the note is expected by the end of July 2013.

2.1.2.3 CLIN 3: Adoption and Accelerated Deployment of Cleaner Fossil Technologies and Management Practices to Achieve Greater Supply side Efficiency from Existing Fossil Power Generation

The adoption and acceleration of cleaner fossil technologies and management practices to improve supply-side efficiency in existing fossil power generation is poised to contribute to the new NAPCC mission on clean coal, with its planned focus on developing next-generation coal-fired power plants, using advanced super-critical and integrated gasification combined cycle (IGCC) technologies, and reducing carbon emissions per megawatt power generated. Significant progress has been made on cleaner fossil activities during the first 12 months of the 18-month duration of this set of CLIN activities. The PACE-D TA Program has been working closely with the Center for Power Efficiency and Environment Protection (CenPEEP) at NTPC for the implementation of tasks under the clean coal activity.

Activities were commenced with a range of consultative meetings with USAID, CenPEEP, Central Electricity Authority (CEA) and other relevant stakeholders. These meetings resulted in:

- Selection of two utilities for heat rate improvement task and a utility for the model power plant and benchmarking task. The selections were made on the criteria-based analysis.
- Delineation of strategies, annual work plan (AWP) and activities required for adoption and accelerated deployment of cleaner fossil technologies.

Task 1: Deployment of Cleaner Fossil Technology and Management Practice in Existing Plants

Heat Rate Improvement in Select Indian Utilities

Ten potential State Electricity Board (SEB) plants were short-listed for the heat rate improvement task, in discussion with CenPEEP and CEA. The two identified focal plants are at Chandrapur, Maharashtra and Panipat, Haryana.

A preliminary visit was organized to the power plants in February and March to collect the data and prepare for the visit of U.S. experts in March 2013. The U.S. and CenPEEP experts conducted the necessary tests at the Chandrapur and Panipat power plants to understand the operation of boiler, turbine and other processes. A detailed walk through of both the plants was conducted along with participant trainings at each site.

The PACE-D TA Program has prepared detailed draft of Heat Rate Improvement Plans based on these visits. The plans include suggestions to improve upon the following deviations from the design of systems at both Chandrapur and Panipat plants:

- Efficiency, Heat Rate & Performance:
 - Boiler Performance Improvement Opportunities (firing system equipment performance, air in-leakage, air-gas systems management, elevated de-superheating spray flows).
 - Turbine Cycle Performance Improvement Opportunities.
- Unit Reliability (overheated tubes & failures).
- Boiler tube alignment and heat transfer optimization.
- Load Generation Capability.

- Coal Quality; Lack of Consistency for the Coal Supply.
- Instrumentation, Control & Archiving Capability for Plant Heat Rate Performance Monitoring & Reaction.
- Plant Safety (i.e. Handrails, cleanliness, leaky insulation, coal & ash leaks, etc.).
- Boiler Cleaning Provisions. The following issues were identified with the boiler cleaning equipment:
 - There are no working long retractable soot blowers available on the unit.
 - There are no cleaning provisions for the super heater heat division panels.
 - Mechanical condition of the wall blowers need to be addressed and optimized.
- Visual observation of the tube circuitry in the upper furnace suggested improvements needed with boiler alignment.
- Excess O₂ measurement is non-optimal
 - Current location of (2) existing probes is non-representative. Only one probe on each side of each boiler exit duct.
 - Visual observations of secondary combustion in the boiler suggest possible oxygen starvation.
- System Air In-leakage
 - Air in-leakage has a negative impact on APH “X” Ratio, ESP performance, Fan Capacity and Auxiliary Power Consumption

Supercritical Technology Guideline Manual - Operations and Benchmarking

The PACE-D TA Program has selected NTPC’s Sipat plant in Chattisgarh for the supercritical technology guideline task. During the first visit of U.S. specialists from the PACE-D TA Program in November 2012, a decision was taken, in consultation with USAID and CenPEEP, that the U.S. team will assist in delivering two study reports: a) Baseline Benchmarking Study and b) Best Practice Manual for Supercritical Technology (in lieu of the operation and benchmarking guideline manual).

During their second visit in March 2013, the U.S. specialists visited Sipat to work with the plant management and conduct a walk through to understand its functioning. Prior to this visit, the CenPEEP team provided detailed technical design information of the Sipat supercritical plant to prepare the U.S. team.

The U.S. team, in close consultation with CenPEEP, is working on the finalization of “Best Practices Manual” that will be useful to existing supercritical plants and Indian utilities that are setting up supercritical units. The manual has specific sections focused on the operation, performance monitoring and maintenance of various plant components. The aspects related to safety, reliability, availability and efficiency of supercritical units are also being addressed, including experience and case studies from some of the best performing units in U.S. The program is developing this document based on the experience and the information gathered from the team’s utility internally and externally, using “best practices” experience from past APP program work and also through information sharing and knowledge transfer with world class utilities and associates. The report will be completed during the first quarter of Year 2.

Development of Concept of Model Power Plant in an Existing Facility

The PACE-D TA Program consulted experts from CenPEEP, NTPC, BEE and LTI to get their inputs on developing a roadmap for the Model Power Plant (MPP) and the plant selection for MPP. After due assessment, the Sipat plant was identified as the best choice for conducting the work to develop the roadmap for MPP. This was followed by visits to Sipat to collect relevant data and develop the roadmap and identify training needs.

Post multiple visits, it was agreed that it would be useful to focus on areas of immediate need to Indian power plant community (instead of developing a detailed roadmap for the Model Power Plant Concept). With this decision, the concepts are now being developed for:

- desk-top coal blending feasibility study focused on evaluating the impact of Indian coal blending using the VISTA™ (formerly CQIM™) model, and
- the boiler tube failure issues.

The feasibility study and training for the use of Vista™ tool will be provided through a new subcontract with Black & Veatch.

Further, a benchmarking report for Sipat supercritical thermal power plant is under preparation. It will be shared with Sipat plant management in the first quarter of Year 2 and finalized thereafter.

Establish a Service Provider Network

Based on the discussions with U.S. team of experts, USAID and few public and private sector utilities in India, it was agreed that the PACE-D TA Program will work towards creating a Heat Rate Alliance in India instead of a Service Providers Network. The Alliance will help bring U.S. service providers to India to work jointly with the Indian private sector to provide technical services to Indian utilities. The PACE-D TA Program has developed a concept note for the creation of a Heat Rate Alliance which has been approved by USAID. The note has also been shared with the Excellence Enhancement Center (EEC) created by GIZ and Central Electricity Authority (CEA), Ministry of Power to explore the possibility of joining hands with them for the promotion of the Alliance. The EEC has shown its interest to take this activity further even after the five-year duration of the PACE-D TA Program. During the next quarter, the PACE-D TA Program will continue working with EEC and other stakeholders for the creation of a Heat Rate Alliance.

Task 2: Capacity Building, Training, Outreach, Dissemination and Sharing Best Practices

Heat rate improvement activities at Chandrapur and Panipat thermal power plants were commenced with on-the-job and class room training programs aimed at preparing a Heat Rate Improvement Plan. Nearly 35 hours of participant training was provided to the middle and junior level operations staff working in turbine and boiler rooms at both locations. In addition, a workshop will be organized in September 2013 to disseminate knowledge on heat rate improvement and provide participants an opportunity to observe best practices that can be taken back to their respective plants with improved methodologies.

A participant training on Benchmarking and Best Practice was also provided to the unit heads and plant staff at the Sipat supercritical thermal power plant. This training will be used to further elaborate the concept of the Model Power Plant.

The PACE-D TA Program, in collaboration with NETRA and CenPEEP, plans to organize an international conference on November 21-22, 2013 in New Delhi. About 200-250 participants from different power plants are expected to attend the conference. The preparatory activities the proposed international conference were conducted in Year 1.

Preparatory activities were also conducted for organizing a utility exchange program to the U.S. focused on cleaner coal technologies. The exchange program (July 20 - August 3, 2013), including visits to multiple U.S. power plants, will provide the participants an opportunity to observe best practices on coal blending, thermal power generation and supercritical technology. As part of this program, participants will get also get first hand observation of Air Pollution Control (APC) systems installed at each of the facilities. Representatives from NTPC, Chandrapur and Panipat power plants and CEA will be a part of the exchange program.

2.1.2.4 CLIN 4: Other Activities and Management Support

Task 1: Secretariat Function - Coordination with Other U.S. Agencies & Programs on PACE-D

The PACE-D TA Program serves as the Secretariat to the Working Group consisting of U.S. agencies implementing clean energy programs in India. As part of the Secretariat, the PACE-D TA program is expected to provide logistical and coordination support to the Working Group. It is also expected to:

- Leverage the project pipeline from PFAN, NVI and its broader developer and financial networks to bring clean energy projects to the Working Group for consideration; and
- Ensure that technologies developed under PACE-R are brought to the notice of the Working Group for integration into the PACE-D deployment process.

The program coordinated six meetings during Year 1. The key points of the discussions include:

- Preparatory for U.S.-India Dialogue organized in the U.S. on September 24-25, 2012 and visit to India by Dr. Raj Shah, Administrator, USAID.
- Specific role and functions of the PACE-D Secretariat.
- Agency-wise clean energy activities in India including progress on PACE-D TA Program's macro and micro activities.
- Outreach activities including establishment of PACE-D TA Program website with events calendar, quarterly newsletter, and establishment of a booth during the Clean Energy Ministerial.
- Clean energy financing.
- Establishment of a new working group under the U.S.-India Energy Dialogue on Low Carbon Growth Strategy.
- Mechanisms to access USD 6 million Path finder Fund for off-grid activities.

- Visits of U.S. Secretary of State and the Energy Secretary to participate in the Strategic Dialogue with the Government of India.

The program also collaborated with different U.S. agencies to develop marketing collateral and design outreach activities. These include:

- **PACE Progress Report:** The PACE-D TA Program worked with the USAID/India team to prepare a major progress report on the PACE Program for public release. The report includes updates on clean energy initiatives of the U.S. agencies working in India. These include: the Department of Commerce (DOS), Department of Energy (DOE), Department of State (DOS), Export-Import Bank of the United States (Ex-Im), Overseas Private Investment Corporation (OPIC), U.S. Trade and Development Agency (USTDA) and USAID.
- **Brochures:** The PACE-D TA Program designed and published two brochures in Year 1. The first brochure provides details of USAID's history in India's energy sector and a brief description of the previous energy programs. It also provides details of the PACE program and its key activities including the TA component. The second brochure is a one-pager on the PACE-D TA Program and provides an overview of the key activities and the implementation partners.
- **Participation at CEM4:** The PACE-D TA Program participated in the Innovation Showcase Pavilion at the fourth Clean Energy ministerial Meeting (CEM4). The program had a booth as part of the U.S.-India Energy Cooperation Program where it displayed posters on U.S.-India clean energy partnership, USAID's history of clean energy programs in India and the ongoing PACE-D TA Program. The program also announced the partnership between American Council on Renewable Energy (ACORE) and Indian Renewable Energy Platform (IREP) at CEM4. The event was attended by a diverse group of clean energy stakeholders including project developers, investors, and technology providers.
- **Website:** The PACE-D TA Program designed and developed a project website – www.pace-d.com. The website, including information on program activities, events, resources, etc., serves as an outreach and knowledge dissemination platform for the PACE-D TA Program. In particular, the website has a Secretariat page which further has sub-pages that can be accessed only by U.S. agencies using their respective login password. These subpages highlight the clean energy activities of the U.S. agencies across different focal areas including renewable energy, smart grid, industrial efficiency, EE in buildings and cleaner fossil technologies. Members of the interagency group can directly login to their respective sub-page and update/view the required information.
- **Newsletter:** The PACE-D TA Program designed a draft newsletter to provide regular updates on clean energy activities and events organized by the U.S. agencies in India. The newsletter will be finalized and distributed in the coming quarter.

Task 2: Strategic Planning, Assessment & Analysis

This activity is ongoing across all CLINs.

Task 3: Build Partnership between U.S. and Indian Institutions

The PACE-D TA Program will facilitate partnerships between the following:

- Indian RE Apex body “Indian Renewable Energy Forum (IREF)” and American Council of Renewable Energy (ACORE) - The partnership between IREF and ACORE was launched at a side event during the fourth Clean Energy Ministerial held in New Delhi on April 18, 2013. A formal partnership awaits incorporation of IREF.
- Alliance for Energy Efficient Economy (AEEE) and American Council for Energy Efficient Economy (ACEEE) - The MoU to be signed by AEEE and ACEEE has been finalized.
- U.S. and Indian utilities to establish a Heat Rate Alliance - A few U.S. utilities have been shortlisted for participation in the proposed Heat Rate Alliance.

Task 4: Establish Baselines

The M&E Plan and the Performance Management Plan were prepared by the PACE-D TA Program and after multiple discussions and iterations finalized and approved by USAID in March 2013. These plans built upon the learning drawn from the M&E Training program held as part of the GCC Coordination Meet at Bangkok, Thailand in January, 2013 which the TA M&E Specialist attended.

Task 5: Maximizing the use of Local Partners and Enhance their Capacity

In line with USAID’s *Forward* initiative, the PACE-D TA Program will build the capacity of two local partners - ABPS Infrastructure Advisory Pvt. Ltd. (ABPS) and Emergent Ventures India (EVI) - and mentor them to become qualified to prime USAID projects in the future. As part of this task, the following three training programs were organized for the management and administrative teams of these organizations.

Date	Topic	Key Agenda Items
November 6, 2012	Training on Subcontractor Procedures by Brian Gould /Nexant and Ritika Sawhney, Jyothi Krishnamoorthy, and Purnima Jolly/USAID	<ul style="list-style-type: none"> • USAID Procedures, Reporting and Finance; • PACE-D M&E Plan and Practices; and • Financial and Contractual Procedurals.
December 05, 2012	Subcontractors Training on Training Concepts and Responsibilities by Lauren Wygonski.	<ul style="list-style-type: none"> • USAID training concepts; • USAID branding and marketing; and • USAID training implementation plan, monitoring and reporting
May 21, 2013	Subcontractors Training on Proposal Development Best Practices by Dick Edwards.	<ul style="list-style-type: none"> • How to develop large proposals • Best practices for proposal development • Process for effective review and writing winnig proposals

2.1.3 Status of Deliverables

S. N.	Deliverable	Status
Energy Efficiency		
Task 1: Market Driven Energy Efficiency Technology Deployment		
Smart Grid Electric Systems		
1.	Opinion Paper: Smart Imperatives for Grid Integration of Renewable Energy Sources of Electricity	Completed
2.	Opinion Paper: Demand Response (DR) in the Indian Context	Completed
3.	Report on international Best Practices for Smart Grid Interoperability	Completed
4.	Technical Assistance Program to assist MoP and ISGTF monitor and manage the implementation of the 14 Smart Grid Pilot Projects	Completed
Building Energy Efficiency		
1.	Development of rules and regulations for state level adoption of ECBC	Under Review; to be Completed in Aug 2013
2.	State-level Technical Assistance & Capacity Building Plan	Under Review; to be Completed in Aug 2013
3.	Identification of ECBC Technical Update Priorities	Completed
4.	ECBC Update Workshop	Completed
5.	Building Energy Performance Analysis and Code Compliance Tool Specifications Development	Under Review; to be Completed in Aug 2013
6.	ECBC Capacity building needs assessment report	Under Review; to be Completed in Aug 2013
7.	ECBC Capacity building action plans	Under Review; to be Completed in Aug 2013
8.	NZEB Awareness Seminar	Completed
9.	Identification of potential NZEB pilot partners and feasibility study.	Completed
10.	Signed Memorandum of Understanding (MOU) with one partner for participation as PACE-D NZEB pilot project	Completed
Heating, Ventilation and Air-Conditioning (HVAC)		
	No deliverables in year 1	

S. N.	Deliverable	Status
Industrial Energy Efficiency		
1.	Roadmap for normalization of targets for sectors under current phase of PAT Scheme and suggested procedures for next phase of PAT	Completed
2.	Criteria for selection of one industrial sector for normalization and selection of sector	Completed
3.	Normalization of targets for selected industrial sector	Moved to Year 2
4.	Development of PAT M&V protocol, training curriculum and train-the trainer program on M&V	Moved to Year 2
5.	WHU assessment study	Draft Completed
6.	WHU pilot feasibility study	Under Review; to be Completed in Aug 2013
7.	Strategy paper for increased market penetration of WHU technologies	Completed
Task 2: Institutional Development and Strengthening of Policy Framework for EE Deployment		
1.	A detailed plan listing the type of technical assistance required to strengthen and expand the capacity of EESL and BEE and its implementation.	Removed from scope
2.	Detailed state action plans for a minimum of two states designated agencies identified in partnership with MOP listing technical assistance required for rapid deployment of EE technologies and its implementation	Moved to year 2
Task 3: TA and Capacity Building to Develop and Implement Innovative Financing Mechanisms		
1.	Review report on the existing financing mechanisms for EE in India with recommended structure for one new mechanism.	Report Completed. The structure to be finalized in Year 2
2.	Design structure for an Advisory Team for EE Finance (ATEEF) and the formation of ATEEF.	Completed
3.	Capacity building and TA plans- one plan for BEE and one plan for the financial institutions.	Moved to Year 2
4.	Design of workshops with loan officers and risk managers of banks/FIs and project developers and identification of participants. The workshops will be organized during the first and second quarters of Year 2.	Moved to Year 2
5.	Design strategy for one financing mechanism.	Under Review; to be completed in December 2013

S. N.	Deliverable	Status
Task 4: Capacity Building, Education, Training, Public Outreach Programs		
	No deliverables in Year 1	
Renewable Energy		
Task 1: Institutional Development and Strengthening of Policy and Regulatory Framework at the State Level for RE Deployment		
1.	Report on Selection of States for RE Policy and Regulatory Support	Completed
2.	Draft Presentation and Report on MPUVNL's State Action Plan	Under Review; to be Completed in Aug 2013
3.	State Action Plan Development Strategy Documents	Completed
Task 2: Market-driven RE Technology Deployment		
1.	Report on mapping ACORE like activities, identification of IREP as apex body and rationale for supporting IREP	Draft Version Delivered to USAID
2.	Strategy Paper for the ACORE - IREF Partnership under the PACE-D TA Program	Draft Version Delivered to USAID
3.	IREP- ACORE Launch event report – combining the launch with the ACORE presentation at the financing roundtable	Draft Version Delivered to USAID
4.	Report on Strategies for Deployment of off-grid Renewable Energy in India for Rural Energy Access	Draft Version Delivered to USAID
5.	Strategy Note on Program for Deployment of off-grid Renewable Energy in India for Rural Energy Access - indicating Details of the Suggested Program to be launched in Year 2	Draft Version Delivered to USAID
6.	Report on Energy Storage Technologies	Draft Version Delivered to USAID
7.	Presentation on Energy Storage Technologies to MNRE	Draft Version Delivered to USAID
8.	Report and strategy document on Deployment of RE for off grid applications in Commercial and Industrial Applications in India	Draft Version Delivered to USAID
Task 3: Technical Assistance and Capacity Building to Develop and Implement Innovative Finance Mechanisms		
1.	Report on RE Financing in India and potential financing instruments which can be introduced in India	Final Version Delivered to USAID
2.	Report documenting the constitution and first meeting of the advisory team for developing RE financing mechanisms for India	Final Version Delivered to USAID
3.	Report on organization of two workshops – one with developers and the other with financiers on RE Financing and Financing instruments in India	Draft Version Delivered to USAID

S. N.	Deliverable	Status
4.	Designing a strategy for the launch of one RE financing mechanism	Draft Version Delivered to USAID
Task 4: Capacity Building, Training, Outreach, Dissemination and Sharing of Best Practices		
1.	Concept note on aligning PACE-D TA Program Capacity Building Activities	Final Version Delivered to USAID
Task 5: Regulatory Partnership		
1.	Concept note on potential areas of collaboration between Indian and U.S. regulators and proposed exchange program	Moved to Year 2
Task 6: Micro-finance Support Program		
1.	Concept note on a Revolving Fund for extending MF support to clean energy interventions	Draft version to be circulated to USAID by end of July 2013
2.	State of the sector report – Micro-finance for Clean Energy Financing	Work in Progress - Draft Report to be shared in August 2013
3.	Note on leveraging U.S. Embassy funds for the revolving fund	Moved to Year 2
Cleaner Fossil		
Task 1: Deployment of Cleaner Fossil Technology and Management Practice in Existing Plants		
Heat Rate Improvement in Select Utilities		
1.	A detailed plan to improve the heat rate of at least two utilities in order to promote best practices and better operation and maintenance (O&M) practices.	Draft under Review; to be Completed in Aug 2013
Supercritical Technology Guideline Manual - Operations and Benchmarking		
1.	A Best Practice Manual for supercritical technology and Benchmarking Study of Supercritical Facility	Draft under Review; to be Completed in October 2013
Development of Concept of Model Power Plant in an Existing Facility		
1.	A Concept of Model Power Plant – The two activities to be included: a. A feasibility study on coal blending technologies and processes b. Boiler tube failure issues	Moved to Year 2
Establish a Service Provider Network		
1.	At least two partnerships and development of service provider's network formalized	Concept note for a Heat Rate Alliance is completed. The partnerships under the alliance will be

S. N.	Deliverable	Status
		developed in Year 2
Task 2: Capacity Building, Training, Outreach, Dissemination and Sharing of Best Practice		
1.	Training workshop on best practices in Indian power utility	Completed
2.	Utility exchange program to the U.S. to familiarize regulators and representatives from Indian power utilities with best practices in the cleaner fossil spectrum	Design completed; the visit is being organized from July 20 to August 3, 2013
Other Activities and Management Support		
Task 1: Secretariat Function- Coordination with Other U.S. Agencies & Programs on PACE-D		
1.	Establish the Secretariat	Completed
2.	Develop the timeline and agenda of meetings, organize regular monthly meetings, prepare minutes of the meetings and share them with U.S. agencies after approval from PACE-D TA Program COR.	Completed for Year 1
3.	Develop and maintain an online calendar of events on PACE-D website.	In progress
4.	Design and launch the quarterly newsletter including information provided by the interagency group to share with stakeholders, program partners, and the national and international clean energy community.	Draft Completed; to be launched in August 2013
5.	Maintain a record of all meetings and decisions taken and report them to USAID along with quarterly, half yearly and annual reports.	Completed for Year 1
Task 2: Strategic Planning, Assessment & Analysis		
1.	Ongoing activity under CLIN 1, 2 and 3.	Ongoing
Task 3: Build Partnership between U.S. and Indian Institutions		
1.	Partnership developed between ACORE and IREF	Established (to be strengthened in Year 2)
2.	Partnership between AEEE and ACEEE	Established (to be strengthened in Year 2)
Task 4: Establish Baselines		
1.	Develop a M & E Plan	Completed
2.	Develop a Project Management Plan (PMP)	Completed
3.	Develop a Baseline report	Draft under review; to be completed by Aug 2013
Task 5: Maximizing the use of Local Partners and Enhance their Capacity		
1.	Organize training workshops for ABPS and EVI	Completed (Nov 6 & Dec 5, 2012) for Year 1
2.	Submission of proposals in partnership with ABPS and	Completed for Year 1

S. N.	Deliverable	Status
	EVI to international agencies	

2.1.4 List of Participant Trainings

The following participant training programs were organized in the year 2012-13:

Date	Name of the Program	Venue
Energy Efficiency		
Jan, 23, 2013	DSM-EMV for Discoms, CMVPs & DSM Verifiers	New Delhi
May 27-28, 2013	Effective Smart Grid Pilot Planning and Implementation Workshop	New Delhi
Clean Fossil		
Mar 4-8, 2013	Heat Rate Improvement Plan Preparation at Thermal Power Plants	Chandrapur
Mar 11-15, 2013	Heat Rate Improvement Plan Preparation at Thermal Power Plants	Panipat
Mar 18-21, 2013	Benchmarking & Best Practices for Supercritical Thermal Power Plant	Sipat

2.1.5 List of Knowledge Sharing Events

Date	Name of the Program	Venue
Energy Efficiency		
December 20, 2012	ECBC Workshop	New Delhi
January 21-22, 2013	AEEE DSM Workshop	New Delhi
Feb 28 - Mar 1, 2013	HVAC Workshop	New Delhi
April 12, 2013	Smart Grid Pilot Implementation: An Introductory Workshop	New Delhi
May 9, 2013	Meeting with the chairs of the ECBC Technical Update Working Groups	New Delhi
May 16-17, 2013	Seminar on Net-Zero Buildings in India	New Delhi
May 27-28, 2013	Effective Smart Grid Pilot Planning and Implementation Workshop	New Delhi
Renewable Energy		
November 23, 2012	IREF Roundtable	New Delhi
April 18, 2013	ACORE-IREP Launch	New Delhi
EE & RE Finance		

April 23, 2013	Advisory Team Meeting for EE and RE Finance	Mumbai
April 22, 2013	Finance Roundtable with Financial Institutions	Mumbai
April 16, 2013	Finance Roundtable with Project Developers	New Delhi

3.1 STATUS OF STANDARD PERFORMANCE INDICATORS

As per the M&E and Performance Monitoring Plan, the following performance indicators will be used for monitoring PACE-D TA Program:

S.N	Performance Indicator	Reporting Frequency	Baseline	Program Target	Annual Target (2012-13)	Annual Achievement (2012-13)	Cumulative Achievement
1	Number of institutions with improved capacity to address climate change issues as a result of USG assistance.						
a	Number of existing institutions with improved capacity to address climate change issues as a result of USG assistance.	Annual	0	10	0	0	0
b	Number of institutions established to address clean energy issues as a result of USG assistance.	Annual	0	2	0	0	0
2	Person-hours (men/women) of training in energy related policy and regulatory practices provided with USG support.	Annual	0	3,600 (2,700 M/ 900 W)	0	0	0

S.N	Performance Indicator	Reporting Frequency	Baseline	Program Target	Annual Target (2012-13)	Annual Achievement (2012-13)	Cumulative Achievement
3	Person-hours (men/women) of training in technical energy fields provided with USG support	Annual	0	36,000 (27,000 M/ 9,000 W)	0	3,827 (3,787 M/ 40 W)	3,827 (3,787 M/ 40 W)
4	Removal of Financial Barriers to public and private sector investments in clean energy.						
a	Number of Partnerships to leverage in public and private funds.	Annual	0	5	0	0	0
b	Amount of public and private funds leveraged through partnerships. (in US \$ millions)	Annual	0	90	0	0	0
5	Number of enabling policies and regulations for wide-scaling clean energy enacted and/or implemented.	Annual	0	No target fixed	0	0	0
6	Capacity of Indian organizations built to assume responsibilities of prime contractors of USAID and other donors.	Annual	0	2	0	0	0
7	Quantity of operational renewable electric generation capacity as a result of USG assistance (in MW).	Annual	0	714	0	0	0
8	Energy saved due to energy efficiency/conservation projects as a result of USG assistance (in MW).	Annual	0	150	0	0	0

S.N	Performance Indicator	Reporting Frequency	Baseline	Program Target	Annual Target (2012-13)	Annual Achievement (2012-13)	Cumulative Achievement
9	Percentage Heat Rate Improvement in 2 power-plants that deploy Clean Fossil Technology and Management Practices.	Annual	0	2%	0	0	0
10	Quantity of greenhouse gas emissions, measured in million metric tons of CO ₂ e, reduced or sequestered as a result of USG assistance. Cumulative GHG reductions over years, as a result of USG assistance (measured in million metric tons of CO ₂ equivalent).	Annual	0	3.54	0	0	0

3.2 SUMMARY OF ENVIRONMENTAL STATUS REPORTS

We did not initiate any activities that required resolution according to the EMMP in the last year.

4.1 CONTRACTUAL ISSUES

Outstanding Issues:

The following issues are to be discussed with USAID:

- Modification of contract with revised activities under annual work plans (CLIN 1, 2 & 3).
- Modification of program budget to accommodate:
 - Expansion of PACE-D TA Program Office space
 - Converting PACE-D TA Program team to Nexant, Inc. employees
 - Hiring of additional staff (Research Associates)
- Approval on escalation of salary and other costs for Year 2, 3, 4 and 5.

4.2 STATUS OF CONTRACT DELIVERABLES

Presented below is the status of standard Contract Deliverables. (The deliverables marked in grey have been submitted as of date.)

S. N.	Reporting Requirement	Delivery Date as per contract	Status
1.	Mobilization Plan	Draft Plan along with the technical proposal. Final plan within 30 days from the Award date.	Final Mobilization Plan submitted on June 29, 2012
2.	Branding & Marketing Plan	Within 30 days of the Award date.	Final Branding & Marketing Plan submitted on June 29, 2012
3.	Program Implementation Plan	Within 30 days of the Award date.	Draft Project Implementation Plan submitted on June 29, 2012
4.	Annual Work Plans	Subsequent annual work plans will be submitted not later than 30 calendar days before the close of the each preceding fiscal year.	Draft Annual Work Plans submitted on June 29, 2012; revised versions submitted on Aug 24, 2012. The Annual Work Plans were approved on February 19, 2013.
5.	Environmental Mitigation and Monitoring Plan (EMMP)	The final EMMP shall be submitted 60 days after the contract is signed.	Draft Environmental Mitigation and Monitoring Plan submitted on July 30, 2012
6.	Monitoring & Evaluation (M&E) Plan	Draft M&E Plan shall be submitted within 30 days of the award and shall be finalized within 90 days from	M&E Plan and Performance Monitoring Plans were approved on March 9, 2013 after multiple discussions and

		the date of the award.	alterations
7.	Performance Monitoring Plan	Draft PMP shall be submitted within 90 days from the date of the contract	M&E Plan and Performance Monitoring Plans were approved on March 9, 2013 after multiple discussions and alterations
8.	Quarterly Progress Report	15 calendar days after the end of the quarter	Reports submitted on Oct 15, 2012, Jan 15, 2013, Apr 15, 2013 and July 15, 2013
9.	Quarterly Financial Report	15 calendar days after the end of the quarter	Reports submitted on Oct 15, 2012, Jan 15, 2013 Apr 15, 2013 and July 15, 2013
10.	Annual Progress Report	30 calendar days after the end of the year	First report for Year-1 submitted on July 31, 2013.
11.	Annual Program Review	As may be requested annually	As scheduled by USAID
12.	Financial Closure Report	90 calendar days from the end date of the contract	Will be submitted 90 days after the end of the contract
13.	Special Reports	As requested	As requested by USAID

4.3 NON-CONTRACTUAL SUBMISSIONS

The PACE-D TA Program developed and submitted a number of deliverables which are not part of the contract. These additional deliverables were added to the work plan on the request of MOP, MNRE, BEE, NTPC and USAID. A comparative spread sheet giving CLIN wise details of contractual and additional deliverables has been submitted to USAID. The decision by USAID for any possible contract modification to include these deliverables is awaited. The spread sheet showing the contractual and additional deliverables is presented in Annex 6.2

On behalf of USAID, the PACE-D TA Program organized a meeting with the international agencies on November 23, 2012 to create a platform for agencies to meet and deliberate on a regular basis on clean energy initiatives and identify the opportunities to leverage the resources.

4.4 ADMINISTRATIVE ACTIONS

4.4.1 Staffing of PACE-D TA Program Office

The PACE-D TA Program office is staffed by the following personnel:

- Key Personnel:
 - Sanjay Dube, Chief of Party
 - Vasudha Lathey, Deputy Chief of Party, Energy Efficiency
 - Ronnie Khanna, Deputy Chief of Party, Renewable Energy
 - Kavita Kaur, Communication and Finance Specialist
 - Himanshu Dube, Monitoring and Evaluation Specialist
- Other Professionals (part-time effort)

- Ram Berry, Senior Advisor
- Pritha Sanyal, Project Coordinator
- Administrative Staff
 - Vinita Kathuria, Office Manager
 - Vikas Khurana, Accounts & Finance Officer
 - Elaa Tandon, Senior Secretary
 - Amar Yadav, Administrative Assistant
 - Sunita, Office Assistant

4.4.2 Status of Sub-contracts

Each PACE-D TA Program subcontractor has been provided with a Master Service Agreement (MSA) for the life of the project. They are also provided annual Task Orders based on the approved annual work-plan. The Year 1(2012-13) Task Orders were issued with the MSA in September 2012.

Name of Sub-contractor	CLINS	Status
ABPS Infrastructure Advisory Pvt. Ltd. (ABPS)	1 and 2	MSA and TO signed
American Council of Renewable Energy (ACORE)	2	MSA and TO signed
Continuing Education & Training Centre (CETC)	1 and 2	MSA and TO signed
Chemonics International	M&E	MSA and TO signed
Environmental Design Solutions Pvt. Ltd. (EDS)	1	MSA and TO signed
Emergent Ventures India (EVI)	2	MSA and TO signed
Development Environenergy Services Limited (DESL)	1	MSA and TO signed
AF-Mercados EMI	1	MSA and TO signed
Leonardo Technologies Inc. (LTI)	3	MSA and TO signed
SRC Global Inc.	1 and 2	MSA and TO signed
Stephen Storm, Inc.	3	MSA and TO signed
Small Scale Sustainable Infrastructure Development Fund (S³IDF)	2	MSA and TO signed

World Resources Institute (WRI)	Knowledge support for institutional capacity building in India	TO may be signed once the activities are discussed, decided & approved by USAID.
P & RO Solutions	3	MSA and TO signed
Ashton Consulting Services	3	MSA and TO signed

4.4.3 International Staff Deployment

The following staff members (Indian staff abroad and U.S. staff in India) were deployed internationally for PACE-D TA activities:

Name/Title	Dates	Purpose
Sanjay Dube <i>Chief of Party</i>	July 3-16, 2012	COP's orientation on Nexant procedures and program management for USAID projects; meet U.S. based sub-contractors and other relevant USG organizations.
Richard (Dick) Edwards <i>Officer-in-Charge</i>	Sept 14 - Oct 10, 2012	Expedite sub-contracting process; meet key GoI officials; develop the structure for PACE-D Secretariat; and present the progress of PACE-D to USAID.
Douglas Welsh <i>Smart Grid Expert</i>	Sept 17-19, 2012	Provide inputs to smart grid task; meet stakeholders and help the team in finalizing smart grid implementation strategy.
Gerry Choi & Radha Krishnan <i>Clean Fossil Experts</i>	Oct 29 - 2 Nov, 2012	Kick-off meeting of CLIN 3: Accelerated Development of Cleaner Fossil Technologies program with CenPEEP, NTPC and CEA; visit Sipat supercritical plant and plan the development of a 'Best Practices Guideline Manual for Supercritical Technology' and benchmarking.
Brian Gould <i>Senior Analyst</i>	Nov 4 - 10, 2012	Orient PACE-D Program TA team and sub-contractors in India; organize and deliver the training on procedure manual to PACE-D TA team; train EVI and ABPS on USAID procedures; assist in

		developing a procedures manual for sub-contractors and provide training on Knowledge Tree (Nexant's online Knowledge Sharing platform) to the team.
Peter du Pont <i>Senior Technical Advisor</i>	Nov 19 - 26, 2012	Meet with finance stakeholders including debt and equity providers; develop an understanding of current "landscape" in RE and EE financing in India and coordinate with COP on EE related activities.
Lauren Wygonski <i>Senior Consultant</i>	Dec 3 - 7, 2012	Update the PACE-D TA Participant Training Manual; deliver training to PACE-D TA subcontractors on participant training protocol and procedures; and work with Communications and Amin team to ensure compliance with USAID guidelines.
Dilip Limaye <i>Senior Clean Energy Finance Advisor</i>	Dec 6 - 18, 2012	TA finance team; meet with stakeholders (banks, PE firms, regulators, SNAs, etc.); develop templates for documenting current practice and results of interviews and prepare action plan for near-term activities.
Andy White <i>Finance Analyst</i>	January 6 - 12, 2013	Meet PACE-D TA team and subcontractors to clarify invoices procedures and required supporting documentation.
Dick Edwards <i>Officer-in-Charge</i>	January 12 - 19, 2013	Meet PACE-D TA team and subcontractors to get detailed update on all CLINs, interview DCOP-RE candidates, and discuss contractual issues with USAID.
Peter du Pont <i>Senior Technical Advisor</i>	January 19 - 23, 2013	Speak at AEEE's DSM training event and discuss EE activities with PACE-D TA team.
Himanshu Dube <i>M&E Specialist</i>	January 22 - 24, 2013	Participation in M&E training during GCC meeting at RDMA, Bangkok, Thailand.
Lauren Wygonski <i>Senior Consultant</i>	March 1 - 16, 2013	Preparations for training in Chandrapur, Sipat and Panipat for clean coal; and discussion on study tour to U.S. in July 2013.

Stephen Storm /Nhia Ly/Ronnie Campbell / Dr.Radha P Krishnan/Pat Abbott/Gerald Choi <i>Clean Fossil Experts</i>	March 1 - 28, 2013	Commence the clean coal activities and organize training in power plants (Chandrapur, Sipat and Panipat).
Dilip Limaye <i>Senior Clean Energy Finance Advisor</i>	April 15-29, 2013	To work on innovative EE and RE financing mechanisms, participate in financing roundtables in Delhi and Mumbai, and finalize the RE and EE financing reports.
Russell de Lucia/S³IDF <i>Microfinance Consultant</i>	April 15-25, 2013	To work with Indian counterparts, regional and cooperative banks, microfinance institutions and S ³ IDF local team to finalize the draft on concept note for a micro-finance revolving fund and a report on case studies of micro-finance in India. Also attend the finance roundtables organized in New Delhi and Mumbai.
Thomas Weirich and Matthew Foley/ACORE <i>RE Consultants</i>	April 15-24, 2013	To launch the partnership between IREF and ACORE and to participate in clean energy round table meetings to support the formation of IREF and its structure in India.
Dick Edwards <i>Officer-in-Charge</i>	May 13-24, 2013	Provide oversight and monitoring of the Nexant team in Delhi and work with COP on project deliverables, meet with USAID/India and MOP/MNRE for planning purposes, meet with project partners and stakeholders to ensure timely delivery of deliverables, chaired session at the PACE-D TA Program's seminar on Net Zero Energy Building (NZEB).
Peter du Pont <i>Senior Technical Advisor</i>	May 15-18, 2013	To participate and speak at the PACE-D TA Program's seminar on Net Zero Energy Building (NZEB).
Sanjay Dube <i>Chief of Party</i>	June 24-28, 2013	To participate and speak at the Asia Clean Energy Forum (ACEF) held in Manila, Philippines.

5.1 CLIN-WISE ACTIVITIES FOR YEAR 2

The CLIN Wise activities for Year 2 are covered under the detailed Annual Work Plans (AWPs). The draft AWPs have been discussed with COR and submitted to USAID for approval subject to no further comments from the USAID team. The duration of the year 2 AWPs is from July 1, 2013 to September 30, 2014.

5.2 TENTATIVE LIST OF EVENTS DURING YEAR-2

Event	Purpose	Proposed Date/City
Energy Efficiency		
Workshop with Forum of Regulators	To provide a clear definition of smart grids, and what it means in the Indian context, discuss the regulatory approaches adopted internationally to regulate smart grid investments and deployments and provide a framework for defining the smart grid regulations for India	August/September 2013, New Delhi
ECBC Technical Committee Meeting	To discuss the technical parameters of various components under ECBC	September 2013, New Delhi
Renewable Energy		
Roundtables on Renewable Energy Vision for India	Support IREF in its consultation with the RE industry on key theme areas	September 2013, New Delhi
Roundtable on Energy Storage Technologies	Industry consultations for developing a roadmap for energy storage in India	September 2013, New Delhi
Clean Fossil Technologies		
Utility Exchange Program	Knowledge sharing on best	July-August 2013, U.S.

	practices on coal blending and super-critical thermal power technology.	
Focused Workshops with Panipat and Chandrapur Utilities	To share the Heat Rate Improvement Plan and present the best practices.	September 2013
International Conference on Clean Fossil Technology Best Practices	To disseminate the work done under clean fossil task including benchmarking, best practice for supercritical technologies, heat rate improvement, etc.	November 2013
Clean Energy Finance		
Launch of RE and EE Financing Reports	The RE and EE Financing Reports will be formally released for public.	August 2013, New Delhi

6.1 FEEDBACK ON PARTICIPANT TRAINING

A total of 3,827 person-hours of person-hours of training in technical energy fields were provided with USG support in this quarter. These included:

- Energy Efficiency
 - DSM-EMV for Discoms, CMVPs & DSM Verifiers (192 person-hours to 24 participants including 1 woman)
 - Effective Smart Grid Pilot Planning and Implementation Workshop (512 person-hours to 32 participants including 2 women)
- Clean Fossil
 - Heat Rate Improvement Plan Preparation at Chandrapur and Panipat Thermal Power Plants (2,059 person-hours to 59 participants)
 - Benchmarking & Best Practices at Sipat Super-critical Thermal Power Plant (1,064 person-hours to 38 participants)

Of the 129 persons provided participant training on Smart Grid and Clean Fossil aspects, 91 provided feedback at the end of the training program. Presented below is a graph presenting the feedback on various aspects of the training program. The PACE-D TA Program will use this feedback to further refine its participant training approach.



Key findings were as under:

- 92% participants found the program relevant to their organization
- 89% found it relevant to their work
- 89% appreciated the structure of the program

- 82% liked the topics covered
- 87% appreciated the quality of class-room interactions
- 90% liked the speakers/trainers

6.2 ANNEXS – PACE-D AWP MODIFICATION (CLIN1, CLIN2, CLIN3)

CLIN 1 (AWP Modification)- Energy Efficiency Tasks

TASKS	SUB -TASKS	PACE-D Deliverable	Deliverable Type (Original/ Modified/New)	Original Contractual Deliverable	Due Date	Remarks
Market Driven Energy Efficiency Technology Deployment	Smart Grids Electric System (SGES)	A series of opinion papers aimed at providing strategic direction for Smart Grids implementation in India. Topics Include: <ul style="list-style-type: none"> • Grid Integration of Renewables and Role of Smart Grids • Demand Response in the Indian Context • Micro-Grids (including smart buildings) • Smart Grid Roadmap/Architecture • Distribution Management & Control • Transmission Network Management and Control • Cyber Security 	Modified	An action plan, developed in partnership with the Ministry of Power, to roll out smart grids tailored to India's unique needs and requirements.	May-13	Task modified based on MOP suggestions. The overall objective is same only the effort has gone up due to writing of each paper separately.
		Report on international Best Practices for Smart Grid Inter-operability	Modified	A white paper on common operability standards for the Indian power sector to support a national smart grid road Map	Feb-13	The activity has been reworded.
		Comparative study of communication technologies feasible to be adopted in the Indian context based on international experience	Modified	A document on the status of smart grid pilots in the U.S., including the communication technologies adopted, lessons learned from these pilots, and recommendations for the Indian power Sector	Yr 2	Task modified based on MOP suggestions. The overall objective is same only the focus shifted to include the international experiences.
		Technical Assistance Program to assist MoP and ISGTF monitor and manage the implementation of the 14 Smart Grid Pilot Projects	Modified	At least two designs (including site features, engineering and detailed technical specifications) and implementation of two smart grid pilots	May-13	Task modified based on MOP suggestions. The overall objective is same only the effort has gone up due to increased focus on 14-pilots.
		Plan for leveraging infrastructure being created under R-APDRP for optimal use	New		Yr 2	New activity added. This will increase the efforts.
		Provide assistance in the development of smart grid regulations at the national level while interfacing with Forum of Regulators (FOR)	New		Yr 2	New activity added. This will increase the efforts and costs.
		Assist FOR in designing TOU/TOD tariff mechanism	New		Yr 2	New activity added. This will increase the efforts and costs.
		Design and implement awareness programs on smart grid technologies among utilities and regulatory agencies	New		Yr 2-3	New activity added. This will increase the efforts and costs.
		At least one international seminar to improve capacity of various stakeholders including utilities, consumers, technology providers, and regulators to implement smart grid projects and programs (Moved to Year 2 from Year 3).	Original		Yr 2-5	New activity added. This will increase the efforts and costs.
	Cost Effective, Net- Zero Energy Buildings	Reworded: NZEB Awareness Seminar	Modified	A detailed plan for improving awareness of different stakeholders on NZEB and conducting at least one international seminar on the subject (Plan delivered beginning of Year 2)	Mar-13	The activity has been reworded.
Identification of potential pilot partners and feasibility study.		Modified	A design and implementation of at least one pilot NZEB (Year 2 onwards).	Mar-13	The activity has been reworded.	
Signed Memorandum of Understanding (MOU) with one partner for participation as PACE-D NZEB pilot project (Could be chosen by on-going projects under EDS, such as IIT Jodhpur				May-13	The activity has been reworded and a sub- task has been added for year-1.	
Establish systems for public display of real time data from NZEB pilots through the internet		Original		Yr 2/3	Original	
	Waste Heat Utilization assessment study	Modified	A design and implementation of one pilot for waste heat utilization technologies and practices	Jan-13	New sub-activity added. This will increase the efforts and costs.	

