PACE-D TECHNICAL ASSISTANCE PROGRAM

Annual Report
(July 2015-June 2016)

October 2016

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PARTNERSHIP TO ADVANCE CLEAN ENERGY DEPLOYMENT (PACE-D)

Technical Assistance Program

Annual Report

July 2015-June 2016

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ACRONYMS

Acronym	Definition
ADB	Asian Development Bank
APR	Annual Progress Report
AREAS	Association of Renewable Energy Agencies
AVVNL	Ajmer Vidyut Vitran Nigam Limited
BEE	Bureau of Energy Efficiency
BESCOM	Bengaluru Electricity Supply Company Limited
BOA	Bank of America
BPG	Best Practices Guide
CE	Clean Energy
CCDT'S	Curriculum and Content Development Teams
CEA	Central Electricity Authority
CEED	Centre for Environment and Energy Development
CEAP	Corporate Energy Audit Program
CFA	Central Financial Assistance
CENPEID	Centre for Power Efficiency in Distribution
CII	Confederation of Indian Industry
CII-GBC	Confederation of Indian Industry – Green Business Centre
CMC	Central Monitoring Centre
CMD	Chairman and Managing Director
COA	Council of Architecture
CPP/OA	Captive Power Plant/Open Access
CREDA	Chhattisgarh Renewable Energy Development Agency
CSR	Corporate Social Responsibility
DBMS	Database Management Systems
DRE	Decentralized Renewable Energy
DRE-CF	Decentralized Renewable Energy – Community Fund
DOE	Department of Energy
DHBVNL	Dakshin Haryana Bijli Vitran Nigam Limited
DISCOMS	Distribution Companies
DPR	Detailed Project Report
DSM	Demand Side Management
DWM	Developing World Markets
EC	Energy Conservation
ECBC	Energy Conservation Building Code
EDP	Entrepreneurship Development Program
EE	Energy Efficiency
EEEC	Energy Efficiency and Energy Conservation
EELP	Energy Efficient Lighting Program
EESL	Energy Efficiency Services Limited
EMMP	Environment Mitigation and Monitoring Plan

Acronym	Definition
EM&V	Evaluation, Measurement And Verification
EOI	Expression of Interest
ERC	Electricity Regulatory Commission
ESCOs	Energy Service Companies
ESAF	Evangelical Social Action Forum
FD	Fixed Deposit
FIs	Financial Institutions
FY	Financial Year
FOR	Forum of Regulators
GERMI	Gujarat Energy Research and Management Institute
GHG	Greenhouse Gas
GIIC	Green Infrastructure Investment Coalition
GIZ	Deutsche Gesellschaftfür Internationale Zusammenarbeit
GOI	Government of India
GOK	Government of Karnataka
GOR	Government of Rajasthan
GOMP	Government of Madhya Pradesh
GSES	Global Sustainable Energy Solutions
GW	Gigawatt
HERC	Haryana Electricity Regulatory Commission
HVAC	Heating, Ventilation and Air-Conditioning
IAMCL	IIFCL Asset Management Company
IDBI	Industrial Development Bank of India
IDF-MF	Infrastructure Development Fund – Mutual Fund
IGS	Indian Grameen Services
IGDPR	Investment Grade Detailed Project Reports
IIA	Indian Institute of Architects
IIFCL	India Infrastructure Finance Company Limited
INR	Indian Rupees
IR	Indian Railways
IOCL	Indian Oil Corporation Limited
IREDA	Indian Renewable Energy Development Agency Limited
ISGTF	India Smart Grid Task Force
JDA	Jaipur Development Authority
JnJPSL	JnJ Powercom Systems Limited
JVVNL	Jaipur Vidyut Vitran Nigam Limited
KERC	Karnataka Electricity Regulatory Commission
KREDL	Karnataka Renewable Energy Development Limited
KW	Kilowatts
LEDs	Light-Emitting Diodes
LBNL	Lawrence Berkeley National Laboratory
MBDs	Model Bid Document
MD	Managing Director
M&V	Measurement and Verification

Acronym	Definition
M&E	Monitoring and Evaluation
MFI	Microfinance Institution
$MMtCO_2$	Million Metric Tons of Carbon Dioxide
MNRE	Ministry of New and Renewable Energy
MNIT	Malaviya National Institute of Technology
MOP	Ministry of Power
MOU	Memorandum of Understanding
MP	Madhya Pradesh
MPUVNL	Madhya Pradesh Urja Vikas Nigam Limited
MSF	Mahashakti Foundation
MSP	Microfinance Support Program
MTE	Mid-term Evaluation
MU	Million Units
MW	Megawatt
NGO	Non-governmental Organization
NISE	National Institute of Solar Energy
NOS	National Occupation Standards
NR	Northern Railways
NRDC	Natural Resources Defense Council
NSGM	National Smart Grid Mission
NU	Nalanda University
NZEB	Net Zero Energy Building
OIL	Oil India Limited
ONGC	Oil and Natural Gas Corporation Limited
PACE-D	Partnership to Advance Clean Energy – Deployment
PFS	PTC Financial Services
PMP	Performance Management Plan
PPA	Power Purchase Agreement
PRGFEE	Partial Risk Guarantee Fund for Energy Efficiency
PRCBWs	Progress Reviews and Capacity Building Workshops
PSUs	Public Sector Undertakings
PTM	Program Target Matrix
PV	Photovoltaic
QPs	Qualification Packages
RBL	Ratnakar Bank Limited
RE	Renewable Energy
REIL	Rajasthan Electronics & Instruments Limited
REMCL	Railway Energy Management Company Limited
RERC	Rajasthan Electricity Regulatory Commission
RESCO	Renewable Energy Services Company
RFP	Request for Proposal
RFQ	Request for Qualification
RFS	Request for Selection
RPO	Renewable Purchase Obligation

Acronym	Definition
RPO-CMR	Renewable Purchase Obligation - Compliance Monitoring And Reporting
RRECL	Rajasthan Renewable Energy Corporation Limited
RSIPL	Radius Synergies International Private Limited
RVPN	Rajasthan Vidyut Prasaran Nigam Limited
SCGJ	Skill Council for Green Jobs
SECI	Solar Energy Corporation of India
SETNET	Solar Energy Training Network
SI	Social Impact
SLDC	State Load Dispatch Centre
Smart-Net	Smart Grid Training Network
SMCS	Swayamshree Micro Credit Services
SNA	State Nodal Agency
SRET	Solar Rooftop Evaluation Tool
SSEF	Shakti Sustainable Energy Foundation
SVCL	SV Creditline Private Limited
TA	Technical Assistance
TAIPA	Tower and Infrastructure Providers Association
TCG	The Climate Group
TCCL	Tata Cleantech Capital Limited
TEA	Training Effectiveness Assessment
TERC	Tripura Electricity Regulatory Commission
T&D	Transmission and Distribution
TNA	Training Needs Assessment
TPDDL	Tata Power Delhi Distribution Limited
TSECL	Tripura State Electricity Corporation Limited
TOT	Training of Trainers
UHBVNL	Uttar Haryana Bijli Vitran Nigam Limited
UDH	Urban Development Housing Department
URS	User Requirement Specification
USG	United States Grant
U.S.	United States
USD	US Dollar
USAID	United States Agency for International Development
VCFEE	Venture Capital Fund for Energy Efficiency
WG	Working Group
WHU	Waste Heat Utilization
WTEA	Walk-through Energy Audit
ZR	Zonal Railways

EXECUTIVE SUMMARY

This Annual Progress Report (APR) covers the period July 2015-June 2016 and presents (a) an overview of the United States Agency for International Development (USAID) Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance (TA) Program achievements in the period; (b) achievements of all of the Program indicators vs. Program targets established in the Performance Management Plan (PMP); and (c) progress on the five-year project implementation plan.