TASKS	SUB -TASKS	PACE-D Deliverable	Deliverable Type (Original/ Modified/New)	Original Contractual Deliverable	Due Date	Remarks
	Waste Heat Utilization	WHU pilot feasibility study Modified			Mar-13	The activity has been reworded.
		Strategy paper for increased market penetration of WHU technologies	New		May-13	New sub-activity added. This will increase the efforts and costs.
	Heating, Ventilation and Air Condition (HVAC) Technologies	Action Plan to promote energy efficiency in existing buildings through retrofits.	New		May-13	New sub-activity added. This will increase the efforts and costs.
		Energy efficient retrofit project implementation plan	New		May-13	New sub-activity added. This will increase the efforts and costs.
		Development of design and implementation of one pilot for HVAC	Original		Yr 2/3	The activity has been reworded.
		Design of HVAC policy and HVAC incentive program for utilities	Original		Yr 2/3	The activity has been reworded.
	Institutional Development and strengthening of policy framework for EE Deployment	A detailed plan listing the type of technical assistance required to strengthen and expand the capacity of EESL and BEE and its implementation.	Original		Jan-13	Original
Detailed state action plans for a minimum of two states designated agencies identified in partnership with MOP listing technical assistance required for rapid deployment of EE technologies and its implementation		Original		May-13	Original	
At least one international conference and two technical workshops on issues such as ESCerts, EE portfolio standards, monitoring and verification, etc. to strengthen the capacity of regulators.		Original		Yr 2/3	Original	
At least one study trip to the U.S. to familiarize the regulators and policymakers with EE technologies such as smart grids, NZEB, etc.		Original		Yr 2/3	Original	
Development of rules and regulations for state level adoption of ECBC		New		Feb-13	New sub-activity added. This will increase the efforts and costs.	
State-level Technical Assistance & Capacity Building Plan		New		May-13	New sub-activity added. This will increase the efforts and costs.	
Identification of ECBC Technical Update Priorities		New		Feb-13	New sub-activity added. This will increase the efforts and costs.	
ECBC Update Workshop		New		May-13	New sub-activity added. This will increase the efforts and costs.	
Building Energy Performance Analysis and Code Compliance Tool Specifications Development		New		May-13	New sub-activity added. This will increase the efforts and costs.	
ECBC Capacity building needs assessment report		New		Mar-13	New sub-activity added. This will increase the efforts and costs.	

TASKS	SUB -TASKS	PACE-D Deliverable	Deliverable Type (Original/ Modified/New)	Original Contractual Deliverable	Due Date	Remarks
		ECBC Capacity building action plans	New		Mar-13	New sub-activity added. This will increase the efforts and costs.
		Roadmap for normalization of targets for sectors under current phase of PAT Scheme and suggested procedures for next phase of PAT	New		Nov-12	New sub-activity added. This will increase the efforts and costs.
		Criteria for selection of one industrial sector for normalization and selection of sector	New		Feb-13	New sub-activity added. This will increase the efforts and costs.
		Normalization of targets for selected industrial sector	New		Feb-13	New sub-activity added. This will increase the efforts and costs.
		Development of PAT M&V protocol, training curriculum and train-the trainer program on M&V	New		May-13	New sub-activity added. This will increase the efforts and costs.
Capacity building, education, training, public outreach programs		At least two curricula/courses on new energy efficiency themes to promote awareness on EE technologies.	Original		Yr 2/3	Original
		Three "train the trainers" programs to enhance the capacity of Indian institutions to plan, design and deliver training programs (Moved to Year 2)	Original		Yr 2/3	Original
		At least 12 training workshops on EE technologies through Indian institutions with special emphasis on the participation of women (One workshop each quarter starting from Year 1- Q4)	Original		Yr 2/3	Original
		At least three workshops to build the capacity of the regulators and key partners (One workshop delivered in Year 1)	Original		Yr 2/3	Original
		One study trip to the U.S. to familiarize key stakeholders with international best practices and national best practices (Year 2).	Original		Yr 2/3	Original

CLIN 2 (AWP Modification) - Renewable Energy Tasks

TASKS	SUB-TASKS	Original Contractual Deliverable	Original Date	Deliverable Type (Original/Modified/ New)	Modified Deliverable (s) / Remarks	Modified Date
Institutional Development and Strengthening of Policy and Regulatory Framework at the State Level for RE Deployment	Action Plans for SNAs and SERCs	1. A detailed action plan, including assessment of the present capacity and the technical assistance required, to strengthen the capacity of at least three SERCs to analyze and implement tariff and subsidy reforms; develop net metering policies, incentives and regulations (e.g. state renewable portfolio obligations, RE-specific PO, RE certificates, M&V mechanisms, etc.) and its implementation.	Dec-12	Original	No change	No change
		3. A detailed action plan, including an assessment of financial requirements and possible sources of RE financing, and technical assistance activities to strengthen the capacity of at least three states to develop their RE policies and programs and its implementation.	May-13	Original	No change	No change
		4. A detailed action plan listing the technical assistance to strengthen the capacity of at least three SNAs to provide assistance to RE project developers in each identified state and its implementation.	May-13	Original	No change	No change
		5. Two workshops and one international seminar on RE policies and strategies, grid integration, tariffs and pricing, tariff bidding processes, etc. to build the capacity of regulators. Conduct one exchange visit to the U.S. to familiarize the regulators with issues related to RE policies and strategies.	Dec-13	Original	No change	No change
Market-driven RE technology deployment (decentralized, distribution reforms, hybrids, solar water heaters)		1. A detailed project roadmap to establish at least two demonstrations/pilots for innovative application of RE and its implementation.	Dec-13	Original	Reworded - A detailed project road-map for establishing pilot projects to demonstrate the technical and financial feasibility of a range of innovative RE technologies for commercial applications (May 2013).	May-13
		2. A detailed project report on the design and development of a micro grid project for industrial process heating in selected states and its implementation.	Oct-14	Original		May-13
		3. A detailed project report on the design and development of off-grid applications for telecom towers, fossil fuel replacements, and meeting domestic power supplies (lighting appliances, roof top solar PV, etc.) in selected states and its implementation.	Jun-15	Modified	Reworded - A detailed project road-map for establishing pilot projects to demonstrate the technical and financial feasibility of a range of innovative RE technologies in rural areas (May 2013).	Apr-13
		Development of an Apex RE institution like the American Council of Renewable Energy (ACORE)	Dec-16	Modified	A study report analyzing the potential for market deployment of efficient storage technologies (April 2013).	Jun-13
Technical Assistance and capacity building to develop and implement		At least three innovative financing mechanisms for RE projects, from both the public and private sectors.	Jun-16	Original	No change	No change
		At least one technical workshop to strengthen the capacity of local financial institutions to understand benefits, risks and cash flows associated with RE systems and project developers to prepare proposals and apply for loans.	May-14	Original	No change	No change

finance mechanisms		Maximize the amount leveraged from both public and private sector for mobilizing RE projects	Ongoing activity - throughout the project	Original	No change	No change
		None	None	Modified	Design the structure and form an Advisory Team for Renewable energy Finance (ATREF)	Apr-13
Capacity building, training, outreach, dissemination and sharing of best practices		At least two curricula (course material, case studies on deployment of RE, and training brochures) on solar and other RE themes for technicians/system operators as well as regulators.	Dec-15	Original	No change	No change
		At least one partnership developed between Indian and U.S. institutions to support the GOI's fellowship program.	Aug-15	Original	No change	No change
		Three "train the trainers" programs to enhance the capacity of Indian institution to plan, design and deliver training programs.	Aug-15	Original	No change	No change
		At least 15 training workshops on RE technologies through Indian institutions with special emphasis on the participation of women.	Starting February 2013 one workshop almost every quarter	Original	No change	No change
		Common knowledge platforms, newsletters and documentaries for information sharing,	Ongoing activity	Original	No change	No change
		One study trip to the U.S. to familiarize trainers and other key stakeholders with international best practices in RE.	Aug-13	Original	No change	No change
Regulator Partnership		An internship program designed and implemented for regulators from central and state government, to gain hands-on exposure to regulatory issues and learn best practices in addressing them.	Jun-15	Original	No change	No change
		At least four technical workshops and one seminar on RE regulatory and policy issues to strengthen the capacity of state and central regulators.	May-16	Original	No change	No change
		Two peer-to-peer exchange visits between U.S. and Indian regulators organized, and the capacity of Indian regulators built/increased.	October 2014	Original	No change	No change
Microfinance Support Program		An action plan to provide technical assistance to at least three microfinance institutions, including development of outreach programs to consumer awareness, after-sales services and maintenance, etc. and its implementation.	Dec-13	Original	Key Microfinance activities across states with a focus on energy and the key barriers to micro finance in India	Jun-13
		At least two partnerships established between MFIs and RE service providers.	May-14	Modified	Develop concept for MF Revolving Fund	May-13
		None	None	Original	Training module and material design for capacity building of microfinance institutions, NGOs, community renewable	Oct-13
		None	None	Modified	Case studies of best practices and replicable business models	Aug-13

CLIN 3 (AWP Modification) - CLEAN FOSSIL

TASKS	SUB-TASKS	Original Contractual Deliverable	Deliverable Type	Modified Deliverable (s) / Remarks	Dates
Deployment of cleaner fossil technology and management practice in existing plants	Heat Rate Improvement	1. A detailed plan to improve the heat rate of at least two utilities in order to promote best practices and better operation and maintenance (O&M) practices and implement it.	Original	No change	August-13
		2. One workshop for utilities to disseminate lessons learned from past heat rate improvement and practices, and establish a community of practice to support deployment of technologies.	Original	No change	August-13
		3. An operational guideline manual for supercritical technology and benchmarking of supercritical facility.	Original	Performance Benchmarking Study Report for Sipat Thermal Power Plant	August-13
		4. A feasibility study on the design and development of an ultra supercritical power plant using Indian high ash coal.	New	A Desk Top Feasibility Study for Coal Blending. Study to evaluate the current state of the art coal blending technologies. Use of the Coal Quality Impact Model (CQIM TM) developed jointly by EPRI and Black & Veatch (B&V).	August-13
	Development of concept of Model Power Plant in an existing facility	1. A white paper on model power plant.	Original	No change	October-13
		2. A roadmap of technical and institutional interventions required for establishing the model power plant in an existing facility and its implementation.	Original	Dropped	
		3. A case study book on best practices and technologies implemented in the model power plant.	Modified	Supercritical Technology Best Practice Manual Baselineing and benchmarking study at a supercritical facility	August-13
		At least two partnerships and development of service provider's network formalized.	Original	Creation of a Heat Rate Alliance in India	March-13
Capacity building, training, outreach, dissemination and sharing of best practices	Capacity Building	1. At least one training workshop on best practices in Indian power utilities.	Original	No	August-13
		One international conference on new cleaner fossil technologies such as supercritical and ultra-supercritical technology.	Original	change	November-13
		One utility exchange program to the U.S to familiarize regulators and representatives from Indian power utilities with best practices in the cleaner fossil spectrum.	Original	No	July-13
		None	Modified	change	July 13-March 14

6.3 WORKSHOP AGENDAS



AGENDA

**Partnership to Advance Clean Energy Interagency Meeting
PS Conference Room, USAID Mission Office, New Delhi**

June 7, 2013

09:30 am - 09:35 am	Opening remarks <i>Jeremy Gustafson, USAID</i>
09.35 am – 09.50 am	US – India Strategy Dialogue Jeremy Gustafson, USAID, S Padmanaban, USAID, Dave Williams, ECON and Others
09:50 am – 10:00 am	Updates of progress made under PACE-D TA Program <i>S. Padmanaban, USAID (10 mins)</i>
10:10 am - 10:25 am	Updates by each Agency <i>ECON (5 mins)</i> <i>EST (5 mins)</i> <i>FCS (5 mins)</i> <i>DOE (5 mins)TDA (5 mins)</i>
10:25 am - 10:30 am	<i>Finalization of agenda points and date for next meeting</i>



AGENDA
Partnership to Advance Clean Energy – Deployment (PACE-D)
Technical Assistance Program
Effective Smart Grid Pilot Planning and Implementation Workshop

Date(s): May 27 – 28, 2013

Venue: Long Champ Hall, Taj Mansingh, New Delhi

Time: 9.30 am – 5.45 pm (Day 1)

9.00 am – 2.00 pm (Day 2)

DAY 1 (May 27, 2013)	
9.00 am	Registration
Inaugural Session Moderated by Ms. Monali Zeya Hazra, Program Management Specialist, USAID/India	
9.30 am – 9.40 am	Welcome Address: Mr. Jeremy Gustafson, Director, Clean Energy & Environment Office, USAID/India
9.40 am – 9.50 am	Setting the context: Mr. N. S. Sodha, Executive Director, Power Grid Corporation of India Limited
9.50 am – 10.05 am	Special Address: Mr. S. Padmanaban, Sr. Energy Advisor and Director SARI/E, USAID/India
10.05 am – 10.20 am	Key Note Address: Mr. B. N. Sharma, Joint Secretary - Distribution, Ministry of Power
10.20 am – 10.35 am	Tea
Session 1 Moderated by Mr. Sanjay Dube, Chief of Party, PACE-D Technical Assistance Program Approach to Smart Grid Project Planning and Implementation	
10.35 am – 10.50 am	Context and Coverage of the Workshop: Mr. Anish De, Lead Smart Grid Consultant, PACE-D Technical Assistance Program
10.50 am – 12.15 pm	Technical Consideration in Smart Grid Project Planning and Implementation: Mr. Vinoo S Warriar, Kalkitech Communication Technologies India
12.15 pm – 1.15 pm	Evaluation Criteria for Smart Grid Technologies: Mr. Ajit Kulkarni, Principal Advisor, PACE-D Technical Assistance Program
1.15 pm – 2.15 pm	Lunch
2.15 pm – 2.50 pm	Regulatory Consideration in Smart Grid Project Planning and

	Implementation: Mr. V. L. Sonawane, Member (Technical), MERC
2.50 pm – 3.30 pm	Commercial Consideration in Smart Grid Project Planning and Implementation: Dr. Puneet Chitkara and Mr. Vikas Gaba, Smart Grid Consultants, PACE-D Technical Assistance Program
3.30 pm – 3.45 pm	Tea
3.45 pm – 4.15 pm	Cyber Security: Mr. Subodh Belgi, Cyber Security Expert, India Smart Grid Forum
Session II Components of Smart Grids and Introduction to Group Work	
4.15 pm – 4.45 pm	Introduction to Group Work and Formation of Groups: Mr. Sanjay Dube, Chief of Party, and Mr. Anish De, Lead Smart Grid Consultant, PACE-D Technical Assistance Program
4.45 pm – 5.45 pm	Group Work
5.45 pm - 6.30 pm	High Tea
Day II (May 28, 2013)	
Session III Lessons from International Experience	
9.00 am –10.30 am	International Experience on Smart Grids: Mr. Ajit Kulkarni, Principal Advisor – Smart Grid, PACE-D Technical Assistance Program
10.30 am – 10.45 am	Tea
Session IV Group Work and Presentations	
10.45 am – 12.00 pm	Groups resume evolving guidelines for effective planning of smart grid pilots with each group focusing on their respective areas. Moderated by: Mr. Sanjay Dube, Chief of Party, and Mr. Anish De, Lead Smart Grid Consultant, PACE-D Technical Assistance Program
12.00 pm – 12.45 pm	Group Presentation (Four Groups) and Conclusion by the Moderators
12.45 pm – 12.55 pm	Way Forward: ISGTF/MoP
12.55 pm – 1.05 pm	Closing Remarks: Ms. Monali Zeya Hazra, Program Management Specialist, USAID/India
1.05 pm onwards	Lunch
2.00 pm – 5.30 pm	Smart Grid Demonstration Site Visit: Landis+Gyr Global Development Centre (GDC), Noida, UP.

6.4 WORKSHOP AGENDAS



AGENDA

**Partnership to Advance Clean Energy – Deployment
(PACE-D) Technical Assistance Program
Seminar on Net-Zero Energy Buildings (NZEBS) in India**

Date(s): May 16 – 17, 2013

Venue: Hotel Hyatt Regency, Regency Ballroom, Bhikaji Cama Place, New Delhi

DAY 1 (May 16, 2013)	
08.45 am – 09.30 am	Registration
<i>Inaugural Session</i>	
Moderated by Mr. Sanjay Dube , Chief of Party, USAID PACE-D Technical Assistance Program	
9.30 am – 9.40 am	Welcome Address: Mr. Jeremy Gustafson, Director, Clean Energy & Environment Office, (CLEEO), USAID/India
9.40 am – 9.50 am	Setting the Context: Dr. N. K. Bansal, Principal Investigator, Centre for Environmental Planning and Technology University
9.50 am – 10.00 am	Special Address: Mr. Saurabh Kumar, Managing Director, Energy Efficiency Services Limited (EESL)
10.05 am – 10.20 am	Key Note Address: Mr. S. Padmanaban, Sr. Energy Advisor and Director – SARI/E, USAID/India
10.20 am – 10.40 am	Tea Break
<i>TECHNICAL SESSION – I (NZEBS Policy Perspectives)</i>	
Session Chair : Dr. Peter du Pont , Senior Advisor, USAID PACE-D Technical Assistance Program	
10.40 am – 11.10 am	Topic : Policy Mechanism: Role of Building Codes in Achieving the Net-Zero Goal: Mr. Charles Eley, Energy Efficiency Expert, California, USA
11.10 am – 11.30 am	Topic : NZEB Projects and Policy Perspectives for Energy Efficient Building in Japan: Dr. Katsuji Emura, Project Coordinator, NEDO, Japan

11.30 am – 11.50 am	Topic : Sustainable Urban Energy Systems: Mr. Toine van Megen, Co-founder, Auroville Consulting, India
11.50 am – 12.10 pm	Topic : Achieving NZEB in Tropical Climates: Lessons from Malaysia: Mr. Poul E Kristensen, Director, IEN Consultants, Denmark
12.10 pm – 13.00 pm	Topic : Wrap-up and Q&A : Dr.Peter du Pont, Senior Advisor, USAID PACE-D Technical Assistance Program
13.00 pm – 14.00 pm	LUNCH BREAK
TECHNICAL SESSION – II (NZEB Projects) Session Chair : Dr. P. C. Jain , Chairman, Indian Green Building Council (IGBC)	
14.00 pm – 14.20 pm	Topic : Centre for Environmental & Planning Technology (CEPT), Ahmedabad, India: Mr. Prasad Vaidya, Director, zenerg
14.20 pm – 14.40 pm	Topic : Haryana Renewable Energy Department (HAREDA) Building, Punchkula, India: Mr. Siddhartha Wig, Principal, The Elements
14.40 pm – 15.00 pm	Topic : BAYER Material Science, Greater NOIDA, India: Dr. Ram Sai Yelamanchili, Head – ECB Center for Excellence, Bayer Material Science
15.00 pm – 15.20 pm	Topic : Towards Zero : High Energy-Efficient Buildings Using Advanced HVAC Technologies: Mr. Shiv Kumar Batra, Senior Manager, UTC CCS (Carrier and US- India Energy Corporation Partnership)
15.20 pm – 15.45 pm	Wrap-up and Q&A : Dr. P. C. Jain, Chairman, India Green Building Council (IGBC)
15.45 pm – 16.00 pm	Tea Break
PANEL DISCUSSION – The Indian Context Moderated by Mr. S. Padmanaban , Senior Advisor, USAID/India	

16.00 pm – 17.00 pm	<p>Topic : Panel Discussion and Wrap-up – The Indian Context : Discussion on the status of the building sector and the policy and regulatory framework needed in India to facilitate progress towards net-zero energy status of the building sector:</p> <p>PANEL MEMBERS:</p> <p><i>Mr. Charles Eley</i>, Energy Efficiency Expert, California, USA</p> <p><i>Dr. N. K. Bansal</i>, Principal Investigator, Centre for Environmental Planning and Technology University (CEPT)</p> <p><i>Ms.Mili Majumdar</i>, Director, Sustainable Habitat, The Energy Research Institute (TERI)</p> <p><i>Mr.Vinod Kala</i>, Managing Director, Emergent Ventures</p> <p><i>Dr.Aromar Revi</i>, Director, Indian Institute of Human Settlements (IIHS)</p>
Day II (May 17, 2013)	
<p>TECHNICAL SESSION – III (NZEB Policy / Indian Perspectives Session Chair : Ms. Apurva Chaturvedi, Program Management Specialist, USAID/India</p>	
9.30 am –9.50 am	<p>Topic : NZEB Context & Opportunities for India: Mr. Tanmay Tathagat, Director, Environmental Design Solutions (EDS)</p>
9.50 am – 10.10 am	<p>Topic : Policy Regulatory Mechanisms Renewable Energy Integration in the building sector: Dr. Bibek Bandhopadhyay, Scientist-G/Advisor, Ministry of New and Renewable Energy (MNRE)</p>
10.10 am – 10.30 am	<p>Topic : Feed-in-Tariff: Experiences from Maharashtra: Mr. Vijay S Sonavane, Member, Maharashtra Electricity Regulatory Commission (MERC)</p>
10.30 am – 10.50 am	<p>Topic : Distributed PV Generation and the Role of Utilities: Dr. Omkar Jani, Principal Research Scientist, Gujarat Energy Research & Management Institute (GERMI)</p>
10.50 am – 11.10 am	<p>Wrap-up and Q&A: Ms. Apurva Chaturvedi, Program Management Specialist, USAID/India</p>
11.10 am – 11.30 am	Tea Break
<p>TECHNICAL SESSION- IV Renewable Energy and Energy-Efficient Technologies / Materials for NZEB Session Chair: Mr.Dick Edwards, Project Director, USAID PACE-D Technical Assistance Program</p>	
11.30 am – 11.50 am	<p>Topic : Day lighting, Lighting, & Controls: Dr.Vishal Garg, Associate Professor, IIIT, Hyderabad</p>

11.50 am – 12.10 pm	Topic : Measuring Zero – Releasing Envelope Boundaries: Mr.Yash Shukla, Senior Research Associate, CEPT University
12.10 pm – 12.30 pm	Topic : Passive Design Strategies: Mr.Ashok B Lall, Principal, Ashok B Lall Architect
12.30 pm – 12.50 pm	Topic : Insulation-Role of Insulation and Advanced Products: Dr. Claude-Alain Roulet, Professor, Indo-Swiss Building Energy Efficiency Project (BEEP)
12.50 pm – 13.50 pm	LUNCH BREAK
TECHNICAL SESSION- V	
Renewable Energy and Energy-Efficient Technologies / Materials for NZEB (contd)	
Session Chair: Mr.Dick Edwards , Project Director USAID PACE-D Technical Assistance Program	
13.50 pm – 14.10 pm	Topic : Advanced HVAC Solutions: Dr. Milind Rane, Professor, IIT, Mumbai
14.10 pm – 14.30 pm	Topic : Measurement & Verification (M&V) considerations for NZEBs: Dr.Peter du Pont, Senior Advisor, USAID PACE-D Technical Assistance Program
14.30 pm – 14.50 pm	Topic : Waste-to-Energy for Buildings: Dr. G. C. Datta Roy, CEO, Development Environenergy Services Limited (DESL)
14.50 pm – 15.10 pm	Wrap-up and Q&A: Mr. Dick Edwards, Project Director, USAID PACE-D Technical Assistance Program
15.10 pm – 15.30 pm	Tea Break
PACE-D NZEB PILOT PROJECT ANNOUNCEMENTS	
Moderated by Mr. Jeremy Gustafson, Director, CLEEO, USAID / India	
15.30 pm – 15.45 pm	Topic : Presentations on Nalanda University’s NZEB Vision, Plans and Proposed Master Plan for the Campus: Dr. Gopa Sabarwal, Vice Chancellor, Nalanda University
15.45 pm – 15.50 pm	Topic : PACE-D Pilot Projects Signing Ceremony: Mr.Sanjay Seth, Energy Economist, Bureau of Energy Efficiency (BEE) Dr. Padmakar Mishra, Finance Officer, Nalanda University
15.50 pm – 16.00 pm	Special Address: Mr.Sanjay Seth, Energy Economist, Bureau of Energy Efficiency (BEE)
WRAP-UP SESSION – TOWARDS A COMMON DEFINITION	
Session Chair : Mr. S. Padmanaban , Senior Advisor & Director – SARI/E, USAID /India	

16.00 pm – 17.00 pm	<p>Topic : Approach to NZEB: Adoption of Common Language and Definitions: Policy / Market / Technology / Finance / Awareness & Education</p> <p><i>SPEAKERS:</i></p> <p>Mr.Sanjay Prakash, Managing Director, SHIFT</p> <p>Mr.Prasad Vaidya, Director, Zenerg</p> <p>Mr.Toine van Megen, Co-founder, Auroville Consulting</p> <p>Mr.Vidur Bharadwaj, Chairman, IGBC-Delhi Chapter</p> <p>Dr.Jyotirmay Mathur, Professor & Head, Centre for Energy and Environment, MNIT, Jaipur</p> <p>Dr.Kirit Parikh, Executive Director, IRADe</p>
17.15 pm – 17.20 pm	<p>Vote of Thanks : Ms. Apurva Chaturvedi, Program Management Specialist, USAID/India</p>



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Donor Meeting on Clean Energy

Date : April 30, 2013

Venue: Daniell’s Tavern, Hotel Imperial, Janpath, New Delhi

Time: 10:00 to 13:00 hrs

10.00 am -10.10 am	Welcome and Opening Remarks by Mr. Bernd Dunnzloff, Head of Economic Cooperation & Development, Embassy of the Federal Republic of Germany, New Delhi
10.10 am -10.30 am	Presentation on Indo-German Energy Programme (IGEN) Mr Jens Burgtorf, Director, Indo-German Energy Programme, GIZ
10.30 am -11.30 am	Update by different donor agencies on thematic sessions (renewable energy, industrial energy efficiency, building energy efficiency, finance, capacity building and policy and regulatory framework strengthening).
11.30 am -12.50 pm	Discussions: Should it be called “Donor meeting” or else? Process of follow-up: Break-out sessions OR Sub-committees to follow-up on specific topics in between the quarterly Donor meetings (e.g. Energy Access, National Clean Energy Fund, etc.). Agenda and format of the next meeting
12.50 pm -13.00 pm	Closing remarks by Mr. Nikolaus Supersberger, Dy. Director, IGEN, GIZ
13.00 pm	Lunch



Agenda

Partnership to Advance Clean Energy Inter Agency Meeting RCCR Conference Room, USAID Mission Office, New Delhi

April 29, 2013

09:00 am - 09:05 am	<i>Opening remarks</i> <i>Jeremy Gustafson, USAID</i>
09:05 am - 09:15 am	<i>Update on activities under PACE-D TA program</i> <i>S Padmanaban, USAID - 10 mins</i>
09:15 am - 09:25 am	<i>Updates on CEM 4 and other related activities</i> <i>Michael Richards and Dave Williams, ECON (10 mins)</i>
09:25 am - 09:55 am	<i>Update by each agency</i> <i>TDA</i> <i>EST</i> <i>FCS</i> <i>DOE</i> <i>Others</i>
09:55 am - 10:00 am	<i>Finalization of agenda points and date for next meeting</i>



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Clean Energy Finance Advisory Team Meeting

Date : April 23, 2013

Venue: Taj Lands End, Bandra -West, Mumbai.

Time : 9:30 am – 2:00 pm

9:30 am – 9:45 am	Introduction to PACE-D TA Program: Sanjay Dube, Chief of Party, PACE-D TA Program
9:45 am – 10:00 am	Inaugural Address: Anurag Mishra, Sr. Clean Energy Specialist, USAID/India
10:00 am – 10:30 am	Summary of EE Finance Report: Dilip Limaye, Team Leader - Clean Energy Finance, PACE-D TA Program
10:30 am – 11:15 am	Discussion on Proposed Options for Financing Energy Efficiency: Moderator: Dilip Limaye
11:15 am – 11:30 am	Tea/Coffee Break
11:30 pm – 12:00 pm	Summary of RE Finance Report: Aseem Varma, RE Finance Expert, PACE-D TA Program
12:00 pm – 12:45 pm	Discussion on Proposed Options for Financing Renewable Energy Moderator: Vinod Kala, Lead RE Consultant, PACE-D TA Program
12:45 pm – 1:00 pm	Wrap-Up and Directions for the Future: Sanjay Dube
1:00 pm onwards	Lunch



AGENDA

Partnership to Advance Clean Energy- Deployment (PACE-D) Technical Assistance Program Clean Energy Finance Roundtable with Financial Institutions

Date : April 22, 2013

Venue: Konkan Hall, Hotel Taj Lands End, Bandra, Mumbai.

Time: 9:30 am – 1:30 pm

Time	Topic/Speaker
9:30 am – 9:35 am	Introduction to PACE-D TA Program: Sanjay Dube, Chief of Party, PACE-D TA Program
9:35 am – 9:45 am	Inaugural Address: S. Padmanaban, Sr. Energy Advisor and Director SARI/EI, USAID/India
9:45 am – 10:05 am	Presentation on Energy Efficiency Finance: Dilip Limaye, Team Leader (Finance), PACE-D TA Program
10:05 am – 11:30 am	Q&A / Discussion
11:30 am – 11:50 am (Working Tea)	Presentation on Renewable Energy Finance: Vinod Kala, RE Lead Consultant, PACE-TA Program
11:50 am – 12:00 pm	Presentation on Microfinance for Off-grid RE: Russell deLucia, Microfinance Lead Consultant, PACE-D TA Program
12:00 pm – 1:15 pm	Q&A / Discussion
1:15 pm – 1:25 pm	Key Takeaway: Anurag Mishra, Sr. Clean Energy Specialist, USAID/India
1:25 pm – 1:30 pm	Wrap Up: Sanjay Dube, Chief of Party, PACE-D TA Program
1:30 pm onwards	Lunch



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Launch of American Council on Renewable Energy (ACORE) and Indian Renewable Energy Platform (IREP) Partnership

Date : April 18, 2013

Venue: Roshanara Hall, The Taj Palace Hotel, Sardar Patel Marg, New Delhi

Time: 4:30 pm - 5:00 pm

Time	Topic	Speaker
4:30 pm - 4:38 pm	Opening remarks	S. Padmanaban, Director - SARI/E and Senior Energy Adviser, USAID/India
4:38 pm - 4:46 pm	Facilitating the establishment of the apex RE body in India	Tom Weirich, Vice President (Corporate Relations) & Director (International Programs), American Council On Renewable Energy (ACORE)
4:46 pm - 4:54 pm	Objective and role of the apex RE body in India	V. Subramanian, Chief Mentor, Indian Renewable Energy Platform (IREP)
4:54 pm – 5:00 pm	Open Discussion & Wrap up	Moderated by: S. Padmanaban, Director SARI/EI and Senior Energy Adviser, USAID/India

AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Clean Energy Finance Roundtable for Project Developers

Date: April 16, 2013

Venue: Hotel Taj Mahal, Mansingh Road, New Delhi

Time: 10.00 am – 1.30 pm

Time	Topic/Speaker
10:00 AM - 10:10 AM	Opening Remarks: Sanjay Dube, Chief of Party, PACE-D TA Program
10:10 AM - 10:20 AM	Inaugural Address: S. Padmanaban, Sr. Energy Advisor and Director – SARI/EI, USAID/India
10:20 AM - 10:45 AM	Presentation: Strategies for RE Finance in India: Vinod Kala, Lead RE Consultant, PACE-D TA Program
10:45 AM - 12:30 PM (Working Tea)	Roundtable Discussion: Moderated by Dilip Limaye, Team Leader – Finance, PACE-D TA Program <ul style="list-style-type: none"> • Proposed Financial Instruments: Barriers to implementing, scaling of instruments, etc.
12:30 PM – 12:45 PM	Role of ACORE in Facilitating Finance for RE projects: Tom Weirich, Director (International Programs), ACORE
12:45 PM - 1:15 PM	Roundtable Discussion: Moderated by Dilip Limaye, Team Leader – Finance, PACE-D TA Program Topics: <ul style="list-style-type: none"> • Role of micro-finance institutions in supporting off-grid RE • Role of Apex body to facilitate finance for RE projects
1:15 PM - 1:30 PM	Key Takeaway: Anurag Mishra, Sr. Clean Energy Specialist, USAID/India
1:30 PM onwards	Lunch



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Introductory Workshop on Smart Grid Pilot Implementation at Central Board of Irrigation and Power (CBIP), New Delhi

Date : April 12, 2013
Venue: CBIP, New Delhi
Time : 2.30 pm to 5.00 pm

TIME	OPENING SESSION	SPEAKERS
2.15 pm	Opening Remarks	N S Sodha, Executive Director, Power Grid Corporation of India Ltd.
2.30 pm	Context Setting	S. Padmanabhan, Senior Energy Advisor and Director SARI/E., United States Agency for International Development (USAID)-India
2.40 pm	<p>Introduction to PACE-D Technical Assistance (TA) Program and the Smart Grid Module under the PACE-D TA Program</p> <p><i>As part of this session, the aim will be to detail out the key objectives and the activities proposed under the PACE-D Program and specifically under the Smart Grid module over the next 2-3 years</i></p>	Sanjay Dube, Chief of Party, Nexant Inc

2.50 pm	<p>Synergies of PACE-D with the 14 Smart Grid pilots</p> <p><i>Smart Grid is one of the key modules of the PACE-D program aimed at supporting and strengthening Smart Grid initiatives in India through technology exchange and access, knowledge sharing, training and capacity building, and access to channels of financing.</i></p> <p><i>The aim of this session will be to take the participants through various aspects of smart grids and present a coherent development framework required at the state and national level. This will act as a reference framework for mapping various activities, identifying gaps and designing measures to strengthen interventions planned under the 14 pilot programs.</i></p>	Anish De, Chief Executive Officer, AF Mercados EMI
3.30 pm	<p>Execution of a Brief Survey</p> <p>The above session will be followed by a short survey to obtain feedback, comments and suggestions from the participants on the key areas of needs, issues and concerns, knowledge gaps experiences etc in the area of Smart Grids.</p> <p>Participants will be distributed a short survey form for their feedback.</p>	
3.45 pm	Tea	
4.00 pm	<p>Interactive Feedback Session with the participants</p>	<p>Sanjay Dube, Chief of Party, Nexant and</p> <p>Anish De, Chief Executive Officer, AF Mercados EMI (Moderators)</p>
4.50 pm	<p>Conclusion and Summarization</p>	<p>Monali Zeya Hazra, Program Management Specialist, USAID and Dr. Vasudha Lathey, Deputy Chief of Party, Nexant Inc.</p>



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Benchmarking & Best Practices Capacity Building Program Participant Training & Plant Visit

Date : March 18-21, 2013

Venue: Sipat Super Thermal Power Station

Time: Day 1- 3 (Full day)

Day 4 (Half day)

Day 1

	Topic	Speaker
10:00 am	Opening Remarks	Sanjay Dube, COP, PACE-D TA Program
10:05 am	Inaugural Address	NTPC
10.15 am	Key Note Address	S.Padmanaban, Director SARI/E and Senior Energy Adviser-USAID
10:30 am	Introduction & High level Overview of Benchmarking & Best Practice work during the visit	G. Choi / R. Krishnan
10.50 am	Discussion on Boiler Tube Failures & Reliability Management Benchmarking / Case Studies; Best Practices / Case Studies	Pat Abbott
1:30 pm	Lunch	
2.30 pm	Overview of Implementation Plan for Benchmarking and Best Practices; Information Sharing; Team Background, Expectations & Program Objectives	Stephen Storm
3.30 pm	Benchmarking Process Matrix/Best Practices: Methodology and Areas to be included: <input type="checkbox"/> Review Skeleton Agenda; Various Plant Equipment for Consideration	Ronnie Campbell / Stephan Storm / R. Krishnan
3.45 pm	Discussion of Cliffside & Mundra Experience on SC units, Safety & Human Performance Management	Ronnie Campbell/Stephan Storm / R. Krishnan
4.15 pm	Discussion of AEP Experience Related to Best Practices Turk Station; Quantitative Industry Standards related to S <input type="checkbox"/> Including start-ups and water chemistry best practices <input type="checkbox"/> Heat Rate & performance monitoring	Warren Ashton/Stephan Storm/R. Krishnan

6.30 pm	Adjourn for the Day
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DAY 2

Time	Topic	Speaker
9:00 AM	Continuation of Day 1; Recap	TBD
10:00 AM	Walk-down Plant While Onsite <input type="checkbox"/> Review details, purpose & plan of action	U.S. Technical Team with focus groups from plant and CENPEEP
All Day	Onsite Walk-down Information Collection Data collection audits and interviews with plant team (via Focus Groups) <input type="checkbox"/> CHP <input type="checkbox"/> Main Plant <input type="checkbox"/> Turbine & boiler systems <input type="checkbox"/> BOP <input type="checkbox"/> Switchyard <input type="checkbox"/> Instrumentation & Controls <input type="checkbox"/> Software tools	Focus teams from U.S. & NTPC (plant and CENPEEP)
TBD	Adjourn for the Day	

DAY 3

Time	Topic	Speaker
9:00 AM	Working Day; Combined Teamwork to finalize table of contents: <input type="checkbox"/> Benchmarking & Best Practices Manual	TBD
Lunch		
2.30 PM	<input type="checkbox"/> 3-D Model Presentation <input type="checkbox"/> Engage Plant with Discussions regarding plant equipment, Sharing of questions & concern with U.S. technical team	Nhia Ly TBD
6:00 PM	Adjourn for the Day	

DAY 4

Time	Topic	Speaker
9:30 AM	Exit Presentation <input type="checkbox"/> Review of Program Plan of Action <input type="checkbox"/> Discuss expected challenges & Preliminary	Stephen Storm Ronnie Campbell Pat Abbott
	recommendations <ul style="list-style-type: none"> • Schedule and area wise lead from plant and CENPEEP 	Warren Ashton
Lunch		
1:00 PM	IAdjourn IDepart to Raipur	



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Heat Rate Improvement Capacity Building Program /Participant Training & Plant Visit

Date : March 11-15, 2013

Venue: Panipat Super Thermal Power Station

Time : Day 1 (10.30 am – 5.30 pm) - (7.00 hrs)

Days 2 (10.00 am – 5.30 pm) – (7.30 hrs)

Day 3-4 (Full day)

Day 5 (Half day)

DAY 1

Time	Topic	Speaker
10:30 AM	Brief Meeting with plant management and discussion about weeks program	NTPC & US Team
All Day	Onsite Walk-down Information Collection Data Collection (as required); Interviews with Plant Team <input type="checkbox"/> Stephen Storm – to lead the boiler area <input type="checkbox"/> NTPC / Mr. V.S. Amarnath – to lead the Turbine Cycle	U.S. Team, NTPC, All

DAY 2

Time	Topic	Speaker
11:20 AM	Registration & Round of Introductions	
11:30 AM	Provide an Introduction & Overview of PACE-D Technical Assistance Program	Monali Hazra, USAID and Sanjay Dube, Chief of Party, PACE-D TA Program
11:40 AM	High level Overview of Program & Plan Of Activities at Plant Site	Dr. Radha P. Krishnan
12:00 PM	Brief about the Panipat Plant & Welcome Remarks	J. P. Agrawal, CE

12:30 PM	<input type="checkbox"/> Discussion and Information Sharing NTPC, past experiences on Combustion Optimization, Turbine Cycle Performance <input type="checkbox"/> Monitoring Performance Testing Protocols and Preparations for Critical components such as pulverizers, air heaters, FW Heaters, Condenser, Steam Path Audits and Over-all Turbine Cycle Real time Performance Monitoring Software and Tools	CenPEEP Team
1:20 PM	Lunch	
2:45 PM	<input type="checkbox"/> Overview and Importance of Heat Rate Program Development, Review Experiences & Best Practices <input type="checkbox"/> Review of Expectations & Overall Program Objectives & Process <input type="checkbox"/> Review past experiences / results from training & programs developed <input type="checkbox"/> Discuss Importance from an Economics to Environmental Importance	Stephen Storm
4:40 onwards	<input type="checkbox"/> Questions & Discussion	

DAYS 3 - 4

Time	Topic	Speaker
All Day	Working Day; Combined Teamwork: <input type="checkbox"/> Heat Rate Program Development <input type="checkbox"/> Review Information Collected on Day-1& 2 <input type="checkbox"/> Preparation for Exit Meeting <input type="checkbox"/> Site Specific Discussion, Questions, etc.	TBD

DAY 5

Time	Topic	Speaker
9:30 AM	Exit Presentation: <input type="checkbox"/> Review of Plant Observations, Recommendations <input type="checkbox"/> Discuss Expected Challenges & Preliminary Recommendations <input type="checkbox"/> Schedule & Support w/ next steps Review final report - TOC	USA Technical Team NTPC CENPEEP
	Lunch	
13:00 PM	Adjourn Depart to New Delhi	

AGENDA

Partnership to Advance Clean Energy - Inter Agency Meeting RCCR Conference Room, USAID Mission Office, New Delhi

March 7, 2013

09:00 am - 09:05 am	<i>Opening remarks Jeremy Gustafson, USAID</i>
09:05 am - 09:15 am	<i>Update on Clean Energy Financing Presentation by OPIC (Peter Ballinger) - 10 mins</i>
09:15 am - 09:30 am	<i>Updates of progress made under PACE-D TA contract S. Padmanaban, USAID (10 mins) Update on RE and EE Finance component (Anurag and Monali) – 5 mins</i>
09:30 am - 09:40 am	<i>Update on CEM 4 Michael Richards, ECON</i>
09:40 am - 09:45 am	<i>Update on Ambassador's Visit to Jaipur Greg O'Connor, FCS</i>
09:45 am - 09:50 am	<i>Presentation on the Annual Work Plan and Calendar on PACE-D Website Sanjay Dube, Nexant</i>
09:50 am - 09:55 am	<i>Any other Updates and Discussions</i>
09:55 am - 10:00 am	<i>Finalization of agenda points and date for next meeting</i>



AGENDA

Partnership to Advance Clean Energy - Deployment (PACE-D) Technical Assistance Program Heat Rate Improvement Participant Training Program

Date : March 4-8, 2013

Venue: Chandrapur Super Thermal Power Station

Time: Days 1 – 4 (Full day)

Day 5 (Half day)

Day 1

Time	Topic	Speaker
11:00 am	Registration & Round of Introductions	
11:30 am	Provide an Introduction & Overview of PACE-D Technical Assistance Program	Monali Hazra -USAID, Sanjay Dube, Chief of Party, Lauren J Wygonski, Energy & International Trade Analyst, PACE-D TA Program
12:00 pm	High level Overview of Program & Plan of Activities at Plant Site	Dr. Radha P. Krishnan
12:30 pm	Brief about the Chandrapur Plant & Welcome Remarks	S. U. Gohotre, CE
12:30-1:00 pm	<input type="checkbox"/> Discussion and Information Sharing NTPC, past experiences on Combustion Optimization, Turbine Cycle Performance <input type="checkbox"/> Monitoring Performance Testing Protocols and preparations for Critical components such as pulverizers, air heaters, FW Heaters, Condenser, Steam Path Audits and Over-all Turbine Cycle <input type="checkbox"/> Real time Performance Monitoring Software and Tools	CenPEEP Team
1:15 – 3:15 pm	Lunch	

3:15 – 5:00 pm	<input type="checkbox"/> Overview and Importance of Heat Rate Program Development, Review Experiences & Best Practices <input type="checkbox"/> Review of Expectations & Overall Program Objectives & Process <input type="checkbox"/> Review past experiences / results from training & programs developed <input type="checkbox"/> Discuss Importance from an Economics to Environmental Importance	Stephen Storm
5:00 – 7:00 pm	<input type="checkbox"/> Questions & Discussion	

DAY 2

Time	Topic	Speaker
9:00 am	Meeting & Review POA	TBD
All Day	Onsite Walk-down Information Collection Data Collection (as required); Interviews with Plant Team <input type="checkbox"/> Stephen Storm – to lead the boiler area <input type="checkbox"/> NTPC / Mr. V.S. Amarnath – to lead the Turbine Cycle	U.S. Team, NTPC, All

DAYS 3 – 4

Time	Topic	Speaker
All Day	Working Day; Combined Teamwork: <input type="checkbox"/> Heat Rate Program Development <input type="checkbox"/> Review Information Collected on Day-2 <input type="checkbox"/> Preparation for Exit Meeting <input type="checkbox"/> Site Specific Discussion, Questions, etc.	TBD

DAY 5

Time	Topic	Speaker
9:30 am	Exit Presentation: <input type="checkbox"/> Review of Plant Observations, Recommendations <input type="checkbox"/> Discuss Expected Challenges & Preliminary Recommendations <input type="checkbox"/> Schedule & Support w/ next steps Review final report – TOC	USA Technical Team NTPC CENPEEP
	Lunch	
13:00 pm	Adjourn Depart to New Delhi	

AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program Low Energy Comfort Systems Expert Group Workshop

February 28 - March 1, 2013

Venue: Sanskriti Foundation, Anandagram, Mehrauli Gurgaon Road, New Delhi

Time: Day 1 (10 am – 5 pm) and

Day 2 (10 am – 1.40 pm)

DAY 1

OPENING SESSION		
10:00 – 10:10	Round of Introductions	
10:10 – 10:20	Welcome Note	Mr. Sanjay Seth, Energy Economist, Bureau of Energy
10:20 – 10:40	Opening Address	Mr. S. Padmanaban, Sr Energy Advisor, USAID/India
10:40 - 11:00	Tea (Working): Introduction to Workshop Format	
TECHNICAL SESSION I		
<i>Low Energy Comfort Strategies for Non-Residential Buildings</i>		
<i>Session Chair: Mr. Sanjay Prakash</i>		
11:00 – 11:20	Low Energy Comfort Systems: Issues and Indian	Mr. Sanjay Prakash
11:20 – 13:50	Strategies, Case Studies, and Experiences	12 Presentations of 12 minutes each
	1. Low Energy Cooling Case Study	Mr. Ashok B Lall, ABL
	2. Natural Cooling in Design	Mr. Dean D’Cruz, Mozaic
	3. Infosys Designs	Mr. Punit Desai, Infosys
	4. Low Energy Cooling Strategies	Mr. Pradeep Kumar, TERI
	5. Learning from Neemrana	Mr. Vinod Gupta, Space design
	6. Innovative Cooling Techniques	Mr. Surya Kakani
	7. Ventilation Through Second Skin Vertical Garden: Goa	Mr. Vikram Varma
	8. Cooling Strategies in HAREDA Building	Mr. Siddhartha Wig, The Elements
	9. Low Energy Cooling Strategies for Agilent Complex at Manesar	Mr. G C Modgil, Sterling
	10. Central University of Rajasthan	Mr. Nabeel Ahmed, EDS
	11. Personal Environmental Control	Dr. Vishal Garg, IIIT
12. Two Stage Evaporative Cooling with Under Floor Air Circulation	Mr. B Mahesh, McDberl	

13:50 – 14:30	Lunch Break	
14:30 – 15:45	Low Energy Case Studies: Approach for the Indian Climate	Discussion on the Presentations of Technical Session I (Q & A)
15:45 – 16:00	Tea Break	
TECHNICAL SESSION II <i>Indian Comfort Standards and Climatic Zones</i> <i>Session Chair: Dr. Vinod Gupta</i>		
16:00 – 16:30	Developing an Adaptive Thermal Comfort Model for India: Active and Passive-mode Buildings	Prof. Rajan Rawal Ms. Sanyogita Manu
16:30 – 17:00	Adopting a Comfort Standard for India	Discussion and Wrap Up

DAY 2

TECHNICAL SESSION III <i>Low Energy Comfort Techniques and Technology</i> <i>Session Chair: Mr. Vardan Seshadri</i>		
10:00 – 11:00	Low Energy Comfort Systems: Techniques and	Six Presentations of 10 minute each:
	1. Natural Ventilation and Three Stage Evaporative Cooling	Mr. Richie Mittal, Overdrive
	2. Desiccant Cooling	Mr. Rahul Aeron, DRI
	3. Solar-based Absorption Cooling	Mr. Manoj/ Sachin, Thermax
	4. Radiant Cooling	Mr. Nabeel Ahmad, EDS
	5. Waste to Cooling : Cogen- Trigen	Mr. Srikant Kasturi, DESL
	6. Ground Source Cooling	Mr. Hisham Ahmad, EDS
11:00 – 11:15	Tea Break	
11:15 – 12:00	Practical Application of Low Energy Comfort	Discussion on the Presentations of Technical Session III (Q & A)
	Appropriate Approach	
WRAP UP SESSION <i>Approach to Transformation and Way Forward</i> <i>Session Chair: Mr. Sanjay Seth</i>		
12:00 – 12:30	Approach to Transformation (Policy, Market, Awareness, and Education)	Moderated Discussion
12:30 – 13:15	Pilot Identifications (Technologies, Products and Techniques)	Moderated Discussion
13:15 – 13:30	Way Forward	Ms. Vasudha Lathey
13:30 – 13:40	Vote of Thanks	Ms. Apurva Chaturvedi
13:40– 14:30	Lunch	



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program MNRE Committee Room, CGO Complex, New Delhi

February 5, 2013

10.30 – 10.35 AM	Welcome and Participant Introduction
10.35 – 10.45 AM	Opening Remarks Mr. Alok Srivastava, Joint Secretary, NINRE
10.45 – 11.00 AM	Strategy and Objective : US – India Partnership to Advance Clean Energy (PACE-D)
11.00 – 11.20 AM	Presentation on PACE-D and Support to State Nodal Agencies Anurag Mishra, USAID and Sanjay Dube, COP
11.20 – 11.50 AM	Address by State Nodal Agencies Karnataka Renewable Energy Development Agency Ltd NIP Urja Vikas Nigam Ltd Rajasthan Renewable Energy Corporation Limited
11.50 – 12.15 PM	Open discussion on next steps
12.15 – 01.00 PM	Finalization of next steps and visits to states
01.00 – 02.00 PM	Lunch



AGENDA

**Partnership to Advance Clean Energy Inter Agency Meeting
PS Conference Room, USAID Mission Office, New Delhi**

February 01, 2013

10:15 - 10:20 AM	Opening remarks <i>Jeremy Gustafson, USAID</i>
10:20 – 10:30 AM	Updates of progress made under PACE-D TA contract and brief introduction to Energy Efficiency Component <i>S. Padmanaban, USAID</i>
10:30- 10:45 AM	Energy Efficiency Programs under PACE <i>Presentation by TDA on EE and smart grid – Mehnaz (5 mins) Presentation by DOE on EE and smart grid – Michael/Usha (5 mins)</i>
10:45 – 11:15 AM	<i>Presentation on PACE-D TA contract - USAID (Monali Zeya Hazra) and Apurva Chaturvedi - 5 mins</i> Updates by each Agency - <i>ECON</i> - <i>TBC EST</i> - <i>TBC FCS</i> - <i>TBC</i> - <i>USAID/DOE/TDA – Other updates</i>
11:15 – 11:25 AM	<i>Discussions on the interagency updates</i>
11:25 - 11:30 AM	<i>Finalization of agenda points and date for next meeting</i>

Note: TBC – To be confirmed

5.2 PARTICIPANT TRAINING PROGRAMS



AGENDA

AEEE WORKSHOP ON DSM-EMV FOR DISCOMS, MVPs & DSM VERIFIERS

**With Support from Shakti Sustainable Energy Foundation and in
Partnership with USAID PACE-D Technical Assistance Program**

January 23, 2013

Time	Topic	Speaker
0900 - 0930	Registration	
0930 – 1030	Inaugural Session	
0930 – 0935	Introduction: AEEE	
0935 - 0940	Welcome	Chinmaya Acharya, Chief of Programs, SSEF
1010 - 1015	USAID PACE-D Technical Assistance (TA) Contract	Sanjay Dube, Chief of Party, USAID PACE-D TA Program
1015 - 1025	Keynote- DSM and Evaluation in India	Dr. GC Datta Roy, Vice Chairman, AEEE
1025 - 1030	Vote of Thanks	
1030 - 1045	Tea / Coffee Break	
1045 – 1300	Technical Session I	
	DSM- Evaluation in Practice: The U.S. Experience	Steven Nadel, Lead Trainer & Executive Director, ACEEE
	Q&A Discussion- Views from Utilities	
	Lunch Break	
1400 - 1515	Technical Session II	
	Evaluation, Cost-Effectiveness and Market Evaluation	Steve Nadel
1430 - 1500	DSM Evaluation- South Asian Experience	Peter du Pont, Senior Advisor, USAID PACE-D TA Contract
1500 - 1530	ICRA's Survey of Consumers	
1530 - 1545	Tea/ Coffee Break	
1545 – 1730	Technical Session III	
1545 - 1615	Practical Examples from Evaluation	Phil Degen
1615 - 1730	Panel Discussion and Way Forward- Utilities Perspective	Session Chair: Peter duPont

Participants: DISCOMs & Utilities Chiefs- BESCO, Tata Power, BEST and TPDPL, BSES, Punjab, Haryana, CESC, West Bengal (Utilities Invited).

AGENDA

Energy Conservation Building Code (ECBC) Implementation & Update: Expert Group Consultation Workshop

Date: Thursday, December 20, 2012

Venue: Ballroom 1, Hyatt Regency, Bhikaji Cama Place, Ring Road, New Delhi, India 110607

Time: 10:00 am - 4.30 pm

INAUGURAL SESSION		
Time	Topic	Speaker
10:00 -10:45	Welcome Note	Jeremy Gustafson Director, Clean Energy & Environment Office, USAID/India
	Setting the Tone	Apurva Chaturvedi Program Management Specialist, Clean Energy & Environment, USAID/India
	Keynote Address	Abha Shukla Secretary, Bureau of Energy Efficiency
	Inaugural Address	Jyoti Arora Joint Secretary, Ministry of Power & Director General, Bureau of Energy Efficiency
	Vote of Thanks	Sanjay Dube Chief of Party, USAID PACE-D TA Contract
10:45 – 11:00	BREAK	

TECHNICAL SESSION I: ECBC Administration and Update Chair: Sanjay Seth		
Time	Roundtable Discussion Topics	Facilitators
11:00 – 13:30	<ul style="list-style-type: none"> Proposed ECBC Implementation Framework Need for Technical Review and Update of ECBC Baseline Scenario ECBC Implementation: Update Priorities and Process 	Girija Shankar Assistant Energy Economist, Bureau of Energy Efficiency Tanmay Tathagat Director, Environmental Design Solutions
13:30 – 14:30 LUNCH BREAK		
TECHNICAL SESSION II: ECBC Future - Towards Net Zero Buildings and Low Energy Comfort Systems Chair: Apurva Chaturvedi		
14:30- 16:30	<ul style="list-style-type: none"> ECBC Future- Towards Net Zero Renewable Energy Integration in Buildings Development of Low energy HVAC Systems 	Sanjay Dube Chief of Party, USAID PACE-D TA Contract Vasudha Lathey Deputy – Chief of Party (Energy Efficiency), USAID PACE-D TA Contract Anamika Prasad Director, Environmental Design Solutions
	Closing Remarks	Monali Zeya Hazra Program Management Specialist, Clean Energy & Environment, USAID/India

AGENDA

PACE-D Technical Assistance Contract Subcontractors Training on Training Concepts and Responsibilities

Date: Wednesday, December 5, 2012

Venue: Ballroom 2, Qutab Hotel (Clarion Collection), Shaheed Jeet Singh Marg, New Delhi

Time: 9:30 am - 4.00 pm

9:30 am – 9:45 am	<p>Introduction & Welcome <i>Sanjay Dube, Chief of Party, PACE-D TA Contract</i></p>
9:45 am – 10:00 am	<p>Manuals and Materials Explanation and Distribution <i>Lauren Wygonski, Training Consultant, PACE-D TA Contract</i></p> <ul style="list-style-type: none"> • ADS 253 • Participant Training Practitioner’s Manual • Trai-Net system • Subcontractor Participant Training Procedure Manual
10:00 am – 11:00 am	<p>Participant Training Concepts</p> <ul style="list-style-type: none"> • Role of USAID, Nexant and Subcontractors • Training types: In-country, regional, 3rd country, U.S. based • Training methods: conferences, workshops, study tours, seminars, etc. • Examples of successful/unsuccessful training activities
11.00 am – 11:15 am	<p>Tea/Coffee Break</p>

11:15 am – 1:00 pm	<p>Program Considerations</p> <ul style="list-style-type: none"> • Human Performance Factors • Training Venue Selection Criteria • Training Plans and Timeline • Training Request (training concept designs) • Training Implementation Plan • Participant Eligibility and Selection
	<p>Branding and Marking</p> <ul style="list-style-type: none"> • Brief on Branding and Marking Manual & Templates <p>In-Country Training Requirement</p> <ul style="list-style-type: none"> • Provider Selection • Travel, Lodging, and Other Logistics • Conditions of Sponsorship • Pre-training preparation and orientation <p>Monitoring and Reporting</p> <ul style="list-style-type: none"> • Nexant Relevant Indicators • Stakeholder Responsibilities • Monitoring Tool • Trai-Net Tool
1:00 pm – 1:30 pm	Lunch
1:30 pm – 3:45 pm	Training by USAID RCO & Finance Team
3:45 pm – 4:00 pm	Q&A and Wrap-up - Sanjay Dube, COP, PACE-D TA Contract

AGENDA

**Partnership to Advance Clean Energy Inter Agency Meeting
RCCR Conference Room, USAID Mission Office, New Delhi**

November 30, 2012

10:30 - 10:35	<i>Introduction of Secretariat Team and Inter Agency Group</i>
10:35 - 10:40	<i>Opening remarks</i> <i>Jeremy Gustafson, USAID</i>
10:40 - 10:50	<i>Presentation on PACE-D Interagency Secretariat Work Plan</i> <i>Monali Zeya Hazra, USAID and Sanjay Dube, COP</i>
10:50-10:55	<i>Introduction to PACE-D website</i> <i>Sanjay Dube, COP</i>
10:55 - 11:25	<i>Update by each agency:</i> <i>USAID (S. Padmanaban); ECON (Dave Williams, TBC); TDA (Mehnaaz Ansari, TBC); EST (Tim Neely, TBC); FCS (Greg O Connor, TBC); and DOE</i>
11:25 – 11:30	<i>Finalization of agenda points for next meeting</i>

Note: TBC – To be confirmed



AGENDA

**Partnership to Advance Clean Energy – Deployment (PACE-D)
 Technical Assistance Contract
 Donor Meeting on Clean Energy USAID/India**

Date: November 23, 2012

Venue: Hotel Royal Plaza, 19 Ashoka Road, New Delhi

Time: 10 am to 1 pm

10.00-10.10 am	Welcome and Opening Remarks by S Padmanaban, Director, SARI/E and Senior Energy Adviser, USAID.
10.10-10.30 am	Presentation on PACE-D by Monali Zeya Hazra, Program Management Specialist, USAID/India and Sanjay Dube, Chief of Party, PACE-D TA Contract
10.30-11.30 am	Update by different donor agencies on thematic sessions (renewable energy, industrial energy efficiency, building energy efficiency, finance, capacity building and policy and regulatory framework strengthening).
11.30am-12.50 pm	Discussions: <ul style="list-style-type: none"> • Possible areas of collaboration. • Process of follow-up including frequency of meetings and deciding the host for next event. • Agenda for the next meeting.
12.50-1.00 pm	Closing remarks by USAID.
1.00 pm	Lunch

AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Contract Roundtable Meeting to Discuss the Formation of an Apex RE Association in India

Date: Friday, November 23, 2012

Venue: Emily Eden and Hodges, 3rd Floor, The Imperial Hotel, Janpath, New Delhi.

Time: 3:00pm – 5:00 pm

India currently has various associations to represent different renewable energy (RE) technologies such as solar, wind, and biomass. However, there is no apex body to represent the overall RE industry as a whole.

USAID/India’s PACE-D Technical Assistance Contract has identified the need to create an apex RE association in India similar to the likes of the American Council for Renewable Energy (ACORE) and European Renewable Energy Council (EREC). The objective of the roundtable is to facilitate a discussion among the key stakeholders, review existing initiatives and international best practices, and explore options for establishing an effective apex RE association in India.

3:00 - 3:15 PM	PACE-D Technical Assistance Contract Overview <i>Sanjay Dube, Chief of Party, USAID PACE-D TA Contract</i>
3:15 - 3:30 PM	Update on apex RE Association Related Activities under PACE-D <i>Vinod Kala, Managing Director, Emergent Ventures India (EVI)</i>
3:30 - 3:45 PM	ICORE Initiative <i>Balwant Joshi, Partner, ABPS Infra</i>
3:45 - 4:45 PM	Roundtable discussion
4:45 – 5:00 PM	Closing Remarks <i>Sanjay Dube, Chief of Party, USAID PACE-D TA Contract</i>
5:00 PM onwards	High Tea



AGENDA

Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Contract Key Subcontractors Training on USAID Guidelines and Procedures

Date: Tuesday, November 6, 2012

Venue: Ballroom No 3, Clarion Collection - The Qutab Hotel, New Delhi
 Shaheed Jeet Singh Marg (Near Qutab Institutional Area), New Delhi

Time: 10:00 am - 4.00 pm

Time	Topic
10:00 am – 10:15 am	Introduction - Sanjay Dube, COP, PACE-D Technical Assistance Contract
10:15 am – 11: 30 am	Training on USAID Procedures, Reporting and Finance – Brian Gould, Program Management Specialist, PACE-D Technical Assistance Contract
11:30 am – 11.45 am	Tea/Coffee Break
11.45 am – 12:15 pm	Training on USAID Procedures, Reporting and Finance (Continued from earlier session)
12:15 pm – 1:00 pm	Orientation on PACE-D M&E Plan and Practices – Himanshu Dube, M&E Specialist, PACE-D Technical Assistance Contract
1:00 pm – 1:30 pm	Lunch
1.30 pm – 3.30 pm	Training on Financial and Contractual Procedures – USAID RFMO representative
3:30 pm – 4:00 pm	Q&A and Wrap-up - Sanjay Dube, COP, PACE-D Technical Assistance Contract

AGENDA

Partnership to Advance Clean Energy Interagency Meeting
RCCR Conference Room, USAID Mission Office, New Delhi
15 October, 2012

10:00 - 10:05	<i>Introductions of Secretariat Team and Inter Agency Group</i>
10:05 - 10:20	<i>U.S. – India Energy Dialogue Brief</i> <i>S. Padmanaban, USAID</i>
10:20 - 10:25	<i>Background of the meeting and update on USAID’s activities</i> <i>Jeremy Gustafson, USAID</i>
10:25 - 10:35	<i>Presentation on the Secretariat Role and Functions</i> <i>Monali Zeya Hazra, USAID and Sanjay Dube, COP</i>
10:35 - 11:05	<i>Discussions on</i> <ul style="list-style-type: none"> - <i>Potential area of synergies between different agencies</i> - <i>Proposed PACE-D Newsletter and Inter Agency activity calendar</i>
11:05 - 11:25	<i>Update by each agency</i> <i>ECON, OPIC, TDA, State, FCS, DOE and USAID</i>
11:25 – 11:30	<i>Finalization of agenda points for November 2012 meeting</i>

5.1 PACE-D SUB CONTRACTORS : AGENDA



AGENDA

**Partnership to Advance Clean Energy-Deployment (PACE-D)
Subcontractors Orientation Meeting**

Date: June 21, 2012

Venue: Emily Eden Room, 3rd Floor, Imperial Hotel, Janpath, New Delhi

Time: 10:00 am - 4.00 pm

10:00 am – 10:15 am	Tea
10:15 am – 10:30 am	Introduction - Dick Edwards, Officer-in-Charge, PACE-D
10:30 am – 11:00 am	PACE-D Overview - Sanjay Dube, Chief of Party, PACE-D
11:00 am – 12:00 pm	Anti-Corruption Guidelines - Allen Eisenberg, Contracts Specialist and Legal Counsel, Nexant
12:00 pm – 12:30 pm	Cost Principles - Allen Eisenberg
12:30 pm – 1:30 pm	Lunch
1:30 pm – 3:00 pm	USAID Subcontracting Regulations – Allen Eisenberg
3:00 pm – 4:00 pm	Q&A and Wrap-up

6.5 LIST OF MEETINGS

PACE-D Technical Assistance Program

List of meetings

(June 01, 2012 to June 30, 2013)

Date	Meeting Purpose	Place	USAID/PACE-D Reps
June 28, 2013	Meeting with AEEE	AEEE office	HD
June 24-25,2013	Meeting with RREC/RERC	Jaipur	RK
June 24,2013	Meeting with Mr.Subramaniam, IREF	PACE-D Office	SD/HD
June 21,2013	Smart Grid Workshop	Indian Habitat Centre	SD/RK
June 20,2013	Meeting with NETRA/NTPC	NTPC Greater Noida	SD
	Meeting with Mr.Hemant Bhatnagar - GIZ	GIZ office, New Delhi	RK
June 18-19,2013	Meeting with Mr. S. Paliah,/ M Prabhakar / Mr. Satish Chandra KREDEL	KREDEL office , Bangalore	SD/RK
	Meeting with Mr. L Ravi-BESCOM Mr. Vishvanath Hiremath -KERC Member	BESCOM & KERC office, Bangalore	SD/RK
June 18,2013	Call to Dilip to discuss finance	PACE-D office	KK
June 17,2013	Meeting with Alok Srivastava-MNRE/ USAID and PACE-D	MNRE CGO Complex	SD/RK/AM
June 14,2013	Meeting with PACE-R & PACE-D coordination	American Embassy	SD
	Meeting with BEE/DESL/USAID	BEE office	SD/USAID/DESL
June 13-14,2013	Meeting in Mumbai	Mumbai	SD
June 12,2013	Meeting with Mr.Khekiho Yeptho, Sr Manager- IREDA to discuss on-going activities in financing and off-grid RE project development with the aim of finding common areas for collaboration	IREDA office	SD/RK
	Meeting with IFC	IFC office	SD
	Discussion with Ajit & Reji –call	PACE-D office	SD/VL
June 11,2013	Meeting with BEE to discuss SI PAT Normalization	BEE office	SD/VL
June 10,2013	Meeting with EDS Deliverables stocktaking	PACE-D office	VL
June 07,2013	PACE-D Interagency Meeting	USAID office	SD/PS/RB/USAID
	Workshop on Financing Energy Efficient (EE) Technologies in SMEs in New Delhi	SMEs	KK

Date	Meeting Purpose	Place	USAID/PACE-D Reps
June 06,2013	Meeting with Reshma Singh -LBNL	PACE-D office	SD/VL/RS
	Meeting with Monali to discuss PACE Brochure	USAID office	KK/MH
	Meeting with IT Power	PACE-D office	SD/RK
	Meeting with USAID - Presentation and discussion on MP State Action Plan	USAID office	SD/RK/AP/AM
	Meeting with Ajit Pandit and Balwant Joshi-IDAM	PACE-D office	SD/RK/VL/AP/ BJ
June 5 ,2013	Meeting in Chandigarh with HAREDA, UHBVN and Energy Secretary Haryana	Chandigarh	SD/MH
June 04,2013	Meeting with Renie Subie US Commercial Service for PACE-D Brochure	American Centre	KK
May 31,2013	Meeting with AEEE	PACE-D office	VL
May 30,2013	Meeting with NTPC	NTPC office	SD
	Debriefing at USAID - Ajit Kulkarni	USAID office	SD/AK
	Meeting with Tata Power – Arunabha Basu	Tata Power office	VL
May 29,2013	Meeting & Breakfast with Mr.Ajit Kulkarni	Gurgaon	SD/VL/AK
	Meeting with AF-Mercados and Ajit Kulkarni	AF- Mercados office	SD/VL/AK / Mercados
	Meeting with PGCIL	PGCIL office	VL
May 28,2013	Smart Grid Pilot Planning and Implementation Workshop	Taj Mansingh, New Delhi	SD/VL/RK/HD/AY/ Mercados
	Meeting with ABPS -Sanjay Mande and Sunil Sharma - discuss on MPUVNL presentation	PACE-D office	SD/RK
May 27,2013	Smart Grid Pilot Planning and Implementation Workshop	Taj Mansingh, New Delhi	SD/VL/RK/HD/AY/ Mercados
May 24 ,2013	Dick Edwards debriefing meeting at USAID	USAID office	SD/DE/USAID
	Call to CETC to discuss their plans and progress	PACE-D office	SD/DE/KK
May 23,2013	Discuss on accruals and invoicing process with Dick Edwards	PACE-D office	SD/DE/VK
	Site visit to Landis with Monali		VL/MH/
	Meeting with Liz Warfield	USAID office	SD/DE
	Review meeting of Smart Grid Workshop with USAID	PACE-D office	SD/VL/KK/MH/PS
	Meeting with Masooma Jha to discuss content & design of marketing material	PACE-D office	SD

Date	Meeting Purpose	Place	USAID/PACE-D Reps
May 22,2013	Meeting with Taiki Kuroda from ICETT, Japan to discuss Clean Energy Finance activities & linkages between PFAN and PACE-D.	PACE-D office	SD/DE
	Project Management Training – ABPS & EVI (capacity building of two key sub-contractors on how to manage large donor projects)	EVI office	SD/DE/KK
May 21,2013	Meeting with DESL to discuss next year plan and review of progress so far.	PACE-D office	SD/DE/DESL
	Meeting with EVI to discuss next year plan and review of progress so far.	PACE-D office	SD/DE/EVI
	Meeting with Himanshu Dube, to discuss M & E framework and reporting.	PACE-D office	SD/DE/HD
May 20,2013	Meeting with Mercados to discuss next year plan and review of progress so far.	PACE-D office	SD/DE/PS/AD
	Meeting with EDS to discuss next year plan and review of progress so far.	PACE-D office	SD/VL/EDS
May 18,2013	Meeting with Peter Dupont	Hyatt Regency Hotel	SD/DE
May 17 ,2013	NZEB Seminar	Hyatt Regency Hotel	PACE-/DE/USAID / EDS
May 16 ,2013	NZEB Seminar / Networking dinner in the evening.	Hyatt Regency Hotel	PACE-D / DE / USAID
	Meeting with Sanjay Verma GE India and its contribution on Smart Grid during the NZEB Seminar.	Hyatt Regency Hotel	KK / Sanjay Verma India
May 15,2013	Meeting with Branden	USAID office	SD/DE
	Meeting with Dick Edwards on PACE-D	PACE-D office	SD
	Meeting with Padu, Jeremy and Monali to discuss new tasks under Clean Coal & other issues	USAID office	SD/DE/S.Padu/JG/MH
	Meeting with Peter Dupont and Lalit Jain – Moser Baer	PACE-D office	KK/PD/LJ
	Meeting and discussion with Anurag on Storage Study	USAID office	RK/AM-USAID
	Meeting with ABPS to discuss their new entity – Idam Infra	ITC hotel	SD/DE/AP/BJ
May 14,2013	Meeting on NTPC, payment, L& L etc.	PACE-D office	SD/DE/ NTPC
	Discussion with team on modified EE, RE and CF work plans and contract modification- finalize work plan	PACE-D office	SD/VL/KK/HD/RK
	Meeting with GIZ along with S Padu and Monali	USAID office	SD/DE/S.Padu/ MH

Date	Meeting Purpose	Place	USAID/PACE-D Reps
May 13,2013	Meeting with Grey, FCA on the publication / secretariat	USAID office	SD/KK
May 10,2013	CEEW-USAID Roundtable Discussion on Scaling up Energy Access Solutions through Effective Networks.	India Intl Centre New Delhi	SD
	Interagency Off-Grid Coordination and next steps with Ambassador Carlos Pascual and DAS Ichord	ACSA	SD
May 09,2013	Meeting with CenPEEP	Noida office	SD/HD
	ECBC Tech update	BEE office	VL
May 08,2013	Call on Skype with Dilip to discuss Finance activities	PACE-D office	SD/KK
	Round table with future USAID/India Mission Director-Mr. John Beed	Deputy Mission Director Elizabeth Warfield's Residence, New Delhi	SD
	Review meeting with Anurag and discussion on Energy Storage and off-grid RE assessment report	USAID office	SD/RK/AM
May 07,2013	Invitation by Ambassador Nancy J Powell of USA - Farewell to USAID Mission Director BILL HAMMINK	U.S.Embassy, New Delhi	SD
May 06,2013	Review meeting of PACE-D with USAID	PACE-D office	SD/VL/KK/HD/RK/USAID
	PACE-D Building work review with EDS /BEE	EDS office	VL
	Meeting with JS on Smart Grid Workshop	Ministry of Power	SD/MH
May 03,2013	Call to Mercados on Smart Grid	PACE-D office	SD/VL/Mercados
May 02,2013	Meeting with ABPS	PACE-D office	SD/HD/RK
	Meeting with USAID	USAID office	SD/RK/AM USAID
May 01,2013	Meeting and discussion on NZEB Seminar	USAID office	SD/VL
	Meeting with Mr.Udit Mathur from British High Commission	PACE-D Office	SD/UM
	Meeting with Prasad Vaidya and Nalanda	Nalanda Office	VL/PV
April 30,2013	Donor Meeting on Clean Energy	Hotel Imperial, New Delhi	SD/PS/RB
	Meeting with BEE	BEE office	VL
	Meeting with AEEE	PACE-D office	VL
	Conference call with USAID and S3IDF	PACE-D office	SD/RK
April 29,2013	PACE-D Interagency meeting	USAID office	SD/RB/USAID

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	ECBC Knowledge Portal	Shakti Foundation	VL
	Nalanda Jury debrief meeting	Nalanda Office	VL
	Debrief of Dilip	USAID office	SD/Dilip
April 26,2013	Workshop by NIPFP on National Clean Energy Fund	India Habitat Centre	SD/KK
	Contractor Process Training Webex	PACE-D office	VL/KK/DE
April 25,2013	Call with EVI to discuss Finance Activities	PACE-D office	SD/KK/Dilip/EVI
	Meeting with BEE to discuss EE Finance	BEE office	SD/Dilip
	Meeting with GIZ on clean energy	USAID office	SD/RK/USAID
April 23,2013	Clean Energy Finance Advisory Team Meeting	Taj Lands, Mumbai	SD/KK/Dilip/RK/ EVI
	Meeting with EDS on NZEB Seminar	PACE-D office	VL
April 22,2013	Clean Energy Finance Workshop for Financial Institutions	Taj Lands End, Mumbai	SD/KK/RK/Dilip/EVI
	Meeting with Nidhi Jhamwal for copy writing tasks	Taj Lands End, Mumbai	SD/KK
April 18,2013	Meeting with EVI and Dilip to discuss finance activities	PACE-D office	SD/KK/Dilip/RK/ EVI
	Meeting with ACORE to discuss activities for IREP/ACORE initiative	Taj Palace,New Delhi	SD/KK/ ACORE
	Launch of ACORE-IREP initiative	Taj Palace,New Delhi	SD/KK/VL/RK/PS
	TERI & Adarsh in collaboration with relevant stakeholders commits to facilitate in next 3 yrs GRIHA	Taj Palace,New Delhi	VL
April 17,2013	Clean Energy Ministerial 4 (CEM4)	Taj Palace,New Delhi	SD/KK/VL
	Meeting at Sa-dhan	Sa-dhan Office	SD/RB/RK
	Meeting with USAID to introduce Russell deLucia and discuss microfinance activities	PACE-D office	SD/RK/Dilip/RD
April 16,2013	Launch of RE/EE - Clean Energy Finance Workshop	Taj Mansingh, New Delhi	SD/KK/Dilip/RK/VL/ PS
	Meeting with ACORE and IREP to plan the launch		SD/RK/ACORE/IREP
	Inaugural session of CEM4 Booth	Taj Palace, New Delhi	SD/KK
April 15,2013	Net Zero Energy Buildings Awareness Seminar	PACE-D office	SD/VL/PS/EDS
	State level ECBC work planning meeting		
	Meeting with ABPS and EDS	PACE-D office	VL/SD
	Meeting with Dr.Grown USAID's gender advisor	PACE-D office	VL
April 12,2013	Smart Grids: Meeting with Utilities and	USAID office	SD/HD/RK

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	PACE-D Workshop		
	Meeting with EVI to discuss on April 16th Finance Event	CBIPB- Central Board for Irrigation & Power Building	SD/VL
April 11,2013	Meeting with IREP	PACE-D office	SD/KK/PM/AB
April 10,2013	Introductory meeting with Ronnie Khanna and USAID	USAID office	SD
	Meeting with USAID on NZEB Seminar	USAID office	SD/RK
	Call to Peter Dupont	USAID office	SD/VL
	Call with Sameer Maithal – BEEP Project	PACE-D office	VL
	Nalanda University – MOU signing	PACE-D office	VL/SM
April 08,2013	Meeting with EVI to discuss Finance events to be held in Mumbai	Nalanda Office	SD/ VL/ USAID
	DESL Deliverables review meeting	PACE-D office	SD/KK/EVI
April 05,2013	DESL Deliverables review meeting with Anand Vadakkath	DESL office	VL/AV/DESL
April 04,2013	Meeting with Shakti Foundation – Mr.Chinmay Kumar Acharya to discuss IREP and Clean Energy program	PACE-D office	VL/AV/DESL
	Meeting with Ashu Arora- Clean Tech Law Partners	Shakti Foundation	SD/ CKA
April 03,2013	Meeting with Ms.Archana Walia from CLASP – Country Director	PACE-D office	SD/AA
	ECBC Technical Committee Foundation- Meeting with BEE	PACE-D office	SD/AW
	Call to CETC	BEE office	VL
	Review of draft ECBC user guide – for ECBC Committee	PACE-D office	KK
	Meeting on Smart Grid workshop planning		VL
	Call to discuss PACE-D EE Finance Report and Innovative Mechanisms	PGCIL office	VL
April 01,2013	Meeting with USAID to discuss RE Finance	PACE-D office	SD/Dilip/S.Padu/MH / Alope / Aseem /Prima
March 22,2013	PAC meeting with Ministry of Power	MOP office	VL/MH - USAID
March 20,2013	Meeting with EVI to finalize finance events to be held in Mumbai	PACE-D office	SD/KK/EVI
	PAT Consultation Workshop	New Delhi	SD/VL
March 19,2013	Meeting with Vivek Mishra-Meghraj Capital Advisors Pvt	PACE-D office	SD/KK

Date	Meeting Purpose	Place	USAID/PACE-D Reps
March 18,2013	Training workshop in Sipat Plant visit by PACE-D Team and US experts	Sipat Plant	SD/ MH – USAID /US experts
March 15,2013	Meeting with SNA/SERC and Energy Secretary	Jaipur	SD/MH/AM /S.Padu - USAID
March 14,2013	Meeting with Nalanda University to discuss MOU	New Delhi	VL
	NZEB Seminar – Planning meeting	PACE-D office	SD/VL
March 13,2013	Meeting with USAID	USAID office	SD/KK/MH-USAID
	Meeting with DoE special advisor Srinivas R Mirmira	ACSA	SD
	Conference call with Dilip and EVI to discuss PACE-D finance tasks	PACE-D office	SD/KK
March 12,2013	Training workshop in Panipat plant visit by PACE-D Team and US experts	Panipat plant	SD/LW-Nexant Inc/MH-USAID/ US experts
March 08,2013	Meeting with PFAN Team - discussion on PFAN and explore linkages with PACE-D Finance activities	PACE-D office	SD/KK/ PS/ NR-PFAN
March 07,2013	PACE-D Interagency meeting	USAID office	SD/PS/RB
	Meeting with Pradeep Kumar, Alliance to Save Energy (ASE)	PACE-D office	SD/VL
March 06,2013	Meeting with ABPS for ICORE	PACE-D office	SD/KK
	PACE-D Work Plan & Pilot Workshop Planning	PGCIL office	SD/VL/KW-Power Grid / AD-Mercados
	Meeting with Garima Singh - Infraline	PACE-D office	SD
March 05,2013	Meeting with USAID and CSE	PACE-D office	VL/MH/AC-USAID
	Discussion on PACE-D TA Website	PACE-D office	KK/MH-USAID
March 04,2013	Training workshop in Chandrapur Plant visit by PACE-D Team and US experts	Chandrapur	SD/LW-Nexant Inc/MH-USAID /SS/Nhia Ly-Stephen Storm Inc/SB/ CenPEEP / AKA-CenPEEP / VSA
March 01, 2013	Meeting with SNA/SERC and Energy	Bangalore	SD/S.Padu/MH/AM - ecretary
Feb 28, 2013	HVAC Expert Consultation Workshop	New Delhi, Gurgaon	SD/VL/USAID/EDS
Feb 26, 2013	Meeting on Clean Fossil	Chandigarh and Panipat	SD/MH-USAID
	EE&RE Subcontractor Review	PACE-D Office	VL/DESL/EDS

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	Meeting		
Feb 25, 2013	DOE & PACE-D teams collaboration on ECBC– Conference call	Virtual	SD/VL/TT-EDS/AC-USAID
Feb 21, 2013	Meeting with Ministry of Power	MOP office	SD/MH/AM-USAID
	RE task review meeting with EVI, USAID and PACE-D	PACE-D office	SD/KK/ MH-USAID/ AB/ PM/ VK/ AV-EVI
Feb 20,2013	Meeting with ECP	UTC office	SD/VL/Bala
	Review meeting with EVI	PACE-D office	SD/KK/ AB/AV-EVI
Feb 19,2013	PACE-D Smart Grids Review and Planning Meeting	PACE-D office	SD/VL/MH-USAID/AD / VG
Feb 15,2013	Meeting with Infinesque to discuss Secretariat page on PACE-D Website	PACE-D office	SD/KK
	Meeting with PACE-R /LBNL	PACE-D office	SD/KK/VL/GG-LBNL
	Meeting with Madhya Pradesh Urja Vikas Nigam Limited (MPUVNL)	Bhopal	SD/ABPS/MH-USAID
Feb 14,2013	Meeting with Mr Mathew Titus - Executive Director of Sa-dhan	New Delhi	SD/RB
Feb 13,2013	NTPC Workshop	New Delhi	SD
	Review and Planning meeting with DESL	PACE-D office	SD/VL/MH- and PACE-D
	ABPS & PACE-D work review and planning	PACE-D office	SD/VL/MH-USAID/ AP/SM-ABPS
Feb 12,2013	Smart Grids Brainstorm with Mercados	Mercados office	VL
	Meeting with USAID to discuss PACE-D Website and Newsletter	PACE-D office	SD/KK
Feb 11,2013	Meeting with USAID	USAID office	SD/MH-USAID
	Meeting with Mr.Sanjay Seth to finalize dates for the ECBC and NZEB seminars	BEE office	SD/VL/TT-EDS/AC-USAID
	Meeting with Mr.Nagaraj Rao, Partner-Dawn Consulting-discussion on PACE-D Finance activities	PACE-D office	SD/KK
	M&E Plan - Discussion and Finalisation	PACE-D office	SD/HD/MH/AM-USAID
Feb 08,2013	Meeting with USTDA Team for a review of Smart Grid initiatives in India and R-APDRP status.	Mercados Office	SD
	HVAC and NZEB discussion	PACE-D office	SD/VL/AV-Nexant Inc TT /AP-EDS/AC-USAID
Feb 07,2013	PAT M&V Workshop by DESL.	India Habitat Centre	VL
	Discussion on GRIDTECH contribution by PACE-D	PGCIL office	SD/VL/AD-Mercados

Date	Meeting Purpose	Place	USAID/PACE-D Reprs
	Conference Call with CETC to discuss training initiatives	PACE-D office	SD/KK/MJ,UR-CETC
	Meeting with EVI to discuss capacity Building task	PACE-D office	SD/KK/EVI
Feb 05,2013	Meeting with MNRE with USAID and PACE-D discussion on Selection of States and Capacity Building SNS	MNRE office	SD/MH-USAID
Feb 04,2013	Meeting with Sanjeev Kumar, Ministry of Power	MOP office	SD/VL/MH-USAID/ SK-MOP
Feb 01,2013	Meeting with John Wells & Orestes-USAID, for PACE-D projects	USAID office	SD/KK/USAID
	PACE-D Interagency meeting	USAID office	SD/PS/RB
Jan 31,2013	Meeting with Nalanda University	New Delhi	VL/AC-USAID/ TT
	Meeting with MNRE and USAID to discuss activities with SNAs	MNRE office	SD/MH-USAID
Jan 30,2013	Meeting with EVI to discuss on off-grid RE and finance	PACE-D office	SD/VL
Jan 27,2013	PACE-D Energy Efficiency Work Progress Review Meeting	PACE-D office	SD/VL/TT/AP-EDS / AP / GS- ABPS / AD / VG / PCH / Mercados / GDR-Dalkia
Jan 25, 2013	Concall with USAID and Dilip Limaye to discuss PACE-D off-grid finance activities	PACE-D office	SD/KK/USAID/DL
Jan 24, 2013	Meeting with USAID and Mercados to discuss smart grid plan	USAID office	SD / KK
	Meeting with ABPS to discuss state plans	PACE-D office	SD/KK/ABPS Team
Jan 21-23, 2013	AEEE Workshop on DSM-EMV	New Delhi	KK/PDP/SD/VL
Jan 22, 2013	Meeting with EVI and USAID- RE	PACE-D office	SD/KK/EVI/MH
Jan 18, 2013	Meeting with Arun Sehgal USAID – Regional Contracting Officer	USAID office	SD/DE/DE-Nexant Inc
	Meeting with Anurag and S.Padu – Debriefing of Dick Edwards	USAID	SD
Jan 17, 2013	Meeting with EVI - EE finance activities	PACE-D office	SD/KK/VL
	India Electricity and Smart Grid Day	New Delhi	VL
	DSM-EMV International Lessons: AEEE Webinar 4-Part Series	PACE-D office	SD/VL/KK/VK/AY
Jan 16, 2013	Meeting with Ministry of Power	MOP office	SD/MH - USAID
Jan 15, 2013	Meeting with BEE discuss the approach for the HVAC market assessment study that has been	PACE-D office	SD/DK/VL/MH/A C - USAID /TT-EDS

Date	Meeting Purpose	Place	USAID/PACE-D Reprs
	initiated by EDS		
Jan 11, 2013	RE Review meeting with ABPS and EVI	PACE-D office	SD/KK/ABPS/EVI
Jan 10, 2013	Andy's Finance Training , EDS and DESL & DESL team	PACE-D office	AW-Nexant Inc /EDS
	Discussions with the Smart Grids Executive Committee Meeting. Smart Grid-pilot selection	Conference call	SD/VL/LJR,LA/AK-Nexant Inc/ AD/ VG/ PCH -Mercados
Jan 09, 2013	Meeting with AEEE - Discuss Steve Nadel Contract and 23 Jan workshop	PACE-D office	SD/VL/KK
Jan 08, 2013	Andy Finance Training with EVI	EVI office	AW-Nexant Inc/ EVI
	Meeting with ICICI Bank - Mr.Jaisingh Dhumal Chief Manager	PACE-D office	SD/KK/JD- CM-ICICI Bank
	Smart Grids review meeting	Mercados Office	VL/Mercados
Jan 07, 2013	Andy meeting with PACE-D staff	PACE-D office	SD/PS/KK/VL/VK/HD/ET/ AY
	Executive meeting with Mr.Y. K. Sehgal – Power Grid to discuss on Smart Grid	Power Grid office	SD/VL/VG/MH-USAID
	Meeting with Mr.Chakravarti & Sanjay Seth	BEE office	SD/VL/MH/AC-USAID /NM/ GDR-DESL
	Meeting with Mr. Ravi Kapoor	PACE-D office	SD
Jan 03, 2013	Meeting on Industrial Efficiency - Presentation by Mr Datta Ray on the strategy for PAT and waste heat to BEE.	USAID office	SD/VL/S Padu/MH-USAID / GDR-DESL
Jan 02, 2013	Meeting with NETRA - discussion on Clean Coal	PACE-D office	SD
	Executive Committee Meeting with NTPC	USAID office	SD
Dec 28, 2012	PACE-D Interagency Meeting	USAID Office	SD/PS/RB
Dec 27, 2012	Meeting with Nalanda University	Nalanda Univ office	VL/KK
	Clean Coal review meeting with CenPEEP	Conference Call	SD
Dec 21, 2012	PACE-D EE Review Meeting	PACE-D office	SD/HD/VL/VK/AY/ET/PS/RB
Dec 20, 2012	PACE-D ECBC Workshop	Hyatt Regency, New Delhi	SD/VL/KK/VK
Dec 19, 2012	Dilip's Debrief meeting with USAID	USAID office	SD/DL and USAID
	Meeting to finalize M&E plan	USAID office	SD/HD and USAID
	USAID Orientation on Fraud and Corruption	PACE-D office	KK/VK/AY/ET
	Meeting with Mr. N. S Sodha, Power Grid	Power Grid office, Gurgaon	SD/ NSS-Power Grid

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	PACE-D ECBC Workshop Review Meeting	PACE-D office	VL/KK/AC/TT
Dec 18, 2012	Meeting with EVI Team to discussion on PACE-D Finance Tasks	EVI office, Gurgaon	SD/KK EVI Team (VK/AV/AB)
	USAID Workshop for all COPs - briefing from Mission Director	Hotel Le Meridien, New Delhi	SD
	Meeting with CenPEEP, NTPC	Noida	SD
	ECBC Workshop Planning Meeting	PACE-D office	SD/VL/TT/AC
Dec 17, 2012	Meeting with Karnataka Renewable Energy Development Limited	Bengaluru	SD/ KK/ DL and Kapil Mohan - MD, KREDL
	Meeting with Karnataka Electricity Regulatory Commission	Bengaluru	SD/ KK/ DL and M.R.Sreenivasan– Chairman, (KERC)
	Meeting with Canara Bank to discuss clean energy finance.	Bengaluru	SD/KK/ DL – PACE-D/Raminder Pal Singh - Asstt. GM Canara Bank
Dec 14, 2012	Meeting with ICICI Bank to discuss PACE-D Finance activities	ICICI office, Mumbai	SD/KK/DL & Jaisingh Dhumal-Chief Manager, ICICI Bank
	Meeting with HSBC Bank to discuss PACE-D Finance activities	HSBC office, Mumbai	SD/KK/DL/ Vandana Bhansali-VP/ Jayesh S Modi -Head, & Shiv Anand Lal,SR.VP& Head – HSBC Bank
	Meeting with IDBI Bank to discuss PACE-D Finance activities	IDBI Bank office, Mumbai	SD/ KK/ DL/ B.D.Save -Dy Gen Mgr/ J.Vidya Shankar- Gen Mgr IDBI Bank
	Meeting with SBI Capital Markets to discuss Clean Energy finance activities	SBI office, Mumbai	SD, KK, DL, Rajat Misra-Sr.V.P. and Mitheel Mody- Asstt V.P.
Dec 13, 2012	Meeting with Indian Banks Association and PACE-D to discuss Clean Energy Finance	IBA office, Mumbai	SD/ KK/ DL, Sangeet Shukla-Sr.Advisor , Indian Banks Association
	Meeting with Reliance Power Limited	Reliance Power office,Mumbai	SD, KK/ DL, Dheeraj Kumar-Gen Mgr & Alope Dasgupta Sr. V.P.
	Discussion on PACE-D Smart Grid	Conference Call	SD/VL
Dec 12, 2012	Meeting with ABPS, USAID and	PACE-D office	SD/VL/MH- USAID