During this period (July 2015-June2016), the Program's major achievements under Energy Efficiency (EE) and Renewable Energy (RE) will certainly and significantly contribute to leaving behind a legacy and an enabling environment, not only for the central and state governments, but also for a range of public and private sector stakeholders across the clean energy value chain. The beneficiaries of the Program's TA will gain significantly from such heritage, both in the short and long term, as they will have access to innovative financing mechanisms, new business models, enabling policy and regulatory frameworks, etc. facilitated by the Program.

Key achievements in Energy Efficiency during this period include the following :

- design and deployment of Ajmer Smart Grid Pilot
- establishment of SMART-NET training initiative on Smart Grid for Utilities
- launch of Net Zero Energy (NZEB) web portal
- completion of state and national stakeholder consultations for finalizing the Energy Conservation Building Code (ECBC) Technical Update
- finalization of Energy Efficiency policy for the Government of Rajasthan, finalization of guidelines for Haryana Electricity Regulatory Commission (HERC) on Cost Benefit Analysis and Evaluation, Measurement and Verification for implementation of Demand Side Management (DSM) projects
- support to HERC for providing in principal approval for the implementation of statewide Energy Efficiency Lighting Program (EELP)
- successful completion of investment grade audit report for Tata Cleantech Capital Limited (TCCL) client
- publishing Market Assessment Potential Report for Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) and Venture Capital Fund for Energy Efficiency (VCFEE) and
- completion of audit and submission of the report on EE investments to Energy Efficiency Services Limited (EESL) and Rajasthan Vidyut Prasaran Nigam Limited (RVPN).

Key achievements in Renewable Energy during this period include the following :

- facilitation of a cumulative capacity addition of 12.07 MW of solar rooftop in Bengaluru Electricity Supply Company Limited (BESCOM) licensee area
- significant technical contribution to Karnataka Electricity Regulatory Commission to approve Gross Metering regulations
- finalization of the 'Tripartite Agreement for Rooftop Solar Net Metering Scheme'

- facilitation of a cumulative commissioned capacity of 2.98 MW of net metered solar rooftop in Jaipur city circle
- facilitating Madhya Pradesh Urja Vikas Nigam (MPUVNL) for finalization of Net Metering policy and regulations for solar rooftop projects
- design and finalization the Interconnection Framework for solar rooftop project interconnection in partnership with MPUVNL and the state Distribution Companies (DISCOMs)
- support to MPUVNL for solar irrigation pumping policy
- publication of Best Practices Guide for solar rooftop
- development and launch of Solar Risk Evaluation Tool (SRET)
- finalizing the risk rating framework for rating agencies accredited by IREDA for rating solar rooftop projects for financing
- development of detailed guidelines for IREDA to help them evaluate solar rooftop proposals publication of draft off-grid RE Policy
- completion of vendor policy manual for MPUVNL
- detailed evaluation of two Request For Proposals (RFP) for solar pump-sets
- finalization of the "White Paper on Framework for Development of RE Hybrids in Karnataka and Rajasthan
- development of the beta version of the web tool on Renewable Purchase Obligation compliance monitoring framework for Rajasthan Renewable Energy Corporation Limited (RRECL)
- finalization of model bid documents for Indian Railways (IR) for procurement of 50 MW solar rooftop
- support to Zonal Railways (ZR) and Northern Railways (NR) in the bid evaluation process
- finalization the solar rooftop Detailed Project Report for Indian Oil Corporation Ltd (IOCL) for its Panipat Naptha Unit
- facilitated BESCOM in successful installation of 130 of the proposed 256 solar PV pumps (approximately1 MW) under the Surya Raitha Scheme
- collaborated with Indian Grameen Services and raised funding from the Centre for Environment and Energy Development (CEED) and The Climate Group and successfully commissioned solar pumps under the shared service model for solar irrigation in Bihar
- assisted MNRE in technical evaluation of the 38 Expression of Interest (EOIs) based on the evaluation criteria and shortlisted ten candidates
- preparation the draft of Energy Storage Roadmap
- organization of three roundtables with potential Green Infrastructure Investment Coalition (GIIC) participants and other stakeholders (regulators and ministries)
- development and finalization the course curriculum, trainer's manual, learner's manual, Qualification Packs (QPs) and National Occupational Standards (NOS) and delivered five Regional Training Programs titled "Implementation of Solar Rooftop by Utilities" in Jaipur (Rajasthan), Kolkata (West Bengal), Ludhiana (Punjab), Hyderabad (Telangana) and Lucknow (Uttar Pradesh), trained a total of 281 utility engineers accumulating 2,748 person hours of training
- development and finalization the course curriculum, trainer's manual, learner's manual, Qualification Packs (QPs) and National Occupational Standards (NOS) and

delivered one Training Program titled “Entrepreneurship Development Program for Solar Rooftop” in Gurgaon (Haryana), trained a total of 46 entrepreneurs across 12 states accumulating 1,840 person hours of training

- organization of a RE U.S. study tour for 8 senior officials from Electricity Regulatory Commission (ERC), state nodal agencies, MNRE and utility from April 3-13, 2016 that focused on development and deployment of new and innovative applications of RE technologies
- organization of the Third Knowledge Exchange Program for States in Bengaluru on June 30-July 1, 2016
- completed business plan development for seven (7) Microfinance Institution
- organization a total of 64 training programs accumulating 7,286.50 person training hours with 56% being participation from women
- facilitation of sale of 184,693 clean energy (CE) products through Microfinance Institutions (MFIs) across nine Indian states with 100% women loan clients
- leveraging USD 6.4 million in loans disbursed and cash sales in the reporting period, also leveraged USD 7.2 million in investments
- facilitated Vayam to complete the installation of the first 8.4 kW micro-grid in Gaya, Bihar
- organization of three Investor Roundtables, one Investor forum and the second Product Showcase and
- completion of the phone survey calls to 400 and 250 clients for Sarala and Saija respectively.

The Program has always maintained the intervention approach that *“PACE-D will build institutional, individual, financial capacity to enable institutions to propose, adopt and/or implement policies, regulations, plans and strategies that will result in scaling up of clean energy (CE) technologies to achieve the outcome of Greenhouse Gas (GHG) emissions reduction.”* As per the recent contract modification #6, this intervention approach is expected to result in 150 megawatts (MW) of energy savings from energy efficiency (EE), 714 MW installed capacity from renewable energy (RE) projects and 3.54 million metric tons of carbon dioxide or MMtCO2 equivalent of GHG emissions reduction.

The CE priorities of the Government of India (GOI) during the design phase of the Program and its launch (Years. 2010-2012) were nascent and modest as to its policy goals and institutional frameworks. For instance, energy sub-sectors such as coal, power and RE were administered by separate ministries with little coordination, thereby impacting design and the implementation of an integrated CE plan aimed at reducing GHG emissions. Thus during the period 2013-2015, the Program design and approach had to evolve with the changed priorities of the new government whose focus on climate change was strengthened through the consolidation of the energy sub-sectors under a single ministry and sharper clarity on the national role of RE and EE.