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	PACE-D to discuss the State selection for EE tasks		and Ajit Pandit-Director , ABPS
Dec 11, 2012	Meeting with Ministry of Environmental and Forests	Lodhi Road	SD/ Shashi Shekhar, MOEF
	Meeting with IREDA to discuss on PACE-D Finance	IREDA office	SD/ DL/ KK, Vinod Kala-MD, and Aseem Varma, EVI
Dec 10, 2012	Discussion with Shakti Foundation to discuss EE Finance activities	PACE-D office	SD/DL/KK/VL, Chinmaya Acharya-Strategy Leader and Smita Chandiwala-Program Officer, Shakti Foundation
	Meeting with EVI to discuss on PACE-D finance tasks	PACE-D office	SD/DL/KK – PACE-D team /VK/AV- EVI Team
	Meeting with USAID and PACE-D discussion on Finance Activities	USAID office	SD/DL and S. Padu - USAID
Dec 7, 2012	Meeting with USAID for finalization on M&E plan	USAID office	SD/HD
	Meeting with USAID Communications Team to discuss PACE-D Website – Kavita Kaur	USAID office	KK
	Lauren's internal meeting with HD, KK and VK to discuss PACE-D guidelines on Communications and Admin	PACE-D office	KK/HD/VK
Dec 6-7, 2012	Gujarat Building Energy Efficiency Workshop	Ahmedabad, Gujarat	VL
	Meeting with CEPT University	Ahmedabad, Gujarat	VL
Dec 6, 2012	Lauren's Workshop with EVI	PACE-D office	KK/HD/EVI/LW
Dec 5, 2012	EDS PACE-D activities update	PACE-D office	SD/VL
	Lauren's and USAID 's workshop with all subcontractors	Qutab Hotel, New Delhi	SD/HD/KK/VL/VK/A Y/LW/USAID and Sub-contractors /
Dec 4, 2012	Discuss PACE-D finance activities with Peter du Pont	Conference Call	SD/KK/DL
	PACE-D staff training on USAID procedures for organizing trainings /workshops by Lauren	PACE-D office	SD/HD/VL/KK/VK/A Y/ET/PS
	EE sub-contractors co-ordination meeting with EVI, AF Mercados and EDS	PACE-D office	SD/VL/EVI/EDS/AF-Mercados
Dec 3, 2012	Training on USAID procedures for PACE-D staff by LW	PACE-D office	SD/HD/KK/VL/Vk/A Y/ET/PS

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	ECBC Workshop Planning Meeting	PACE-D office	SD/HD/VL/KK/VK/A Y/ET/PS
Nov 30, 2012	PACE-D Interagency meeting	USAID	SD/RB/PS/MH,SPadu /AM/AC-USAID
	Discussion on revised M&E Plan with USAID	USAID	SD/HD/USAID
	Meeting with PNNL	PACE-D office	SD
	Meeting with MNRE	MNRE office	SD
Nov 29, 2012	Peter du Pont debriefing on development of innovative finance mechanism	USAID	SD-PACE-D; Padu /AM/MH/JG/ AC- USAID; Peter du Pont Nexant, Inc.
	PAC meeting at Ministry of Power	Shram Shakti Bhawan, New Delhi	SD/VL/and Monali, USAID
	Clean Coal review meeting with CenPEEP, MOP, BEE	Conference Call	SD
Nov 27, 2012	Training for women entrepreneurs and discuss workshops to be held with Meeting with Swayam Shikshan, CETC and PACE-D	Mumbai	Prema Gopalan- Director, Mr.Patil, Swayam Shikshan Prayog,Ummul Ranalvi, CETC/ SD / KK
	Meeting with IDFC	IDFC office, Mumbai	SD/KK & Satish Mandhana -MD, IDFC
	Meeting with CII GBC Team	PACE-D office	VL
Nov 26, 2012	Monthly review meeting - PACE-D & USAID	PACE-D office	VL/Monali
Nov 23, 2012	Donor Coordination Agency meeting	Hotel Imperial	SD/VL/HD/PS /MH / SPadu/AM/AC-USAID
	Roundtable - Establishment of an apex RE association in India with ACORE/ APEX/ PACE-D	Hotel Imperial	SD/KK/PS
Nov 21, 2012	Jeremy's visit to ABPS / EVI	ABPS / EVI office	SD/JG
	Meeting with EVI	EVI office	SD
Nov 20, 2012	Meeting at NETRA	NETRA office	SD
	Meeting between AEEE & PACE-D	PACE-D office	SD/VL/KK and Koshy Cherail – President, AEEE
Nov 16, 2012	Meeting with NETRA – discussion on International Seminar	NETRA office	SD
	PACE-R meeting	PACE-D office	SD / KK
Nov 09, 2012	Brian Gould debrief meeting with USAID	USAID office	SD/BG/PS/USAID

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	Orientation on PACE-D Manual – Brian Gould	PACE-D office	SD/VL/KK/VK/ET
Nov 08, 2012	Training on Knowledge Tree by Brian Gould	PACE-D office	SD/HD/VL/KK/VK/ET
	Meeting with AF-Mercados, EMI and PACE-D	PACE-D office	SD/KK/VL/PS
	PACE-D staff training on USAID procedure and manual by Brian	PACE-D office	SD/HD/KK/VL/VK/ET
	Meeting with Nalanda University	Nalanda Univ office	HD/VL
	AEEE Workshop on Smart Metering	Gurgaon	VL/KK/HD
Nov 07, 2012	Introduction and Orientation on Knowledge tree and accounting by Brian to PACE-D staff	PACE-D office	SD/HD/VL/KK/VK/ET
	RE Expo 2012	Greater Noida	SD
Nov 06, 2012	Workshop on Subcontractors Training on USAID Guidelines & Procedure (ABPS, EVI & USAID) by Brian Gould	Qutab Hotel, New Delhi	ABPS/EVI/USAID/BG /SD/HD/ VL/ KK/VK
Nov 05, 2012	Meeting with Ministry of Power	Sewa Bhawan, R.K.Puram	SD
Oct 31-02 Nov'12	Trip to Raipur - Meeting with NTPC , Sipat Power Plant	Raipur	SD/Gerry Choi-Nexant / Dr.Radha Krishnan-LTI/ Monali-USAID
	Trip to Hyderabad - Meeting with Green Building Congress	Hyderabad	VL/KK
Oct 30, 2012	Conference Call with Dick Edwards and SD on Salary Waiver	USAID office	SD/DK
	Meeting with NTPC and CenPEEP	NTPC office	SD/Gerry Choi - Nexant/Dr. Radha Krishnan-LTI/ NTPC
	Meeting with EVI	PACE-D office	SD/KK
Oct 29, 2012	Meeting with LTI , Nexant and PACE- D	PACE-D office	SD
	Meeting with LTI, Nexant and USAID and PACE-D	USAID office	SD/Dr.Radha Krishnan and Gerry Choi, LTI
Oct 26, 2012	Discussion with ACORE AND EVI	Conference Call	SD/KK
Oct 25, 2012	PACE-D Interagency Meeting	USAID office	SD/PS/RB/USAID
	Meeting with AEEE, TPDDL to update on PACE-D TA initiatives	PACE-D office	SD/KK/VL/Dr.Bhaskar Natarajan , Advisor - AEEE

Date	Meeting Purpose	Place	USAID/PACE-D Reps
	Meeting with BEE on Industrial Efficiency	BEE office	SD/VL /KK and K.K.Chakravorty - BEE
	Clean Coal review meeting (with CenPEEP, MOP, BEE)	Conference Call	SD
Oct 18, 2012	Meeting on USAID on Industrial Efficiency, strategy and work Plan	PACE-D office	SD/VL/ Monali-USAID
Oct 17, 2012	Meeting with Tata Power Delhi Distribution Limited	PACE-D office	SD/KK/ Dr. G. Ganesh Das-Head, Smart Grid, TPDDL
	Meeting with K. K.Chakravorty -BEE	BEE office	SD/VL
Oct 15, 2012	PACE-D Interagency Meeting	USAID	SD/PS/RB
	Meeting with Dr.Pramod Deo -CERC	CERC office	SD
Oct 12, 2012	Meeting with Tetrattech – Forest Plus Project	PACE-D office	SD/VK and Gina. C. Green-Sr.Associate, Tetrattech
	ECBC enforcement through Third Party Assessors – Stakeholder Consultation	Magnolia Room, India Habitat Centre, New Delhi	SD/VL
Oct 11, 2012	Meeting with Vaidya Prasad, Weidtt Group	PACE-D office	SD/VL
	Meeting with ICPCI	PACE-D office	SD/VL
Oct 10, 2012	International M&V Conference	Hotel Royal Plaza	HD/KK/VL/RA
	Meeting with Arjun Gupta, TeleSoft Partners	PACE-D office	DE/SD & Mr. AG,Chief Believer, TeleSoft Partners
Oct 9, 2012	Meeting with USAID - M&E Plan	USAID office	SD/HD
	Meeting with USAID	USAID office	Pritha Sanyal
	USAID-Project Management Mtg	USAID office	SD
Oct 5, 2012	Meghraj Capital Advisors Pvt. Ltd	PACE-D office	SD/RA/KK
	USAID/EDS-Nalanda University	Conference call	SD/HD/VL
Oct 3, 2012	Meeting with ABPS & USAID	PACE-D office	SD/HD/VL/KK
Sept 28,2012	Meeting with FICCI	PACE-D office	DE/SD/KK/RA/VL/H D
	Meeting with Nalanda University	PACE-D office	SD/VL/HD
Sept 27,2012	Meeting with NTPC	NTPC office	DE/SD
Sept 26,2012	Meeting with ABPS	PACE-D office	DE/SD/RA
Sept 25,2012	Meeting with EVI- Scope discussion	PACE-D office	DE/SD/RA
Sept 21, 2012	Meeting with IBM	PACE-D office	VL/KK/RA
	Meeting with Global Business Inroad, Bangalore	PACE-D office	SD
Sept 19,2012	Meeting with USAID	PACE-D office	SD/VL
Sept 17,2012	PACE-D office -USA DE/PD/DW)	PACE-D office	SD/HD/VL/RA/KK/V K

Date	Meeting Purpose	Place	USAID/PACE-D Reps
Sept 15, 2012	Meeting with Tata Power	Mumbai	SD
Sept 14, 2012	Meeting with ICICI / CETC	Mumbai	DE/SD
Sept 13, 2012	Ministry of Renewable Energy	Secretary's	SD/RA/USAID
	Meeting with USAID	Conference Room	DE/SD
	Meeting with Nalanda University	R.K.Puram	VL/HD
Sept 10, 2012	Meeting with Urja Unlimited	PACE-D office	SD/KK/RA
Sept 7, 2012	Meeting with USAID	PACE-D office	SD
Sept 6, 2012	Ministry of Power	MOP Office	SD
Sept 5, 2012	Anand Vadakkath	Call	SD
	Meeting with Logica – Rajesh Nair	PACE-D office	VL/RA
Sept 4, 2012	Meeting with NRDC	PACE-D office	SD
Aug 31, 2012	Meeting with USAID	PACE-D office	SD/KK/RA/HD/VL
	Meeting with USAID/AF-Mercados EMI	PACE-D office	SD/KK/RA/HD/VL
Aug 30, 2012	Meeting with USAID-Anurag / Monali	PACE-D office	SD/KK/VL/RA/HD
	Meeting with USAID/EVI/ABPS	PACE-D office	SD/KK/VL/RA/HD
	Meeting with Tetrattech –Forest Plus Project	PACE-D office	SD
Aug 29, 2012	Meeting with Dilip – Finance & ABPS	Mumbai	SD
Aug 28, 2012	Meeting with BEE & EDS	PACE-D office	SD/VL
	Meeting with Itron - DSM activities in the Building sector	PACE-D office	VL
Aug 27, 2012	Meeting with DSCL	PACE-D office	SD/VL
	Meeting with Chemonics-SVP	PACE-D office	SD/HD
Aug 21, 2012	Meeting with Ckinectics	PACE-D office	SD/KK
	Meeting with EVI	Gurgaon	SD/RA
Aug 17, 2012	Meeting with BEE and CEA	Sewa Bhawan ,Bhikaji	SD/VL
	Meeting with Tata Power –TDDPL	PACE-D office	SD/VL/RA
Aug 16, 2012	Meeting with MNRE	Lodhi Road	SD/RA/Bibek/AM
Aug 14, 2012	Meeting with ITPI Bhasker Natarajan, Abhay Sidham	PACE-D office	SD/RA
Aug 10, 2012	Meeting with USAID	US Embassy	SD/RA/USAID
	Meeting with ISC/NREL	PACE-D office	SD/RA
Aug 9, 2012	Meeting with Power Grid / ISGTF	Gurgaon	SD/VL/MH/SPadu
	Meeting with NTPC	NTPC office	SD
Aug 8, 2012	USAID- TERI Roundtable on Innovation Alliance to Scale Rural Energy Access through Off-grid Renewables	Indian Habitant Centre	SD/RA
July 27, 2012	Meeting with USAID	USAID office	SD/VL/HD/TT/S Padu

Date	Meeting Purpose	Place	USAID/PACE-D Reps
			/MH/ AC
July 12, 2012	WISE/Vasudha Foundation/SSEF Conference on establishment of national apex RE institution in India	India International Centre	RA/KK
June 20, 2012	U.S. Interagency Meeting	USAID office	DE/SD/KK, Padu, Jeremy, U.S Agencies representatives
June 18, 2012	Project Advisory Committee meeting	USAID office	DE/SD/KK, Padu, Monali, AC, and MNRE and MOP representatives

Personnel Acronym List

Acronym	Name	Title	Organization
AC	Apurva Chaturvedi	Program Management Specialist & EE Buildings Expert (PACE-D)	USAID/India
AM	Anurag Mishra	Project Management Specialist & RE Lead (PACE-D)	USAID/India
AD	Anish De	CEO	AF Mercados
AD	Aloke Dasgupta	Senior Vice President-Project Finance	Reliance Power Limited, Mumbai
AB	Arunabha Basu	Vice President & Head	Tata Power - DDL
AB	Aloke Barnwal	Principal Consultant - Sustainability and Climate Value Advisory	Emergent Ventures India
AG	Arjun Gupta	Chief Believer	TeleSoft Partners
AP	Ajit Pandit	Director	Idam Infrastructure Advisory Ltd.
AB	Aloke Barnwal	Principal Consultant	Emergent Ventures India
AV	Aseem Varma	Consultant	Emergent Ventures India
AV	Anand Vadakkath	Sr.Technical Specialist	Nexant Inc.
AMS	Ajit M Sharan	Addl Chief Secy (Power Deptt)	UHBVN
AK	Ajit Kulkarni	Electric Power Industry Expert	Nexant Inc.
AW	Andy White	Finance Analyst	Nexant Inc.
AP	Anamika Prasad	Director	EDS
AA	Ashu Arora	Partner	Clean Tech Law Partners -CTLP
AS	Arun Sehgal	A & A Specialist	USAID
AS	Aloke Srivastava	Joint Secretary	MNRE
AW	Archana Walia	Country Director	CLASP
AKA	A.K.Arora	Dy. General Manager	(CenPEEP), NTPC
BG	Brian Gould	Program Management Specialist	Nexant Inc
BDS	B.D.Save	Deputy General Manager-Carbon Credit & Environment Funding	IDBI Bank, Mumbai
BJ	Balwant Joshi	Managing Partner	Idam Infrastructure Advisory Ltd
BH	Bill Hammink	Mission Director	USAID
CA	Chinmaya Acharya	Strategy Leader, Power & Head of DSM	Shakti Foundation
CI	Chandrakant Ingole	Manager, Technology Finance Group	ICICI Bank, Mumbai
CKA	Chinmaya Kumar Acharya	Strategy Leader, Power & Head of DSM	Shakti Foundation

Dr.BN	Dr.Bhaskar Natarajan	Advisor	AEEE
Dr.PC	Puneet Chitkara	Principal	AF-Mercados
Dr.RK	Dr.Radha Krishnan	Technical Advisor	LTI - Leonardo Technologies Inc
Dr.GG	Dr.G Ganesh Das	Head-Smart Grid Group	Tata Power Delhi Distribution Ltd
Dr. G	Dr.Grown	USAID Gender Advisor	USAID
Dr.PD	Dr.Pramod Deo	Chairman	CERC
Dr.PC	Puneet Chitkara	Principal	Mercados
DE	Dick Edwards	Officer-in-Charge	Nexant Inc
DK	Dheeraj Kumar	General Manager- Project Finance	Reliance Power Limited, Mumbai
DL	Dilip Limaye	PACE-D Finance Lead	SRC Global
EW	Elizabeth Warfield	Deputy Mission Director	USAID/India
GS	Gagan Shrivastav	Sr.Analyst	Idam Infrastructure Advisory Ltd
GG	Girish Ghatikar	Acting Dy General Manager	LBNL
GCG	Gina C Green	Sr. Associate Environment & Natural Resources	TetraTech
GChoi	Gerald Choi	Vice President – Energy Technology	Nexant Inc
HB	Hemant Bhatnagar	Technical Expert	GIZ
JSM	Jayesh S Modi	Head-Inclusive Banking Unit, Commercial Banking	HSBC Bank, Mumbai
JB	John Beed	Mission Director	USAID/India
JD	Jaisingh Dhumal	Chief Manager-Technology Finance Group	ICICI Bank, Mumbai
JVS	J.Vidya Shankar	General Manager-Syndication Structuring & Advisory Department (SSAD)	IDBI Bank, Mumbai
KM	Kapil Mohan	Managing Director	Karnataka Renewable Energy Development Limited-KREDL
KY	Khekiho Yeptho	Asstt General Manager (PTS)	IREDA
KKC	K.K. Chakarvarti	Energy Economist	Bureau of Energy
KC	Koshy Cherail	President	AEEE
KW	Kumudh Wadhwa	Dy.General Manager	Power Grid
LA	Laliya Agrawal	Sr.Consultant	Nexant Inc
LW	Lauren Wygonski	PACE-D Training Consultant	Nexant Inc

LJR	Lawrence J Risman	Principal Consultant	Nexant Inc
LR	L Ravi	General Manager-Distribution Automation & Smart Grid	Bangalore Electricity Supply Company Limited
MH	Monali Zeva Hazra	COR- EE Expert	USAID/India
MT	Mathew Titus	Executive Director	Sa-dhan
MI	Masooma Isha	Consultant	CETC
MM	Mitheel Modi	Asstt Vice President- Project Advisory & Structured Finance	SBI Capital Markets, Mumbai
MS	Manish Saxena	Associate Consultant	DESL
MRSM	M.R.Sreenivasa Murthy	Chairman	Karnataka Electricity Regulatory Commission - KERC
NSS	Narendra Singh Sodha	Executive Director-Load Dispatch & Communication	Power Grid
NJP	Nancy J Powell	Ambassador of USA	U S Embassy, New Delhi
NR	Nagaraja Rao	Regional Coordinator	PFAN
NM	Nisha Menon	Sr. Consultant	DESL
NL	Nhia Ly	Consultant	Stephen Storm, Inc.
Padu	S.Padmanaban	Sr Clean Energy Advisor	USAID/India
PV	Prasad Vaidya	Heads – LEED Consulting Practice	Weidt Group
P	Prabhakar	Manager	KREDEL
PD	Peter du Pont	VP – Clean Energy	Nexant Asia
PS	Peter Storey	Global Coordinator	CTI PFAN
PK	Pradeep Kumar	Director-Program Development	Alliance to Save Energy
PKN	P K Nautiyal	Senior Technical Manager	HAREDA
PKY	P K Yadav	Chief Scientific Engineer	HAREDA
PM	Prima Madan	Sr. Consultant	Emergent Ventures India
RM	Rajat Misra	Sr. Vice President –Project Advisory & Structured Finance	SBI Capital Markets, Mumbai
RS	Reshma Singh	Program Manager	LBNL
RPS	Raminder Pal Singh	Asstt General Manager – Project Advisory Group	Canara Bank, Bangalore
SC	Satish Chandra	Manager	KREDEL
SC	Smita Chandiwala	Program Officer-Buildings & Appliances	Shakti Foundation
SS	Sanjay Seth	Energy Economist	Bureau Energy Efficiency
SS	Shashi Shekhar	Additional Secretary and Finance Adviser	Ministry of Environment and Forests
SS	Sunil Sharma	Consultant	Idam Infrastructure Advisory Ltd
SS	Sangeeta Shukla	Senior Advisor	Indian Banking Association, Mumbai

SS	Stephen Storm	Director	Stephen Storm Inc
SB	Sankar	General Manager	(CenPEEP), NTPC Ltd
SP	S Paliath	Manager	KREDEL
SM	Sanjay Mande	General Manager	Idam Infrastructure Advisory Ltd.
SM	Sameer Maithel	Consultant	BEEP
SM	Satish Mandhana	Managing Director	IDFC Alternatives Ltd
SV	Sanjay Varma	LEAD – Smart Grid	GE India
SAL	Shiv Anand Lal	Sr.Vice President & Head Corporate Propositions	HSBC, Mumbai
TK	Taiki Kuroda	Secretariat Lead	ICETT
TT	Tanmay Tathagat	Director	EDS
UR	Ummul Ranalvi	Director	CETC
UM	Udit Mathur	Sr. Advisor	British High Commission
VB	Vandana Bhansali	Vice President-Product Development Commercial Banking	HSBC Bank, Mumbai
VG	Vivek Goel	Deputy Director	CEA
VG	Vikas Gaba	Sr. Manager	AF-Mercados
VK	Vinod Kala	Managing Director	Emergent Ventures India
VM	Vivek Mishra	Consultant	Meghraj Capital Advisors Pvt Ltd
VH	Vishvanath Hiremath	Member	KERC
YKS	Y.K.Sehgal	Executive Director	Power Grid Corp of India
SD	Sanjay Dube	COP	PACE-D TA
VL	Vasudha Lathey	DCOP-EE	PACE-D TA
KK	Kavita Kaur	Communication Specialist	PACE-D TA
HD	Himanshu Dube	M & E Specialist	PACE-D TA
RK	Ronnie Khanna	DCOP-RE	PACE-D TA
RB	Ram Berry	Advisor	PACE-D TA
PS	Pritha Sanyal	Secretariat Coordinator	PACE-D TA
VK	Vinita Kathuria	Office Manager	PACE-D TA
AY	Amar Yadav	Assistant Office Manager	PACE-D TA
ET	Elaa Tandon	Project Coordinator	PACE-D TA

6.6 TRIP REPORTS

TRIP REPORT TR-052413-SD-India

Countries visited: Manila, Philippines

Dates of Trip: June 24-28, 2013

Travelers' Names: Sanjay Dube

Purpose of Trip: To participate and speak at the Asian Clean Energy Forum (ACEF) in Manila.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Program is a USAID-funded five year program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments: one on Energy Efficiency (EE) technology commercialization and innovation, and the other on Renewable Energy (RE) technology commercialization and innovation.

The PACE-D Technical Assistance Program has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes 13 subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

June 24: SD travelled to Manila, Philippines.

June 25: SD reached Manila and attended the pre-forum events of ACEF.

June 26: SD participated in the session on "New Models for Utility Delivery of DSM and Energy Efficiency" and made a presentation on "Demand Response in Indian Context".

June 27: SD participated in other EE sessions and networked with ACEF participants. He also had a detailed meeting with Russell de Lucia to discuss the microfinance activities under the PACE-D TA Program.

June 28: SD left Manila.

Organization/Persons Met & Projects Identified

See attached scanned copy.

Report Body:

The Asia Clean Energy Forum (ACEF), jointly organized by ADB and USAID, is the premier knowledge sharing platform for learning and exchange of experiences on key issues and latest developments in clean energy. Each year, clean energy stakeholders from different countries convene at the ADB Headquarters to network, discuss issues, exchange knowledge and do business.

ACEF is a great networking platform since it has participants from over 55 countries across all streams: finance, technology, policy and energy access. SD met with participants and explored potential areas for cooperating with the PACE-D TA Program. He also made a presentation in “Session 5: New Models for Utility Delivery of DSM and Energy Efficiency”. His presentation focused on India’s DSM scenario including challenges. See attached presentation.

Next Steps

Follow up with participants met in ACEF and send them the PACE-D TA briefer.

Asian Clean Energy Forum (ACEF) in Manila.

Md. Anwarul Islam	Research Fellow (Technology Transfer)	SAARC Energy Centre	House No 697, Street 43, E-11/4 NPF, Islamabad, Pakistan	+920512228802 extn110	+9203454054344	anwar@saarcenergy.org
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TRIP REPORT
TR-062513-AP/RK/RS/SS – IND

Cities visited: Jaipur

Dates of Trip: June 24 – 25, 2013

Travelers' Names: Ajit Pandit, Ronnie Khanna, Rajiv Shukla and Sunil Sharma

Purpose of Trip: *Meetings with senior officials of Rajasthan State Energy sector – Govt. of Rajasthan (GOR), Rajasthan Renewable Energy Corporation Ltd (RREC) and Rajasthan Electricity Regulatory Commission (RERC), to discuss the priority areas under PACE-D TA Program*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Program is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Program has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S. subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

June 24, 2013: Meeting with Chairman of Rajasthan Electricity Regulatory Commission (RERC) with other members from RERC, Director of Rajasthan Renewable Energy Corporation Ltd. (RREC).

Organization/Persons Met & Projects Identified:

PACE-D TA Program met the following key stakeholders during this Jaipur visit:

Shri B.K. Makhija, RREC
Shri D.C. Samant, Chairman, RERC
Shri G.K.Sharma, Secretary, RERC
Shri R.C.Sharma, Director (Engg)
Shri G.S.Verma, Asst Director (Tech), RERC

Report Body:

Meeting with Shri B.K. Makhija, Director, RRECL

Mr. Ajit Pandit and Mr. Ronnie Khanna explained the purpose of the visit as Rajasthan has been identified as one of the focal state for extending TA support under PACE-D program to state nodal

agency to facilitate their efforts in harnessing renewable energy potential in the state. The team also explained the background of PACE-D TA Program.

He also highlighted the need for supporting efforts in harnessing grid/off-grid RE potential in the state and how the state could benefit from the PACE-D program.

Shri Makhija and his team informed about several initiatives undertaken by RREC for promotion of grid connected/off-grid RE technologies as well as Energy Efficiency/Energy Conservation initiatives in the state in the recent past and other ongoing programs.

Shri Makhija highlighted the present initiatives of RREC such as solar power bidding process, initiatives for promotion of off-grid solar & rooftops, RPO target monitoring and REC project accreditation etc.

Meeting with RERC: Chairman RERC - Shri D.C.Samant, Shri G.K.Sharma, Director (Tariff) and Acting Secretary, RERC, Shri N.K.Pranami, Jt Director (Tech), Shri G.S.Verma, Asst Director (Tech), RERC.

Mr. Ajit Pandit made a presentation on the PACE-D TA Program background and the activities identified during the previous visit to RERC.

Shri Samant highlighted the need of a formal communication from MNRE / MOP regarding the technical assistance to RERC under PACE-D TA Program.

Mr. Ajit Pandit and Mr. Ronnie Khanna explained the net metering concept and discussed the way forward with RERC team. PACE-D TA Program also discussed the TA activities on RPO compliance and programmes on energy efficiency.

Shri. Samant also stressed upon the need of restructuring the organizational structure and conduct the manpower and skill requirement analysis exercise at RERC level. He also highlighted the need of usage of IT tools for RERC.

As regards DSM initiatives, Shri Samant expressed that the team should work closely with Utilities and decide future course of actions in this regard.

The PACE-D TA Program expressed their keen interest to work closely with RERC to devise and introduce appropriate regulatory intervention measures to promote RE development in the state and agreed to develop work plan for TA including institutional strengthening support jointly in consultation with RERC team.

Daily Activities

June 25, 2013: Meeting with CMD of, Rajasthan Renewable Energy Corporation Ltd (RREC)/Principal Secretary (Energy), GOR and Mr. Arjun Singh, Director (Trading), JVVNL

Organization/Persons Met & Projects Identified:

The PACE-D TA Program met the following key stakeholders during this Jaipur visit:

Shri Shailendra Aggarwal, CMD-RREC and Principle Secretary (Energy), GOR
Shri B.K. Makhija, RREC
Shri Sunit Mathur, RREC
Shri Arjun Singh, Director (Power Trading), JVVNL

Report Body:

Meeting with CMD, RRECL and Principle Secretary (Energy), GOR, - Mr. Shailendra Aggarwal

Mr. Ajit Pandit and Mr. Ronnie Khanna explained the background of PACE-D TA program. They also briefed him about the purpose of the visit as Rajasthan has been identified as one of the focal state for extending TA support under PACE-D program to state nodal agency to facilitate their efforts in harnessing renewable energy potential in the state. The team also explained the background of PACE-D TA Program.

Shri Aggarwal informed about several initiatives undertaken by RREC for promotion of grid connected/off-grid RE technologies as well as Energy Efficiency/Energy Conservation initiatives in the state in the recent past and other ongoing programs.

Shri Aggarwal suggested the team to concentrate on limited no of activities in order to bring out the best results from the TA activities. He informed the team about the small solar plant programme of GOR in which three cities i.e., Jaipur, Ajmer and Jodhpur are selected for deployment of small rooftop solar projects with the financial support from MNRE (30 percent of the project cost) and GOR (20 percent of the project cost).

As regards DSM initiatives, Shri Aggarwal asked the team to meet with Mr. Arjun Singh, Director (Power Trading), Jaipur DISCOM to explore specific activities related to DSM.

Shri Aggarwal welcomed such initiative for TA support under PACE-D program and agreed to take forward dialogue on possible areas of co-operation/support that PACE-D TA program could participate.

Meeting with Shri Sunit Mathur and Shri B.K. Makhija, RRECL

The PACE-D TA Program discussed the ongoing activities in the field of energy efficiency in Rajasthan. Mr. Mathur informed the team that capacity building process is underway for energy efficiency team in RREC. He also informed the team about various ongoing activities in the field of EE.

The PACE-D TA Program discussed about the priority areas for technical support under ECBC and load research.

The team also apprised Mr. Makhija about the discussions with Mr. Aggarwal and agreed to share a document with the activities identified for TA support and way forward for these identified activities.

Meeting with Director (Power Trading), JVVNL - Shri Arjun Singh

Mr. Rajiv Shukla explained the background of PACE-D TA program and discussed the initiatives taken by the state in the field of energy efficiency and demand side management specifically.

Mr. Singh was of the opinion that Demand Side Management has two components such as energy efficiency and load management. Load Management is very important for flattening the load curve and time of day tariff is important tool for the same. All the distribution utilities in the Rajasthan are jointly preparing the petition for introduction of the time of day tariff in the state of Rajasthan for commercial and industrial consumer categories.

Mr. Singh requested the PACE-D TA program to carry out the study for the improvement of efficiency of the distribution system by improving the power factor.

Presently, JVVNL is launching residential sector energy efficiency program (replacement of incandescent bulbs with CFL). Discoms are planning to distribute around 1 crore CFLs to old domestic rural as well as BPL consumer categories in the entire state of Rajasthan. Planning to distribute around 2 CFLs per households. This programme is state funded and CFL is going to be distributed free of cost to the consumers. They are expecting around 150 MW of peak power reduction.

The PACE-D TA Program also discussed with him regarding load research activity. In his opinion, distribution utilities must have done some load research for the development of time of day tariff.

Mr. Singh also asked to suggest various energy efficiency programmes (appliance level efficiency improvement programmes at consumer end) which distribution utilities can take up as DSM programme.

Key Results and Next Steps:

PACE-D TA Program agreed to provide formal communication from MoP / MNRE / USAID to RERC and RRECL regarding technical assistance under PACE-D TA Program.

PACE-D TA Program will provide a brief note on the activities which are identified during the discussions with RERC and RRECL that will include the scope of activities, timelines and way forward for the identified activities.

PACE-D TA Program will start working on net metering framework as this is the immediate requirement of RERC and RRECL to introduce small rooftop solar project scheme in the state.

PACE-D TA Program will visit RERC and RRECL again during the third week of July for collection of data and development of state act

TRIP REPORT TR-200613-VL-MUM

Cities visited : Mumbai, India

Dates of Trip : June 20, 2013

Travelers' Names: Vasudha Lathey (VL)

Purpose of Trip: Visit IIT Bombay, Department of Energy Science and Engineering, get appraised of on-going activities and brainstorm about potential synergies with PACE-D work.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Program has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

VL travelled to Mumbai to have a meeting at IIT Bombay with the team from the Department of Energy Science and Engineering. VL was accompanying Ms. Jyoti Arora Joint Secretary, ministry of Power (MoP)/ Director General Bureau of Energy Efficiency (BEE) at the meeting. The purpose of the visit was to find out about on-going areas of work at IIT Bombay, introduce PACE-D activities, discuss initiatives at the MoP and BEE and brainstorm about potential synergies.

June 20, 2013: VL travelled to Hyderabad via Indigo flight 183- Departing Delhi @ 6:00 AM and departing Mumbai via Indigo flight 176 @ 2:00 PM.

June 20, 2013: 10 -12: 00 PM Meeting at IIT Bombay

Meeting with the IIT Bombay team and talk about on-going work in the field of energy efficiency and renewable energy

Visit to the IIT Bombay labs

Organization/Persons Met & Projects Identified

The key stakeholders we met during this visit were the PACE-R team members and other building industry key stakeholders

Mr. Santanu Bandyopadhyay, Head of Department, Department of Energy Science and Engineering, IIT Bombay; And his team which included the following:

Mr. J. K. Nayak

Mr. Manaswita Bose

Mr. Suryanarayana Doolla

Report Body:

Key discussions at the meeting:-

Ms. Jyoti Arora briefed the IIT Bombay team about on-going initiatives for EE and RE promotion at the MoP (Including the Super-Efficient Equipment Program: SEEP).

VL introduced the scope of the PACE-D program to the IIT Bombay team.

IIT team members introduced their own individual areas of work- which included solar, smart grids, micro-grids, fuel cells, Nano materials, clean fossil and more.

IIT Bombay introduced a research breakthrough at one of their labs- development of a low cost energy efficient fan (< 35 W/hr. rating) which could be a viable candidate for commercialization under BEE' SEEP project.

Key Results and Next Steps

Ms. Jyoti Arora to identify ways to provide MoP/BEE support to IIT Bombay.

The PACE-D Program was able to establish a network of professionals at one of the elite academic institutes in India and will look for ways of including the IIT Bombay team at PACE-D events and activities.

TRIP REPORT
TR-061913-SD/RK/AP/RS- IND

Cities visited: Bengaluru

Dates of Trip: June 18-19th, 2013

Travelers' Names: Sanjay Dube, Ronnie Khanna, Ajit Pandit and Rajiv Shukla

***Purpose of Trip:** Discussions and data collection from various departments of KREDL, discussions with KERC for identification of support area, discussions with BESCO on Grid automation terms of reference and decide the further course of action*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

June 18, 2013: Meeting with General Manager – Distribution Automation and Smart Grid, Bangalore Electricity Supply Company Limited (BESCO) and Member, Karnataka Electricity Regulatory Commission (KERC).

Organization/Persons Met & Projects Identified:

The team including Mr. Sanjay Dube (Nexant), Mr. Ronnie Khanna (Nexant), Mr. Ajit Pandit and Mr. Rajiv Shukla met following key stakeholders during this Bangalore visit:

Shri L. Ravi, GM, BESCO

Shri P.N.Ravindranath, DGM, BESCO

Shri Hiramath, Member, KERC

Report Body:

Meeting with GM – Distribution Automation and Smart Grid – Shri L. Ravi,

Mr. Sanjay Dube explained the purpose of the visit as Karnataka has been identified as one of the focal state for extending TA support under PACE-D program to state nodal agency/state designated

agency to facilitate their efforts in harnessing renewable energy and energy efficiency potential in the state.

He referred to the discussion during visit of delegation of USAID team members lead by Dr. Padmanabhan and Ms. Monali Hazra on carrying out grid automation study for the BESCOM as a part of PACE-D TA program during their visit to BESCOM.

He also explained the terms of reference on grid automation study developed by PACE-D TA program and requested BESCOM to share necessary data and information for the analysis purpose; Shri.L. Ravi expressed his keen interest in providing support to PACE-D TA program for carrying out grid automation study.

Shri Ravindranath, DGM, BESCOM was appointed as a single point of contact for all the activities related to grid automation study.

Shri.L. Ravi also introduced Shri. Prakash, DGM – Area Load Dispatch Centre, BESCOM with PACE – D TA program and requested to get in touch with him for the collection of necessary data and information pertaining to grid automation study.

Meeting with Member, KERC - Shri Hiramath

Mr. Sanjay Dube highlighted that Karnataka has been identified as one of the focal state for extending TA support under PACE-D TA program to SERC/state nodal agency/state entities to facilitate their efforts in harnessing renewable energy and energy efficiency potential in the state.

Shri Ajit Pandit also clarified that based on feedback given by Hon'ble Chairman during previous introductory meetings, PACE-D TA program would like to suggest following work areas, which could be of priority interest for regulatory institution:

- Regulatory Framework for Net-metering;
- Support for Institutional strengthening for RPO compliance monitoring,'
- DSM Regulatory Framework and Action Plan

Shri Hiramath welcomed such initiative for TA support under PACE-D program and asked the PACE-D TA Program to submit the brief note on the areas identified for the TA support.

The PACE-D TA Program agreed to provide the same within couple of weeks.

Daily Activities

June 19, 2013: Meeting with General Manager and Assistant General Managers – KREDL and

Organization/Persons Met & Projects Identified:

The team including Mr. Sanjay Dube (Nexant), Mr. Ronnie Khanna (Nexant), Mr. Ajit Pandit and Mr. Rajiv Shukla met following key stakeholders during this Bangalore visit:

Shri Paliyah, GM, KREDL

Shri Prabhakar, AGM-Solar, KREDL

Shri Satish Chandra, AGM-off grid, KREDL

Shri Hanumantharayappa, AGM – EE & EC

Meeting with GM, KREDL

Mr. Sanjay Dube explained the purpose of the visit as Karnataka has been identified as one of the focal state for extending TA support under PACE-D program to state nodal agency/state designated agency to facilitate their efforts in harnessing renewable energy and energy efficiency potential in the state.

Shri Paliah informed about the several initiatives undertaken by KREDL as well as planned for this financial year for promotion of Energy Conservation/Energy Efficiency and grid connected/off-grid RE technologies in the state.

Shri Paliah also informed about the Chief Minister and Government's keenness about the integration and promotion of EE & RE technologies in the state of Karnataka.

Shri Paliah also informed about requirement or creation of project management cell in KREDL to effectively monitor the various programs initiated by KREDL. He also specified the requirement of Chief Engineering level person as technical assistant to Managing Director, KREDL for the institutional strengthening purpose.

PACE-D TA program has agreed to extend the support and necessary assistance for the development of project management cell in KREDL.

Meeting with Shri Satish Chandra, AGM-off grid, KREDL

Shri Satish Chandra informed about the several initiatives undertaken by KREDL as well as planned for this financial years in the area of solar (grid connected and off-grid), wind, small hydro, solar thermal, biomass, cogeneration, decentralized distributed generation etc.

He also informed about the technology wise potential of RE in the State of Karnataka as well as allocated and installed capacity of different RE technologies in the state.

PACE-D program also discussed about the potential areas for technical assistance to KREDL under PACE-D TA program for different RE technologies.

Meeting with Shri Hanumantharayappa, AGM – EE & EC

Shri Hanumantharayappa informed about the several initiatives undertaken by KREDL as well as planned for this financial years in the area of energy efficiency and energy conservation targeting government hospitals, government building, street lighting, energy conservation building code and energy efficiency pump-sets etc.

He also informed about the existing tendering process of KREDL for the engagement of energy auditing and energy service companies for the implementation of identified energy efficiency and energy conservation programs.

The PACE-D TA Program also discussed about the potential areas for technical assistance to KREDL such as development of rate contract mechanism for engaging consultant, empanelment of energy service companies framework, revision in existing tendering process and support in implementation of energy conservation building code etc. under PACE-D TA Program.

Key Results and Next Steps:

The PACE-D TA Program agreed to prepare and submit the note covering data/information requirement for carrying out Grid Automation Study for BESCOM;

The PACE-D TA Program will provide the brief note on identified areas of support to RERC. It has identified following areas for the support for the current year:

Assistance in development of action plan for implementation of DR program in the State of Karnataka;

Assistance in organization of workshop for promotion of DSM;

Assistance in development of a concept paper on competitive bidding for RE in Karnataka;

Assistance in net metering framework;

The PACE-D TA Program will visit KREDL and BESCOM again during the second/third week on July for the collection of data and information required for the grid automation study as well as development of the state action plan;

The PACE – D TA Program will also visit KERC to get their confirmation on the identified activities of the TA support for the year 2 and to initiate the work.

TRIP REPORT
TR-060513-AP/SD – IND

Cities visited: Chandigarh

Dates of Trip: June 05th, 2013

Travelers' Names: Ajit Pandit and Sanjay Dube

Purpose of Trip: *Introductory Meetings along with USAID team with Senior officials of Haryana State Energy sector – Govt. of Haryana (GOH), Haryana Renewable Energy Development Agency (HAREDA) and Uttar Haryana Bijli Vitaran Nigam Ltd and Dakshin Haryana Bijli Vitaran Nigam Ltd (DHBVNL)*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

June 5, 2013: Meeting with Addl. Chief Secretary, Power Department, Govt. of Haryana, Managing Director- HAREDA and CMD- Uttar Haryana Bijli Vitaran Nigam Ltd and Dakshin Haryana Bijli Vitaran Nigam Ltd (DHBVNL).

Organization/Persons Met & Projects Identified:

A delegation of USAID team members led by Dr. Padmanabhan and Ms Monali Hazra along with Sanjay Dube (Nexant) and Ajit Pandit (Idam Infra) met following key stakeholders during this Chandigarh visit:

Shri Ajit M. Sharan, Addl. Chief Secretary – Power Department, GOH
Shri Devender Singh, CMD – UHBVNL and DHBVNL
Shri D.K.Chopra, Additional Director, Renewable Energy Dept, Haryana
Shri P.K.Nautiyal, Senior Technical Manager, HAREDA
Shri P.K.Yadav, Chief Scientific Engineer, HAREDA

Report Body:

Meeting with Additional Chief Secretary (Power Dept), GOH - Mr. Ajit M. Sharan

Dr Padmanabhan explained the purpose of the visit as Haryana has been identified as one of the focal state for extending TA support under PACE-D program to state designated agency (SDA) to facilitate their efforts in promoting energy efficiency and energy conservation initiatives in the state.

Shri. Sharan informed about several initiatives undertaken by Govt. of Haryana for promotion of grid connected/off-grid RE technologies as well as Energy Efficiency/Energy Conservation initiatives in the state in the recent past and other ongoing programs.

Shri. Sharan expressed that pilot rooftop solar PV installations would have demonstration effect and presents huge market opportunity for the state of Haryana. He also opined that the market based framework for promotion of off-grid solar & rooftop solar application need to be pursued.

He opined that the micro-grid concept for providing energy access in remote villages should be explored. However, present conditions under DDG scheme are not conducive for Haryana. He suggested that if business model for cluster based approach for catering to limited no. of hamlets is developed, the same would be useful for Haryana. Besides, technology packages and applications should be customized for rural energy micro-grid installations.

He further suggested that PACE-D TA program could consider developing business models and could help organize investor forums to present rural energy access opportunities and to mobilize funds for such initiatives.

As regards demand-supply situation in Haryana, Shri. Sharan expressed that they have been successful to achieve significant capacity addition (~ 3000 MW) in the recent past, however, their major challenge is to manage load diversity & seasonal variation. He expressed that there is significant scope for Load Research activities and to suggest load shifting, load flattening, load management measures.

He also suggested that

In response to USAID team suggestion for develop business model for energy efficiency improvement in Lift Irrigation schemes through ESCO participation, Shri Sharan expressed willingness to explore this option.

Dr. Padmanabhan explained about the nature of PACE-D TA support program and the possible areas of work that could take up under PACE-D TA support program.

Shri Sharan welcomed such initiative for TA support under PACE-D program and agreed to take forward dialogue on possible areas of co-operation/support that PACE-D could participate.

Dr. Padmanabhan suggested that creation of a dedicated Reform Cell with counterpart support to co-ordinate initiatives under PACE-D program would be useful for such transformational exercise of long du

Meeting with HAREDA team – Shri D.K.Chopra, Additional Director

Dr Padmanabhan explained the purpose of the visit as Haryana has been identified as one of the focal state for extending TA support under PACE-D program to state designated agency/state entities to facilitate their efforts in promoting energy efficiency and energy conservation initiatives in the state. He also highlighted the need for supporting efforts in harnessing Grid/off-grid RE potential in the state and how the state could benefit from the PACE-D program. He also queried as to existing initiatives by HAREDA to promote Energy Efficiency/Energy Conservation and to promote off-grid/grid RE programs and sought views of the HAREDA team on future programs.