The above mentioned changes in the national scenario provided the Program with a greater mandate to perform and deliver on its goals but required significant attention to policy and institutional strengthening. For instance, developing the institutional and regulatory framework and laws for solar rooftop programs became a major priority for the Program which is also the major achievement of the Program. Similarly, given the renewed thrust by

the government in improving the financial and technical performance of the power distribution companies (DISCOMs) required a major commitment to the design and implementation of Smart Grids in Indian utilities. The Program again rose to the challenge by focusing significant attention of its EE component in the development of institutional capacity in this frontier area. The Program's work with Smart Grid Pilots in Ajmer and Tripura, and conceptualization and launch of Smart Grid Training Network (Smart-NET) to meet the capacity building targets as laid under the National Smart Grid Mission (NSGM) roadmap are a testimony to this fact.

The thrust of the Program hitherto has been in creating institutional capacity in key RE and EE agencies and institutions at the federal and state levels. Thus the target of the number of institutions with improved capacity to address climate change issues under the Program has already been achieved.

However the rebalancing and reallocation of the Program's resources required a downward adjustment to the other indicators such as avoided capacity under the Energy Efficiency Program and Green House Gas (GHG) emission reductions. The avoided capacity was revised downwards from 150 MW to 26 MW and the GHG emission reductions were revised downwards from 3.54 Mn $MTCO_2$ to 1.4 Mn $MTCO_2$. The target indicator for installed Renewable Energy capacity and the investment mobilization remained unchanged. The revised Monitoring and Evaluation Plan for the Program was submitted to USAID during this Period which was positively considered by USAID.

During this period (July 2015-June 2016) the avoided capacity from energy saved due to EE has been impressive given the implementation of the Haryana Energy Efficiency Lighting Project. On the other hand, the installed RE capacity achievements against the target still remain a fraction of the stipulated targets. However the achievements by the Program during this period in creating an enabling institutional and policy ecosystem under RE are significant and unprecedented. As a result, a large and an impressive pipeline has been created on solar rooftop projects by Indian Railways, Indian Oil Corporation, State Utilities in Karnataka and Rajasthan, Energy Storage projects under the Ministry of New and Renewable Energy (MNRE) demonstration scheme, RE Hybrid, Madhya Pradesh Solar Irrigation Policy and Karnataka RE Policy.

The focus of the Program in creating such an enabling institutional and policy ecosystem has made it almost certain, barring any change in future GOI climate change/CE policy, to achieve and in all probability over achieve on the targets set on these two counts, in the remaining period of the Program and in the years following the post-Program period beyond 2017. It is important to note that underpinning the major savings in energy and harnessing solar energy as never before is the enormous potential unleashed by the introduction of Smart Grids, Demand Side Management and solar rooftops. The basic foundation for this is being undoubtedly contributed by the PACE-D Program.

1. INTRODUCTION

This Annual Progress Report covers the period July 2015-June 2016 for the PACE-D TA Program. Key achievements during this period are shown in Section 2 below. Section 3 presents progress to date towards achieving the Program's indicator targets. Section 4 presents an in-depth description of progress to date vs. the 5 Year Project Implementation Plan. Section 5 discusses Project Management, including contractual issues, status of contract deliverables, subcontracts and staffing. Finally, Section 6 lists the proposed training activities planned for Year 5 of the Program, including knowledge-sharing and outreach events.

The five-year PACE-D TA Program was launched in July 2012, with the aim to accelerate India's transition to a high-performing, low-emissions, and energy-secure economy through the development, deployment, and transfer of innovative clean energy technologies. The Program is working at the national and state levels to strengthen energy efficiency and renewable energy policy and regulatory frameworks; design effective clean energy programs and pilot projects; and provide technical support for the development of innovative financing mechanisms with both public and private sector partners. The three key components of the program are:

- **Development Result 1: Energy Efficiency (EE)**
    - Improved end use of energy efficiency by scaling up and deployment of energy efficiency technologies.
- **Development Result 2: Renewable Energy (RE)**
    - Increased supply of renewable energy through scaling up renewable energy technologies.
- **Development Result 3: Cleaner Fossil Technologies**
    - Adoption and accelerated deployment of cleaner fossil technologies and management practices to achieve greater supply side efficiency from existing fossil power generation.

Since its inception, the PACE-D TA Program has achieved many milestones. A snapshot of these milestones is presented in the infographic below:

Figure 1: Snapshot of PACE-D TA Program Achievements as of June 2016

2. ACHIEVEMENTS

DEVELOPMENT RESULT 1: IMPROVED END-USE ENERGY EFFICIENCY BY SCALING UP AND DEPLOYMENT OF ENERGY EFFICIENCY TECHNOLOGIES

Task 1: Market Driven Energy Efficiency Technology Deployment

Task 1.1 Smart Grids Electric System

Technical Assistance to Ministry of Power on Implementation of Smart Grid Pilots

- **Smart Grid Pilot in Ajmer**
  - Finalized the scope for the pilot and selected two vendors for the pilot on the basis of an expression of interest (EOI) issued earlier.
  - Developed consumer engagement brochure and initiated door-to-door awareness campaign for the pilot initiative.
  - Partnered with Energy Efficiency Services Limited (EESL) to distribute 3 Light-emitting Diodes (LEDs) each to individual consumers at no cost for the pilot as part of its consumer engagement initiative.
  - Completed more than 80% of the installations of smart meters and adaptors in the Satguru feeder by the two selected vendors.

- **Smart Grid Pilot in Tripura**
  - Finalized the scope for the pilot based on the feedback received from Tripura State Electricity Corporation Limited (TSECL).
  - Organized the first and second capacity building workshop on Smart Grid at TSECL on January 19, 2016 and April 26, 2016 respectively.
  - Finalized the report formats for the pilot post discussion with TSECL.
  - Discussed the overall evaluation, measurement and verification (EM&V) framework and subsequently shared the data requirements with TSECL.
  - Supported TSECL by providing comments on Draft Smart Grid Regulations 2015 for consideration by Tripura Electricity Regulatory Commission (TERC).

- **Smart Grid Course Development and Roll-out Strategy (Smart-NET)**
  - Initiated the work on developing two Smart Grid courses - a three-day course for utility technical engineers and a half-day executive orientation program for top level utility executives.
  - Formed the working group (WG) for development of the Smart Grid courses.
  - Conducted three WG meetings to prepare (a) draft course outline for the two Smart Grid courses, (b) draft roll-out strategy and (c) get feedback on the course modules prepared.
  - Developed the two Smart Grid courses as well as the roll-out strategy which defines the overall goal and modus operandi of the course, the selection criteria of partner institutes, implementation plan and the roles and responsibilities of the stakeholders involved.
  - Planned and organized an Executive Orientation Program on Smart Grid for top management of DISCOMs on January 21, 2016 at Bengaluru.

- Finalized the roll-out strategy for Smart Grid course and prepared a draft note on seeding program (to fast-track initial roll-out of the course). The seeding program note was submitted to the NSGM.
- Finalized the three-day Smart Grid Course post incorporation of WG comments. The first three-day seeding program is planned from July 27-29, 2016 at the Centre for Power Efficiency in Distribution (CENPEID), the Tata Power Delhi Distribution Limited (TPDDL) Learning Centre, New Delhi.

- **Smart Grid Film**
  - Developed a short film on "Smart Grid and its Transformative Impact on Utility Operations and Customer Energy Empowerment".
  - Screened the film at the Executive Orientation Program on Smart Grid for top management of DISCOMs on January 21, 2016 at Bengaluru. The film will be screened at various government events and at training workshops to be organized for utilities under the Smart-NET Program.

- **National Smart Grid Mission (NSGM)**
  - Organized a meeting with NSGM on April 21, 2016 to discuss the goals to be targeted as inputs towards finalizing the institutional framework of NSGM.
  - Prepared the draft report on the NSGM - Module 1: Vision, Mission, Goals and Institutional Structure.

Task 1.2.Cost Effective; Net Zero Energy Buildings (NZEBs)

Technical Assistance to Bureau of Energy Efficiency (BEE) on Market Transformation for Net Zero Energy Buildings

- **Nalanda University (NU) NZEB Pilot**
  - Organized the review meeting on May 13, 2016 in New Delhi to review project progress, tenders and NZEB strategies with Vastushilpa (project architects) and the NU team.
  - Facilitated the planning and organizing of the NU foundation laying ceremony to be attended by Honorable President of India, Shri Pranab Mukherjee scheduled to be held on August 27, 2016.
  - Initiated the designing of a plaque to summarize the NZEB vision and features of the NU to be displayed during the foundation laying ceremony.

- **Net Zero Energy Building Portal**
    - Finalized the portal structure and developed the wireframes for the pages.
    - Completed the data compilation for all the sections (knowledge center, NZEBs, case studies, alliance, etc.) of the portal.
    - Developed the sustainability framework of the portal explaining the strategy for long term sustenance with issues related to hosting, sustainability options, portal funding, alliance memberships, and data management.
    - Continued to connect with academic and research institutions, architectural practitioners, manufacturers and technology providers in the building sector to encourage them to join the NZEB alliance.
    - Launched the NZEB portal on May 27, 2016 at an event in New Delhi, by Mr. P.K. Pujari, Secretary, Ministry of Power (MOP), Mr. Raj Pal, Economic Advisor, MOP and Ambassador Jonathan Addleton, Mission Director, USAID/India.

- **Ministry of New and Renewable Energy (MNRE) Akshay Urja Bhawan Event**
    - Organized a half day workshop on August 5, 2015 at the India Habitat Centre, New Delhi to formulate a vision for New Akshay Urja Bhawan, the new headquarters building that has been proposed for the MNRE in New Delhi.
    - Proposed to provide TA in architecture design competition and selection of NZEB related vendors to MNRE in order to realize the vision on New Akshay Urja Bhawan as an energy positive building.

Task 1.3.Waste Heat Utilization (WHU)

Technical Assistance to BEE on WHU Policy

- Prepared a draft working paper on the WHU policy. Received comments and feedback from USAID in October 2015 and revised the paper to cover all small and medium enterprises, with sector specific inputs on the textile sector.
- Organized a consultation meeting on the draft policy framework and the technology compendium at BEE on April 12, 2016.
- Received several suggestions and completed the revisions with regard to the policy framework which is currently under review.

Task 1.4.Heating, Ventilation and Air Condition (HVAC) Technologies

Technical Assistance to BEE on Policy Framework for HVAC Technologies

- Prepared the scope of activities required to design the HVAC Program.

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

Technical Assistance to BEE to Update Energy Conservation Building Code (ECBC)

- Organized several WG meetings for review of stringency analysis results of building envelope, comfort systems, lighting systems, electrical and RE systems and, administration and compliance norms.
- Completed stringency analysis for comfort systems, electrical and RE systems. The study was discussed with WGs on July 9, 2015.

- Conducted three regional workshops in Mumbai, Bengaluru and Kolkata to discuss the ECBC update progress, process and draft recommendations for ECBC update.
- Organized the national stakeholder workshop on ECBC on May 27, 2016 and presented the progress and recommendations for ECBC update.
- Incorporated recommendations of the WG members, regional workshops and national workshop in the analysis.

Technical Assistance to Government of Rajasthan (GOR) for ECBC Implementation

- Compiled the recommendations for amendments to building byelaws of Jaipur.
- Developed the handbook on ECBC implementation guidelines and compliance procedure. The same has been handed over to BEE for their approval and launch.

Technical Assistance to Government of Karnataka (GOK) and Rajasthan to Develop and Implement State Level Energy Efficiency Policies

- **Rajasthan**
  - Received inputs from Rajasthan Renewable Energy Corporation Limited (RRECL) which were incorporated in revised policy document.
  - Provided inputs to RRECL on certain changes proposed by them. RRECL has finalized the draft policy document and has submitted the same to DOE, GOR for finalization.

Technical Assistance to Haryana Electricity Regulatory Commission (HERC) to Develop and Implement Demand Side Management (DSM)

- **Guidelines on Cost Benefit Analysis of DSM Programs**
  - Prepared the draft guidelines and submitted the same to the Commission for its comments/suggestions.
  - Submitted and presented the revised guidelines to the Commission for further consideration and notification based on its comments/suggestions received.
  - Submitted the final guidelines to the Commission for further consideration and notifications.

- **First Capacity Building Workshop for Distribution Utilities**

  Organized its first capacity building workshop on "Identification and Development of DSM Projects for Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL) and Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL)" on July 7 -8, 2015 at Panchkula, Haryana.

- **Guidelines on EM&V**
  - Prepared the approach note and draft Table of Contents for the development of guidelines on EM&V.
  - Developed the draft guidelines on EM&V and submitted the same to Commission for comments/suggestions.

- Incorporated the comments/suggestions received from the Commission, modified the guidelines, and submitted the final document to the Commission for further consideration and notifications

- **Support in Constitution of DSM Advisory Committee**
  - Provided necessary support to the Commission in constitution of DSM Advisory Committee which includes preparation of list of possible members, preparation of the letters for all the members requesting them to nominate the concerned person, etc.
  - Developed the draft agenda for the first DSM Advisory Committee meeting to be organized in the month of October 2015 and submitted the same to the Commission.
  - Followed up with the Commission for the constitution of DSM Advisory Committee. The Commission issued gazette notification dated January 13, 2016 with respect to the constitution of DSM Advisory Committee in compliance with the provision of Regulations 8 of DSM Regulations.

- **Support in Conducting First DSM Advisory Committee Meeting**
  - Provided necessary support to HERC in organizing and conducting the first DSM Advisory Committee Meeting on June 14, 2016.
  - Presented the key components of DSM Regulations pertaining to preparation and submission of DSM Plan by the Distribution Licensee to the HERC for the approval.
  - Presented the possible sector specific DSM projects and its overall technical potential for the inclusion in the DSM Plan.

- **Support to HERC**
  - Provided necessary support in reviewing the revised documents submitted by the distribution utilities and approving the program document. The Commission has given in principal approval for the implementation of statewide EELP.
  - Followed up with HERC to understand the current status of the finalization of two guidelines such as Central Electricity Authority (CEA) and EM&V of DSM Programs. HERC has finalized both the guidelines and are in the process of issuing the same through gazette notification.