Shri Chopra informed about several EE programs initiated by HAREDA including change in building bye laws which is under advanced stage of finalization, star rating of pump program, Energy conservation fund (Rs 2 Cr) and its utilization, energy conservation award scheme, energy audit of 8 industrial clusters and subsequent studies for waste heat utilization carried out by HAREDA etc.

Shri Chopra also explained about existing organizational structure of HAREDA and its operations at district level through office of ADC (Additional District Commissioner).

Shri Chopra further informed about cogen/biomass power generation initiatives in the State (e.g. 176 MW biomass by rice mills, 28 MW cogen by distilleries/paper mills, gassifier/dual fire gen set cases by poultry farm users etc.)

USAID expressed their keen interest to work closely with HAREDA to devise & support HAREDA's various program initiatives on EE measures and to promote RE development in the State and agreed to develop work plan for TA support jointly in consultation with HAREDA team.

Meeting with CMD, DHBVNL & UHBVNL - Shri Devender Singh

Dr Padmanabhan explained the purpose of the visit as Haryana has been identified as one of the focal state for extending TA support under PACE-D program to state nodal agency/state entities to facilitate their efforts in promoting energy efficiency and energy conservation initiatives in the state. He also highlighted the need for supporting efforts in harnessing grid/off-grid RE potential in the state and how the state could benefit from the PACE-D program.

Shri Devender Singh welcomed such initiative for TA support under PACE-D program and elaborated on the several initiatives which could be covered under this TA Program for promotion of grid connected and off-grid RE technologies.

Development of Solar Policy / RE Policy for the State

Development of RE power procurement policy for DISCOMs in the State

Load Management and Peak to Off-Peak Load Diversity management and seasonal demand variation aspects.

Measures for improvement of distribution losses/commercial losses in rural areas

Position Paper on Off-Grid / Mini-Grid programs in rural villages for energy access

USAID expressed their keen interest to work on some of these initiatives in close consultation with HAREDA and Haryana DISCOMs and agreed to develop work plan for TA support jointly in consultation with HAREDA team and DISCOMs.

TRIP REPORT
TR-051413-DE-India

Countries visited: Delhi, India
Dates of Trip : May 14-24, 2013
Travelers' Names: Dick Edwards

Purpose of Trip: Meet PACE-D team and subcontractors to get detailed update on Year I deliverables and plan for Year II, interview finance manager candidate, and discuss contractual issues with USAID.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USAID-funded five year program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments: one on Energy Efficiency (EE) technology commercialization and innovation, and the other on Renewable Energy (RE) technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes 13 subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

January 12: ED travelled to Delhi, India late night.

January 14: ED had a team meeting with PACE-D TA staff to get an update on the progress made on different activities. Also worked on the quarterly progress report (update on tasks across all CLINS for the period October – December 2012).

January 15: ED reviewed the final draft of the quarterly progress report. Also participated in PACE-D TA Meeting with Bureau of Energy Efficiency to discuss ECBC and HVAC related activities.

January 16: ED had a meeting with two subcontractors – ABPS and EDS - to discuss PACE-D TA project activities. Also held interviews with DCOP-RE candidates.

January 17: ED worked on strategy note for capacity building of local partners. Also met with USAID/India to discuss contractual issues and overall project activities.

Organization/Persons Met & Projects Identified

The key stakeholders met during this visit included:

Bureau of Energy Efficiency

Sanjay Seth, Energy Economist

Girja Shankar, Assistant, Energy Economist

USAID/India

Arun Seghal, A&A Specialist

ABPS Infrastructure Advisor

Ajit Pandit, Partner

Environmental Design Solutions (EDS)

Tanmay Tathagat, Director

Report Body:

ABPS had questions regarding their invoicing and ED updated on the invoicing process.

Each team member provided a detailed update on his/her area of activity including M&E, Communications, Clean Coal, Energy Efficiency and Renewable Energy. This discussion was helpful to bring everyone on the same page as well review the Quarterly Progress Report.

The Quarterly Progress report included an update on all tasks for the period October – December 2012 and also provided the key activities for the next quarter.

As part of USAID's FORWARD initiative, the PACE-D TA team has to build the capacity of two local subcontractors. Detailed discussions were held with the COP and other team members on the formal training and informal mentoring provided so far and the topics to be covered in the remaining months of Year 1.

Discussions were held with Arun Seghal in USAID/India.

Next Steps

Work with COP to shortlist two DCOP-RE candidates and send to USAID for final selection and approval.

Review first draft of capacity building note and finalize it.

TRIP REPORT
TR-090513-RK-BHOPAL

Cities visited: Bhopal, India

Dates of Trip: May 09, 2013

Travelers' Names: Ronnie Khanna (RK)

***Purpose of Trip:** Visit the Madhya Pradesh Urja Vikash Nigam Limited (MPUVNL) to undertake discussions with key stakeholders in the organization and also plan for future activities under the state support*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

RK travelled to Bhopal to have a meeting with the Additional Managing Director, Mr Sibi Chakarvarty and the General Manager, Mr. S Deshmukh of the Madhya Pradesh Urja Vikash Nigam Limited (MPUVNL). The meeting was also attended by the team from IDAM Infra (Mr. Ajit Pandit, Mr Sunil Sharma & Ms. Prerna Sharma). The purpose of the visit was to consult with MPUVNL on the gap analysis and detailed action plan being prepared by the PACE-D TA Program and develop a broad timeline for future activities.

May 09, 2013: RK travelled to Bhopal via Jet flight 9W-2654 - Departing Delhi @ 6:20 AM and flew back, departing Bhopal via Spice Jet flight SG - 2226@ 08:00 PM.

May 09,2013 : 11:30 AM - 12:30 PM Meeting at MPUVNL with Mr. Sibi Chakarvarty at MPUVNL. The meeting with MPUVNL discussed the arrangement under which the PACE-D TA Program shall work with MPUVNL. Mr. Chakarvarty suggested that MPUVNL enter into a Memorandum of Understanding with USAID as it would be a government to government cooperation. Mr. Chakarvarty also appraised the team of his and his teams schedule and a broad time line was worked out for future consultations and data collection.

RK also visited the team from PricewaterhouseCoopers (PwC) to get a background of the work had undertaken while developing the business plan for MPUVNL. While interacting with Mr. Chandan Mishra, Associate Director, PricewaterhouseCoopers India, he got insights on the state of development of the power sector in the state as well as the focus in the renewable energy sector.

Report Body:

Key discussions at the meeting:-

Mr. Ajit Pandit briefed all the attendees at the meeting of the progress of the gap analysis and also laid down the next few steps which included undertaking an analysis of institutional issues which may impact MPUVNL's future activities. He also requested for time from various section heads to consult them on the key issues they face while designing and implementing programmes.

RK gave a background of all the activities under the PACE-D TA Program to all the team members and how the team plans on leveraging activities under other components to assist in off grid market development and deployment in Bhopal.

MPUVNL provided their own insights on the key issues facing the problems and their vision of how they would take the organization forward.

Key Results and Next Steps

Finalization of the gap analysis and presentation of key findings to USAID and MPUVNL
Drafting, sharing and signing of an MoU between USAID and MPUVNL.

TRIP REPORT

TR-050213-Dr.RL- IND

Cities visited: India

Dates of Trip: April 10th – May 2nd

Travelers' Names: Dr. Russell deLucia

Purpose of Trip: *The purpose of the trip was to work with S³IDF's Bangalore based team on the Task Order deliverables, participate in multiple PACE-D Round Tables organized by USAID/Nexant, undertake selected interviews for Task Order work, and meet with Nexant and USAID.*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy – Deployment (PACE-D) is a co-operative initiative of The United States Agency for International Development (USAID) and the Government of India (GOI). As stated in various PACE-D documents, “The objectives of PACE-D are to assist in accelerating India’s transition to a high-performing, low emissions, and energy secure economy, and to increase collaboration in Clean Energy and addressing Climate Change.” This initiative has multiple components and Nexant is the prime contractor for a multi-firm consortium under contract with USAID to implement them.

One component of PACE-D is focused on scaling-up small-scale renewable energy and other clean energy technologies and their associated investments, with a particular focus on investments (both grid and non-grid, both electricity and fuel related) that will provide modern energy services and linked productive-use investments to benefit women as well as rural and other poor and/or underserved communities. This trip was to work on various activities/deliverables of the first Task Order of this component.

Daily Activities

April 12-15: Bangalore

Dialogue with team as mentioned above; finalize presentation for Mumbai Roundtable (see below); meeting /interviews with a few individuals in our existing networks/collaboration (e.g. Ashis Kumar Sahu², Thomas Pullenkav³) who are involved with i) incubating small/new renewable enterprises that might be candidate for partnerships to be developed in activities in subsequent Task Order and/or helping RE enterprise and local associated communities access financing from the existing financial institution networks.

² Ashis’s current responsibility is to direct the SELCO-S³IDF incubation Initiative.

³ Thomas is an independent consultant, involved in mentoring incubates of the SELCO-S³IDF incubation Initiative. Working with various other energy entities on financing related matters, and a member of the REWG (Rural Energy Working Group Initiative supported by GIZ and others (he is former senior officer of SELCO) .

April 15-18: Delhi

Meetings with Nexant team members, participate in USAID/Nexant Clean Energy Finance Roundtable for Project Developers; meeting with USAID regarding status of our work on various deliverables for which we are responsible. Nexant was also at the USAID meeting, USAID personnel present were: Jeremy Gustafson – Director, Clean Energy and Environment Office, Anurag Mishra – Sr. Clean Energy Specialist, Clean Energy and Environment Office, Apurva Chaturvedi – Program Management Specialist, Clean Energy and Environment Office, and S. Padmanaban – Senior Energy Advisor

The meeting with USAID focused primarily on the deliverable of a Concept Note on a Revolving Fund (RF). USAID requested another related deliverable, a Concept Brief that could be utilized to “market” the RF concept particularly to the US Embassy. A discussion meeting arranged by Nexant (and at which they were present) was also held with Sa-Dhan the MFI association, present FORM Sa-Dhan were Saibal Paul – Senior Executive; Mathew Titus – Executive Director and K. Balasubramanyam – General Manager

April 18-21: Bangalore

More meetings with Bangalore team and work on deliverables as in prior period (April 12-15) and start work in additional deliverable of aforementioned RF brief. Also there was discussion with T.L. Sankar⁴ regarding experience of two small clean energy practitioners, created previously by S³IDF and in particular their innovative efforts to access financing for clients under various Bank schemes and in particular use of the “farmers credit card scheme” in collaboration with Dena Bank.

April 21-23: Mumbai

Participated in and presented at Clean Energy Finance Roundtable With Financial Institutions; participated in Clean Energy Finance Advisory Team Meeting Roundtable; discussions of RF concept with Somak Ghosh (founder Contrarian Capital, former VP Corporate and Development Finance of Yes Bank Ltd.)

April 23-May 2: Bangalore

Further dialogues with team as mentioned above and work on deliverables. Preparation of very detailed outline of the Sector Report Deliverable -as requested by and forwarded to USAID and Nexant. This report and related matters of status and schedule revision of various deliverables was the subject of end-of-trip briefing for USAID which took place by phone with USAID’s agreement.

⁴ Sri Sankar is one of India’s most eminent experts in the energy sector, having amongst other prior responsibilities Chairman of the AP SEB prior to un-bundling, creator of AP Gas Power Corporation, Principal of SCI, and many other senior positions. He is a Padma Bushmana awardee of the Government, founder of S³IDF [US and India] and current director of S³IDF India leading our activities in AP.

Organization/Persons Met & Projects Identified

See comments above. Also USAID and Nexant have the lists of people who attended the three Roundtables in which I participated. I met all the attendees.

Report Body:

Other than the report outline and presentation for Mumbai Roundtable mentioned above, no reports were prepared. The trip purpose did of course include much work on reports to be forthcoming.

Key Results and Next Steps

Key results were multiple learning points to be reflected in the forthcoming deliverables, and planning for priority activities to be included in the next Task Order activities. Also there was feedback on deliverable draft pieces and notes; and multiple contacts for follow-up both during the remainder of this Task Order period and thereafter.

TRIP REPORT
TR-20130328-1 SS/NL/RC/RPK/PA/GC

Countries visited: India

Dates of Trip: March 1 – March 28, 2013

INDIA

- a. Delhi (Storm, Ly, Krishnan, Campbell, Abbott and Choi)
- b. Chandrapur (Storm, Ly, Krishnan)
- c. Panipat (Storm, Ly, Krishnan)
- d. Raipur (Storm, Ly, Krishnan, Campbell, Abbott and Choi)

Travelers' Names and Organization

1. Stephen Storm, Stephen Storm, Inc.
2. Nhia Ly, Stephen Storm, Inc.
3. Ronnie Campbell, Stephen Storm, Inc.
4. Radha P. Krishnan, Leonardo Technologies Inc. (LTI)
5. Pat Abbott, P&RO Solutions, Inc.
6. G. Choi (Nexant, Inc.)

Purpose of Trip:

The purpose of this trip was to commence the Cleaner Fossil Technologies program for

- 1 Heat Rate Improvement at two State Electricity Board (SEB) plant sites---Chandrapur Power Station of Maharashtra and the Panipat plant of Haryana.
- 2 Best Practices and Benchmarking of Supercritical Technologies at Sipat.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a five-year USAID-funded program to accelerate India's transition to a high performance, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation. The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. The work completed on this trip is related to the '*Cleaner Fossil Technologies*.

CSTPS is the largest Thermal Power Station within the Maharashtra State Electricity Board. The location of power station is at 6 Kms from Chandrapur City. CSTPS has an installed capacity of 2,340MW or 4x210MW (stage 1 & 2) and 3X500MW (stages 3 & 4).

Panipat Thermal Power Station (PTPS) is a part of HPGCL, Haryana Power Generation Corporation Limited. PTPS has a total installed generation capacity of 1360 MW comprising of four Units of 110 MW each, two Units of 210 MW each and two Units of 250 MW each. As all the balance of

plant facilities viz. Coal Handling Plant, Ash Handling Plant, Cooling towers, C.W. System are separate for 4x110 MW Unit 1 to 4 and are completely independent from Units 5 to 8.

Keeping this in view and in order to improve the performance of the Plant and to have a better control, a need was felt to bifurcate PTPS into two Thermal Power Station i.e. PTPS-1, comprising of 4x110MW Units 1 to 4 and PTPS-2 comprising of 210MW /250MW Units 5 to 8. Work was also performed under a second deliverable under Clean Fossil Technologies which is on Benchmarking and Best Practices for Supercritical (SC) power plants for “*information collection*” at NTPC’s SIPAT SC plant.

1 Heat Rate Improvement at the two SEBs

During the visit, technical training on Heat Rate Improvement was also administered to over 100 participants (see the attached sign-up lists). The USAID team, consisting of US and Indian experts from NTPC’s, Center for Power Efficiency and Environment Protection (CenPEEP), Ms. Monali Hazra, Project Officer, USAID mission, Ms Lauren Wygonski and Mr. Sanjay Dube, Nexant, Mr. V.S. Amarnath, technical consultant traveled to Chandrapur and Panipat to kick off the program. A Heat Rate Improvement program for the two plants will be provided as a deliverable to help prioritize opportunities for improvement and furthermore train their staff on a process to achieve and sustain heat rate improvement. It is tentatively planned to present the reports in a formal workshop this summer (between June – August).

During the three days of walk down and targeted diagnostic testing conducted at the two locations. Major opportunities for heat rate improvement in the magnitude of 100 - 150kCal/kWh was identified. Further improvement is possible with precise component wise testing using precision test equipment. Chandrapur plant has a limited set of instruments on site and they would have to be trained in the testing protocols and analysis of test data. Panipat station does not have any test equipment as yet and they would have to procure them and also be trained in the use of the equipment. To the extent the team could cover in the one day training, the testing equipment, protocol for testing and interpretation of test results were covered. However, additional “hands on” training will be needed for the plant team to become fully conversant with the test procedures and how to conduct the tests. The training presentations (see Appendices) were well received and appreciated by the plant management the results of the “onsite” assessment conducted by the US and CENPEEP team was presented (see attachment) in the close out meetings. Both plants agreed to implement the recommendations that need their immediate attention. They, however, felt that in some of the areas which they are not familiar with, support should be forthcoming from the program.

At both Chandrapur and Panipat, coal blending is adopted to overcome the shortage of domestic coal. Domestic and imported Indonesian coals are physically blended on site to augment their requirement and this practice has exasperated the combustion problems in the boiler. Both plants expressed interest in knowing the scientific method of blending as opposed to just physical blending which they now adopt. Other plants in India are facing the same problem and this is an area that some assistance could be provided under PACE-D.

Daily Activities:

March 1, 2013 (Fri): Stephen Storm & Nhia Ly Departed Charlotte, NC. Flight was cancelled and re-routed to Brussels, Belgium and then Frankfurt, Germany.

March 2, 2013 (Sat): Storm & Ly Departed Germany and arrived in New Delhi, India early morning on March 3. Check in at the Grand Hotel. Dr. Radha Krishnan arrived in Delhi as scheduled.

March 3, 2013 (Sun): The team took an evening flight to Nagpur and stayed overnight at the Pride Hotel near the airport. Mr. Bandopadhyay, General Manager and Mr. A.K. Arora, Deputy General Manager (DGM), CenPEEP and Mr. V.S. Amarnath, Technical Consultant had already arrived in the hotel. A brief meeting was convened in the hotel lobby to discuss the program at Chandrapur. Ms Hazra, USAID, Ms Lauren Wygonski and Mr. Sanjay Dube joined in the discussions.

March 4, 2013 (Mon): We had an early morning departure to Chandrapur (~154KM) by car. Stayed at Tristar Hotel Wadgoan, Nagpur Road, Chandrapur. Registration and round table presentations were completed around 11am with all in attendance. Opening remarks were provided by Sanjay Dube (Nexant), Monali Hazra (USAID), Lauren Wygonski (Nexant) and Dr. RP Krishnan (LTI) with formal presentations by Shankar Bandopadhyay and Stephen Storm who went through the process, plan and introductory presentation of technical details & process that will be used to develop a Heat Rate Improvement program. Mr. Burde, Deputy Chief Engineer provided the welcome note and chaired the workshop on the first day. Mr. N.V. Rade and Mr. Marudkar acted as coordinators.

Over twenty personnel were involved with the meeting / training. Upon completion, personnel division of responsibilities for divided into two primary focus areas (Boiler and Turbine). Ms. Hazra left late afternoon to Delhi. Messrs. Nag, Singh, and Rajan from CENPEEP arrived from Delhi with the portable test equipment.

March 5, 2013 (Tues): Onsite walk-downs / assessments were conducted as well as preparation of diagnostic testing equipment brought by CenPEEP. Mr. Rade, Executive Engineer, Chandrapur was assigned to the team for support and coordination between the focus teams conducting the walk down. After the forenoon walk down, Mr. Dube, Mr. Bandopadhyay and Ms. Lauren Wygonski departed to Delhi.

March 6, 2013 (Wed): Abbreviated Boiler & Turbine Cycle performance tests were completed by CenPEEP and site walk-downs and plant equipment/process discussions were continued by each of the respective focus groups. Also, during the day, a tube failure occurred on the unit being assessed. Thus, discussions around the plant shutdown were further discussed while the plant made preparations to recover from the forced outage.

March 7, 2013 (Thurs): Drawings were completed for each of the respective plant areas. The failed boiler tubes were assessed. An exit presentation of testing results, findings and recommendations was compiled for presentation on March 8.

March 8, 2013 (Fri): A plant exit meeting was led by Stephen Storm with additional comments by Mr. A.K. Arora, Mr. V.S. Amarnath and closed out by Dr. RP Krishnan. The findings and initial recommendations were presented to the Chief Engineer Mr. Gohotre (who only made the appearance at the close-out meeting) and his staff. We left Chandrapur around 1:30pm and then returned to Delhi the same evening.

March 9, 2013 (Sat): No official business; Work from hotel.

March 10, 2013 (Sun): Work from the hotel and prepared for visit to Panipat Station.

March 11, 2013 (Mon): Early morning departure to Panipat Station by road with CenPEEP team and Mr. Amaranth. The team checked in at Nirulas's hotel downtown Panipat. Later, the team left to the plant and conducted a walk down. Mr. S.K.Bajaj was assigned by the plant manager for overall coordination.

March 12, 2013 (Tues): Training workshop commenced after the formal introductions and the welcoming address by Mr. J.P. Agrawal, Chief Engineer, Panipat. Opening remarks were provided by Sanjay Dube (Nexant), Monali Hazra (USAID), Lauren Wygonski (Nexant) and Dr. RP Krishnan (LTI) with formal presentations by Pankaj Bhartiya and Stephen Storm who went through the process, plan and introductory presentation of technical details & process that will be used to develop a Heat Rate Improvement program. Over thirty eight personnel from the plant were in attendance. The workshop concluded late in the evening with the formation of designated teams from the plant side and US/CENPEEP team for the subsequent walk down and testing planned over the rest of the week.

Monali, Lauren and Sanjay left in the evening to Delhi. Mr. Rajan and his team from CenPEEP arrived from Delhi to conduct the testing in the boiler area. Mr. Nag, Turbine lead from CenPEEP arrived in the morning along with Mr. Pankaj Bharthiya, GM, and CenPEEP.

March 13, 2013 (Wed): Abbreviated Boiler & Turbine Cycle performance tests were completed by CenPEEP and site walk-downs and plant equipment/process discussions were continued by each of the respective focus groups.

March 14, 2013 (Thurs): Drawings were completed for each of the respective plant areas. An exit presentation of the test results, findings and recommendations was compiled for presentation on March 15th. In addition, Unit 5 & Unit 8 walk-downs were completed over a period of several hours with Stephen Storm, the Chief Engineer, his staff and Dr. R. P. Krishnan.

March 15, 2013 (Fri): Exit meeting. During this meeting, the findings, initial recommendations and program development tasks to be recommended were reviewed with the plant team by Stephen Storm and Mr. Nag, CenPEEP. Further discussions and comments were made by the entire team with closing comments by Dr. Krishnan. Dr. Krishnan also made a quick visit to the coal yard to see how the coal blending was being carried out by the station. Mr. Agrawal, Chief Engineer accompanied him. Roughly 20% Indonesian coal with 15% moisture content and the rest domestic coal was the blend that was being prepared for firing in the boilers. We returned to Delhi late evening by road.

2 Best Practices and Benchmarking Supercritical Technology at Sipat

March 16, 2013 (Sat): Mr. Pat Abbott, P&RO Solutions and Dr. Gerry Choi, Nexant had arrived in the hotel from the US to join the team for the NTPC Sipat visit. The entire team, Ms. Monali Hazra, USAID and Mr. Sanjay Dube went to the NTPC corporate office for a briefing to Mr.

N. N. Misra, Director (Operations) and Mr. Thomas Joseph, Executive Director (Operations Services), NTPC. Dr. Krishnan introduced the US team and briefed Mr. Misra and Mr. Thomas on the purpose of the visit and the scope of the two documents---Benchmarking and Best Practices document. Mr. Misra responded by adding that the purpose of the Benchmarking is for NTPC to track the performance of the new SC units as they age and what are those critical parameters that need to be benchmarked from day one to track the aging process. This, he added could be done for every new unit that comes into the NTPC fleet in the future irrespective of design so that a comparison of how performance degradation occurs across the fleet could be monitored. He also requested the team to include for comparison other plants in the US if data is available. Mr. Misra touched on the coal shortages prevailing in the country and that NTPC is roughly importing around 18 million tonnes annually for blending with domestic coal. He was concerned about the way blending is done now, “blindfolded” in his words, without any scientific basis. Dr. Choi responded by commenting that one of the tasks under PACE-D is to provide technical support for coal blending and provide the quantitative tools which would enable NTPC and others to do the blending in a way that the boiler performance is not compromised. The meeting was adjourned and the team left to the hotel to continue the preparations for the Sipat visit. Mr. Ronnie Campbell was expected to arrive in Delhi the same night and join the team on Sunday to fly to Raipur en route to Sipat.

March 17, 2013 (Sun): The team took the afternoon flight to Raipur. Mr. S. Padmanaban, Senior Advisor and Ms. Monali Hazra, USAID and Mr. Sanjay Dube, Nexant traveled with the team to Sipat. Messrs. Bandopadhyay, Mittal, Arora and Surendra Prasad from CenPEEP joined us at the airport. Upon arrival, we went to the NTPC guest house in Raipur for refreshing before we drove to Sipat, a distance of 135 km. Accommodation for the team was arranged at the Sipat guest house which was comfortable.

March 18, 2013 (Mon.): Formal presentations were completed at SIPAT with over 45 NTPC personnel in attendance. Mr. Rao, General Manager, Operations & Maintenance welcomed the team. Ms. Hazra introduced the team which was followed by a short presentation by Mr. Padmanaban on the legacy of USAID’s involvement in the coal and power sectors in India dating back to 1983 and the evolution of technical assistance from R&D laboratory scale projects on coal beneficiation, fluidized bed combustion, coal gasification pilot studies, renovation & modernization , efficiency improvement and now the next generation of high efficiency power generation systems, namely, supercritical technology. His overview was much appreciated by the plant management and set the tone for the activities to be conducted at Sipat. Dr Choi made a brief presentation on the two tasks to be completed on SC technology with NTPC Sipat as the focal point and the deliverables under PACE-D.

Dr. Krishnan gave an overview of SC technology since the 1960s and the experience and technology development that has occurred over the years to make it a mature technology.

The US team led by Stephen Storm made presentations on the scope of the two deliverables and the expectations during the visit for compiling the information required for the benchmarking and best practices documents. Mr. Abbott presented applied asset management methods and technologies for boiler pressure parts and how they can help eliminate boiler tube failures, and the need for targeted monitoring and diagnostic practices for high boiler reliability. Mr. Campbell made a presentation on the recently commissioned AEP’s Turk Plant. The Duke Energy’s Cliffside Ultra supercritical plant

and the Adani SC plant at Mundra , Gujarat, India. Mr. Campbell who was earlier with Duke Energy spent three years after his retirement from Duke Energy at Mundra where he was responsible for the start-up and commissioning of the SC units.

Mr. Rao thanked the US speakers and extended full support from the plant side during the team's assessment of the Sipat SC unit. Mr. Mitra, Additional General Manager (AGM) served as the coordinator during the entire stay at Sipat providing excellent support to the team.

Mr. Padmanaban and Ms Hazra had a quick walk down of the plant and left for Delhi.

March 19, 2013 (Tues.): Site walk-downs and group meetings were conducted and respective areas assessed by individual team members from the US technical team. Sipat is a state-of-the-art plant with 3 660MW SC units and 2, 500 MW sub critical units. It has an excellent simulator facility and the first 700 KV transmissions sub-station in India. Instrumentation and Controls package was supplied by Emerson, USA and is state-of-the art. The boilers and auxiliaries are from Doosan, Korea and the Turbine-Generator (TG) is from Power Machines, Russia. The plant has a sound safety program with 24x7 video screens in the main safety room to monitor the movement of people and equipment. Safety lapses are monitored in real time and corrective actions implemented as and when the lapses occur. This is a good practice that many US plants could adopt. Meetings with maintenance, operations and planning groups directly involved with the boilers were held to compare "best practice" Targeted Boiler Management (TBM) boiler pressure part process key elements and attributes with processes and practices in daily use at the plant. Several favorable comparisons were observed and cited.

Messrs. Bandopadhyay, Prasad, and Dube CenPEEP left the plant around noon to Delhi because of other commitments. Mr. Pankaj Bharthiya and Mr. Subodh from CenPEEP arrived late in the evening from Delhi to be with the team for the rest of the week.

March 20, 2013 (Wed.): Site walk-downs and group meetings were completed. Then, a working meeting was held to share observations and review our plan & strategy forward with the SIPAT team.

March 21, 2013 (Thurs): Formal exit Meeting at Plant. After completion, we departed to Raipur for a meeting at the NTPC Western Regional office. Mr. S.N. Ganguly, Executive Director, NTPC, Western Region was briefed on the Sipat visit and the exit presentation given to the plant was shared with him. Mr. Ganguly extended full support from NTPC Sipat during the preparation of the two documents and committed to send his staff to the US if necessary. He hosted a dinner at the hotel for the team with his senior staff members.

March 22, 2013 (Fri): We took an early morning flight back to New Delhi and after checking in at the hotel left for the debriefing meeting at USAID. Mr. S. Padmanaban, Monali and other PACE-D project managers attended the meeting. Stephen Storm summarized the accomplishments and the next steps in completing the Heat Rate Improvement reports and the Benchmarking and Best practices documents. Dr Choi, proposed to contact Black & Veatch and some of the coal blending companies in the US as part of the deliverables under the Coal Blending study.

In the meeting, we discussed some of the proposed activities to follow which included the study tour to a US coal blending facility and SC plants, and the white paper on the model plant concept, which

will be focused a coal blending facility conceptual design and demonstration of Targeted Boiler Management (TBM) program at Sipat. One additional topic discussed was the formation of a prospective “*Heat Rate Alliance*” with Indian Industry (including private sector),

3 ‘Close Out’ meeting attended by Dr. Krishan with USAID and CenPEEP

Dr. Krishnan attended a close out meeting on Monday March 25 with USAID and CenPEEP and departed to the US on March 26.

Outcome and Action items from the Close out Meeting

During the close out meeting with Monali and Sanjay in the Nexant office on Monday March 25 (forenoon), followed by a meeting with CENPEEP in the afternoon, the key points that were discussed and agreed to were:

- 1.) The draft reports on the SEB plant visits and walk down conducted by Stephen Storm, LTI and CENPEEP at Chandrapur and Panipat will be sent for review to the individual plants and CENPEEP by end of May. The final report will be issued in June.
- 2.) One workshop (two days) on the SEB activities completed under PACE-D will be convened in Delhi this summer (between June – August). CEA will be contacted to invite other SEBs to the workshop. Stephen Storm and CENPEEP will conduct the workshop. LTI will also travel, if required.
- 3.) A two week study tour to the US will be planned for a group comprising of NTPC (Sipat/CenPEEP/Fuel group), Chandrapur, Panipat, MoP, USAID and Nexant in late July. The focus will be on coal blending and Supercritical Technology. Visits and meetings to coal blending facilities in the U.S. the AEP Turk SC plant and Duke Energy’s Cliffside SC plant will be organized by Nexant with support from Stephen Storm, Ronnie Campbell and Warren Ashton. Logistic support will be provided by Nexant Washington (Lauren Wygonski).
- 4.) A Concept Note on the creation of a Heat Rate Alliance with Indian and US private companies to address efficiency (heat rate) and other technical services for Indian power plants will be drafted by LTI and sent to USAID. During the close out meeting with the US experts at USAID we deliberated on how best to carry forward the momentum created by USAID in India on Efficiency and GHG reduction. Direct USAID technical assistance to SEBS and others may not be available in the future and one way to sustain the work done over the past two decades is to create a Heat Rate Alliance that will help bring US service providers to India to work jointly with the Indian private sector to provide technical services to Indian utilities.
- 5.) The US team will travel to Sipat in mid to late August to present the draft reports on Benchmarking and the Best Practices to NTPC and get their feedback/comments. The final report will be issued in October, NTPC Sipat plant personnel and CENPEEP will be available to come to the US at any time during the preparation of the reports should the need arise. Mr. Ganguly, Executive Director, Western Region, NTPC offered the assistance

during our close out meeting with him in Raipur on March 22.

- 6.) The International conference on SC Technology tentatively scheduled for November 12-13, 2013. The theme will be BROAD and will include presentations from SENIOR US utility experts, EPRI, DOE and OEMs. The Benchmarking and Best Practices reports will be released in the Conference and presentations from the US team, Sipat and CENPEEP will be made as well. LTI/NEXANT tasked to contact potential speakers from US utilities, EPRI and others for the event.
- 7.) Mr. Pankaj Bharthiya desired that a two-day workshop specifically on the technical topics related to SC technology be planned during the visit of the US experts to Sipat in August. ALL NTPC stations will be invited and the topics could be selected from the list provided to Nexant and USAID by NTPC NETRA.
- 8.) USAID and Nexant India will follow up with MoP on the Advanced Materials program for SC plants and schedule the meeting with NTPC and BHEL as requested by MoP. Mr. Padmanaban is leading this effort and the topic was discussed in the last joint meeting at MoP on March 22.

Going forward, USAID's focus in the Clean Coal component will be more on Coal Blending and SC technology and forming a Partnership/Alliance of Indian and US private sectors for sustaining the Efficiency agenda that has been supported for over two decades under the previous USAID projects--GEP, APP and now PACE-D. LTI will provide strategic support to Nexant in these areas as needed. Preparations for the International Conference should commence at least six months prior to the event to get the commitments of senior level people from US utilities and other organizations.

LTI will prepare a draft concept note on the Alliance for USAID's comments.

In summary, the three week visit to India was timely and the US team with excellent support from CENPEEP and NTPC Sipat was available to accomplish the work that was planned.

APPENDICES (*Reference attachments*):

1. Final Program Agendas for Chandrapur, Panipat and Sipat
2. SIPAT Matrices (result of strategy meeting for inclusions requested for coverage within the best practices & benchmarking documents.
3. Group Photos from Chandrapur, Panipat and Sipat
4. Power Point Presentations (total of 15)
 - a. Chandrapur (3)
 - b. Panipat (3)
 - c. SIPAT (8)
 - d. USAID Debrief (1)
5. Participant Sign-up sheets. The surveys completed at the conclusion of each Exit Review Meeting (*delivered to S. Dube / Nexant India office*).

TRIP REPORT 2

TR-130315-LW-IND

Countries visited: India

Dates of Trip: March 1 – March 16, 2013

Travelers' Names: Lauren Wygonski

Purpose of Trip: Clean Coal Training Facilitation and Study Tour Planning

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

March 2, 2013 March 3, 2013: Arrive early in the morning. Fly to Nagpur in the evening.

March 4, 2013: Travel with Clean Coal team to Chandrapur Power Plant and participated in the formal training held by Dr. Krishnan of LTI and Stephen Storm of Stephen Storm, Inc. regarding Heat Rate Improvement. The training took all day and covered power points from NTPC and Stephen Storm, Inc. for Heat Rate Improvement methods and the plan for the week's audit. Met with Chief Engineer of the plant to discuss schedule of program into the summer and hopeful outcomes.

March 5, 2013: Attended site tour of the Chandrapur Power Plant before returning to Nagpur to fly back to Delhi in the evening.

March 6, 2013: Went to Delhi Office to meet with staff and prepare training paperwork for Chandrapur visit and upcoming Panipat visit.

March 7, 2013: At Delhi Office to and coordinated with M&E specialist and DCOP-EE to review training compliance and indicator status regarding training

March 8, 2013: At Delhi Office to prepare final information for Panipat site visit and coordinate with Delhi staff.

March 11, 2013: At Delhi Office to prepare final information for Panipat site visit and discussion with USAID's Monali Hazra regarding future study tour.

March 12, 2013: Drove to Panipat Thermal Plant with COP and Monali Hazra to deliver the training from March 3rd to the Panipat project . Drove back to Delhi in the late evening.

March 13, 2013: Began preparation of the US Study Tour scheduled for July 2013 with inputs from USAID, Stephen Storm, Inc., LTI, and COP Sanjay Dube.

March 14, 2013: Arranged documents from Panipat tour and further arranged documents for upcoming Sipat tour.

March 15, 2013: Prepared concept note for future study tour and reviewed concepts with COP and subcontractors before final drafting. Departed Delhi in the late evening for Washington, DC.

March 16, 2013: Arrived in Washington, DC

Organization/Persons Met & Projects Identified:

Ms. Wygonski met with the following individuals:

1. Monali Zeya Hazra, PACE-D COR and Program Management Specialist, Clean Energy and Environment Office, USAID
2. Sanjay Dube, Chief of Party, Nexant
3. Himanshu Dube, Monitoring and Evaluation (M&E) Specialist, Nexant
4. Vinita Kathuria, Office Manager, Nexant
5. Kavita Kaur, Communication and Outreach Specialist, Nexant
6. Vasudha Lathey, Deputy Chief of Party-Energy Efficiency, Nexant
7. Pritha Sanyal, Secretariat Coordinator, Nexant
19. Elaa Tandon, Project Coordinator, Nexant
20. Stephen Storm, Stephen Storm, Inc.
21. Nhia Ly, Stephen Storm, Inc.
22. Sankar Bandyopadhyay, General Manager (CenPEEP), NTPC Limited (Govt.Of India)
23. A.K.Arora, Dy. General Manager (CenPEEP), NTPC Limited (Govt of India)
24. V.S.Amarnath, CEO, Synterprise Energy Services Pvt Ltd
25. Dr.Radha Krishnan, Technical Advisor, LTI - Leonardo Technologies Inc.

Report Body:

Chandrapur Training

The Chandrapur Training consisted of a day of presentations from Stephen Storm, Inc. and NTPC explaining Heat Rate Improvement measures and hopeful procedures to improve the Chandrapur Efficiency. The subcontractors (LTI, Stephen Storm, Inc., and NTPC) lead the presentations while the Nexant staff (Lauren Wygonski and Sanjay Dube) completed the compliance tasks (i.e. sign in sheets and evaluations). The subcontractor team stayed on-site for one week while the Nexant team left after the second day to return to Delhi. The schedule for Chandrapur included the 1 week

quick-audit of heat rate improvement this March followed by a workshop with all of the selected SEB plants in June to explain findings and solutions. We will engage Chandrapur again for participants to be involved in the upcoming study tour to the U.S.

Panipat Training

The Panipat training was similar in structure and presentations to the Chandrapur Training program the week before. The subcontracting staff remained in Panipat while the Nexant staff (Lauren Wygonski and Sanjay Dube) returned to Delhi after the first day of training. Once again, the Panipat plant will be engaged by Nexant and subcontractors for participation in the upcoming study tour.

U.S. Based Training Planning

After working with USAID, LTI, Stephen Storm, Inc., and NTPC, Ms. Wygonski and COP Sanjay Dube decided on a study tour strategy for July 2013. The study tour will consist of a two week program focused on heat rate improvement and super critical technologies for the Sipat plant. Tentatively scheduled for the last two weeks of July, the tour will be spearheaded by Stephen Storm, Inc. with support in Delhi and Washington DC's Nexant staff for logistics and compliance.

Key Results and Next Steps:

- Complete study tour concept note and finalize site visits
- USAID will select the participants for the study tour
- Commence planning for the November conference

TRIP REPORT
TR-030113-AP&SD – IND

Countries visited: Bangalore

Dates of Trip: February 28 – March 1, 2013

Travelers' Names: Ajit Pandit and Sanjay Dube

***Purpose of Trip:** Introductory meetings with senior officials of Karnataka State Energy sector – Govt. of Karnataka (GOK), Karnataka Renewable Energy Development Agency Ltd (KREDL), Karnataka Electricity Regulatory Commission (KERC), and Bangalore Electricity Supply Co Ltd (BESCOM.)*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

February 28, 2013: Reached Bangalore.

March 1, 2013: Meeting with Chairman of Karnataka Electricity Regulatory Commission (KERC), Bangalore Electricity Supply Company Ltd (BESCOM), Karnataka Renewable Energy Development Agency Ltd (KREDL) and Principal Secretary (Energy) GOK.

Organization/Persons Met & Projects Identified:

USAID India team including S Padmanabhan, Anurag Mishra and Monali Hazra along with PACE-D TA team including Sanjay Dube and Ajit Pandit met the following key stakeholders:

1. M.R. Srinivas Murthy, Chairman, KERK
2. P. Manivannan, Managing Director, BESCOM
3. M. B. Dyaberi, Managing Director, KREDL
4. S.K. Pattanayak, Principle Secretary, (Energy), GOK

Report Body:

Meeting with Chairman KERK - M.R.Srinivas Murthy

- S. Padmanabhan explained the purpose of the visit and mentioned that Karnataka is one of the focal states for extending TA support under PACE-D TA program to state nodal agency/state entities to facilitate their efforts in harnessing renewable energy potential in the state.
- He also highlighted the need for supporting efforts in harnessing grid/off-grid RE potential in the state and how the state could benefit from the PACE-D TA program. He asked for suggestions on how regulatory initiatives can promote off-grid/grid RE programs.
- Mr. Murthy explained that regulator has to strike a balance between objective of promoting RE sources and at the same time ensuring minimal cost implications for the consumers in the state.
- He highlighted that case-to-case based competitive bidding approach for procurement of RE power needs to be explored which could bring in cost optimization in RE procurement. S. Padmanabhan indicated that the PACE-D team TA could develop concept paper and discuss the regulatory approach for the same with KERC team.
- Mr. Murthy also suggested that improving the efficiency at the utility end itself presents huge opportunity however it requires significant system changes in approach including treating SBU head /Divisional head as profit center to achieve remarkable improvements in performance, revenue and collection.

Meeting with Managing Director, BESCO - P. Manivannan

- S. Padmanabhan explained the purpose of the visit and mentioned that Karnataka is one of the focal states for extending TA support under PACE-D TA program to state nodal agency/state entities to facilitate their efforts in harnessing renewable energy potential in the state.
- He also highlighted the need for supporting efforts in harnessing grid/off-grid RE potential in the state and how the state could benefit from the PACE-D TA program.
- Mr. Manivannan welcomed the initiative for TA support under PACE-D program and elaborated on the several initiatives undertaken by BESCO for promotion of grid connected and off-grid RE technologies.
- He suggested to three key things for ensuring success of such kind of long term TA support program: (a) availability of nodal officer/dedicated officer on long term basis (b) capacity building of manpower/engineers/providing them with skill enhancement and motivational tools and linking their performance to completion/participation in certified programs and (c) availability of funds/resources to support such program.
- He also suggested the following areas to considered for part of TA support activities: (i) Fund guidelines for utilization of State Clean Energy Fund and its deployment (ii) DSM and DSM load research related activities (iii) Grid automation study for grid integration of intermittent/variable renewable energy generation (iv) competitive bidding based procurement for RE sources to ensure cost optimization for RE procurement.
- Mr. Padmanabhan indicated that the PACE-D TA team could develop a concept paper on grid integration of RE sources/grid automation study.

Meeting with Managing Director, KREDL, M. B. Dyberi

- S. Padmanabhan explained the purpose of the visit and mentioned that Karnataka is one of the focal states for extending TA support under PACE-D TA program to state nodal agency/state entities to facilitate their efforts in harnessing renewable energy potential in the state.
- He also highlighted the need for supporting efforts in harnessing grid/off-grid RE potential in the state and how the state could benefit from the PACE-D TA program.

- Mr. Dyberi and his team informed about the several initiatives undertaken by KREDL for promotion of grid connected/off-grid RE technologies in the state.
- The KREDL team clarified that at present KREDL does not have a mandate to undertake case-to-case type of competitive bidding for RE. However, he expressed that they are willing to explore the role of project development in the initial stage to facilitate case-to-case type of competitive bidding for RE in future.
- The KREDL finance team clarified the sources of funding, annual budget and current activities related to RE project/site allotment for different RE technologies presently being followed by KREDL.
- S. Padmanabhan explained about the nature of PACE-D TA program and the possible areas of work that could be taken up under program.
- Mr. Dyberi welcomed the initiative for TA support under PACE-D program and agreed to take forward dialogue on possible areas of co-operation/support that PACE-D could participate. The KREDL team also clarified that participation of DISCOM/Utilities is critical for success of program of this nature as KREDL team is short on staff and mainly on deputation from various KEB parent organization.

Meeting with Principle Secretary (Energy), GOK - S.K.Pattanayak

- S. Padmanabhan explained the purpose of the visit and mentioned that Karnataka is one of the focal states for extending TA support under PACE-D TA program to state nodal agency/state entities to facilitate their efforts in harnessing renewable energy potential in the state.
- He also highlighted the need for supporting efforts in harnessing grid/off-grid RE potential in the state and how the state could benefit from the PACE-D TA program.
- Mr. Pattanayak and his team informed about several initiatives undertaken by KREDL for promotion of grid connected/off-grid RE technologies in the state in the recent past and other ongoing programs.
- He welcomed the initiative for TA support under PACE-D program and agreed to take forward dialogue on possible areas of co-operation/support that PACE-D could participate.
- He also emphasized on the need for capacity building on the institutional side and enhancing skillsets through training programs wherein PACE-D TA could provide support.
- He requested for the specific activities/work plan components that PACE-D TA team wish to take up. He also requested for formal communication from MOP/MNRE/USAID for taking up this program forward in Karnataka.
- S. Padmanabhan suggested that the agency should create a dedicated Reform Cell to co-ordinate initiatives under PACE-D TA program which would be useful for such transformational exercise of long duration.
- Mr. Pattanayak agreed to identify nodal officers within few weeks and inform the PACE-D TA team of the same.

TRIP REPORT
TR-022713-AP&MJ – IND

Countries visited: Bhopal

Dates of Trip: February 26 – 27, 2013

Travelers' Names: Ajit Pandit and Masuma Jha

Purpose of Trip: Attend the workshop organized by MP Urja Vikas Nigam Ltd. (MPUVNL) to enhance energy access.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance (TA) Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Madhya Pradesh (MP) is one of the focal states for PACE-D TA's focused capacity building activities. MP has huge potential for deployment of off-grid and decentralized solar PV and thermal systems. MPUVNL recognizes its key role in developing, deploying and promoting these technologies in the state. The nodal agency has estimated a target potential for deployment of nearly 100 MW off-grid solar systems under this programme through the network of channel partners in the initial phase of this program. To further this cause, MPUVNL organized a one day workshop to deliberate on related issues with MNRE channel partners issue and had invited the PACE-D TA team to participate in the same.