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

Technical Assistance to develop and Roll out EE Financing Mechanisms

- **Corporate Energy Audit Program (CEAP)**
  - Met with four clients of Tata Cleantech Capital Limited (TCCL) and finally zeroed in on SEACO, an automotive component manufacturing facility in Pune for the first energy audit.
  - Facilitated the release of an invitation inviting proposals for selection of energy audit agency for CEAP clients in August 2015.
  - Evaluated the proposals received and selected See-Tech Solutions Private Limited.

- Completed the Walk-through Energy Audit (WTEA) and Investment Grade Detailed Project Reports (IGDPR) of SEACO and presented the results to SEACO in December 2015.
- Prepared the IGDPR of SEACO and presented the same to TCCL.

- **Preparation of Guidelines on EE Financing**
  - Made further revisions to the guidelines on request from BEE. This revision included a review by an international specialist prior to its review by BEE.
  - Incorporated the feedback received on the EE Financing Guidelines from the committee constituted by BEE and the same is under review.

- **Energy Service Companies (ESCO) Report**
  - Printed the Market Assessment Potential Report for Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) and Venture Capital Fund for Energy Efficiency (VCFEE) and submitted the copies to BEE. The ESCO survey report will help determine the potential pipeline of projects which could seek funding from PRGFEE and VCFEE.

- **EE opportunities at Rajasthan Vidyut Prasaran Nigam Limited (RVPN) Substations**
  - Submitted the report on EE investments to EESL and RVPN.
  - Made a presentation to the Chairman, RVPN on the EE opportunities in RVPN substations.
  - Addressed the comments received from RVPN and submitted the same to EESL and RVPN for the further consideration. EESL submitted proposal for implementation of two pilot projects to RVPN

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

The activities under this task are being delivered together with activities in other tasks and have been discussed above.

DEVELOPMENT RESULT 2: INCREASED SUPPLY OF RENEWABLE ENERGY BY SCALING-UP RENEWABLE ENERGY TECHNOLOGIES

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

Technical Assistance for Transforming the Solar Rooftop Market in the Indian States of Karnataka, Rajasthan and Madhya Pradesh (MP)

- **Bengaluru Electricity Supply Company Limited (BESCOM), State of Karnataka**
  - Facilitated a cumulative capacity addition of 12.07 MW of solar rooftop in BESCOM's licensee area as of June 26, 2016.
  - Developed, finalized and released the white paper on 'Gross Metering for Solar Rooftop for BESCOM' after discussions with Karnataka Renewable Energy Development Limited (KREDL) and Karnataka Electricity Regulatory Commission (KERC).
  - Finalized and submitted comments to KERC on its discussion paper on Gross Metering.
  - Provided inputs to BESCOM in finalizing the 'Tripartite Agreement for Rooftop Solar Net Metering Scheme'. The first version of the agreement was developed by the Program during Year 3.
  - Organized a webinar on 'Gross Metering for Solar Rooftop' on March 18, 2016.
  - Participated in the technical and process review meetings convened by BESCOM and assisted in developing a power purchase agreement (PPA) and a single line diagram for Gross Metering as well as the mechanisms for interconnecting high capacity solar rooftop plants with their evacuation grid.
  - Designed a detailed stakeholder survey to understand the challenges faced by stakeholders in the development and deployment of solar rooftop installations.

- **Jaipur Vidyut Vitran Nigam Limited (JVVNL), State of Rajasthan**
  - Facilitated a total commissioned capacity of 2.98 MW of net metered solar rooftop in Jaipur city circle during the reporting period.
  - Participated in the "Workshop on Solar Rooftop Systems" organized by RRECL and shared the work undertaken by the Program with partners in Rajasthan.
  - Finalized the content for a two-day training program for JVVNL utility personnel.
  - Organized a two-day training program for JVVNL on solar rooftop deployment on January 7-8, 2016 in Jaipur.
  - Organized the first regional training program on March 3, 2016 on solar rooftop deployment for utility personnel in Jaipur.

- **Madhya Pradesh Urja Vikas Nigam Limited (MPUVNL), State of Madhya Pradesh**

- Provided inputs for finalization of Net Metering policy and regulations for MPUVNL and shared documents developed for the roll out of Net Metering framework in other states such as Karnataka and Rajasthan.
- Designed and organized a stakeholder consultation workshop on developing an implementation framework for solar rooftops in MP.
- Participated in stakeholder consultation workshop for finalization of MP solar rooftop policy and interconnection framework.
- Finalized the solar rooftop policy for MP in partnership with MPUVNL and the state DISCOMs.
- Designed and finalized the Interconnection Framework for solar rooftop project interconnection in partnership with MPUVNL and the state DISCOMs.
- Provided extensive inputs towards the finalization of the solar pumping policy.

Technical Assistance for Building Capacity of Key Stakeholders for Market Transformation of Solar Rooftop in India

- **Solar Rooftop Evaluation Tool (SRET)**
  - Developed and shared the tool in a workshop in Mumbai on September 11, 2015.
  - Developed a comprehensive User Manual to provide step-by-step guide on how to use the tool.
  - Secured the approval from IREDA and its credit rating agencies for the rating framework recommended by the Program.
  - Assisted Indian Renewable Energy Development Agency Limited (IREDA) evaluate a 10 MW financing proposal using the framework developed under the tool. The risks involved in the solar rooftop power project built in the tool were referred to restructure the framework for credit rating by IREDA to support its program to finance 50 MW solar rooftop power projects.
  - Developing detailed guidelines for IREDA to help them evaluate solar rooftop proposals.

- **Best Practices Guide (BPG)**
  - Developed and completed the final draft of the BPG in partnership with Gujarat Energy Research and Management Institute (GERMI).
  - Made a presentation to MNRE and shared the draft with them for their go ahead.
  - Launched the BPG for implementation of state-level solar rooftop programs in India on June 7, 2016 during the first national workshop on solar rooftop organized by MNRE at Vigyan Bhawan, New Delhi.

Technical Assistance to BESCOM to evaluate, design and implement business models for solar rooftop implementation based upon the key challenges identified

- Organized the project kick off meeting with BESCOM.
- Prepared and shared the detailed plan for identification of challenges
- Prepared the questionnaire for consumers, developers and BESCOM and commissioned the survey.

Technical Assistance for Developing an Off-Grid Policy for the State of Madhya Pradesh

- Published the draft off-grid RE Policy, 2015 on the Program's website. The Shakti Sustainable Energy Foundation (SSEF) reached out to the Program for the framework of the off-grid RE policy with the view of drafting a similar policy for the state of Uttar Pradesh. The Program shared all the relevant documents with SSEF.

Technical Assistance to MPUVNL to build its Institutional Capacity

- **Manual on Vendor Policy**
  - Carried out comparative analysis of different processes adopted by different states such as a) Empanelment process – Chhattisgarh. Tamil Nadu, Andhra Pradesh and b) Tendering and Operation and Maintenance process- Chhattisgarh, Maharashtra, Rajasthan.
  - Prepared and finalized the background paper and draft vendor manual and submitted both documents to MPUVNL for its comments and suggestions.
  - Carried out detailed review of two RFPs i.e. Solar Photovoltaic and Agricultural Pump-sets and submitted to MPUVNL for further consideration.