Daily Activities

February 26, 2013: Reached Bhopal.

February 27, 2013: Participated in the workshop organized by MPUVNL for MNRE Channel Partners for enhancing energy access across Madhya Pradesh; met with additional MD, MPUVNL to discuss work plan activities under PACE-D TA program and seek confirmation on counter-part nodal officer for the PACE-D TA Program; and left for Delhi in the evening.

Organization/Persons Met & Projects Identified:

USAID India and PACE-D TA team including Anurag Mishra, Ajit Pandit and Masuma Jha met with several key stakeholders/channel partners during the workshop and subsequently also met following key personnel from MPUVNL during this Bhopal visit:

- o M. Sibi Chakravarthy, IAS, Addl MD, MPUVNL
- o Shrikant Deshmukh, Executive Engineer, MPUVNL

Report Body:

One Day Workshop Proceedings – Enhancing Energy Access with MNRE Channel Partners

- o Invitation to channel partners to operate in M.P. where the business potential is high. An open canvas with lot of buyers is available from institutional, industrial, commercial and domestic sector for various renewable energy equipment's like SPV Power Plants, SPV Street Lights, SPV Home Lights, SPV Lanterns, SPV pumps, Solar Water Heating systems, Solar Cookers etc.
- o Identification of channel partners who wish to participate in programme implementation in M.P.
- o Programme wise segregation of channel partners based on SPV, Solar Thermal, Biomass and wind hybrid programmes.
- o Induction of market mode of implementation of programmes in the state through channel partners.
- o Feedback from the channel partners on market mode implementation of the programmes in other states.
- o Suggestions from channel partners to incorporate the best aspects of market mode implementations of the other states.
- o Assessment of overall aggregate system capacity that can be deployed through channel partners in the state within the allocations allotted to them by MNRE directly.
- o Facilitation to channel partners for effecting the implementation through a network of more than 100 Akshay Urja Shops already developed by MPUVNL in the state.
- o Facilitation to channel partners from rural banks, co-operative banks, lead banks for establishing a mechanism for easy financing for the systems.
- o Suggestions for effecting online purchase of Renewable energy equipments through market mode implementation.
- Following key personnel from GoMP and MPUVNL participated in the workshop deliberation
 - o Ajay Bishnoi, Honorable Cabinet Minister, New & Renewable Energy, Govt. of M.P.
 - o Vijendra Singh Sisodiya, Chairman, M.P. Urja Vikas Nigam Ltd., Bhopal
 - o S. R. Mohanty, IAS, Principle Secretary, Department of New & Renewable Energy, Govt. of M.P. & Managing Director M.P. Urja Vikas Nigam Ltd.
 - o M. Sibi Chakravarthy, IAS, Additional Managing Director, M.P. Urja Vikas Nigam Ltd.
 - o Shrikant Deshmukh, Executive Engineer, MPUVNL

Meeting with Addl MD, MP Urja Vikas Nigam Ltd (MPUVNL)- M. Sibi Chakkravarthy

- Subsequent to the workshop, a meeting was held at MPUVNL office to discuss work plan activities under PACE-D TA program and to seek confirmation on counter-part nodal officer for the PACE-D TA Program.
- M. Chakkravarthy requested for possible areas for TA support and work plan for the same and also suggested that Shirkant Deshmukh will be the point of contact for the TA program and coordinate these activities. He further requested for terms of MOU in this matter.
- Anurag Mishra agreed to revert with requisite inputs and made the following observations on the workshop deliberations and possible areas /priorities that MPUVNL could take up:
 - o **Quality of product:** It would be a big task for a state agency to certify products given that it would require setting up standards, grading systems, testing infrastructure and trained manpower. This should be taken up at the National level. However the state agency can set minimum standards on the key performance parameters of the technology/product, so that low grade products do not get state/MNRE subsidies.
 - o **Availability of financing:** Although a lot of participants raised the need of additional government subsidies, they also mentioned the need for financial products at the point of sale. MPUVNL can work with leading RRBs, Banks and other financial institutions to design loan products and make them available for consumer through Akshay Urja Shops and other outlets.
 - o **Cluster approach:** Concentrating efforts via a stepped cluster approach is a good strategy to create a sizeable market for channel partners and also establish sustainable infrastructure for maintenance services. It is best to start with some focus districts/locations.
 - o **Commercial opportunities:** Identify opportunities in the commercial and industrial sector where off-grid technologies can be installed at scale with limited government support. This will be a much larger market for the channel partners. In most cases support would be required to create awareness among users, make quality products available within reach, technical advice in terms of integrating them with the existing systems, and mandating them through government orders.
 - o **Image or perception of the state agencies:** The image of a SNA plays a key role in attracting business. Examples of Gujarat, Tamil Nadu and Chhattisgarh were discussed. The state agency should be seen as progressive, open to new innovative ideas, professional, respond quickly and facilitate clearances, etc.
 - o **Single window clearance:** This was mentioned by a few participants, but looks more relevant for large grid connected projects.
 - o **Facilitate local industry:** This was the only point where there was no consensus as participants had diverse views on preference to the local industry (later clarified by Mr. Mohanty that the market in the state is quite nascent and should be open for all). However, most of the participants agreed on supporting new clean energy entrepreneurs.

- o **Awareness of users:** State agencies can open up market opportunities by creating awareness and establishing tools to help user pick the right product.
- o **Faster approval and disbursement of subsidy:** Less paper work, transparency and faster disbursement of subsidies help in better deployment. It also allows channel partners to focus their MNRE quota in that specific state.
- o **Rooftop Solar projects:** Two key challenges: lack of strong political will to enforce with DISCOMs and technical issues such as metering, connectivity with the low voltage grid, grid safety, etc.

TRIP REPORT

TR 240113 HD

Countries visited: Thailand

Dates of Trip: Jan 22-24, 2013

Travelers' Names: Himanshu Dube

Purpose of Trip: GCC Training on M&E

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

Jan 23, 2013: Participation in GCC M&E Training at RDMA, Bangkok

Organization/Persons Met & Projects Identified

USAID employees and contractor staff from the Asian region participated in the training. Lead Trainers included:

- Ashley Allen, Climate Change Specialist, USAID
- Todd Johnson, Senior Manager, Environment & Natural Resources, Engility

Report Body:

The training was conducted with the participants divided by GCC pillar- Clean Energy, Landscapes and Adaptation. HD was part of the table that seated USAID employees responsible for CE from Asian countries including Mr. Anurag Mishra, Senior CE Specialist, USAID/India. He actively participated in the training and various discussions.

As part of the training, 8 exercises were conducted through the different modules. This was followed by discussions on possible solutions in each exercise. These exercises focused on the following amongst others

- Planning M&R
- Indicator development
- Communication

During the training the drafts of the following were shared:

- Clean energy results framework
- Standard Climate Change Indicators
- Custom Climate Change Indicators

It was informed the draft framework will be finalized and formally communicated in the coming months.

Discussions were also held on trainings being outputs or inputs. It was suggested that each project appropriately considers them.

Similarly the issue of attribution especially in context of a capacity building project was also discussed. The difficulty in attribution was recognized and accepted.

The training emphasized the need for following and/or referring to ADS 203 for all M&E issues. The agenda for the training is attached.

Key Results and Next Steps

- HD to incorporate learning in the PACE-D M&E Plan

TRIP REPORT
TR-020413-DE-DEL

Countries visited: Delhi, India

Dates of Trip: January 12-19, 2013

Travelers' Names: Dick Edwards

Purpose of Trip: Meet PACE-D TA team and subcontractors to get detailed update on all CLINS, interview DCOP-RE candidates, and discuss contractual issues with USAID.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USAID-funded five year program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments: one on Energy Efficiency (EE) technology commercialization and innovation, and the other on Renewable Energy (RE) technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes 13 subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

January 12: DE travelled to Delhi, India.

January 14: DE had a team meeting with PACE-D TA staff to get an update on the progress made on different activities. Also worked on the quarterly progress report (update on tasks across all CLINS for the period October – December 2012).

January 15: DE reviewed the final draft of the quarterly progress report. Also participated in PACE-D TA Meeting with Bureau of Energy Efficiency to discuss ECBC and HVAC related activities.

January 16: DE had a meeting with two subcontractors – ABPS and EDS - to discuss PACE-D TA project activities.

Also held interview with DCOP-RE candidate Ronnie Khanna.

January 17: DE worked on strategy note for capacity building of local partners.

Also met with USAID/India to discuss contractual issues and overall project activities.

Organization/Persons Met & Projects Identified

The key stakeholders met during this visit included:

1. **Bureau of Energy Efficiency**

Sanjay Seth, Energy Economist

Girja Shankar, Assistant, Energy Economist

2. USAID/India

- S. Padmanaban, Senior Energy Advisor
- Anurag Mishra, CLEEO Renewable Energy Specialist
- Arun Seghal, A&A Specialist

3. ABPS Infrastructure Advisor

- Ajit Pandit, Partner
- Balwant Joshi, Partner

4. Environmental Design Solutions (DES)

- Tanmay Tathagat, Director

Report Body:

- ABPS had questions regarding their invoicing and DE updated them on the process and requirements.
- Each team member provided a detailed update on his/her area of activity including M&E, Communications, Clean Coal, Energy Efficiency and Renewable Energy. This discussion was helpful to bring everyone on the same page as well review the Quarterly Progress Report.
- The Quarterly Progress report included an update on all tasks for the period October-December 2012 and also provided the key activities for the next quarter.
- As part of USAID's FORWARD initiative, the PACE-D TA team has to build the capacity of two local subcontractors. Detailed discussions were held with the COP and other team members on the formal training and informal mentoring provided so far and the topics to be covered in the remaining months of Year 1.
- Discussions were held with Arun Seghal in USAID/India on the status of the salary waiver request, and to seek guidance on contract modifications given several changes in the original scope of work.

Next Steps

- Submit request to USAID for final selection and approval of the DCOP-RE finalist interviewed during Mr. Edwards' visit.
- Review first draft of capacity building note and finalize it.

TRIP REPORT
TR-130113-AW-DEL

Countries visited: India

Dates of Trip: January 6 – 12, 2013

Travelers' Names: Andrew White

Purpose of Trip: Meeting with subcontractors and other stakeholders to clarify invoices procedures and required supporting documentation.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

January 6, 2013: Preparatory work for meetings.

January 7, 2013: Meet COP and local staff to discuss ongoing finance and invoicing issues and to clarify requirements going forward.

January 8, 2013: Meeting with EVI and Mercados in their offices to discuss invoicing issues.

January 9, 2013: Meeting with DESL in their office to discuss invoicing issues and a conference call with CETC to discuss invoicing issues.

January 10, 2013: Meeting with EDS in PACE-D TA office to discuss invoicing issues.

January 11, 2013: Debrief meeting with USAID followed by work on finance related input for PACE-D Quarterly report and a meeting with ABPS to discuss invoicing issues.

Organization/Persons Met & Projects Identified:

Andrew White met with the following individuals:

1. Monali Zeya Hazra, PACE-D TA COR and Program Management Specialist, Clean Energy and Environment Office, USAID
2. EVI Management and Finance Staff
3. Mercados Management and Finance Staff
4. DESL Management and Finance Staff
5. CETC Management and Finance Staff (Conference Call)
6. EDS Management and Finance Staff
7. ABPS Management and Finance Staff

Report Body:

Orientation meeting with PACE-D TA Staff

Mr. White began his trip with staff meetings to determine local capabilities, discuss uniform financial procedures and enhance capabilities where assistance was needed.

Subcontractor Training

Met with subcontractor individually to discuss and resolve any issues in invoicing that have delayed Nexant's ability to submit an invoice to USAID.

USAID Meeting

Debriefed the results of our meetings with Monali and Sanjay Dube and discussed required reporting needs and supplemental supporting schedules with Monali.

Key Results and Next Steps:

- Review prior invoices and collect necessary supporting documentation.
- Receive and verify proposed procedures on January invoicing for all subcontractors.
- Submit completed quarterly financial reporting.

TRIP REPORT
TR-121712-SD-KK-DL-BGLR

Countries/Cities visited: Bangalore, India

Dates of Trip: December 16-17, 2012

Travelers' Names: Sanjay Dube (SD), Kavita Kaur (KK) and Dilip Limaye (DL)

Purpose of Trip: Meet with Canara Bank, Karnataka Electricity Regulatory Commission (KERC) and Karnataka Renewable Energy Development Limited (KREDL) to understand the key barriers to RE and EE financing; and explore linkages with PACE-D.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USAID-funded five year program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments: one on Energy Efficiency (EE) technology commercialization and innovation, and the other on Renewable Energy (RE) technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes 13 subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

- o December 16: SD, KK and DL travelled to Bangalore late night.
- o December 17: SD, KK and DL held meetings with Canara Bank, KERC and KREDL to discuss PACE-D finance related activities. The team travelled back to Delhi late evening.

Organization/Persons Met & Projects Identified

The key stakeholders we met during this visit included:

•Canara Bank

Raminder Pal Singh, Senior Manager, Project Advisory Group

•Karnataka Electricity Regulatory Commission

M.R.Sreenivasa Murthy, Chairman

•Karnataka Renewable Energy Development Limited

Kapil Mohan, Managing Director

Report Body:

Key discussion points of meeting with Canara Bank – Raminder Pal Singh

- Canara Bank has invested in wind and solar PV projects however they did not want to divulge their total exposure to RE/EE. They are wary of solar thermal technology since it is not commercially viable yet. The bank is currently appraising a 10MW biomass project in Gujarat.
- The financial health of State Electricity Boards (SEBs) is the biggest bottleneck. Canara Bank is comfortable with states like Gujarat and Rajasthan but dealing with PPAs in Tamil Nadu is a tricky issue. Many SEBs have high T&D as well as commercial losses and poor financial health which makes the banks wary of PPAs.
- The bank looks at the project viability for larger loans, however for smaller projects they look at the individual/promoter's credit worthiness. It is difficult to make credit assessment of smaller projects – it also entails high due diligence costs.
- Canara Bank has an equity arm but that provides funds for growth stage.
- The bank uses P90 for loan structuring.
- Raminder has referred PACE-D to India Infrastructure Finance Company Ltd. (IIFCL) to discuss off-grid projects.

Key discussion points of meeting with KERC – Mr. Murthy

- SD provided an overview of PACE-D and how Karnataka could be one of the states selected for capacity building for RE/EE. Mr. Murthy was pleased to know this and offered his support for PACE-D activities in Karnataka.
- Mr. Murthy provided details of the Green Energy Fund in Karnataka which has got in-principle approval by KERC and now has to be formally approved and announced by the state government. The fund will be raised partly via tariff and state government support. KERC expects to collect Rs.50 crores per year by charging one paisa on every unit of electricity consumed. The state government will match this amount - in total, the fund will have Rs.100 cores.
 - The fund will be primarily used to:
 - o promote RE off-grid in remote areas;
 - o assist local government organizations for community lighting;
 - o assist micro entrepreneurs that work on off-grid RE projects;
 - o help in research and higher studies on how to use RE in rural areas;
 - o promote rooftop solar in urban areas; and
 - o promote solar water pumps.
 - The fund will be located in KREDL which will have a five-member committee that will provide loan and disbursement advice. The committee will have a mix of people including finance and technology experts.

- Agricultural DSM is a big concern for Karnataka. There are nearly 2m pumps in the state-to replace them will require a lot of money. KERC chairman would like to see a good ESCO model – particularly get big firms like L&T and Schneider Electric involved in this.
- PACE-D can help KERC by bringing in a proven strategy for utilities to cut their T&D losses. KERC is ready to fund a study to determine the weaknesses in the grid and identify the diagnosis and treatment to fix this.

Key discussion points of meeting with KREDL – Kepi Mohan

- SD and DL shared the Green Energy Fund details with KREDL. Mr. Mohan said that collection of fund is never a problem – it is the allocation and distribution which becomes a bottleneck. They also discussed the related problems with the National Clean Energy Fund.
- Mr. Mohan mentioned that we should consider solar thermal projects for Rajasthan’s canals. However the technology is expensive (about Rs.40 crores per MW) so we need to have some grant mechanism for it.
- 90% of the village electrification is done via capital subsidy. KREDL is exploring solar/wind hybrid projects and also focusing on grid connected solar rooftop.
- Biggest barrier to RE projects in remote areas is sub stations and net metering.
- According to him, structured finance is available for RE projects but not so for EE due to the perceived risks. Mr. Mohan mentioned that PACE-D can help by developing up with an underwriting mechanism for financing EE projects.
- KREDL requires manpower: their staff largely includes distribution engineers and they want people with finance and technology skills. PACE-D can help with capacity building in this space.
- Mr. Mohan is particularly keen on repowering of wind projects in the state and would like PACE-D to focus on the financing mechanism for repowering projects. According to KREDL, there are no technology bottlenecks for repowering. They have done a study based on inputs from the industry – however there is no financing mechanism to make this happen.
- C-STEP is mapping the wind potential in Karnataka. NREL did a similar study earlier however KREDL would like more granular data using GIS/remote sensing technology.

Key Results & Next Steps

- DL to reach out to IIFCL to get inputs on barriers to financing of off-grid projects.
- PACE-D TA team to identify any successful strategy adopted by Indian utilities to cut their T&D losses and provide information to KERC.
- PACE-D TA team will also speak to banks to get their support for seed capital based on the Green Energy Fund.
- PACE-D TA team to explore financing mechanism for wind repowering projects.

TRIP REPORT
TR-121412-SD-KK-DL - MUM

Countries/Cities visited: Mumbai, India

Dates of Trip: December 12-14, 2012

Travelers' Names: Sanjay Dube (SD), Kavita Kaur (KK), Dilip Limaye (DL) and Monali Hazra (USAID)

Purpose of Trip: Meet with finance stakeholders to understand the key barriers to RE and EE financing; and explore linkages with PACE-D.

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USAID-funded five year program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments: one on Energy Efficiency (EE) technology commercialization and innovation, and the other on Renewable Energy (RE) technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes 13 subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

- o **December 12:** SD, KK, SD and DL travelled to Mumbai late night.
- o **December 13:** SD, KK and DL held meetings with SBI Caps, Indian Bank Association, Reliance Power and ICICI to discuss PACE-D finance related activities.
- o **December 14:** SD, KK and DL held meetings with HSBC and IDBI for PACE-D finance related activities. The team travelled back to Delhi late evening.

Organization/Persons Met & Projects Identified

The key stakeholders we met during this visit included:

1. SBI Capital Markets

- Rajat Misra, Senior Vice President – Project Advisory & Structured Finance
- Mitheel Mody, Assistant Vice President – Project Advisory & Structured Finance

2. Indian Banks Association

- Sangeet Shukla, Senior Advisor

3. Reliance Power Limited

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- Dheeraj Jhavar, General Manager – Project Finance
 - Alope Dasgupta, Senior Vice President – Project Finance
- 4. ICICI Bank**
- Jaishigh Dhumal, Chief Manager, Technology Finance Group
 - Chandrakant Ingole, Manager, Technology Finance Group
- 5. HSBC**
- Jayesh S. Modi, Head, Inclusive Banking Unit
 - Shiv Anand Lal, Senior Vice President & Head, Corporate Propositions
 - Vandana Bansali, Vice President, Product Development, Inclusive Banking Unit
- 6. IDBI Bank**
- J. Vidya Shankar, General Manager - Syndication, Structuring & Advisory
 - Balwant D. Save, Deputy General Manager - Carbon credit & Environment Funding

Report Body:

Key discussion points of meeting with SBI Caps – Rajat Mishra & Mitheel Mody

- SBI Caps is the investment banking arm of State Bank of India. They have invested in wind, solar and small hydro.
- Wind has completed the entire financing cycle and structured payments have come in. Bankers and project developers have learnt the cycle and are comfortable with it.
- Land acquisition is a bottleneck for wind power projects.
- The expected PFL of wind projects is 22% but none of the projects have achieved it.
- EE projects are solely funded on balance sheet and not on cash flow accruals. SBI can do project finance for a large EE project but hasn't got a proposal so far.
- SBI Caps does not calculate RECs during investment analysis. The financing is done on basis of FiTs. They do not finance based on CDM returns without off-taker agreements with multi-national agencies. One point of discussion was if we can have FiT for EE.
- Due diligence is required for HVAC and other EE projects. The bank relies on lender's engineering services from US firms to check the different technologies including RE and EE.
- SBI Caps has not invested in solar thermal due to technology issues. They would like USAID/PACE-D to focus on technology off-taker risk and not commercial risk.
- SBI Caps would also like PACE-D to focus on capacity building of entrepreneurs. Rajat shared his experience with solar project developers at a recent workshop – very few had knowledge of the technology or the risks involved.

Key discussion points of meeting with IBA – Sangeet Shukla

- IBA does not see any specific barriers to clean energy finance. Their principle is that if RBI issues a circular regarding priority sector lending or clean energy finance they will follow it.
- According to IBA, 75% of the banks' risk is guaranteed so it is not a problem.
- Small ticket projects, particularly EE and off grid RE, are difficult to finance. Small firms are not ready to mortgage their assets (for EE loans).
- Indian banks require balance sheet to fund EE projects but RBI guidelines do not all this.
- Many industrial clients are not even aware of EE opportunities.
- Dilip discussed the EBRD EE finance scheme but IBA said that it cannot be considered by them as they are commercial banks.
- Indian banks are not against clean energy finance but RBI and MNRE have to push for it and issue related guidelines.
- IBA is more of an industry association and not does not get involve in policy or regulatory interventions.
- They are interested to know more about capacity building component of PACE-D.

Key discussion points of meeting with Reliance Power – Dheeraj Jhawar and Alope Dasgupta

- This meeting was to get the perspective of project developers. Reliance Power has 45MW of wind and 40 MW of solar. They are also setting up a 100MW CSP under NVVN.
- Reliance Power has set up two solar projects in Rajasthan. They have signed a PPA with their sister firm Reliance Infrastructure as this gives them the comfort level for payment security compared to signing PPAs with utilities.
- Reliance Power has an existing relationship with EXIM which has given foreign currency loans for their solar projects. The wind project was financed by local banks.
- The firm has also bid for a CSP project – the NVVN structure protects them as NVVN deals with the SEBs and DISCOMs so it becomes their headache to get payments on time.
- NVVN has got USD 100m as direct budget allocation.
- The firm believes that the solar sector in Rajasthan and Gujarat will evolve in 2/3 years.
- US EXIM should consider relaxed norms like OPIC.
- Grid connectivity and wheeling charges are a big issue and Reliance Power would like to get regulatory intervention for this. Other bottlenecks are slow approvals and lack of NVVN mechanism at state level.
- Bids for solar PV below INR 9 are not sustainable.

Key discussion points of meeting with ICICI – Jaisingh Dhumal and Chandrakant Ingole

- Jaisingh recently met with Joint Secretary, Finance who told him that a committee has been formed to review the reflow funds issue and use it for social research or support for first generation entrepreneurs.
- ICICI has used different mechanisms like rupee and condition loans and have 100% recovery.
- Jaisingh feels that financing projects are successful if the bank has a regular monitoring process process for them.
- ICICI gets calls from other banks for tips on doing similar innovative financing.
- Jaisingh feels that training is required for project appraisal.
- Bankers do not have risk mindset – if someone has such a mindset it's not necessary that others on the higher hierarchy level will have it so innovative initiatives get stopped.
- ICICI's former head Nachiket wrote to RBI in 1006 stating how ICICI's efforts to mitigate GHG have been viable.
- ICICI has got a USD 100 m line of credit from ADB – 70% of this will be used for RE and the rest 30% for EE.
- ICICI would like a backup mechanism such as performance guarantee as this will increase the comfort of banks.

Key discussion points of meeting with HSBC – Jayesh Modi & team

- The banks has directive to work on renewable energy. The head office has selected countries where they will focus on RE financing and India is one of them. HSBC India will develop the approach for RE in 2013.
- HSBC has a tie up with the Hong Kong-based Business Environment Council for due diligence and technology assessment for RE/EE projects that come up for financing consideration. The credit evaluation is done by HSBC.
- HSBC has the challenge of understanding new technologies as they do not have sector specific experts.
- Jayesh feels it is important for PACE-D to talk to Dr Chakarborty in RBI for financing policies and priority lending for RE/EE projects.
- Jayesh has asked us to talk to Indian Institute of Banking & Finance for capacity building and training component of finance stakeholders under PACE-D.

Key discussion points of meeting with IDBI – Vidvashankar & Balwant D. Save

- IDBI has INR 3,000 crore exposure to RE of which nearly INR1,000 crore is for solar PV.
- Key barriers include lack of long term policy, volatility of solar prices and lack of

enforcements of PPAs and RECs.

- EE projects are small and spread over a large area so it becomes difficult to evaluate them. We should look at cluster financing.
- According to IDBI, the PAT scheme will work only if there is enforcement mechanism.
- Home solar systems have now been classified as priority sector. The SME division of IDBI will be in charge of this when they receive a circular from RBI.
- IDBI is interested in WHU and would like to get updates about PACE-D activities in this sector.

Key Results & Next Steps

- HSBC will connect PACE-D finance team to Business Environment Council to understand their model of technology assessment and see if there can be replicated for India.
- Dilip to send his EBRD contacts to HSBC as they are interested to know more about their model of giving loans by including an EE components.
- Dilip to send IIP report and its templates to ICICI.
- Dilip and KK to work on a brochure highlighting case studies on ICICI's innovative financing for clean energy.
- PACE-D TA team to write a mail to IBA head regarding overview of clean energy finance activities, proposed workshops and explore linkages.

TRIP REPORT
TR-120712-VL - AHM

Countries / Cities visited: Ahmedabad, India

Dates of Trip: December 6-7, 2012

Travelers' Names: Vasudha Lathey (VL)

Purpose of Trip:

- *Attend the Gujarat Building Energy Efficiency Workshop organized by the Natural Resources Defense Council (NRDC) and discuss EE opportunities and barriers in the real estate sector*
- *Visit the Centre for Advanced Research in Building Science & Energy (CARBSE) and the Centre for Sustainable Environment and Energy (CSEE) at the Center for Environment Planning and Technology (CEPT) University and discuss collaboration with the PACE-D Technical Assistance Contract*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance (TA) Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation. The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Organization/Persons Met & Projects Identified

- Bimal Patel (Ph.D), President, CEPT University
- Rajan Rawal- Head of UG Program, Faculty of Design & Executive Director- CABRSE, CEPT University
- Sanjoygita Manu - Senior Research Associate (Energy Efficiency) & Assistant Professor, Faculty of Design, CABRSE, CEPT University
- Bhaskar Deol: India Representative, NRDC
- Radhika Khosla (Ph.D.): Staff Scientist, NRDC
- Anjali Jaiswal: Sr. Attorney & Director, India Initiative, NRDC
- Pavan Bakeri, Bakeri Developers
- Shaan Jhaveri, Amaya Properties
- K Balakrishnan, UTC Carrier

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Daily Activities

- o VL traveled from Delhi to Ahmedabad and visited to the Centre for Advanced Research in Building Science & Energy (CARBSE) at the Center for Environment Planning and Technology (CEPT) University on 6th November 2012
- o VL participated in the Gujarat Building Energy Efficiency Workshop organized by the Natural Resources Defense Council (NRDC) and met with building developers
- o VL travelled back to Delhi on the 7th November 2012

Report Body:

CEPT University Visit

- o VL met with Rajan Rawal (RR) and Sanyogita Manu (SM), who head the CARBSE and also the lead investigators for research under the Partnership to Advance Clean Energy- Research (PACE-R) Project
- o RR and SM briefed VL at research activities underway at CARBSE and planned under the PACE-R projects.
- o CARBSE current activities include:-
 - Development of an Adaptive Thermal Comfort Standard for India – This is a project jointly funded by the CSEE. The work focusses on conducting rigorous field studies of commercial buildings to examine the temperatures at which most Indians feel comfortable. The findings will help define the design parameters for Heating, Ventilation and Air-Conditioning (HVAC) systems that are appropriate for India’s climatic and cultural context.
 - Testing and evaluation of the thermo-physical-optical and energy performance of building materials and components. The testing lab provides support for implementation of Energy Conservation Building Code (ECBC) in building sector in India and assists the Indian industry in establishing key testing facilities to carry out fair and accurate measurements of building product performance.
 - Research, design and development of Net Zero Energy Building (NZEB’s). VL also visited the site for a NZEB building that is currently under construction at the CEPT campus
 - CARBSE is also involved in development of curriculum for architecture and engineering institutes, conducting the ‘Train the Trainers’ program, post occupancy evaluation of building for their energy and thermal comfort performance, solar city planning and development of teaching tools
- o PACE-R activities include :
 - Computer simulation and modeling, advanced Heating, Ventilation and Air-Conditioning (HVAC), Smart Grids, passive heating and cooling strategies and building envelope

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- o VL invited RR to attend the PACE-D ECBC Expert Stakeholder Workshop on the 20th December in New Delhi and RR confirmed participation.

Gujarat Building Energy Efficiency Workshop

- NRDC team made presentations on the expected growth of the buildings sector in India and its implications for the energy sector. The presentations identified the immense opportunity for energy savings potential through energy efficiency (EE) initiatives and stressed the need to enforce the Energy Conservation Building Code (ECBC) in commercial buildings.
- The NRDC facilitated a discussion among participating real estate developers to identify barriers for energy efficiency in the buildings sector. The following were identified as key implementation barriers for EE measures
 - o Lack of data to demonstrate the energy and cost savings associated with EE investments- i.e. Need for post occupancy evaluations and energy performance data collection through an independent third party
 - o Lack of awareness among the building's community about EE technologies/products/ and the associated saving opportunities by implementing EE measures
 - o Lack of technical capacity in the building's sector to design, develop and construct EE buildings
 - o Lack of financing mechanisms to offset the potential higher capital cost for EE buildings

Key Results and Next Steps

- VL and RR will work together to identify potential areas of collaboration with the PACE- D project. Some immediate areas of collaboration include the following:-
 - o ECBC implementation – state of affairs document to identify the status of implementation in various states, share barriers/success stories, identify collaboration partners working towards ECBC implementation etc.
 - o Develop a framework for building trade workers capacity building and training to design, develop and construct EE buildings.
 - o Net Zero Buildings–CEPT can share our experience / expertise to PACE-D partners and pilots.PACE-D can help create awareness and interest about the CEPT NZEB and facilitate connections with industry partnerships for funding support.
- VL and Bhaskar Deol will reconnect in Delhi to organize a similar building developers workshop under the PACE-D TA Contract.
- Pavan Bakeri from the Bakeri Developers and Shaan Jhaveri from Amaya Properties pledged monetary and other support for a buildings post occupancy study conducted by CEPT University which will yield energy performance data for wide scale circulation among the buildings sector in Gujarat.

TRIP REPORT
TR-120712-LW - DEL

Countries / Cities visited: New Delhi, India
Dates of Trip: December 3- 7, December, 2012
Travelers' Names: Lauren Wygonski (LW)

Purpose of Trip: Train and revise the PACE-D specific Participant Training Manual

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE, and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc. Over the course of the five years, more than 60 participant training activities will take place both in India and the U.S. Both Nexant and subcontractors are responsible for participant training activities under the contract.

Daily Activities

LW traveled to New Delhi to train the USAID PACE-D technical assistance contract team regarding USAID participant training required procedures. The agenda went as follows:

•**December 03, 2012:** LW addressed the Nexant administrative staff (Pritha Sanyal, Vinita Kathuria, Amar Nath Yadav, and Elaa Tandon) regarding the updates to the USAID ADS 253 and 253. Given the past experience of the administrative team with in-country, third country, and U.S. based training activities with USAID, the administrative staff session focused more on delegating responsibilities for future trainings and reviewing methods of reporting and monitoring.

•**December 04, 2012:** LW met with the rest of the Nexant staff (Sanjay Dube, Vasudha Lathey, Kavita Kaur, Himanshu Dube) to explain the entire participant training process and obligations under the contract. The group determined that Nexant would be responsible for all administrative support and planning of the first year of the project while enabling the subcontractors to focus only on technical details and training their administrative groups. This will create the "USAID/PACE-D technical assistance contract" brand with the goal of consistent participant trainings throughout the

project.

•**December 05, 2012:** LW met with the subcontractors (CETC, ABPS, EVI, EDS, DSL, AF-Mercados) to train on the participant training regimen for the PACE-D timeline. The presentation is attached to this report as Attachment A. USAID/India attended the later half of the subcontractor training and delivered presentations regarding financial reporting obligations and visa requirements for U.S. based participant training activities.

•**December 06, 2012:** LW further trained members of the EVI team regarding participant training protocol and procedures. EVI has three upcoming training activities throughout India and requires assistance from Nexant regarding per diem calculation and venue confirmation. LW introduced EVI to the responsible Nexant India team for trainings.

•**December 07, 2012:** LW sat with Sanjay Dube and Monali Zeya Hazra, USAID India, to debrief Ms. Zeya Hazra regarding the week's participant training activities. LW and Ms. Zeya Hazra agreed to review the final Participant Training Procedure's manual to ensure USAID compliance and approval.

Organization/Persons Met & Projects Identified

LW met with the Nexant-India office team, subcontractors under PACE-D (CETC, ABPS, EVI, EDS, DSL, AF-Mercados), and the USAID team. The meetings are detailed under the Daily Activities Section.

Key Results and Next Steps

- LW to finish preparing the final Nexant Participant Training Practitioner's Manual with comments from USAID
- The manual will be added to the already existing "PACE-D Procedure's Manual" as an addendum.
- LW will work closely with the Nexant-India office to maintain procedures and records related to all participant training activities under the PACE-D Technical Assistance Contract.

Attachments

- December 5th Presentation to the subcontractor audience
- Participant Training Manual

TRIP REPORT
TR-111012-BG-IND

Countries / Cities visited: New Delhi, India

Dates of Trip: 4th November – 10th November, 2012

Travelers' Names: Brian Gould

Purpose of Trip: Orientation of Project Procedures for PACE-D TA Staff and Subcontractors

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

November 04, 2012: Arrive early in the morning. Spend day working from hotel.

November 05, 2012: Orientation meeting with PACE-D staff at office. Make additional preparations for Subcontractor Training.

November 06, 2012: Conduct training of procedures for major local subcontractors ABPS and EVI. Attend USAID training of financial and contractual procedures.

November 07, 2012: Go over Knowledge Tree and make proposed changes to records management system with project Communication and Outreach Specialist. Make revisions to Project Procedures Manual.

November 08, 2012: Knowledge Tree/Records Management and Project Procedures training for PACE-D staff.

November 09, 2012: Debrief at USAID. Make any needed revisions towards procedures based on feedback.

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Organization/Persons Met & Projects Identified:

Brian Gould met with the following individuals:

1. Monali Zeya Hazra, PACE-D COR and Program Management Specialist, Clean Energy and Environment Office, USAID
2. Anurag Mishra, Project Management Specialist, Clean Energy and Environment Office, USAID
3. Jeremy Gustafson, Director, Clean Energy and Environment Office, USAID
4. Anish Pasrija, Deputy Manager, ABPS Infrastructure Advisory Pvt. Ltd
5. Sanjay Mande, General Manager, ABPS Infrastructure Advisory Pvt. Ltd
6. Ajit Pandit, Director, ABPS Infrastructure Advisory Pvt. Ltd
7. Sunil Sharma, Senior Analyst, ABPS Infrastructure Advisory Pvt. Ltd
8. Siddharth Chatpalliwar, Consultant, EVI
9. Alope Barnwal, Principal Consultant, EVI
10. Additional EVI Staff
11. Ram Berry Senior Advisor, Nexant
12. Himanshu Dube, Monitoring and Evaluation (M&E) Specialist, Nexant
13. Sanjay Dube, Chief of Party, Nexant
14. Vinita Kathuria, Office Manager, Nexant
15. Kavita Kaur, Communication and Outreach Specialist, Nexant
16. Vasudha Lathey, Deputy Chief of Party-Energy Efficiency, Nexant
17. Pritha Sanyal, Secretariat Coordinator, Nexant
18. Elaa Tandon, Project Co-ordinator, Nexant
19. USAID Reporting and Finance Training Staff

Report Body:

Orientation meeting with PACE-D staff

Mr. Gould met with all PACE-D staff getting a feel for their operations and the status of individual project tasks. Noted how standardization and streamlining procedures could help the tasks flow more efficiently.

Sub-contractor Training

Prepared a power point and presented to major PACE-D subcontracting local firms ABPS and EVI. Main emphasis was on building local capacity and the importance of these firms getting to know USAID procedures in order to “own” the project by year 4. Mr. Gould also described key reporting requirements, travel guidelines, subcontracting procedures, invoicing, branding and marking, and project codes. Although seen as challenging, the local staff members were receptive to these guidelines and understanding of their importance to USAID. Local staff members had questions and provided useful feedback. A subcontracting draft manual was also distributed for study and future comments.

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Mr. Gould also attended M&E training by Himanshu Dube that provided an update of the importance of indicators for the project's success. Afternoon Finance and Reporting session was conducted by two USAID F&A and Reporting Specialists who went over guidelines concerning the ADS, VAT claims, invoicing, getting an advance, audit preparations, and the importance of internal corporate procedures not only for Nexant but also for ABPS and EVI.

Records Management

Prepared a final filing structure and explained the logic to office staff. Welcomed and took into account recommendations to make it more efficient. Showed staff how to access, navigate, upload, download and edit documents on the online filing structure called Knowledge Tree.

Project Procedures

Mr. Gould went over draft project procedures manual with staff that included project reporting structures, formats, internal reporting, and step-by-step procedures for establishing a subcontract, revisions of folder structure, labor corrections and overview of other templates (travel checklist, trip reports, and expenditures. Also discussed who would be responsible for each individual task in the present and in the future. Mr. Gould also made several revisions/updates to the procedures manual while in Delhi as new procedures were coming to light.

USAID Meeting

Mr. Gould attended his debriefing at USAID where he described to the USAID COR, the Clean Energy and Environment Director and a Project Management Specialist his daily tasks and outcomes of his trip, the potential long-term benefits and what future tasks are to be expected.

Key Results and Next Steps

- Completion of Procedures Manual
- Make sure all reporting is done autonomously, submitted to USAID and appropriately filed.
- Confirm that records management is localized
- Distribute all appropriate formats to subcontractors
- Get all outstanding subcontracts signed
- Complete any outstanding deliverables

TRIP REPORT TR-110212-SD – IND

Countries / Cities visited: Raipur – Sipat

Dates of Trip: October 31 - November 2, 2012

Travelers' Names: Sanjay Dube

Purpose of Trip: Meeting with staff at Sipat Plant, Raipur, along with Nexant experts

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

November 01, 2012: Meeting with Sipat Power Plant Team and plant visit.

Organization/Persons Met & Projects Identified:

The key stakeholders Sanjay Dube met during this visit were as follows:

1. Mr. P. K. Mahapatra, General Manager, Sipat, NTPC
2. Mr. R. Samual, General Manager, Sipat, NTPC
3. Mr. Ramchandra Kamat, Additional General Manager, Sipat, NTPC

Report Body:

Meeting with Sipat Plant Staff

- A visit to NTPCs Sipat Power Plant was organized along with Dr. Radha Krishnan, LTI, Gerald Choi, Nexant and Pankaj Bhartiya, CenPEEP, NTPC. The purpose of visiting Sipat

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Power Plant and meeting with NTPC staff was to understand their requirements about the planned activities under the project on developing (1) a Supercritical Technology Guideline Manual and (2) a concept for a Model Power Plant at Sipat.

- The first day was devoted to the visit to plant and see the operations at various units. The visit was conducted to have a better understanding about various operations at Sipat power plant which consists of 3 supercritical units. The team visited the plant simulator room and the main control room; toured the boilers, coal processing units, turbine power generation and transmission control unit, safety and precaution unit; and met with the administrative staff at the plant. The interaction with the staff at all the units was fruitful. The plant staff is looking forward to work with USAID team and CenPEEP on developing a best practice manual for supercritical technology and developing a concept for model power plant.
- The other purpose of the visit was to get the approval of plant management on selection of Sipat plant to conduct a baseline benchmarking study, develop a best practice manual for supercritical technology and develop a concept for model power plant. Sipat plant being a mix of subcritical and supercritical technology is best suited for all the proposed activities.

November 02, 2012: Meeting with Sipat Plant Management.

Organization/Persons Met & Projects Identified:

The key stakeholders Sanjay Dube met during this visit were as follows:

1. Mr. P. K. Mahapatra, General Manager, Sipat, NTPC
2. Mr. R. Samual, General Manager, Sipat, NTPC
3. Mr. Ramchandra Kamat, Additional General Manager, Sipat, NTPC

Report Body:

Meeting with Sipat Plant Staff

- The second day of the visit was devoted to conduct the meetings with senior management at the plant and get their agreement on proposed activities.
- The plant management showed their interest in working with USAID team with providing inputs to complete the tasks on developing a Best Practices Guideline Manual, conducting a Baseline / Benchmarking / Gap Analysis Study and provide boiler design material, performance data, commissioning, current O&M practices, including the monitoring procedures to USAID team.
- The plant management also shown their interest in using the services of US experts like Ronnie Campbell, Pat Abbott, Stephen Storm and Duane Phiegar and/or Warren Ashton. Out of all, Ronnie Campbell, Pat Abbott, Stephen Storm is the first choice. In case if it is required, the services of Duane Phiegar and/or Warren Ashton can also be made available as part of Stephan's team. All these experts are known to the plant management team. Nexant will now move the process to include them in the team.
- As discussed with the management, both Ronnie and Stephan (along with Dr. Krishnan) will visit Sipat in the near future to initiate the work of developing a table of content (TOC) for Best Practices Manual as well as the basis for the baseline and benchmarking study for Sipat.

It is understood that NTPC is looking for some guidance with how to establish a 'baseline' of their

plant performance, against (a) the original plant design and (b) similar plants in operation in the US; (c) identify any gaps in performance and recommend procedure/practices to minimize the gaps; (d) lesson learned from similar supercritical plant operations and best practices in O&M methodology, etc. Evaluation of boiler tube failure results and the suspected cause-and-effect analysis would be using information collected with AWARETM software.

Next Steps

- Nexant to finalize the scope of work for Stephen Storm and his associates, along with our India boiler expert, Mr. Amar Nat, and include them in the team to start the work on Heat Rate Improvement for the SEBs
- Nexant will work on the selection of utilities for heat rate improvement and visit to the selected utilities to finalize the selection of two SEBs for the study, after which we will initiate the work on developing a plan for heat rate improvement. The work should be started in December 2012 and completed by June 2013.
- Sanjay to continue working with CenPEEP to finalize the selection of two utilities for heat rate improvement task. Once the selection process is over, the request should be sent to Ministry of Power to issue the letters to both the utilities for working with USAID team. The list of shortlisted utilities and the probable candidates for selection (highlighted in bold) is provided below.
- The utility selection process will be completed by the first week of December 2012.

SEB plants	State Utility	Unit size (MW)	Net Heat
Koradi	Maharashtra	105x4+200x1+210x2(1040)	207
Chandrapu	Maharashtra	210x4+500x3(2340)	93
Khaperkhe	Maharashtra	4x210(840)	128
Birsinghpur	MP	4x210+1x500(1340)	210
Anapara	UP	210x3+500x2(1630)	3
Raichur	Karnataka	210x7+250x1(1720)	64
Kota	Rajasthan	110x2+210x3(1240)	32
Suratgarh	Rajasthan	6x250(1500)	53
Gandhinagar	Gujarat	120x2+210x3(870)	87
Wanakbori	Gujarat	210x7(1470)	67
Vijaywada	AP	1760	5
Rayalseema	AP	1050	7

- Nexant to (1) develop the scope of work, (2) finalize subcontracts for Campbell, Abbott, Ashton and/or Phiegar, and (3) meet with Sipat Plant Management to finalize the study details on base lining and benchmarking of supercritical technology, and development of a manual on best practices for supercritical technology. Some of these activities will also be started in December 2012.

TRIP REPORT TR-110112-VL&KK - HYD

Countries Cities visited: Hyderabad, India

Dates of Trip: 31st October- 1st November 2012

Travelers' Names: Vasudha Lathey (VL) and Kavita Kaur (KK)

Purpose of Trip: Attend India Green Building Council' Annual Conference and participate in Partnership to Advance Clean Energy- Research (PACE-R) Building's Workshop

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

- o VL travelled to Hyderabad to participate in the India Green Building Council' Annual Conference and participate in the Partnership to Advance Clean Energy- Research (PACE-R) buildings workshop. The purpose of the trip was to meet the PACE-R team, participate in the PACE-R workshop, introduce PACE-D tasks and activities and identify potential areas of collaboration with the PACE-R team.
- o **October 31, 2012:** VL travelled to Hyderabad via Indigo flight 309- Departing Delhi @ 5:00 PM and arriving Hyderabad@ 7:10 PM.
- o **November 1, 2012:**
 - VL and KK attended the IGBC Conference day 3 opening session and the PACE-R workshop from 10 AM- 5:30 PM.
 - VL made a presentation in the PACE-R workshop on Net Zero Energy Buildings (NZEB) and also presented the PACE-D NZEB Work Plan to the audience
 - VL travelled back to Delhi via Indigo flight 309- departing Hyderabad @ 7:40 PM and arriving Delhi @ 9:50 PM (Changed returned flight due to cancelled meeting).
- o **November 2, 2012:** KK travelled back to Delhi by 9 am Indigo flight.

Organization/Persons Met & Projects Identified

The key stakeholders we met during this visit were the PACE-R team members and other building industry key stakeholders (See attached)

Report Body:

PACE-R Workshop:

- o VL and KK attended the PACE-R Buildings Workshop, where members of the PACE-R team presented their work plan and research activities for the buildings sector.
- o PACE-R will focus on multiple areas for buildings research which include computer simulation and modeling, advanced Heating, Ventilation and Air-Conditioning (HVAC), Smart Grids, Passive heating and cooling strategies and
- o The team identified some potential areas of collaboration with the PACE-D team, which include the following
- o The PACE-R team will develop new GUI's for the Energy Plus simulation tool which will be capable of performing ASHRAE-90.1 and ECBC compliance check simulations. PACE-D would collaborate with the PACE-R group and include roll-out of these simulation tools into its ECBC Implementation activities.
- o The PACE-R team will develop advanced energy efficient HVAC technologies for the Indian climate and the PACE-R project could assist them in the market- deployment of these technologies
- o PACE-R's work on Smart Buildings could be integrated with the PACE-D's agenda on smart grids.
- o Nexant is a cost sharing partner of LBNL on PACE-R (EE Buildings). KK met with Girish Ghatikar and Dale Sartor of LBNL to identify opportunities for collaboration. Girish was particularly interested to learn more about KK's communication/outreach role in PACE-D and suggested that going forward he would like KK to help in organizing workshops for PACE-R in India wherever possible. As an example, he said that it was difficult for him to organize the PACE-R workshop (in Hyderabad) from U.S due to the time difference.
- o Girish and Dale were also interested to know about the PACE-D website. They said that they would like to have a similar website or a few pages on the PACE-D website – to provide an overview of the research component of the PACE program.
- o At the PACE-R workshop, Padu mentioned that PACE-D should not limit its PACE-R collaboration discussion with LBNL – it should also connect with NREL and University of Florida who are the leads on solar and biofuels PACE-R teams. He also suggested that Sanjay Dube should make a presentation on PACE-D – PACE-R collaboration at the next PACE-D Secretariat meeting. The presentation will provide a quick overview of what each team is doing and what are the possible areas for collaboration.

PACE-D Work Plan Presentation:

- VL presented the PACE-D agenda on Net-Zero Energy Buildings at the PACE-R workshop
- Tanmay Tathagat from the PACE-D team presented details on the PACE-D activities on the ECBC update and plan on moving the building sector towards NZEB by 2030

Key Results and Next Steps

- Sanjay Dube and KK to reach out to the PACE-R teams on solar and biofuels and explore areas of collaboration.

- Girish and Dale of the PACE-R team will visit the PACE-D office on November 16 to further discuss about collaboration, workshops and website.
- Sanjay Dune will give a presentation on PACE-D – PACE-R collaboration to the PACE- D Secretariat Working Group at the next meeting.

TRIP REPORT

TR-110212-GC/RK-IND

Countries / Cities visited: *New Delhi, Raipat, Chhattisgarh, India*

Dates of Trip: *October 29 - November 2, 2012*

Travelers' Names: *Gerald Choi (Nexant U.S.) and Dr. Radha Krishnan of LTI (along with S. Dube, PACE-D Chief of Party)*

Purpose of Trip: *Delhi to meet with USAID, CenPEEP and CEA (October 29 to 31, 2012)*

- Raipur, Chhattisgarh, to meet with NTPC and SIPAT personnel (October 31 to November 2, 2012)

- *Kick-off meeting of PACE-D's Development Result 3: Accelerated development of Cleaner Fossil Technologies program with (1) CenPEEP, NTPC and CEA to solicit their support and assistance in fine tuning the work scope details, and (2) Visit the SIPAT supercritical plant to discuss with NTPC personnel their needs and inputs with respect to developing a Best Practices Guideline Manual for Supercritical Technology' and benchmarking.*

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 19.5M , five-year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and six U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, and consulting firms.

The current trip is related to the 'Cleaner Fossil Technologies' scope of work.

Daily Activities:

October 29, 2012: Choi and Krishnan met with Sanjay Dube at the Nexant PACE-D Offices in the morning and the team met with Mr. Pankaj Bhartiya and his staff of CenPEEP in the afternoon.

October 30, 2012: The Nexant/LTI team continued the meeting with Mr. Pankaj Bhartiya and his staff of CenPEEP in the morning, followed by a visit to the (a) USAID offices with Ms. Monali Hazra and Mr. Padmanabail, and (b) Central Electricity Authority (CEA) offices with Mr. A.S. Bakshi and Mr. Praveen Gupta.

October 31, 2012: The Nexant/LTI project team continued the meeting with Mr. Pankaj Bhartiya

and his staff of CenPEEP to discuss project scope of work details, and in the afternoon, departed for Raipur. The visit to Sipat plant was accompanied by Mr. Bhartiya and Mr. Arora of CenPEEP.

November 1, 2012: While at Sipat, the team met with Mr. Prasant Kumar Mohapatra (Sipat Plant General Manager) and toured the plant.

November 2, 2012: The team held a debriefing breakfast meeting with Mr. Prasant Kumar Mohapatra and then departed for Raipur for a flight back to Delhi.

Organization Key Persons Met:

CenPEEP: Pankaj Bhartiya (General Manager)
A.K. Arora (Dy. General Manager)
Anil K. Mittal (Addl. General Manager)

CEA: A.S. Bakshi (Chairman CEA)
Praveen Gupta (Director)

Sipat (NTPC): P.K. Mahapatra (General Manager, Sipat)
R. Samual (General Manager)
Ramchandra Kamat (Addl. General Manager)

Report Body:

Meeting Discussion Outcome and Action items

CenPEEP provided an agenda for the various meeting topics (ATTACHMENT 1). USAID/India's Contracting Officer's Representative (COR) for PACE-D Ms. Monali Hazra was not able to join CenPEEP and the Nexant team in the discussion and the visit to Sipat. The Nexant team met with Mr. Pankaj Bhartiya and his staff at CenPEEP on October 29 to 31st, and Mr. Bhartiya and Mr. A.K. Arora accompanied the Nexant team to the Sipat power plant. Following is a summary of discussion outcomes according to the meeting agenda:

- 1). Discussion on 'Plan for Benchmarking Study at Sipat' –
 - a) CenPEEP is interested in continuing some of the early work done by Duane Phlegar and Warren Ashton of AEP (who were part of a team led by Dr. Krishnan) from the 2011 visit to Sipat, and they asked for a copy of the report.
 - b) Sipat is experiencing boiler tube failure, and they are using AWARETM to keep track of the problems and their 'cause-and-effect'. NTPC provided a list of the issues which Dr. Krishnan attempted to address. He told them a boiler specialist is needed to address them fully.
 - c) NTPC expressed interested in having Pat Abbott (the boiler specialist recommended by Dr. Krishnan) to help with addressing Sipat's boiler reliability issues.
 - d) With benchmarking, Sipat (NTPC) is looking to establish a baseline performance (i) against the plant design performance, (ii) compare with similar plants in operation in the US, (iii) identify any gaps in performance, and (iv) recommend procedures/practices to minimize the gaps.
 - e) NTPC agreed that Ronnie Campbell would be a valuable US supercritical technology expert to help with the Sipat Benchmarking study.
 - f) Deliverables would include (i) a generic supercritical technology BEST PRACTICES guideline

manual and (ii) a BASELINE BENCHMARKING study report for Sipat.

g) CenPEEP provided the PACE-D team detailed technical design information on the Sipat supercritical plant, in a CD, as background information for the study.

h) Action item-Nexant to develop a detailed scope of work and finalize a contract with Campbell, Abbott and Ashton and/or Phlegar.

2. Discussion on 'Heat Rate Improvement Study' –

a. CenPEEP provided a short list of 10 potential State Electricity Board (SEB) plants for consideration (Please see Sanjay Dube's trip memo TR-110212 for the listing.)

b. Sanjay Dube of Nexant will work with CenPEEP and CEA to select and finalize the two SEBs for the study, with the aim to complete this exercise by first week of December 2012.

c. While in Delhi, the Nexant team met with Mr. A.S. Bakshi (Chairman) and Mr. Praveen Gupta (Director) of the Central Electricity Authority (CEA) and acquired their support for the study.

d. CenPEEP is pleased that Nexant will be using Stephen Storm as our heat rate improvement expert, along with Mr. Amar Nath as our turbine specialist for this task.

e. Action item – Nexant to develop a detailed scope of work and finalize a subcontract with S. Storm and Mr. Amar Nath by the first week of December 2012 so that this task can get started as soon as possible.

3. Discussion on 'Feasibility Study on Coal Blending' –

a. CenPEEP cited the studies by both NTPC and CEA, and that these studies would be a good starting point.

b. CenPEEP acknowledged that it is to be a desktop study, and that the deliverable is to be a technical document White Paper by a US expert.

c. Dr.Krishnan mentioned the value of a CQIM model (developed by Black & Veatch) as a predictive tool; which was of interest to CenPEEP.

d. Action item-Nexant team to locate a US expert to help with the coal blending study and finalize the scope of work.

4. Roadmap for Model Plant' –

a. Didn't really have much opportunity to discuss this topic in detail with CenPEEP and NTPC at Sipat; would need to do that in the near future to iron out the scope of work.

b. Action item – follow up with NTPC Sipat in the near future after we initiated the Supercritical Technology baseline study.

5. Additional information on the Sipat Plant visit

a. Please refer to Sanjay Dube's trip report Trip Report 3 (TR-11022120SD-IND) for additional information (ATTACHMENT 2)

6. Others

a. CenPEEP/NTPC is organizing an O&M Conference, "Indian Power Stations -

2013", on February 13-14, 2013 in New Delhi. The topic is "Sustainable Growth for Fuels & Efficiency." They are asking PACE-D to give one or two presentations at the conference.

TRIP REPORT
TR-091512-SD – IND

Cities visited: Mumbai

Dates of Trip: 13th September – 15th September 2012

Travelers' Names: Sanjay Dube

Purpose of Trip: Meeting with Project stakeholders in Mumbai along with NEXANT team

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

September 14, 2012: Meeting with ICICI Bank and CETC.

Organization/Persons Met & Projects Identified:

The key stakeholders Sanjay Dube met during this visit were as follows:

1. Ummul Ranalvi, CETC
2. Vasudevan Srinivasan, CETC
3. Jai Singh Dhumal, ICICI Bank

Report Body:

Meeting with CETC

- The purpose of meeting CETC was to discuss their role in the PACE-D project, understand their capabilities and check the possibility of organizing a team bonding workshop for the PACE-D team.
- CETC confirmed that they are well positioned to organize a team bonding workshop for the PACE-D team. They also confirmed their country wide presence to organize training sessions for different target groups in various Indian languages.

- CETC explained about general topics that can be covered under team bonding workshop. The workshop can begin with an exercise on expectation sharing and then lead to cover the following topics:
 - o Building greater familiarity as individuals.
 - o How do we collectively perceive ourselves as a team?
 - o Where do we wish to navigate together as a team?
 - o Defining team purpose
 - o Define practicable Team Values.
 - o What values as a team do we align to?
 - o How do we consistently demonstrate them in our behaviors and decisions?
 - o Collectively solving problems giving “space” to other team members to maintain individuality but contribute willingly
 - o Been sensitized to supportive and hindering behavior for individual and team goal accomplishment.
 - o Developing Trust in the team.
 - o Different roles ones plays in the team.
 - o Creating positive energy in the team.

- CETC informed that Vasu will send the draft presentation and the proposal for team bonding workshop. Ummul will send the biodata sheet and the CV of Vasu to Dick to initiate the process for signing the Task Order.

Meeting with Jai Singh Dhumal, ICICI Bank

- Dick and I had a lunch meeting with Jai Singh Dhumal of ICICI Bank. The purpose of meeting was to discuss about the possible use of reflow funds for clean energy financing. ICICI Bank is a Resource Pool partner and PACE-D project would like to consider using their reflow funds for the clean energy finance tasks under the PACE-D Technical Assistance Contract.
- Jai Singh informed that these funds were given by USAID as a grant to the Government of India for different projects in the energy and health sector. The money was parked at ICICI Bank and a MOU was signed between USAID and ICICI Bank in 1999 for the use and management of these funds. The duration of the ten-year MOU expired in February 2009 and post the expiry date DEA has not approved the use of these funds by ICICI. DEA believes that the funds should go to a public sector bank such as NABARD.
- Jai Singh suggested that we should talk to USAID and request them to take this up with DEA to get a clear understanding about using the funds for clean energy finance under PACE-D project.
- On micro-finance, Jai Singh informed that ICICI Bank is working with SEWA Bank where ICICI is providing loan to SEWA Bank for financing solar lanterns and other home lighting products. The project also includes training of trainer’s activity to build local skills for providing repair and maintenance support. This project could be a good example for developing financing mechanisms.
- Jai Singh also informed about ICICIs work with Indian Army in Arunanchal Pradesh. ICICI has financed local farmers to grow mushrooms for Army mess. This is a very good model of developing local markets and entrepreneurs.

- Finally it was discussed that ICICI will be part of the Advisory Team for RE and EE finance and they will make their experts available for providing trainings to other bank staff's on innovative financing mechanisms.

September 15, 2012: Meeting with TATA Power.

Organization/Persons Met & Projects Identified:

The key stakeholders Sanjay Dube met during this visit were as follows:

1. Avinash Patkar, TATA Power
2. Anil Sardana, CEO, TATA Power

Report Body:

Meeting with TATA Power

- The PACE-D team consists of Dick Edwards, Peter DuPont, Douglas Welsh and Sanjay Dube met with Avinash Patkar and Anil Sardana of TATA Power to discuss the possibility of future collaborations between TATA Power and PACE-D project.
- While discussing the idea about distribution training, Anil Sardana confirmed that they are interested in a combination of higher level management training in utility system optimization with the aim being at serving and satisfying customers. The emphasis should be on more than just loss reductions. At the same time, he said that they had worked with the CENPEED program under USAID DRUM and that was providing good technical training in distribution efficiency.
- Anil liked the idea of setting up a SWAT Team for training in distribution system efficiency, since USAID has asked Anil, and other Tata Power people to go to trainings in Afghanistan and a number of other regions, and they (TP) does not have the bandwidth to keep doing it.
- US company tie-ups – this is one place we could jointly pursue development of USTDA funding for pre-FS and FS for technology applications that TP is interested in, and that are “deployable”. One example could be the Urban Electric Power Company that has CUNY funding and is looking at Nickel Manganese battery technologies for storage in cell towers. But we should probably select a technology that is more ready for prime time.
- USTDA North Delhi project: we need to meet with the North Delhi folks and find out how we can tap into and leverage that smart grids work for PACE-D.
- T&D transformers: At present few of their transformers at either T or D levels have load-tap changing capability under load. This results in increased technical losses in the system and also reduces transfer capability. It may be worth writing a white paper to talk about the potential savings that could be obtained by replacing some transformers at these levels to reduce losses and improve system operations.
- Sanjay to meet with Arunaba Basu of TATA Power New Delhi and the Avinash Patkar to follow up on the discussions.

TRIP REPORT
TR-082912-SD – IND

Cities visited: Mumbai

Dates of Trip: 28th August – 29th August 2012

Travelers' Names: Sanjay Dube

Purpose of Trip: Meeting with ICICI Bank & Dilip Limaye

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

August 29, 2012: Meeting with Dilip Limaye and ICICI Bank.

Organization/Persons Met & Projects Identified:

The key stakeholders Sanjay Dube met during this visit were as follows:

1. Dilip Limaye, SRC Global
2. Jai Singh Dhumal, ICICI Bank

Report Body:

Meeting with Dilip Limaye

- The purpose of meeting Dilip was to benefit with his presence in India and discuss about the proposed approach for EE and RE financing tasks under PACE-D project. The proposed approach was presented to Dilip and he suggested that we must have an advisory group to advise us on what can work and what cannot work.
- Dilip informed about his relations with Indian Bankers Association and the officers of lead banks in India. These relationships will help us in developing the understanding about market requirements and current barriers. He explained that we have work closely with three kind of

stakeholders – BEE and MNRE at national level and state bodies at state level, financing institutions and energy service providers/project developers.

- Dilip informed that he can come to India and work with the team during the 1st and 2nd week of October and finalize the strategy and the plan for year-1 and identify key members for proposed advisory teams. While in India, he will also help in identifying the stakeholders for focus group discussions and develop an understanding about the available financing mechanisms. He will also work with EVI and guide them on collection and analysis of information on existing financing mechanisms.
- Once the contract is signed, Dilip will send lot of relevant documents to help the team understand about similar work done in other part of the world.

Meeting with ICICI Bank

- I have met with Jai Singh Dhumal at ICICI Bank to discuss about the possible use of reflow funds for clean energy financing. ICICI Bank is a Resource Pool partner and PACE-D project would like to consider using their reflow funds for the clean energy finance tasks under the PACE-D Technical Assistance Contract.
- Jai Singh informed that these funds were given by USAID as a grant to the Government of India for different projects in the energy and health sector. The money was parked at ICICI Bank and a MOU was signed between USAID and ICICI Bank in 1999 for the use and management of these funds. The duration of the ten-year MOU expired in February 2009 and post the expiry date DEA has not approved the use of these funds by ICICI. DEA believes that the funds should go to a public sector bank such as NABARD.
- The funds are still with ICICI and they are multiplying each year due the reflow and interest earned on fixed deposits. The current size of the fund is approximately 225.0 crores. ICICI is willing to use these funds for clean energy finance under the PACE-D Technical Assistance Contract. However, this will be possible if USAID initiates a dialogue with Mr. Surendra Bagde, Director, North America Bilateral Cooperation, DEA who has the authority to take a decision on the reflow funds. It has been three and half years and there has been little progress. As such, we suggest that USAID should organize a meeting with Mr. Gopalan, Secretary, DEA. This will help convince DEA about the use of the funds for clean energy finance under the PACE-D project and also expedite the process.
- According to ICICI, since the original MOU was between ICICI and USAID, it is difficult for DEA to transfer the funds to any other bank. Also administratively it will be difficult for other banks to manage these funds as the reflow is still continuing and the money given on the loan goes to ICICI. Transferring the fund to a new bank will require a new agreement with the borrowers and they may not agree to it. As such it will be a win-win situation for all stakeholders if we can use the reflow funds, via ICICI Bank, for the clean energy tasks under the PACE-D Technical Assistance Contract.
- Jai Singh suggested that we should talk to USAID and request them to take this up with DEA to get a clear understanding about using the funds for clean energy finance under PACE-D project.

TRIP REPORT
TR-071312-SD/DE-IND

Countries visited: USA (San Francisco & Washington, DC)

Dates of Trip: 5th July - 13th July 2012

Travelers' Names: Sanjay Dube, Dick Edwards

Purpose of Trip: PACE-D Orientation & US Sub-Contractor Meetings

Brief Summary of Activities and Outcomes:

Project Background

The Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Contract is a USD 20m five year USAID-funded program to accelerate India's transition to a high performing, low emissions, and energy secure economy. This initiative is largely based on the bilateral agreements signed between the U.S and Indian governments, one on EE technology commercialization and innovation, and the other on RE technology commercialization and innovation.

The PACE-D Technical Assistance Contract has three key components: EE, RE and Cleaner Fossil Technologies. Nexant's team for this project includes six Indian and five U.S subcontractors, along with a resource pool including RE/EE associations, technology firms, civil society, etc.

Daily Activities

July 05, 2012: Meeting with Gerry Choi, Energy Technology Team, John Toyofuku & IT Team and conference call with Deb Rimmler & team in Nexant SF office.

July 06, 2012: Meeting with Kent Murray & team (Accounts), Chris Harper & team (HR), Basem Sarandah, CEO, Nexant in Nexant SF office and also a meeting with LBNL.

July 09, 2012: Introductory meetings with Richards Smith and all the staff at Nexant Washington, DC office.

July 10, 2012: Meetings with WRI, NSC, Chemonics & USAID.

July 11, 2012: Orientation meeting with Deb Rimmler & Team.

July 12, 2012: Meetings with DOE, ACORE, World Bank and David Jhirad.

July 13, 2012: Internal Review meeting with PACE-D team at Nexant Washington office.

Organization/Persons Met & Projects Identified:

The key stakeholders Dick Edwards and Sanjay Dube met during this visit were as follows:

1. Gerry Choi, Energy Technology Team, Nexant
2. John Toyofuku & IT Team, Nexant
3. Deb Rimmler & Team, Nexant
4. Kent Murray & Accounts Team, Nexant
5. Chris Harper & HR Team, Nexant
6. Basem Sarandah, CEO, Nexant
7. Chris Perine, Chemonics
8. Shannon Moselle, Chemonics
9. Reshma Singh, Program Manager, LBNL
10. Girish Ghatikar, Program Manager, LBNL
11. Dale Sartor, Application Team, LBNL
12. Richards Smith, Vice President, Nexant
13. Sharon Hsu, USAID
14. Anne Convery, USAID
15. Colin, USAID
16. Kathleen Nawaz, NREL
17. Siddharthan Balasubramania, Director Climate & Energy Program, WRI
18. Randall Snodgrass, Director, US Gov. Cooperation, WRI
19. Tao Zang, Chief Operating Officer, New Ventures
20. Neelam Singh, Associate, Climate & Energy Program, WRI
21. Jason Donovan, Director for South Asia, NSC
22. Todd Foley, ACORE
23. Jan Siler, ACORE
24. Tom Weirich, ACORE
25. Ashok Sarkar, World Bank
26. David Jhirad, Johns Hopkins University
27. Ariadne BenAissa, Pacific Northwest Lab
28. Dan T. Ton, Pacific Northwest Lab
29. Nicolas Sherman, Pacific Northwest Lab
30. Elena Berger, Pacific Northwest Lab
31. Robb, Pacific Northwest Lab
32. Nicholas, Pacific Northwest Lab
33. Cary N Bloyd, Pacific Northwest Lab

Report Body:

Meeting with Gerry Choi

- Dick provided an overview of the PACE-D Technical Assistance Contract and along with an update on the contract-related progress including work plans, project office and contracts with sub-contractors.
- Gerry informed that Nexant has prior experience of working with NTPC in India and has provided technical inputs on power plant improvement and design to the power major. However, the work on the project has stopped due to nonpayment of invoices to Nexant. Nexant's point of contact for this project at NTPC was Mr. D. K. Dubey, GM Clean Coal Technologies. Gerry also mentioned that NTPC had some issues with Nexant deliverables.
- Dick briefed Gerry about the specific tasks under the clean fossil technologies component

of PACE-D and the role identified for Gerry, Babul and Sunil. The role of LTI was also discussed. Gerry informed that Mr. Krishnan of LTI has worked on a White Paper on model power plants under a project funded by USTDA. This paper can be updated and used for PACE-D.

- Gerry suggested that PACE-D should use Bechtel's expertise for tasks under CLIN 3. Bechtel has an office in India and they are working with both public and private power utilities to build their capacity.
- Another suggestion from Gerry was to tap the young staff from Nexant's US team.

Meeting with Kent Murray

The meeting with Kent Murray was to discuss the required financial procedures and responsibilities for the project. Meeting participants included: Dan Miller, Tony Babcock, Margret, Andy White, Jonathan and Smith Richards. A consensus decision was taken to register the PACE-D project first followed by the registration of Nexant, India as a legal entity in India.

Meeting with Chris Harper

The meeting with Chris Harper and team was to get an overview of Nexant's HR procedures that need to be followed by the PACE-D project team in India office. Potential benefits for PACE-D personnel were also discussed. The action point is to identify an employment lawyer in India and introduce him to Chris. Sanjay will also introduce Mr. V. V. Kale to Chris.

Meeting with Basem Sarandah

The meeting with Basem was to introduce Sanjay and brief him about the project activities. Basem hinted on the long term benefit of project and how Nexant can leverage the work in India. Basem also showed his interest to come to India once Nexant has established its office.

Meeting with LBNL

- Dick and Sanjay provided an overview about PACE-D project along with the key personal, sub-contractors, resource pool and proposed ecosystem. Dick also explained about project activities under the EE and RE sectors.
- Girish Ghatikar provided an overview of the PACE-R project, LBNL's role, project partners, role of industry, project components and responsible agencies in US and in India.
- Dale and Reshma discussed about the technologies and documents developed by LBNL, which may be useful for PACE-D project.
- PACE-D can work with PACE-R institutional partners on programs like NZEB. LBNL partners for PACE-R include: CEPT, Ahmedabad, IIT Jodhpur, IIM Ahmedabad and IIT Mumbai. IIT Jodhpur is working with PACE-D sub-contractor EDS on the design of a NZEB and this work can be leveraged by PACE-D.
- Girish also informed that the industry partners in India and US will provide a cost share of USD 34 million for research under PACE-R project. LBNL has signed NDA's with all the industry partners whereby the outcomes of the research cannot be disclosed in the market until they are mature and permitted by the industry partners.
- Girish proposed for a monthly call to discuss the project progress and to identify the areas for cooperation. He informed that LBNL is very keen to work closely with PACE-D project and if there is an opportunity, they can make their experts available for work in

India.

- Dick informed the LBNL team that Sanjay should be their point of contact for any future exchange of notes.

Meeting with Richard Smith and DC team

There was an introductory meeting with Richards Smith and all the staff at Nexant Washington, DC office. Richard gave important advice on project management. Also met with Vasudha Lathey and briefed her about India activities so far. Vasudha will be available from 25th July in India.

Meeting with Chemonics

Meeting with Chemonics was mainly to sort out the contractual issues between Nexant and Chemonics and also relating to key personnel: Himanshu Dube and Rajiv Chibber. The meeting was attended by Chris Perine and Shannon Moselle from Chemonics and Sanjay, Dick and Richards from Nexant.

Meeting with USAID

The meeting with USAID was attended by Sanjay and Dick from PACE-D and Sharon Hsu, Anne Convery and Colin from USAID and Kathleen Nawaz from NREL. The meeting was organized to meet Sharon and understand the thinking behind the design of PACE-D scope of work and USAID's expectations from Nexant. Sharon was involved in developing the SOW for PACE-D. Sharon informed that USAID is developing strategic partnerships in India. The signing of a MOU with Planning Commission India is one of them. The MOU defines the areas for cooperation. Ann informed that USAID India is developing a Country Development and Coordination Strategy (CDCS). The USAID Washington is reviewing the drafts of the strategy. The future programs in India will depend on this strategy.

Meeting with WRI

- Dick and Sanjay presented the structure of PACE-D project, key personal, activity areas and role of WRI and other sub-contractors including the role of resource pool organizations.
- WRI is in the process of developing their India strategy for climate and energy sector. WRI is working on a number of programs including a project on India Electricity Planning Framework with Karnataka and Tamil Nadu. The organizations like Prayas, Shakti Foundation and NVI are partners for this project. Under this program, WRI is working with regulators to build their capacity for developing sustainable plans for electricity sector. WRI has developed an India. Resource Trust in partnership with Godrej India. The plan is to build an institution to support climate and energy programs for industrial sector in India. The trust will be based in Mumbai with branch offices in Bangalore and Delhi
- WRI informed the Nexant team that New Ventures in India, China and Indonesia are going to be independent organizations from January 2013. NVI will generate its own funds to continue working in India. WRI will continue working with NVI in the capacity of program implementation partners for ongoing and future projects.
- WRI is part of the Indo-US track dialogue for India. They are contributing through their resources in developing strategic programs on clean and renewable energy, and energy conservation and efficiency. CII is coordinating this dialogue in India.

Meeting with NSC

- Jason worked with Padu closely on the design of SOW for PACE-D during his posting at the US Embassy in India. His particular inputs include: the Whole of Government approach and clean energy finance.
- At NSC, Jason is writing a memo for the President Barak Obama covering US-India cooperation, where he will mention about PACE-D. According to him, this is a high value project for US administration.
- Other than being staffed for the President of United States, NSC's role is to coordinate on foreign policies. They played a key role in signing of cooperation agreements with India and one of them is on clean energy.
- Jason informed that the vision of PACE is to make all the agencies like DOE, USAID, etc. work closely with counterparts in India. Considering this, DOE has been given the responsibility of PACE-R and USAID of PACE-D.
- Jason is keen that we talk to USAID (Padu) about the Pathfinders Fund. The fund is controlled by the US Ambassador in India and the value of the fund is USD 4.0 million. The fund can be utilized for energy sector activities. He also mentioned that USAID has developed a concept note about the use of this fund. Nexant should get the concept note and suggest the possible use of this fund for activities under PACE-D project. This fund can also be utilized for developing a revolving fund for micro-finance.
- Jason suggested that we should get in touch with Jessica Farmer and Craig O'Connor of Exim Bank to understand their plans on financing clean energy.
- Jason was also kind enough to mention that we can contact him anytime if we face any problem in terms of coordination with any of the US agencies in support of this project.

Meeting with Deb Rimmler & Team

The day long orientation meeting was conducted to orient the PACE-D team with procedures and protocols for using the Knowledge Tree, PACE-D procedures manual, management of contract with USAID, compliance requirements under the contract, maintenance of office records and inventories and requirements for trainings, workshops and travel under the project. The meeting was very helpful in bringing clarity about all the procedures and protocols.

Meeting with ACORE

The brief meeting with ACORE was to explain them about the scope of work and update them about the status of annual work plan and PIP approval from USAID. The current market scenario for RE in India was also discussed. Todd Foley, Jan Siler and Tom Weirich from ACORE and Richard, Dick and Sanjay from Nexant attended the meeting.

Meeting with World Bank

Dick and Sanjay met with Ashok Sarkar at World Bank to discuss future cooperation with PACE- D. Ashok informed about upcoming programs of World Banks for India. Ashok is managing it from Washington office and Ashish Khanna is responsible for the activities in India. The World Bank is planning to extend a loan of USD 1.0 billion to MOP for capacity building on programs like PAT, building EE, appliance standards and labeling and design of innovative financing mechanisms to finance energy efficiency. The Bank has a plan to set up a PRGF in India.

Meeting with David Jhirad

Padu introduced Dick and Sanjay to David Jhirad who is a faculty at Johns Hopkins University. Meeting with David was to understand about the activities of Energy, Resources and Environment Program of the university. David explained about conference organized at the Rockefeller Foundation Conference Center in Bellagio, Italy, titled “Partnerships for Investment, Innovation, Resilience and Sustainability”. The interesting area of work mentioned by David is the Smart Power for Environmentally-sound Economic Development (SPEED) Program, which aims to provide electricity services from renewable sources to villages using cellphone towers as anchor loads, thereby promoting economic growth and human development in rural communities. The future meetings at Bellagio can be attended and discussion with David should continue to leverage their work for PACE-D. It is important to note that Padu took six months sabbatical to go to work at Johns Hopkins University as visiting faculty. During this time he worked closely with David and the students to promote clean energy and energy efficiency financing approaches.

Meeting with DOE/Pacific Northwest

- The DOE and the Pacific Northwest are working on a program to design and implement smart grid programs in developing countries including India. In India they are working with partner institutions like IIT Jodhpur. The activities are at initial research stage. DOE knows about smart grid task force in India but is not working with them directly.
- The other areas of work in India are the Super Energy Efficient Appliance Development (SEED) Project. DOE is focusing on ceiling fans under this program in India. DOE is also setting up a data base for RE/EE sectors. They are working closely with MNRE and MOP/BEE in India to set up a database.
- DOE has placed a full time person Ms. Usha Suneel at New Delhi. It is suggested that we meet Usha to know more about DOE activities in India. The overall responsibility to coordinate all the activities in India is with Ariadne BenAissa. Future cooperation can be discussed with both Usha and Ariadne. Ariadne is going to be in India in end July and she will be present at PACE-D launch ceremony.
- DOE informed that they have formed Working Groups at MNRE and MOP to coordinate DOE activities with Government of India. Ms.Jyoti Arora, Joint Secretary, MOP and Mr. Alok Shrivastava, Joint Secretary, MNRE are the point of contacts for Working Groups. The meeting of the Working Group was held in 2010. The next meeting is due this year.
- DOE has launched a project in partnership with IFC on solar lanterns and energy efficient appliances. The project is to work with private sector to promote the distribution of solar lanterns.
- DOE has higher interest in supporting activities under ECBC and PAT Schemes. They see these programs as common areas of interest for both PACE-D and DOE. DOE mentioned about GSEP program where they have funds to support PAT program related activities in India. These funds can be provided to PACE-D if the planned activities to support PAT are common for both DOE and PACE-D.

Meeting for internal review

The internal team meeting at Nexant Washington, DC office was organized to review the progress on sub-contracting, India office set up procedures, knowledge tree, IT and accounting procedures for PACE-D, discuss the responsibilities of key Nexant staff, immediate next steps in India and timeline for each action.

Key Results and Next Steps:

Gerry Choi, Energy Technology Team

- Gerry to call Mr. Krishnan and determine his availability for PACE-D as well as get names of the LTI team that will work on PACE-D project.
- Sanjay to do a status check of Nexant payments from NTPC and also identify the sticky points, if any.
- Dick to organize a detailed discussion with Gerry on CLIN 3 tasks.
- Sanjay to talk to Krishnan to understand about his work in India and the current issues being faced by Indian power sector. Also discuss the proposed tasks under PACE-D and the plan and timeline to implement them.

John Toyo fuku & IT Team

- John to coordinate with the ESCONET, hardware vendor in India to supply all the IT equipment for project office.
- John to assist in setting up of PACE-D mail IDs for the team.
- John to connect with Bangkok office IT team for immediate support to India office.
- John to procure the laptops for key team members and ship them to Sanjay's home address.
- John to work with ESCONET to set up internet connection at PACE-D office.

LBNL Meeting

- Get the copy of PACE-R proposal (if possible) to better understand the proposed activities.
- Organize a call with LBNL team to further discuss the cooperation. Dick can attend the calls with LBNL. Sanjay can attend once in a month to be part of the major discussions.
- As suggested by Girish, Sanjay to meet with Usha Suneel who is the DOE person in India.
- Sanjay and Dick decided that LBNL resources should be used for organizing the workshops and trainings in India. LBNL can present on various technology research areas to build the capacity of Indian experts.

WRI Meeting

- Keep an ongoing dialogue with Siddharthan and Neelam to understand more about their activities in India under existing programs and explore the possibility of leveraging the resources for PACE-D capacity building component under both EE and RE sectors.
- Assess the situation of NVI and identify any future partnership needs. Take USAID approval for using NVI if their input is required under PACE-D.
- Assess the requirement of WRI resources for capacity building component of project and develop the task orders accordingly.

NSC Meeting

- Find out about the concept note on Pathfinders Fund developed by USAID India.
- Contact Jessica Farmer and Craig O'Connor of Exim Bank.
- Send regular updates to Jason covering key achievements under the project.

DOE Meeting

- Organize a meeting with Usha Suneel to understand more about DOE and PACE-R activities in India.
- Update USAID about meeting with DOE.
- No further action is required unless USAID feels that PACE-D should work closely with DOE programs in India.

6.7 MINUTES OF MEETINGS

Minutes of PACE-D Interagency Group Meeting

June 7, 2013

Venue:	PS Conference Room, USAID Mission Office, New Delhi
Date & Time:	June 7, 2013, 0930 – 1030 HRS
Participants:	Jeremy Gustafson, S. Padmanaban, Monali Zeya Hazra, Apurva Chaturvedi, Anurag Mishra and Amol Bhutad, USAID; Dave Williams and Michael Richards, ECON; Usha Sunil, DOE; Sikander R Shah, ECON; Sanjay Dube and Pritha Sanyal, PACE-D Secretariat

Jeremy Gustafson chaired the PACE-D Interagency Meeting, held on June 7, 2013, at PS Conference Room, USAID. *A copy of the agenda is attached for reference.*

The highlights of the meeting are as follows:

Jeremy Gustafson shared the news of sudden demise of Dr David Jhirad, Professor and Director, Energy Resources and Environment Center at Johns Hopkins University School of Advanced International Studies. Dr Jhirad was also a former employee of USAID and the Department of Energy. Jeremy and Dave Williams briefed the group about the upcoming visit of U.S. Secretary of State and the Energy Secretary for participating in the Strategic Dialogue with the Government of India.

Dave Williams also mentioned about the roundtable with the private sector on clean energy which would be attended by Secretary Moniz.

Monali Zeya Hazra provided an update on the progress made by the PACE-D Program. She informed about the Workshop on Effective Smart Grid Pilot Planning and Implementation conducted to train the key staff implementing the smart grid pilots from the 14 state utilities. Mr. B. N. Sharma, Joint Secretary - Distribution, Ministry of Power inaugurated the event. She further added that the participants of the workshop were taken for a site visit to the Landis⁺Gyr Global Development Centre (GDC), Noida, UP.

Apurva Chaturvedi provided an update on the Two Day International Seminar on Net-Zero Energy Buildings (NZEBs) in India that was organized in New Delhi on May 16 and 17, 2013. She informed that the seminar was very successful in terms of getting resource people from EU, Japan, USA and Switzerland as well as good participation from the building sector experts.

Anurag Mishra provided an update on the renewable energy activities under the PACE-D TA Program. He mentioned about the key findings of the study on storage technologies, which has

evaluated technology options for (a) Wind (b) Off-grid (c) Commercial Buildings. Mr. Padmanaban added that there could also be a 4th application to set up a company for storing and selling the electricity in India. This could play a crucial role in flattening the demand curve during peak hours. He further suggested that a roundtable workshop should be organized to discuss this idea.

The tentative date for next PACE-D Interagency Group meeting is August 1, 2013.



Minutes of PACE-D - Interagency Group Meeting

April 29, 2013

Venue:	RCCR, USAID Mission Office, New Delhi
Date & Time:	April 29, 2013, 0900 – 1015 hrs.
Participants:	Jeremy Gustafson, S. Padmanaban, Monali Zeya Hazra, Apurva Chaturvedi, Anurag Mishra and Amol Bhutad, USAID; Dave Williams and Michael Richards, ECON; Usha Sunil, DOE; Mehnaz Ansari, TDA; Sanjay Dube and Ram Berry, PACE-D Secretariat
Special Invitees:	Jamie Merriman, Country Manager, South Asia, USTDA and Kendra Kintzi, Program Evaluation Manager, USTDA

Jeremy Gustafson chaired the PACE-D INTERAGENCY GROUP Meeting, held on April 29, 2013, at RCCR, USAID. *A copy of the agenda is attached for reference.*

The following key points were discussed during the meeting:

Jeremy Gustafson initiated the meeting by briefing the group about the Clean Energy Ministerial and the upcoming Strategic Dialogue (SD). He also informed the group that an MOU was signed with the Planning Commission to create another working group under the energy dialogue on Low Carbon Growth Strategy.

Dave Williams mentioned that one of the deliverables being considered for the SD was an umbrella MOU of USD 50 Billion between EXIM and GOI for infrastructure projects (roads, ports, communications, energy (including nuclear energy), and other sectors). Mr. Padmanaban (Padu) suggested that ECON might wish to involve IDFC and ILFS as they are bigger players in the infrastructure area. However, Dave mentioned that EXIM Bank’s earlier relationship with IDFC had not progressed much.

Dave updated the group on a \$6 million Pathfinder Fund that can be used for off-grid activities available with the Embassy. However, it requires matching fund from the GOI, for which they had some initial discussions with the planning commission and MNRE. MNRE seem to be interested in providing the matching funds in off-grid space. However, they had requested a concept paper on this. Padu informed Dave that a concept note is being prepared on microfinance by the PACE-D TA program and that would be shared with ECON for their comments and inputs. The note can be

subsequently shared with the GOI. Dave also suggested that concept note should include a paragraph about the structure and management of the Fund.

Jeremy and Padu mentioned about USAID's plans to launch a country-wide alliance for off-grid RE innovations/projects and discussed the new entity that is likely to be created for this purpose.

Padu informed the group about the workshop on off-grid that was organized in Mumbai with CEEW when administrator Shah was in India and the plans for two more workshops in Delhi and Bangalore on the same subject. The idea of the alliance is to develop an aggregator. A consultative process would advise the shape and structure of this entity and where it would be hosted. All these modalities would need to be worked out between now and October when the alliance would be launched. During the SD, the intention of setting this alliance could be announced.

If there is a buy in from the GOI, the Embassy's pathfinder fund could also be used for the alliance along with USAID's funds. Dave suggested that such an entity could be formed on the lines of Indo-U.S. Science and Technology Foundation and may be named as Indo-U.S. Micro Grid Alliance. Padu further elaborated that the alliance could include all players including other development agencies. He further suggested that National Clean Energy Fund could be another source of funds for the alliance.

Jeremy mentioned that PACE-D secretariat is compiling a publication, which provides an update/progress to PACE, which would be released in the SD. The PACE-D TA program would be reaching out to different agencies for information for this publication. Padu mentioned that it was long time since there were any updates from DOE about PACE-R activities. Usha informed that Srinivasan, DOE had indicated that he would share PACE-R quarterly reports with everyone but that has not been done yet.

Padu apprised the group about the plan to facilitate the formation of a Heat Rate Alliance to promote cooperation between public and private utilities in India under the coal component of USAID's PACE-D TA program. Discussions with different stakeholders including NTPC, CENPEEP and private utilities such as TATA Power and Lanco have been undertaken and all have shown their interest in this alliance. USAID has already prepared a concept paper for this program.

On the material testing for Ultra Super Critical Technology, Padu informed the group that quite a lot of development had already taken plan on this front. A team from BHEL, NTPC and DRDO has already visited Ohio with the involvement of NETL. Therefore, it is currently unclear what role could USAID's PACE-D TA Program play. The team is looking into this and is identifying the next steps.

Anurag Mishra informed that a partnership between American Council of Renewable Energy (ACORE) and Indian Renewable Energy Federation (IREF) was announced in one of the side events during the Clean Energy Ministerial (CEM4) on April 18, 2013. IREF is a new initiative to set up an apex association in India aimed at creating a common platform for stakeholders to address barriers to

RE development in India, and facilitate market transformation. ACORE has been quite successful in doing this in the U.S. currently; ACORE is developing a MOU to list out the support areas for IREF.

Dave and Michael provided an update on the CEM4 and informed that it was a multilateral forum with 20 countries participating. There were 13 initiatives of which Indian joined 2 (Electric Vehicle and 21st Century Partnership). A series of Roundtable (RT) meetings were organized during CEM4. U.S. Energy Secretary Steven Chu participated in the finance and Power Market meetings. Michael felt that the RTs were not effectively organized as there was little or no time for discussions. However, showcase innovation pavilion was new.

Michael further listed two outputs of CEM4 – a standing committee to do business of CEM4 was established and a catalogue documenting all clean energy initiatives/studies/activities will be prepared.

He mentioned about the Bloomberg study that shows economic turndown in clean energy space with two exceptions – China and South Africa.

Mehnaz introduced the two visiting officials from US TDA. She along with Jamie informed that they were in Mumbai last week to discuss and finalize three activities: i) Shale Gas with Essar, ii) Feasibility study on Smart Grid Pilot with Reliance, and iii) Solar off-grid activities. Mehnaz provided an update on TDA studies with GETCO on RE and Smart Grid Test Bed with CPRI in Bangalore. Padu asked whether these studies could be made available to USAID. Mehnaz promised to check and inform if these documents could be shared. The USTDA team informed that an Indian Trade Mission comprising of officials from petroleum refineries was scheduled to go to the U.S. on May 11.

Next PACE-D Interagency Group meeting is scheduled for **May 24, 2013 at 0930 hrs.**

No. 18/6/2010-IC
Government of India
Ministry of Power

Shram Shakti Bhawan
Rafi Marg, New Delhi – 110001

Date: 04.04.2013

To

1. Shri Vivek GaeI, Director (DP&D), CEA
2. ED (CP), PGCIL
3. ED (CP), NTPC
4. Secretary, BEE

Subject: Partnership to Advance Clean Energy Deployment (PACE- D) Project
Advisory Committee meeting-regarding.

Sir,

I am directed to enclose herewith a copy of the minutes of the Project Advisory Committee meeting held on 22.03.2013 in Shram Shakti Bhawan, Ministry of Power, New Delhi for your record and appropriate action.

2. This issues with the approval of Joint Secretary (IC), Ministry of Power.

Encl : as above.