- **Net Metering implementation**
  - Developed a draft Net Metering Policy document for solar rooftop projects implementation in MP
  - Drafted a petition to seek amendments in the Net Metering regulations of MP.

Technical Assistance to Develop a Framework for Development of RE Hybrids in the States of Karnataka and Rajasthan

- **Karnataka**
  - Conducted a Stakeholder Workshop on September 11, 2015 at Bengaluru to present the detailed framework for development of RE Hybrid.
  - Developed and finalized the "White Paper on Framework for Development of RE Hybrids in Karnataka" after incorporating suggestions received during the workshop and from USAID.
  - Delivered a presentation on "Development of framework for RE Hybrids in Karnataka" in Knowledge Exchange Program scheduled in Bengaluru on June 30, 2016.
  - Delivered a presentation on DRE Hybrid Framework in Karnataka to the Chairman, members and other senior officers of KERC and seek their inputs/suggestions on the same.
  - Submitted comments to MNRE on its Draft Wind Solar Hybrid Policy.

- **Rajasthan**
  - Developed a 'Draft White Paper on Framework for Development of RE Hybrids in Rajasthan' on the similar line of the white paper developed for the state of Karnataka.

Technical Assistance to Develop and Implement Renewable Energy Purchase Obligation (RPO) - Compliance Monitoring Framework in Rajasthan

- Developed and delivered a presentation on RPO-CMR at the FOR consultation meeting.

- Customized the report/manual on RPO compliance framework prepared for the state of Rajasthan and submitted the same to Forum of Regulators (FOR) for onwards distribution to regulators of various states.
- Participated in Association of Renewable Energy Agencies (AREAS) meeting at Pune and delivered a detailed presentation on RPO Compliance Monitoring Framework.
- Supported RRECL in collating the information about obligated entities Captive Power Plant /Open Access (CPP/OA users) and compiling their data in a structured manner and to create an excel database for the past compliance period (2007 to 2015).
- Supported RRECL to discharge its responsibility of reporting RPO compliance status of obligated entities for the past control period as per directions of Rajasthan Electricity Regulatory Commission (RERC).
- Facilitated RRECL constitute a WG comprising the representation from DISCOMs, State Load Dispatch Centre (SLDC), RVPN, RERC, Electrical Inspectorate. Principal Secretary, DOE, GOR will chair the WG.
- Made a presentation on "Support for Implementation of RPO Compliance Monitoring and Web Tool Development for RRECL" at the first meeting of the state level group on March 16, 2016 at Jaipur.
- Initiated the development of the foundation work for the web tool through the development of an "Accredited Process Guidelines".
- Shared the draft of the guidelines with RRECL for their comments and feedback.
- Prepared a draft of User Requirement Specification (URS) document and shared internally for comments. The URS document is planned to be completed by July 2016 and will form the basis for further coding/software development of a web tool for RPO compliance monitoring.
- Made a presentation on "Support for Implementation of RPO Compliance Monitoring and Web Tool Development for RRECL" at the Knowledge Sharing Workshop held at Bengaluru on June 30, 2016.
- Shared a draft of Web Hosting Requirement for development of web tool for RRECL's comments and feedback.
- Presented the beta version of the web tool on RPO compliance monitoring framework to RRECL team for their feedback and comments.

Technical Assistance to Design City-wide 5 MW Solar Rooftop Program in Partnership with RRECL and JVVNL

- Developed a concept note to assess the commercial viability of the Renewable Energy Services Company (RESCO) based solar rooftop system.
- Prepared the inception report based on the inputs from the meetings and research covering existing scenario, policy, regulations, assessment of solar potential, business models, implementation schedule, etc.
- Prepared the due-diligence report covering the regulatory, commercial and technical aspects in detail.
- Initiated plans to undertake the site visit to analyze and validate the technical issues and their impact associated with each site.
- Finalized the regulatory and commercial due-diligence report.

- Selected the RESCO model for implementation of solar rooftop systems based on the regulatory and commercial due-diligence and consultation with RRECL
- Engaged in preparing a draft model Request for Selection (RFS) of qualified bidders, contractual and legal agreements as part of bid process management for RRECL.

Task 2: Market-driven RE technology Deployment

Technical Assistance on Commercial & Industrial Pilots to Public Sector Undertakings (PSUs) for Deploying Solar Projects

- **Indian Railways (IR)**
  - Developed detailed financial models and carried out sensitivity analysis for various scenarios.
  - Prepared a status paper helping IR gather internal approval for the 50 MW solar rooftop work.
  - Completed the solar rooftop feasibility assessment for selected sites (five) for identifying buildings and potential at the sites.
  - Finalized the Model Bid Documents (MBDs) for the procurement of 50 MW of solar rooftop by IR.
  - Assisted IR in developing and delivering presentations on the salient features of the MBDs and selection of the suitable rooftop for solar installation at the Railways Zonal meet on December 1, 2015 held in Kolkata.
  - Prepared an updated status on Net Metering regulations in all the states across India to help Zonal Railways (ZR) in understanding applicable regulations for solar rooftop projects.
  - Supported various zones of IR issue notices for the release of tender documents and Request for Qualification (RFQ) for the 50 MW solar rooftop program.
  - Provided assistance to IR to promote the bid documents to increase outreach amongst solar developers, revise the MBD and issue corrigendum based on the feedback from developers and ZR.
  - Supported the ZR in the RFQ application evaluation process and in presenting the approach for the deployment of 100 MW in a series of meeting.
  - Assisted in customizing the MBD for 100 MW to incorporate the revised Central Financial Assistance (CFA) scheme by MNRE and the corrigendum issued for 50 MW program.
  - Supported IR in organizing a developers meeting and pre-application conference for Northern Railways (NR) and provided clarifications to the developers on the MBDs.
  - Prepared the evaluation template for NR which helped them evaluate 15 applications received at the RFQ stage.
  - Delivered presentations to all ZR on the route-based clusters being designed for the development of the 100 MW solar rooftop program to be announced soon by IR. In a series of three meetings held in May 2016, the Program shared the route wise deployment of solar rooftop of 100 MW with the ZR and sought their comments.

- Made an inception presentation on the strategy for deployment of 1 Gigawatt (GW) RE capacity by 2022. Data sharing and strategy development teams were put in place.

- **Railway Energy Management Company Limited (REMCL)**
  - Conducted a kick off meeting with REMCL on May 25, 2016 to explain the methodology to develop a RE procurement strategy for REMCL.
  - Collected the data required from REMCL to develop the strategy.
  - Initiated the work on developing the strategy.

- **Indian Oil Corporation Limited (IOCL)**
  - Finalized the DPR of the Panipat Naptha unit.
  - Detailed the costing for investments (Previously, IOCL undertook the preparation of standard documents which were used by Vadodara and Barauni refineries for procurement of solar rooftop based projects on the site assessment reports prepared by the Program. There were some technical issues identified by IOCL for the Panipat solar rooftop project, specifically on the interconnection and safety measures which have been addressed by the Program. Also, the financial analysis, including detailed costing for components was undertaken.)
  - Finalized a report on selection of MP as the preferred state for solar park development for IOCL.
  - Facilitated initial discussions between IOCL and MPUVNL on the MOU, joint venture design and work flow streams as well as land identification.
  - Developed a framework for evaluating the attractiveness of different sites.
  - Finalized and submitted the framework for evaluating the attractiveness of different sites.
  - Developing the potential power sale options for IOCL.