Yours faithfully,

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Section Officer (JC} Tele-fax: 2376-6531

Email: ic.mop@nic.in

**Partnership to Advance Clean Energy-Deployment (PACE-D)
3rd Project Advisory Committee (PAC) meeting**

Minutes of the Meeting

Date: March 22, 2012

Venue: Committee Room, 2nd Floor, Ministry of Power

Time 5.15pm - 6.30 pm

Chair: Ms. Jyoti Arora, Joint Secretary, MOP

Participants:

1. Mr Alok, Director- International Cooperation, MOP
2. Mr Sanjay Garg, GM, Ministry of Power
3. Mr H.K.Sikri, AGM, Ministry of Power
4. Mr Vivek Goel, Director, CEA
5. Mr.S Padmanaban, Senior Energy Advisor & Director –SARI/IE, USAID
6. Ms Monali Zeya Hazra, Program Management Specialist, CLEEO, USAID
7. Ms Apurva Chaturvedi, Program Management Specialist, CLEEO, USAID
8. Mr Anurag Mishra., Program Management Specialist, CLEEO, USAID
9. Mr K K Chakarvarti, Secretary, BEE
10. Mr Sanjay Seth, Energy Economist, BEE
11. Mr Pankaj Bhartiya, General Manager, CenPEEP, NTPCTPC
12. Dr. P.K.Jain, GM, NETRA, NTPC
13. Mr Surendra Prasad, AGM, CenPEEP, NTPC
14. Mr N. S. Sodha, ED (CD&C), Power Grid
15. Mr Sanjeev Singh, ED (SG), Power Grid
16. Mr Subir Sen , GM(SG), Power Grid
17. Ms. Kumud Wadhwa, DGM, Power Grid
18. Mr Sanjay Dube, Chief of Party, Nexant
19. Ms Vasudha Lathey, Dy. Chief of Party, Nexant

Meeting Highlights

1. At the outset Ms.Jyoti Arora, Joint Secretary -JC, MOP welcomed the participants and mentioned that the PACE-D Program has three verticals with the Ministry: Energy Efficiency, Smart Grid Technologies and Clean Fossil Technologies are making progress.
2. The gist of the discussion is summarized below:
 - Building Efficiency:
 - o PACE-D is assisting BEE in developing the framework to update ECBC 2007 with the vision of moving it to Net Zero Energy Building (NZEB). This was initiated with an Expert Consultation on 20 December, 2012. Experts have also been identified in the form of six

technical committees to provide guidance on ECBC updates. Dates for organizing the technical committee meetings has been finalized as April 23, 2013.

- o Criteria have been developed to select Net Zero Energy Building (NZEB) pilots and a tentative list of viable pilots identified. Mr Sanjay Seth, Energy Economist, BEE mentioned that the building of Uttar Haryana Bijli Vitran Nigam Limited has been chosen as one of the pilots under the Net Zero Energy Building (NZEB). The JS(IC) suggested that the program should also undertake techno economic analysis of net zero energy buildings in different climatic zones.
- o A market assessment study on Heating Ventilation Air Conditioning (HVAC) has been initiated to identify barriers. In this context, a stakeholder workshop was conducted on 28th February- 01 March 2013. The JS(IC) advised the PACE D team to take cognizance of existing studies on HVAC before determining the content of the market assessment study.

- **Industrial Efficiency:**

- o USAID informed that Sponge iron sector has been selected for normalization of targets and development of M&V protocols under the PAT scheme. The draft normalization and M&V protocol has been prepared, which will be shared with BEE. A stakeholder consultation is also planned to vet the protocols. Secretary, BEE mentioned that sponge iron is an important sector considering its energy intensity as well as its informal nature. JS(IC) advised the PACE-D team to share the development related to M&V protocol in sponge iron sector with BEE.
- o An assessment of Waste Heat Utilization(WHU) technology in India has been completed and team has also initiated the work on developing a strategy paper on WHU. JS(IC) advised PACE-D team to consider existing pilots under BEE for waste heat utilization.

- **Smart Grid:**

- o USAID informed that the work plan for smart grid has been modified 10 consultation with the Director, Distribution–MOP and the team has also interacted with the Indian Smart Grid Task Force (ISGTF) to identify areas for technical assistance to the 14 smart grid pilot projects of GoI. JS(IC) stressed that the program should add value to the Government of India's program. In this context, she advised JS(IGTF) to assess the specific need for technical assistance from the PACE-D program.
- Institutional strengthening activity: Three states have been selected, namely, Karnataka, Rajasthan and Haryana for technical assistance and support to the state designated agency for promotion of energy efficiency. The USAID team visited Karnataka and Rajasthan in February and March, 2013 to conduct introductory meetings and plans to visit Haryana in April 2013.
- Energy efficiency financing: USAID informed that a draft report on "EE Financing Mechanisms in India" has been compiled which includes draft recommendations on innovative

financing mechanisms. The PACE-D team is also setting an Advisory Team for EE Finance (ATEEF) and the first meeting will be held on April 23, 2013. USAID requested Ministry of Power to recommend representatives from BEE/Power Finance Corporation for the ATEEF. JS(IC) suggested that the program should assess the existing financial instruments developed by BEE and identify how it could be more useful/successful.

- On the Cleaner Fossil, Mr Pankaj Bhartiya, General Manager, CenPEBP, NTPC made a presentation on the progress made under the program. He briefed about activities undertaken on heat rate improvement at Panipat and Chandrapur, benchmarking of supercritical technology at NTPC's Sipat unit and the work on model power plant, which would essentially be comprised of better coal blending technologies and improved boiler reliability. JS(IC) advised CenPEEP to check the performance of Epsilon Software and its use by Chandrapur and Panipat Power Plants and suggest the areas of value addition by PACE-D team for effective implementation of efficiency improvement activities.

Dr. P.K. Jain from NETRA briefed the committee regarding the outreach activities planned under the program including the International Conference in November, 2013.

Mr Padmanaban mentioned about the proposed work on introduction of Materials for supercritical boilers at high super heat temperature i.e. 700 degree centigrade and higher. The JS(IC) informed that NTPC, BHEL and IGCAR are jointly working on development of materials suitable for 700 deg. C application in utility boilers. She opined that the USATO may interact with NTPC and BHEL & discuss on further collaboration on a need basis.

3. JS(IC) pointed out that there is a need to formulate an annual work plan on a quarterly basis. USAID expressed difficulty in making quarterly plans. It was agreed that USAID will submit the annual plan for various activities scheduled for 2013-14 in six monthly formats latest by 30th April 2013 for concurrence of Ministry of Power and subsequent implementation. The reviews in successive meetings will be based on agreed plan of action.

**Minutes of PACE-D Interagency Group Meeting
 March 07, 2013**

Venue:	RCCR Conference Room, USAID Mission Office, New Delhi
Date & Time:	March 07, 2013, 0900 HRS – 1000 HRS
Participants:	Jeremy Gustafson, S. Padmanaban, Monali Zeya Hazra, Apurva Chaturvedi, Anurag Mishra and Amol Bhutad, USAID; Dave Williams, Michael Richards and Sikander R Shah, ECON; Peter Ballinger, OPIC, Usha Sunil, DOE; Greg O’Connor and Renie Subin, FCS; Sanjay Dube, Ram Berry and Pritha Sanyal, PACE-D Secretariat Daniel Rochberg, DOS, joined the meeting via telephone

The PACE-D Interagency Group Meeting, held on March 07, 2013, at RCCR conference room, USAID, was chaired by Jeremy Gustafson. *A copy of the agenda is attached for reference.*

The following key points were discussed during the meeting:

11. In his Opening remarks, Jeremy Gustafson briefed the group about Administrator Rajiv Shah’s visit to Mumbai, India and his participation in a Roundtable on Off-grid Renewable Energy systems. USAID had also planned to launch the Working Group on Low Carbon Strategy as a part of US-India Energy Dialogue in association with the Planning Commission during the Administrator’s visit. However, that could not happen and the launch is now planned during the Clean Energy Ministerial – 4 (CEM 4).

12. Peter Ballinger provided an update on OPIC’s activities on Clean Energy Financing. These include:

- The joint venture on solar energy between Reliance and First Solar did not materialize as Reliance has withdrawn from the deal.
- Goldman Sachs has decided to go ahead with their own financing on the wind project they were discussing with OPIC.
- OPIC is no longer looking at grid connected solar projects but are open to financing off grid solar projects.
- o OPIC is discussing with Mera Gao Power (MGP) to fund their off grid solar projects in Uttar Pradesh (UP). MGP operates RE based micro grids in 155 villages of UP that serve

- o over 3600 households.
- o OPIC is in discussions with Husk Power for expanding their operation in India and replicating their projects in Africa. Husk Power operates biomass based micro grid systems in Bihar state of India.
- o OPIC is also ready for discussions with SunEdison once they have identified project opportunities. Anurag added that since SunEdison is active in MP, there is an opportunity for PACE-D TA Team to coordinate with them for design and implementation of solar projects with financial support from OPIC.
- In the Clean Energy Finance Centre, OPIC's involvement will be virtual as will be EXIM's involvement. USTDA and FCS will continue to be actively involved.
- 13. S. Padmanaban updated the group on the progress made by USAID's PACE-D TA Program so far. Key highlights include:
 - USAID launched the state institutional strengthening activity by visiting Madhya Pradesh and Karnataka. The team will also visit the other two states, namely Rajasthan in the week of March 11, 2013 and Haryana in April, 2013. PACE-D TA program will help the SDAs in selected states to develop strategy to optimally utilize their manpower and financial resources for deployment of clean energy.
 - The meetings in Karnataka revealed that there was a trust deficit. The companies that are buying green power as a part of their corporate strategy want to procure it at cost cheaper than conventional power thereby defeating the purpose of green power. The DISCOM had a technical concern regarding the grid stability in integrating renewable energy. The regulator is in favor of a more transparent bidding process like Case 2 bidding. It is a big task for the program to address all these concerns and find some solutions.
 - Based on the requests from the different stakeholders in the state, the program will initiate two studies a study on the stability of the grid for development of Grid connected RE for Bangalore Electricity Supply Company (BESCOM) and Case 2 Bidding Process for Karnataka Electricity Regulatory Commission (KERC).
 - A two days workshop on Heating, Ventilation and Air Condition (HVAC) technologies was held on February 28-March 1, 2013. It had a very high level of participation with leading architects discussing their work on natural air conditioning systems.
 - A U.S. expert team is visiting Chandrapur and Panipat Power plants for Heat Rate Improvement task under the Clean Fossil Technologies Component. The team will also visit NTPC's Sipat Power plant in March 2013 to work on benchmarking of supercritical technology.
- 14. Mr. Padmanaban also informed the group about the visit of Robert Purgert from Ohio Group of Industries who participated in the NTPC's Conference on Operation & Maintenance. His presentation was on advanced materials for ultra supercritical boilers at 760C temperature. This is 60C better than European system and can have significant impact on efficiency of the Indian power plants. It however needs to be analyzed how will it work with high ash Indian coal. The PACE-D team is looking at the option of supporting this activity by undertaking preparatory work including introductory meetings with NTPC/BHEL, developing protocols, etc.

15. Anurag Mishra provided an update on the RE Finance component. He also mentioned about a meeting organized by Madhya Pradesh Urja Vitran Nigam Ltd (MPUVN) with Ministry of New & Renewable (MNRE) Channel Partners. This was attended by the PACE-D TA team and the discussions will feed into developing an Action Plan for the state.
16. He also mentioned that MNRE is looking at PACE-D for developing a plan to support the training and capacity building program under MNRE's HRD policy. PACE-D is going to submit a note on the proposed plan, which is in line with the DRUM training program. The program will try to establish linkages between industry partners and training institutions.
17. Monali Zeya Hazra mentioned about a request from BESCO for technical assistance to help them develop a web based Rating System to rate the capabilities and skills/qualifications of their technical staff. She requested help/support from the interagency to address this request.
18. Jeremy Gustafson suggested developing one page update on the activities under PACE-D TA program in Karnataka to share it with U.S. consulates in Chennai.
19. Dave Williams provided an update on the CEM 4 preparations. The details are as follows:
- Department of Energy (DOE) has a new Energy Secretary. It is likely that he would be visiting India during CEM 4 in April 2013. In case the Energy Secretary is not able to visit, the Deputy Secretary will attend CEM 4.
 - There will be increased level of working between DOE, ECON and Planning Commission for CEM preparations. From DOE, Kavita Ravi and Srinivasan would be in India in next few weeks and meeting with Anil Jain, Planning Commission to discuss the preparations for CEM 4. ECON will arrange for a meeting with Kavita and Srinivasan to update the rest of the group.
 - The Interagency group needs to brainstorm on the meetings to be arranged for the Energy Secretary in India. Michael Richards indicated that DOE would appreciate if the interagency group could prepare a list of deliverables for the visit of the Energy Secretary. He also suggested that PACE-D should set up a pavilion in the CEM4 and prepare a one- page document on the program.
20. Apurva Chaturvedi informed that CEPT University, Ahmedabad has offered to fund monitoring and verification of the pilot projects under PACE-R.
21. S Padmanaban informed that a RE Expo will be held in Mumbai in May 2013 and in Delhi in September 2013, one of which will be attended by NREL Director,
22. Greg O'Connor provided an update on the recent Ambassador's visit to Jaipur. He mentioned that a Roundtable on RE was organized in Jaipur by FICCI in association with Naresh Gangwar, Chairman and Managing Director of Rajasthan Renewable Energy Corporation. The event was high-level and attended by the Chief Minister. Four Companies were brought together for dialogue. There are possibilities of organizing a trade delegation to the state.
23. Dave Williams mentioned about its plans to talk to MNRE regarding the use of Pathfinders funds to use for clean energy activities. MNRE will also put money in the fund and is interested in using it for micro off-grid projects. Sanjay Dube added that PACE-D is preparing a concept note to set up a revolving fund for micro finance activities to promote off grid RE and the program could explore the possibility of using Pathfinder funds to capitalize the revolving

fund. The draft Concept Note would be prepared by May 2013 and shared with the Inter agency group.

24. Sanjay Dube demonstrated the PACE-D TA website to the interagency members and specifically discussed the features of the Secretariat page. These subpages highlight the clean energy activities of the respective U.S agencies across different focal areas including renewable energy, smart grid, industrial efficiency, EE in buildings and cleaner fossil technologies. The Secretariat page also has an events calendar that lists the upcoming clean energy events. The website has a feature that the members of the interagency group can directly login to their respective sub-page and update/view them. It was suggested by the group that they would prefer to give information to the website coordinator instead of updating the information themselves. Dave Williams suggested that the PACE-D website should have a link to the CEM website.

25. The suggested date for the next interagency meeting is Monday, April 8, 2013.



Agenda Points for the scheduled meeting in MNRE, New Delhi to discuss U.S. India Partnership to Advance Clean Energy Deployment (PACE-D)

February 5, 2013

Pace Deployment (PACE-D)

The deployment component of PACE (PACE-D) is designed to support India's accelerate transition to a high performing, low emissions and energy secure economy by tackling multiple clean energy deployment opportunities, including :

- Energy efficiency and distribution reform:
- Scaling renewable energy technologies.
- Cleaner fossil technology and management.
- Enhanced greenhouse gas (GHG) mitigation.
- Planning and programs.
- Engaging the private sector and mobilizing investment.

Several U.S. government agencies contribute to PACE-D efforts under the auspices of the U.S.-India Energy Dialogue. The U.S. Agency for international Development (USAID) plays a lead role in shaping the overall approach to PACE-D, supported by Energy (DOE), U.S. Department of State, U.S. Trade and Development Agency (USTDA), Overseas Private Investment Corporation (OPIC), Export-Import Bank (Ex-Imp), U.S. Department of Commerce, and office of the U.S. Trade Representative (USTR). This work is shaped to a large extent by two separate bilateral agreements and the Ministry of Power, and the other between USAID and the Ministry of New and Renewable Energy.

1- Type of major central and state funded programs under implementation.

MPUVNL is a state Nodal agency of Ministry of New & Renewable Energy Govt. of India for implementation of their various programs on New & Renewable Energy technologies.

Pt. Jawaharlal Lal Nehru National Solar Mission, is presently coming under high focus of implementation. MPUVNL's 90% of project turnover is dedicated to On-grid and Off-grid projects based on Solar Photovoltaic technology.

Special drive is undertaken for providing basic infrastructure in the solar parks developed in the state of Madhya Pradesh for On-Grid Projects. With this and the newly emerged policies for Solar, wind, Biomass and Micro hydel projects response from developers is over whelming. In recent investors meet MOU to the tune of 2000 MW have been placed with the Government of M.P.

In Off-Grid SPY sector almost all the un-electrified villages of the state have been energized with Off-Grid systems. 600 villages have been covered up to this financial year. 50 projects based on decentralized distributed generation (DDG) under the purview of rural village electrification

corporation are being undertaken which are basically micro grid systems.

Deployment of standalone roof top Solar Photovoltaic Power Plants is also one of the Priority focused area of implementation. It is projected to cover I Lakh rural and semi Urban Households of the state with 2 KW capacity power Plant during the year 2013-14 totaling to capacity of 200 MW.

2- Is there any plan to develop state clean energy (renewable energy orenergy efficiency d development fund. What is the state if the plan is already in place.

The state Energy conservation fund is created by the state government. (GoMP vide is notification (F1-02/201 0/60) notified as MP State Energy Conservation

Fund Rules, 2010 providing for the constitution of State Energy Conservation Fund (SECF) to be administrated by MPUVNL) State share of Rs. 1.00 Crore is already contributed in SECF.

Roadmap for activities under SECF for phase I :

- Sector Specific action plans.
- Formation of district level energy committee. DREO capacity building.
- Pilot project of EE Air Conditioning system at MPUVNL Head Office, Bhopal. Formation of Energy Clubs in consultation with Department of education. Support the technical studies of DISCOMs for the pilot projects; one each for advertisements/ hoarding for promoting use of improved irrigation pumping, efficient energy products etc.
- Development of framework for implementation of provisions under GoMP notification date 17-02-2010 for incorporation of energy efficient and New & Renewable energy technologies in industrial, Residential and institutional sectors.

3- Are you working in partnership with any other international agency/project. What is area of the program and the size and extent of program.

Under Department for International Development (DFID) UK, Price water house coopers (PWC) have been assisted with Department of New & Renewable Energy and M.P. Urja Vikas Nigam Ltd. for preparing reports for institutional development of the department, promotion of renewable energy and energy efficiency since April 2010. Key areas of support are as under:

- ↳ Formulation of RE promotional Policies (Solar, Wind, Small Hydro and Biomass)
- ↳ Regulatory support
- ↳ Institutional strengthening of MPUVNL
- ↳ Business plan and financial planning for MPUVNL
- ↳ Policy implementation support (RfPs, Hydro and Wind Power Development Agreements, MoUs, dynamic web application)
- ↳ Support for the development of Solar cities (Roadmap, Action Plan)
- ↳ Programme implementation support for Off-grid RE projects.

- ↳ Promotion of Energy Efficiency and Conservation measures
- ↳ IT support

All these report have been submitted and shall be tabled before the concerned quarter of DFID for further needful.

4- Do you have a state action plan? Does it cover human and financial resource required human resource development plan, frame works for program monitoring and valuable bench marking and data management system, coordination with SERCs, etc.

The government of M.P. every year declares their state plan and projection for 12th five year plan for various developmental programs under the purview of state planning board.

The issues pertaining to HR, capacity building, institutional strengthening, program monitoring data management systems, coordination etc. are attended and resolved individually for each of the department of the state at the level of state planning board.

5- How the state is dealing with REC and RPO mechanisms and their compliance. You see in the implementation of REC and RPOs.

RPO mechanisms are formulated and enforced by central electricity regulatory authority CEA wherein mandate is given for RPO to all the states utilities. The state of M.P. is doing well for meeting its RPO. In Madhya Pradesh RPO declared by MPERC are as under: (Vide their regulation No.3042/MPERC-2010; notified in gazette Notification date19-11-010.

Financial	Cogeneration and other Renewable Sources of Energy		
	Solar%	Non	Total (%)
2010-11		0.80	0.80
2011-12	0.40	2.10	2.50
2012-13	0.60	3.40	4.00
2013-14	0.80	4.70	5.50
2014-15	1.00	6.00	7.00

The state of M.P. has achieved the largest aggregate capacity of REC accredited projects. (Total capacity under REC (as on 31" Jan, 2013) 62.785 MW. (6.1 MW for solar SPY, 9.02 MW for wind, 31.5 MW for Biomass and 15.7 for Hydel Power.)

6- Any specific area you would like to propose where PACE-D can add value

Support for market driven deployment of renewable energy technologies (i.e. renewable energy based mini/micro grids, off-grid applications for industrial power and process heating) Development and testing of innovative finance mechanisms to leverage public and private sector firm Icing for renewable energy projects. Support for partnerships between micro finance institutions and renewable energy service providers, including capacity building to increase clean energy access to rural communities.

Minutes of PACE-D Interagency Group Meeting

February 01, 2013

Date & Time:	February 01, 2013, 1015 HRS – 1130 HRS
Venue:	PS Conference Room, USAID Mission Office, New Delhi
Participants:	Jeremy Gustafson, S. Padmanaban, Monali Zeya Hazra, Apurva Chaturvedi, Anurag Mishra and Amol Bhutad, USAID; Dave Williams and Michael Richards, ECON; Usha Sunil, DOE; Mehnaz Ansari, TDA; Greg O’Connor, FCS; Anjana Modi, DOS; Sanjay Dube, Ram Berry and Pritha Sanyal, PACE-D Secretariat
Special Invitee:	Orestes R. Anastasia, Senior Regional Climate Change Advisor, USAID/RDMA

The PACE-D Interagency Group Meeting, held on February 01, 2013, at PS conference room, USAID, was chaired by Jeremy Gustafson. *A copy of the agenda is attached for reference.*

The following key points were discussed during the meeting:

1. The meeting started with a round of introductions for the benefit of the new attendees and Orestes R. Anastasia, USAID/RDMA.
2. Jeremy briefed about the two study trips supported by USAID in January 2013. One of the study trips was on smart grid in Singapore and the other was on shale gas in the U.S. between January 21-25, 2013.
3. S. Padmanaban briefed the group on PACE-D TA Contract’s macro and micro level activities. These include:
 - The two focal states selected for support under institutional strengthening and policy support are Rajasthan and Karnataka under the EE component.
 - The WHU activity will lead to policy recommendations for the Government of India (GOI) to promote WHU technologies in the industrial sector.
 - Assisting GOI to develop the roadmap for normalization of data under the Perform, Achieve and Trade (PAT) scheme. The sector selected for demonstration of normalization process is steel industry.
 - GOI wants PACE-D TA team to monitor the progress of Ministry of Power’s 14 smart grid pilots in different utilities.
 - He also discussed the upcoming conference “U.S. India Technology Cooperation on Clean Energy” scheduled to be held in September 2013 in U.S. The Confederation of Indian Industry (CII) is playing a key role in organizing the conference. The PACE-D TA team will coordinate on behalf of USAID and develop the background paper for the conference.
4. Michael Richards and Dave Williams provided the following updates on ECON activities:

- GOI has agreed to join the 21st Century Power Partnership. The initial discussions covering topics such as integrating Renewable Energy (RE) into the Grid, efficient buildings and Smart Grid technologies are expected to begin in February 2013. This commitment is seen as one of the deliverable from GOI for the fourth Clean Energy Ministerial (CEM4).
 - GOI participated in the planning meeting organized recently in Seoul, Korea to prepare for the CEM4 event scheduled in April 2013 in India.
 - The Indian Minister of Power Jyotiraditya Scindia is planning a visit to the U.S. during March 18-20, 2013 and has requested for a meeting with the Secretary, U.S. Department of Energy (DOE) in Washington, D.C.
 - Dr Phyllis Yoshida, Deputy Assistant Secretary, DOE was in India last week to prepare for CEM4 and meet the co-chair at the Ministry of New and Renewable Energy (MNRE) and Ministry of Power (MOP) to roll out the action plans.
 - Dave also provided an overview of the Women Entrepreneurship Development Program. Jeremy and Apurva Chaturvedi provided the highlights of USAID/India's Women's Entrepreneurship in Clean Energy (wPOWER) project which was recently awarded to Swayam Shikshan Prayog (SSP), a Mumbai-based NGO.
5. Monali Zeya Hazra briefed the group on PACE-D TA's Clean Coal activities and mentioned that CenPEEP/NTPC is actively working with the team to design and implement heat rate improvement activities at two selected thermal power plants – Chandrapur in Maharashtra and Panipat in Haryana. A team of U.S. experts will visit these plants in February-March 2013. The PACE-D TA team is also working with Sipat Thermal Power Plant to develop a concept for model power plant. The team will also develop a Best Practice manual on super critical technology and share it with public and private utilities in India.
6. Apurva provided an update on PACE-D TA's work on building efficiency. She informed that the team organized a consultative workshop on ECBC in December 2012 and currently technical committees are being formulated to work on updation of ECBC. She also mentioned that the PACE-D TA team is talking to potential partners for pilot projects in net zero buildings. Mehnaz Ansari added that TDA has received a request from Delhi Mumbai Industrial Corridor and Development Corporation (DMIDC) for assistance in Dwarka Exhibition and Convention Center for a net zero energy building.
7. Anurag Mishra briefed the group on RE activities under the PACE-D TA Contract and informed that three states (Karnataka, MP and Rajasthan) have been finalized, in consultation with MNRE, for institutional strengthening. The focus of the activities will be on off-grid RE technologies. The PACE-D TA team is also conducting a study on decentralized storage technologies. The first meeting with the selected state agencies is due on February 5, 2013. MNRE has also requested support in effective implementation of training and capacity building programs of the ministry.
8. Mehnaz Ansari provided the following updates on TDA activities:
- TDA will reach out to Power Finance Corporation for tamper proof meters which they want to upgrade to Smart Meters.
 - They are working with power utility CESC for Smart Grid implementation in Kolkata and have awarded the work to a contractor. The roadmap of the work is still under discussion.
 - She also briefed on TDA's other activities on smart grid including the current work with the Gujarat Energy Transmission Corporation Limited (GETCO), a study with Reliance Infrastructure on peaking power systems to support DSM initiatives, and the ongoing discussions with Central Power Research Institute (CPRI) for supporting Smart Grid Test

Bed facility. She mentioned that the Karnataka Government has requested for U.S. assistance for Karnataka Power Transmission Corporation Limited (KPTCL).

9. Orestes Anastasia provided a brief on the Low Emissions Asian Development (LEAD) Program. This program is helping South Asian governments develop the frameworks for sustained low-emissions development. He suggested that the LEAD and PACE-D TA projects can collaborate on knowledge sharing and capacity building initiatives.

10. Next PACE-D Interagency Meeting is scheduled on Monday, February 25, 2013.

Action Required:

- PACE-D TA team to have a detailed discussion on Smart Grid activities in India with Mehnaz.
- PACE-D TA team to meet with relevant groups under Energy Cooperation Partnership.
- Dave Williams and Michael Richards to provide detailed Action Plan which was circulated by Ari for energy dialogue.
- USAID to discuss with ECON/DOE on setting up a PACE-D booth at CEM4.
- The PACE-D TA team to develop a background paper for the upcoming U.S. India Technology Cooperation in Clean Energy.

Minutes of PACE-D RE Review Meeting (CLIN-2)

Date – January 11, 2013

Time – 9:00 AM

Place – PACE-D TA office, New Delhi

Attendees –

1. Anurag Mishra (USAID)
2. Sanjay Dube, Kavita Kaur, Himanshu Dube (PACE-D)
3. Ajit Pandit, Sanjay Mande, Sunil Sharma (ABPS Infra)
4. Vinod Kala, Ashutosh Pande, Alope Barnwal, Aseem Verma (EVI)

Key Discussion Points:

- AEEE Workshop*: PACE-D TA Contract is supporting AEEE's workshop on DSM scheduled to be held on January 23, 2013. Sanjay Dube extended an invite to ABPS to attend the workshop.
- Monitoring & Evaluation*: Himanshu Dube emphasized on the quantification of program activity results. 714 MW of operational capacity addition has to be achieved under the PACE-D TA program. He also highlighted the need to define the operational capacity addition. The impact of policy and capacity building activities on total MW capacity addition also needs to reflect in the M&E report.

Comments on Presentation on RE Task Activities by Anurag Mishra:

- MNRE and USAID have not yet finalized the focal states. As such, further activities for stakeholder engagement at the state level cannot be initiated. ABPS is working on the preliminary investigation/desk review of few states - Rajasthan, Madhya Pradesh and Karnataka and presented its approach for the development of state specific action plan document.
- Stakeholder consultation should be in two phases: initial phase should be part of the desk review and broader consultation at later date.
- ABPS should indicate the timelines for completion of desk review and priority activities.
- Consultation should be the responsibility of SNA and PACE-D TA team will provide the technical support to SNA.
- A MNRE - SNA meeting is likely to be organized on Jan 21, 2013 to discuss modalities of state specific action plan requirements.
- ABPS needs to prepare a presentation for discussion with SNAs. The presentation should cover the following:
 - o Introduction of PACE-D TA Contract
 - o Brief background of SNA activities
 - o Expectations from SNA on their role and required support
 - o List of priority activities and suggestions from SNA on their priorities areas.
 - o Potential positive outcomes of PACE-D TA activities
 - o Way forward for next meeting
- USAID will sign a MOU with SNAs and will request them to appoint one contact person for the PACE-D TA Contract.
- Tentative date for next review meeting: **Jan 29-30, 2013**

Task Components: *Market Deployment of RE Technologies, Renewable Energy Finance and Capacity building, training, outreach, dissemination and sharing of best practices*

Current Status and Work Plan- EVI Minutes of the Meeting

Date	January 11, 2013
Venue	Nexant Office, Delhi
Participants	<p>USAID/India:</p> <p><input type="checkbox"/> Mr. Anurag Mishra, Senior Clean Energy Specialist, Clean Energy and</p> <p>PACE-D TA Contract:</p> <p><input type="checkbox"/> Mr. Sanjay Dube, Chief of Party, PACE-D TA Contract</p> <p><input type="checkbox"/> Ms. Kavita Kaur, Communications and Public Outreach Specialist, PACE-D TA Contract</p> <p><input type="checkbox"/> Mr. Himanshu Dube, M&E Specialist, PACE-D TA Contract</p> <p>Emergent Ventures India (EVI):</p> <p><input type="checkbox"/> Mr. Vinod Kala, Managing Director, EVI</p> <p><input type="checkbox"/> Mr. Ashutosh Pandey, President, EVI</p> <p><input type="checkbox"/> Mr. Alope Barnwal, Principal Consultant, EVI</p> <p><input type="checkbox"/> Mr. Aseem Varma, Senior Consultant, EVI</p> <p><input type="checkbox"/> Ms. Prima Madan, Senior Consultant, EVI</p>

Objective:

The objective of the meeting was to review the work as of December 31, 2012, across the three task components. A future work plan was also discussed based on the progress made and the current status of various activities. ,.

Highlights of the discussion:

The meeting began with a presentation on project progress by EVI.

Capacity building and training:

- It was emphasized that focus should be on assessing the current training and capacity building needs of the RE sector. EVI should prepare an assessment note for the trainings done under the current programs, and do a need assessment to define training needs.
- It was also emphasized that trainings proposed for this year should be based on this needs assessment and also supplement other task components. The trainings should maintain the continuum into the next year.

- The task component should be directly linked to the pilot projects under market deployment and RE microfinance. There is a need to be look at the synergies while working on this task component.
- It was also suggested, that as an immediate step the team should meet MNRE to assess their existing programs and identify areas where PACE-D TA Contract can complement or add value.

RE Financing

- It is important to weigh the practical problems (regulatory, other issues) while selecting innovative mechanisms.
- It was discussed that PE funds are drying up, as PEs have been unable to find exits from existing investment due to dull capital markets. It was discussed that existing investors can explore exits through green bonds that can be subscribed by pension funds or other FIs.
- It was also suggested that the financing requirements to meet targets as per the 12th five year plan should be included in the financing report.
- It was advised that there should be two advisory teams for financing: one for RE and the other for EE as each sector has specific barriers and issues.
- EVI will finalize the assessment of financing mechanisms options that are viable for the Indian market.

Market Deployment

- The key mandate of pilot projects is not only to implement two standalone demo projects, but also to find value addition so that these off grid projects can be scaled up.
- ABPS has proposed a franchise model for implementing off-grid projects which has been approved in-principal by the Forum of Regulators (FOR). While this model addresses some critical barriers, there are certain issues such as the financial health and approachability of DISCOMs that need to be addressed to make it viable.
- Anurag Mishra will connect EVI to CEW for discussion on off-grid RE activities.
- As next step, the team needs to focus on evaluating the models for pilot implementation and discuss it internally before finalizing the villages and actual sites.
- The team will develop a report on storage technologies quantifying benefits that can accrue to all stakeholders and provide recommendations for storage technology deployment in India. This report will be submitted to MNRE and USAID.
- The team will submit the draft report on storage technology soon and then finalize it ased on the comments/suggestions received from USAID.

Meeting takeaways

- Meet MNRE to understand their HRD policy and explore synergies; and develop capacity building and training activities accordingly.
- Develop a training needs assessment paper.
- Finalize the assessment of financing mechanisms options that can be feasible in India.
- Evaluate the models for pilot implementation for internal discussion before finalizing the villages and actual sites.
- Submit report on storage technology analysis.

Annual Report: PACE-D Technical Assistance Program

United States Agency for International Development Contract AID-386-C-12-00001

**Partnership to Advance Clean Energy-Deployment (PACE-D)
 Technical Assistance Contract: Energy Efficiency**

Minutes of Executive Committee Meeting

January 7, 2013

Preamble:

The Executive Committee for the Energy Efficiency activities met on January 7, 2013 to review the progress under each task, and finalize the plans and events for the next quarter/year. Three separate meetings were held to discuss activities under Smart Grids, Industrial Energy Efficiency and Building Energy Efficiency.

- I. The PACE-D team first met Mr. Y.K. Sehgal & team from Power Grid Corporation of India Limited (PGCIL) and Mr. Vivek Goel from the Central Electricity Authority (CEA) at the PGCIL office in Gurgaon to discuss work progress for the Smart Grids task at 11:00am.
- II. The PACE-D and Development Environenergy Services Limited (DESL) team then met with K.K.Chakravorty at the Bureau of Energy Efficiency (BEE) at 2:00 pm to discuss work progress for industrial energy efficiency task
- III. The PACE-D team also met Sanjay Seth And Girija Shankar at the Bureau of Energy Efficiency (BEE) at 3:00 pm to discuss work progress under the building energy efficiency task

The minutes of the meeting along with action items are provided below.

Present:

Name & Designation	Organ	Meetings
Y.K. Sehgal, Executive Director	PGCIL	I
Kashish Bhambhani , Manager	PGCIL	I
Manish K. Tiwari, Chief Manager	PGCIL	I
Vivek Goel, Director	CEA	I
K.K. Chakravorty, Additional General Manager	BEE	II
Nisha Menon, Sr. Consultant,	DESL	II
Datta Roy, Chief Executive Officer	DESL	II
Sanjay Seth, Energy Economist	BEE	III
Girija Shankar, Assistant Energy Economist	BEE	III
Monali Zeya Hazra, Program Management Specialist	USAID,	I,II & III
Apurva Chaturvedi, Program Management Specialist	USAID,	III
Sanjay Dube, Chief of Party, PACE-D TA Contract	Nexant, Inc	I,II & III
Vasudha Lathey, Deputy Chief of Party, PACE-D TA Contract	Nexant.Inc	I,II, & III

Highlights of the Discussion:

I. Smart Grids

- j. The Executive Committee was briefed about the work plan for the PACE-D TA Contract, which included technical assistance for 2 of the 14 Government of India (GoI) smart grid pilot projects and the work on interoperability standards for India.
- k. The PACE-D team requested access to the Detailed Project Reports (DPR's) of the 14 pilots in order to be able to select the two pilot projects for detailed support. The also requested access to the draft report on single-phase interoperability standards for low cost meters, which was recently developed by the CEA.
 - Vivek Goel volunteered to send the PACE-D team the CEA report on low cost meters and all available smart grid pilot DPR's
- l. The PACE-D team was briefed about the Pondicherry Smart City pilot project and was urged to consider Pondicherry as a PACE-D pilot by the PGCIL team. They mentioned that the Pondicherry project needs technical assistance in a wide range of areas that include micro-grids, grid controls, communication software development, energy storage etc. The PACE-D team was requested to facilitate knowledge transfer from the US to the Pondicherry pilot in those areas.
 - The PGCIL team will send the PACE-D team documentation about the current status of the Pondicherry smart city pilot project along with a detailed request for technical assistance
 - The PACE-D team will then identify select areas where the project could provide Pondicherry targeted technical support to the project. Areas of TA to the Pondicherry will be identified based on the potential of reliability to other GoI pilots.
- m. The PACE-D team was briefed on the upcoming international GRIDTECH 2013 Conference which is being organized by PGCIL in Delhi from 3rd to 5th April 2013. The conference brings together international best practices and experts from the fields of transmission, distribution, smart grid/city, load dispatch & communication. PACE-D team committed to working with PGCIL to actively participate at GRIDTECH2013.
- n. The PACE-D team also suggested February 28th & March 1st 2013 as dates for the Smart Grid Training Workshop for the 14 GoI pilots. This workshop will be planned and organized by the PACE-D team.

II. Industrial Energy Efficiency

- d. The PACE-D team was recommended to take on the normalization for the Pulp and Paper sector under the PAT program. It was acknowledged that the normalization methodology developed for the Pulp and Paper sector will be easily transferable to other sectors.
- e. The PACE-D team has also suggested a programmatic approach for normalization of energy use for the textile sector, but they were advised to abandon that idea and focus all efforts on the pulp and paper sector.
- f. For Waste Heat Utilization (WHU) task, the team was advised to focus on the high-medium temperature technologies and sectors. West Bengal and Orissa were mentioned as

two states where there is high potential for WHU in the sponge iron sectors.

- g. WHU from open hood steel furnaces was mentioned as another good potential for deployment of WHU technologies. The PACE-D team was advised to research advanced WHU technologies for open hoods available in Canada and also being developed by the Office of Energy Efficiency and Renewable Energy (EERE) at the US Department of Energy.
- h. The team discussed the possibility of getting involved with low temperature WHU technologies (i.e. Heat pumps/pipes, boilers etc.)
- i. The PACE-D team was advised to work towards an integrated approach for developing a WHU policy directive for India- which involves researching the potential and viability of all technologies and all sectors.

III. Building Energy Efficiency

- f. The Executive Committee agreed to start the work on selecting the technical committees to guide the process of ECBC Technical Update and implementation process. It was advised to finish the formulation of the technical committees by January end 2013.
- g. The Executive Committee advised the PACE-D team to expedite the process of development of Rules and Regulation for ECBC administration, implementation, and compliance. The team was advised to have a first review meeting of the Rules and Regulation before March 2013.
- h. The BEE team offered to organize a joint meeting with all three international donor agencies working to implement ECBC in India- namely, UNDP, USAID and the Indo-Swiss collaboration. The meeting will identify each agency's unique contribution towards promoting energy efficiency in the Indian building sector and their roles/responsibilities for ECBC implementation.
- i. The participants agreed to meet on January 15th to review the work progress of the on-going HVAC market assessment study and to finalize the letter to invite building experts to participate in the ECBC technical committees. The letter will be sent to Ms. Jyoti Arora, Joint Secretary MOP & DG, BEE- for review and once approved; the invites will be delivered by BEE.

**Minutes of Executive Committee Meeting
 Clean Fossil Technologies
 January 2,2013**

Preamble:

The Executive Committee for the Clean Fossil Technology activity met on January 2, 2013 at 11.00 am at PACE-D Project office to review the progress under each task, and finalize the plans and events for the next quarter/year. The minutes of the meeting along with action items are provided below.

Present:

S. No	Name & Designation	Organization
1.	P. K. Jain, General Manager	NETRA, NTPC
2.	A. K. Das, Additional General Manager	NETRA, NTPC
3.	Pankaj Bhartiya, General Manager	CenPEEP, NTPC
4.	A. K. Mittal, Additional General Manager	CenPEEP, NTPC
5.	S. Bhandopadhyay, Additional General Manager	CenPEEP, NTPC
6.	Monali Zeya Hazra, Program Management Specialist	USAID India
7.	Sanjay Dube, Chief of Party, PACE-D TA Contract	Nexant, Inc.

Highlights of the Discussion:

1. Capacity Building, Training and Workshops

- a. The Executive Committee discussed the potential trainings and workshops under the PACE-D TA Contract
- b. The draft agenda and the plan for the proposed international conference, to be held on November 11-12, 2013, were discussed in detail. The USAID India team will start preparing for the conference in consultation with NETRA and identify expert speakers from U.S. and India. The preferred venue for the conference is India Habitat Centre or India International Centre. The venue should be booked in advance to ensure availability.
- c. It is proposed that the conference be inaugurated by the Minister of Power.
- d. The conference will have five technical sessions, in addition to the inaugural session. The

concluding session will end by evening tea time on November 12.

e. The details of each technical session were discussed and listed. The NETRA team will refine the topics under each proposed technical session and mail to USAID and CenPEEP for review. The topics that cannot be included in the conference agenda can be covered under other workshops organized by NETRA or CenPEEP during the year. The USAID team will ensure the participation of international experts to share best practices.

f. The ‘Best Practice Manual for Supercritical Technology’, which is being developed by USAID under the PACE-D TA Contract, should be released during the inaugural session of the conference.

g. USAID to send the list of experts (who are on PACE-D TA team) to NETRA/CenPEEP to help them better plan and organize the conference. The NETRA/CenPEEP team will also suggest the requirement of other experts for the conference.

h. Dr. Radha Krishnan, PACE-D TA team member, should be consulted for the names of U.S. based service providers who can be invited to participate at the conference. The U.S. based service providers should be encouraged to develop partnerships in India. The service provider company/individual experts can also speak during the technical sessions and set up stalls to facilitate knowledge exchange. The presence of service providers will also support the activity of developing service provider’s network under the PACE-D TA Contract.

i. The NETRA/CenPEEP team suggested that USAID should get the list of workshops and training events organized by EPRI to recommend stakeholders from India to attend the relevant training events and workshops.

2. Utility Exchange Visit to U.S.

a. The utility exchange visit to U.S. should be organized in July, 2013. About ten representatives from utilities (where heat rate improvement activities are going on), SipaPower Plant (where model power plant activity is going on), CenPEEP/NETRA, CEA and MOP should participate in the exchange visit.

b. The visit should focus on supercritical technology as this will help India in transitioning towards better technologies and develop useful partnerships with leading utilities in U.S.

c. The plan for the visit and the identification of U.S. utilities should be finalized with Dr. Radha Krishnan when he visits India in the month of February 2013. The USAID team will provide all the logistic support for organizing the visit.

3. Heat Rate Improvement Task

a. The executive committee agreed to select the Chandrapur Thermal Power Plant, Maharashtra and Panipat Thermal Power Plant, Haryana for heat rate improvement activity. Both plants have good potential for heat rate improvement. The third choice is Raichur Thermal Power Plant, Karnataka. The technical staff from Raichur can be nominated to work with Chandrapur plant staff for knowledge transfer on heat rate improvement activity under the PACE-D TA Contract.

- b. The Executive Committee requested USAID to follow-up with MOP for sending the letters to the management of the Panipat and Chandrapur plants to inform them about their selection and to get their consent to work with the USAID team for heat rate improvement task. The confirmation from the management of both plants should be received by January 15, 2013. The Executive Committee also suggested that the management of plants should commit to appointing a dedicated team to work with USAID and CenPEEP teams for heat rate improvement task.
- c. The Executive Committee suggested organizing half day workshops at each plant to share the objective and purpose of heat rate improvement task and to capture their views about the approach to implement the heat rate improvement plan. The workshops should be inaugurated by the Chairman of each plant to ensure the commitment from the plant management. Visiting experts should also make presentations at the proposed workshop to share their knowledge with the plant staff.
- d. The USAID team should establish a data tracking mechanism to track the heat rate improvement at both power plants. The plants should track their data and share them with USAID for at least the duration of PACE-D project (May 2017).
- e. On coal blending task, the Executive Committee suggested that the USAID should provide the Technical Assistance to operationalize CQIM software and buy the license for this to demonstrate the use with one utility. Going forward, CenPEEP will procure the license and continue building the capacity of utilities in India.

4. Model Power Plant Task at Sipat

- a. CenPEEP emphasized that the U.S. based experts should review the Sipat plant data before arriving in India. The team is also expected to send the questionnaire for the collection of additional data before the visit. The CenPEEP and PACE-D teams will coordinate with Sipat plant and the two selected power plants to collect the remaining data.
- b. CenPEEP also requested to include the operationalization of software for boilers at Sipat along with staff training. This is desired as part of the model power plant activity and Stephan Storm has the expertise on this.
- c. It is not required to develop the proposed 'Booklet on Model Power Plant' as a deliverable as the topic will be covered as part of the 'Best Practice Manual for Supercritical Technology'.

PRESS RELEASE

U.S. and India Organize Seminar on Net Zero Energy Buildings in India, New Delhi May 16, 2013

The United States Agency for International Development (USAID), in partnership with the Bureau of Energy Efficiency, Ministry of Power, Government of India, organized a two-day seminar on Net Zero Energy Buildings (NZEBs) in New Delhi on May 16-17, 2013.

At the seminar, the Ministry of Power announced two pilot projects – a net-zero energy campus in Nalanda University, Rajghir, Bihar and a net-zero energy office building in Panchkula,

Haryana – to demonstrate the value of net-zero energy principles in buildings. A net zero energy building is energy efficient, grid connected, zero carbon emission building which can generate energy from renewable sources to offset its own energy consumption.

Praising the Government of India's efforts, Jeremy Gustafson, Director, Clean Energy and Environment Office, USAID India, said "Net Zero Energy Buildings, using environmentally sustainable technologies and designs, can have a significant impact on a country's carbon footprint. USAID is pleased to support the Indian Government's efforts to include NZEB strategies under the National Action Plan on Climate Change."

Recognizing the role of USAID, Saurabh Kumar, Managing Director, Energy Efficiency Services Limited said, "The Government of India is happy to partner with USAID to create public awareness and facilitate stakeholder collaboration to spearhead the NZEB market development in India."

The seminar was organized as part of the five-year U.S.-India Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance Program. It brought together more than 150 experts and energy efficiency specialists, including architects, designers, and developers to focus on NZEB policies, technologies, and implementation plans to facilitate market transformation in the Indian building sector.

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