Technical Assistance to Develop and Roll-out Rural Pilots

- **Surya Raitha Scheme, Karnataka**
  - Developed and finalized the white paper on business models, lessons learnt, best practices and scale-up plan under the pilot program for submission to USAID.
  - Completed the field visit to the pilot site along with the implementing agency (SunEdison) and held discussions on the ongoing implementation.
  - Till date, SunEdison has been successful in installing 130 of the proposed 256 solar PV pumps (capacity of these pumps would be around 1 MW).

- **Shared service model for solar irrigation in Bihar**
  - Collaborated with Indian Grameen Services (IGS) as the pilot partner and interacted with Centre for Environment and Energy Development (CEED) which agreed to support the pilot. It offered eight solar pumps of which five were installed. Subsequently, due to poor performance, one system has been un-installed.
  - Undertook technical assessment of the performance of the systems.
  - Made application to The Climate Group (TCG) to support four systems, to which it agreed and sanctioned a grant to IGS.

- Assisted IGS and Vayam in identifying potential solar pump set suppliers and assessing their technical and financial proposals.
- Assisted IGS in developing and releasing the purchase order for procuring solar pump sets.
- Provided TA to IGS and Claro Energy (the identified supplier) in commissioning the pumps at four sites and undertaking a preliminary impact assessment of six other sites which had been commissioned earlier.
- Developed the Monitoring and Evaluation (M&E) framework for this pilot.
- Prepared and finalized the white paper on business models, lessons learnt, best practices and scale-up plan under the pilot program for submission to USAID.

Technical Assistance to Build Capacity of MNRE on Storage Technologies

- Facilitated MNRE in the process of following up with stakeholders who could take up demonstration projects. Finalized the Expression of Interest (EOI) document which was published by MNRE.
- Held detailed discussions with Rajasthan Electronics & Instruments Limited (REIL), SECI, Tower and Infrastructure Providers Association (TAIPA) and IOCL for developing and submitting EOIs against the MNRE call. Assisted SECI and REIL in preparing their EOIs.
- Assisted MNRE (on its request) in technical evaluation of the 38 EOIs based on the evaluation criteria.
- Shared the results of the detailed evaluation with MNRE. The ten shortlisted candidates are awaiting approval from the Secretary, MNRE.
- Prepared and shared the draft of Energy Storage Roadmap.
- Finalized and submitted the roadmap document to USAID after incorporating expert feedback.

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

Technical Assistance to Develop and Roll Out RE Financing Mechanisms

- **Green Bonds**
  - Finalized the scope of work with IREDA, India Infrastructure Finance Company Limited (IIFCL), Yes Bank and PTC Financial Services (PFS).
  - IREDA's board of directors approved execution of MOU with USAID for Green Bonds-related TA. However, MNRE has not cleared the file despite several follow up attempts.
  - Finalized the MOU for execution between USAID and YES Bank, subsequent to the USAID's meeting with YES Bank in Mumbai on Green Bonds, Development Credit Assistance and Infrastructure Development Fund – Mutual Fund (IDF-MF). USAID submitted the MOU to Yes Bank for execution.
  - Held three roundtables in April and May with potential Green Infrastructure Investment Coalition (GIIC) participants and other stakeholders (regulators and ministries).

- **Infrastructure Development Fund – Mutual Fund (IDF-MF)**

- Signed the MOU between USAID and IIFCL Asset Management Company Limited (IAMCL) to provide TA to the latter for increasing investment in RE sector in the country by US Dollar (USD) 665 million through the IDF-MF instrument.

- **Decentralized Renewable Energy – Community Fund (DRE-CF)**
  - The Program decided not to pursue this activity.

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

Technical Assistance to National Institute of Solar Energy to Establish and Sustain the Solar Energy Training Network (SETNET)

- **Training Needs Assessment (TNA)**
  - Contracted Confederation of Indian Industry – Green Business Centre (CII-GBC) to undertake the TNA under SETNET. CII-GBC prepared and submitted an inception report for the Program's review.
  - Organized the first meeting of the TNA task force on October 27, 2015. The task force provided its expert guidance to CII in meeting the goals of the TNA initiative. It also validated the findings of the research done by CII and provided its valuable inputs.
  - Finalized and submitted the pilot survey report and Phase I of the survey report under the TNA after holding in-depth consultation with more than 50 solar companies.
  - Met SCGJ for finalizing the TA for developing the training manual for Surya Mitra.
  - Engaged Global Sustainable Energy Solutions (GSES) to develop the training manual for Surya Mitra.

- **1.5 Day Regional Training Program on Solar Rooftop for Utility Engineers**
  - Developed and finalized the course curriculum and training program strategy, modules for all sessions after incorporating the internal feedback and suggestions, handbook for utility engineers, trainer's manual, learner's manual, roll out plan, QPs and NOS and packaged the modules of the sessions of the training program.
  - Organized Five Regional Training Programs titled "Implementation of Solar Rooftop by Utilities" in Jaipur (Rajasthan), Kolkata (West Bengal), Ludhiana (Punjab), Hyderabad (Telangana) and Lucknow (Uttar Pradesh).
  - Trained a total of 281 utility engineers accumulating 2,748 person hours of training.

- **Five (5) Day Entrepreneurship Development Program (EDP) on Solar Rooftop**
  - Developed and finalized the course curriculum and training program strategy, modules for all sessions based on the feedback received by the members of the committee, handbook for utility engineers, trainer's manual, learner's manual, roll out plan for the training program, QPs and NOS and packaged the modules of the sessions of the training program.
  - Organized the first five-day training program on solar rooftop titled "Five (5) Day Residential EDP on Solar Rooftop" on May 16-20, 2016 at NISE, Gurgaon.
  - A total of 46 participants were trained across 12 states accumulating 1,840 person hours of training.

- **One (1) Day Training Program on Solar Rooftop for Bankers**
  - Initiated discussions on the 'One (1) Day Training Program on Solar Rooftop for Bankers and Financers'.

- Developed the concept note and agenda for a 'One (1) Day Training Program on Solar Rooftop for Bankers and Financers', to be organized in partnership with IREDA.
- Developed QPs and NOS for the banker's training program.

- **RE Study Tour to the U.S.**
  - Organized a RE U.S. study tour from April 3-13, 2016 that focused on development and deployment of new and innovative applications of RE technologies. Heads of Electricity Regulatory Commission (ERC), state nodal agencies, MNRE and utility officials participated in this study tour. A total of 8 senior officials were part of the study tour.
  - Finalized the U.S. study tour report and shared the same with USAID.

- **Third Knowledge Exchange Program for States, Bengaluru**
  - Organized the Third Knowledge Exchange Program for States in Bengaluru on June 30-July 1, 2016.

Task 6: Microfinance Support Program (MSP)

MSP: Technical Assistance to Microfinance Institutions for Clean Energy Lending

- Completed business plan development for seven (7) Microfinance Institution (MFIs) - SV Creditline Private Limited (SVCL), Saija, Sarala, Evangelical Social Action Forum (ESAF), Swayamshree, BASIX (Vayam) and Mahashakti Foundation (MSF).
- Organized a total of 64 training programs accumulating 7,286.50 person training hours taking the total achievement to 77 training programs and 8,576 person training hours with 56% being participation from women.
- Facilitated the sale of 184,693 CE products through MFIs across nine Indian states with 100% women loan clients.
- Leveraged USD 6.4 million in loans disbursed and cash sales in the reporting period taking the total figure of funds leveraged in this segment to USD 6.6 million.
- Leveraged USD 7.2 million (Indian Rupees (INR) 46 cr) in investments (The Rockefeller Foundation and Schneider Foundation grants to Vayam, Ratnakar Bank Limited (RBL) debt investment in MSF; Milaap debt investment in Swayamshree Micro Credit Services (SMCS); Developing World Markets (DWM) debt investment in Saija; IntelleGrow debt investment in Sarala (not specifically earmarked for energy; Blue Orchard debt investment in Saija (not specifically earmarked for energy).
- Developed a Phase II plan as a part of the implementation of the MSP which includes three new components namely scaling up TA for the partner MFIs, creating an investor platform, and outreach and capacity building to share MFI energy lending successes with other Indian MFIs.
- Developed the work plan for implementation of the Phase II of MSP for the next twelve months. The activities related to leveraging investment have been already initiated since October 2015.
- Continued to support the MFI partners in implementing their business plans which includes below:

- Facilitated Vayam to complete the installation of the first micro-grid in Gaya, Bihar. The 8.4 kilowatts (kW) micro-grid began supplying electricity to 44 households.
- Supported Vayam to start the procurement of equipment for the second micro-grid in Gaya. The Program helped the MFI's (Vayam) new management, understand the market context, assess the impact of past activities, and re-examine the organization's strategies.
- Supported three partners--Saija, Vayam and MSF--prepare the EOI for the PACESetter Fund. All the three proposals were chosen for the second round. The Program worked closely with Saija in preparation of the final proposal. It visited client sites in Chapra, Bihar and identified several entrepreneurs suitable for the model. A mini survey was also conducted to gather energy-related data from households in the vicinity of the entrepreneur. The Program also reviewed the final proposal prepared by Vayam. Assisted Vayam and Saija in preparing the presentation for the selection committee of the PACESetter fund. Based on a request from the partner MFIs, the Program attended and presented Vayam and Saija's proposals to the selection committee.

- Prepared final reports on the market research in two states, Odisha and Uttar Pradesh.
- Conducted consultations with key players in the microfinance sector on the draft policy paper prepared by the Program previously.
- Organized the first Investor Roundtable on December 8, 2016 in New Delhi with participation of 14 unique institutions.
- Organized an event in Trichy, Tamil Nadu to showcase the ESAF aggregator model.
- Organized the second Investor Roundtable on February 29, 2016 in Mumbai.
- Organized the second Product Showcase on March 1, 2016 in Mumbai.
- Conducted an investor forum in Mumbai at the Sankalp conference on April 20, 2016 and participated in the energy lending session on Day 1 of Sankalp.
- Organized an Investor Roundtable in Kolkata on June 3, 2016 for Sarala. Attendees included Sarala existing lenders as well as new potential investors.
- Conducted the phone survey calls to 400 and 250 clients for Sarala and Saija respectively. Ongoing calls to ESAF energy clients.
- Developed and produced the new MSP brochure which documents the objective, approach, implementation journey, partnerships and impacts of MSP.

3. INDICATORS

This section reports achievements of all of the Program indicators vs. the Program targets established in the Performance Management Plan.

STATUS OF INDICATORS

Indicators	Reporting Frequency	Cumulative 5 year Targets	FY 15 Target	Cumulative Target till end FY 15	Cumulative Achievement till FY 15 Q4[1]	Cumulative Achievement till Q1 FY (March 31, 201)	Cumulative Achievement till Q2 FY (June 30, 2016)
Outcome Indicators							
Quantity of GHG emissions, measured in million metric tons of CO_2 equivalent, reduced or sequestered as a result of USG assistance.	**Annual (at end of FY)**	**3.54**	**1.09**	**1.09**	**0.421**	**0.421**	**0.421[2]**
Output Indicators							
Number of institutions with improved capacity to address climate change issues as a result of USG assistance	**Annual (at end of FY)**	**12**	**4**	**7**	**6**	**6**	**6**
Number of existing institutions with improved capacity to address climate change issues as a result of USG assistance		**10**	**3**	**5**	**4**	**4**	**4**
Number of institutions established to address clean energy issues as a result of USG assistance		**2**	**1**	**2**	**2**	**2**	**2**
Person hours training completed in clean energy supported by USG assistance	**Quarterly (at end of each quarter)**	**39,600**	**11,000**	**19,200**	**16,302**	**20,408**	**29,001**
Number of men		**29, 700**	**8,000**	**15,200**	**15,058**	**16,682**	**22,662**
Number of women		**9,900**	**3,000**	**4,000**	**1,244**	**3,726**	**6,339**

[1] The Interventions to Results pathway presented on the following page presents PACE-D's approach to meet Program targets.

[2] Heat improvement: Chandrapur FY14: 7,286 tCO2 & FY15: 123,861 tCO2; Panipat FY14: 86,078 tCO2; NTPC Sipat FY15: 202,453 tCO2 and BESCOM Solar PV rooftop FY15: 1,496 tCO2

Number of enabling policies and regulations for wide-scaling clean energy proposed, adopted and/or implemented as a result of USG assistance	**Annual (at end of FY)**	**No fixed target**	**No fixed target**	**No fixed target**	**7**	**7**	**7**
Proposed					**7**	**7**	**7**[3]
Adopted					**3**	**3**	**3**[4]
Implemented					**3**	**3**	**3**[5]
Quantity of operational renewable electric generation capacity as a result of USG assistance (in MW)	**Annual (at end of FY)**	**714**	**122**	**122**	**3**	**12.283**	**19.45**[6]
Energy saved due to energy efficiency/conservation projects as a result of USG assistance (in MW)	**Annual (at end of FY)**	**150**	**35**	**35**	**0**	**0**	**0**[7]
Percent heat rate improvement in two power plants utilities (cumulative)	**Annual (at end of FY)**	**2%**	**1%**	**1%**			
Panipat thermal power station					**5.6%**	**5.6%**	**5.6%**
Chandrapur thermal power station					**3.4%**	**3.4%**	**3.4%**
Total public and private funds leveraged by USG for energy projects (in millions USD)	**Annual (at end of FY)**	**90**	**20**	**20**	**13.45**	**30.71**	**48.92**[8]

[3] Karnataka RE Policy, Karnataka EE Policy, Rajasthan EE Policy, SG Regulations, MP Net Metering Policy, Karnataka Gross Metering Regulations, technical update of ECBC

[4] Karnataka Solar Policy, Haryana DSM Regulations, Rajasthan Net Metering regulations

[5] Karnataka Solar Policy, Haryana DSM Regulations, ECBC

[6] BESCOM: 12.07 MW; RRECL: 4.383 MW; JVVNL (Jaipur City Circle): 2.98 MW; Solar PV Pumps: 0.023

[7] The Program has revised its Monitoring and Evaluation (M&E) plan with new EE targets and is awaiting approval from USAID. The various interventions include facilitating state DISCOMs to develop DSM proposals that will save 10 MW of energy, Smart Grid regulations that will result in saving of 22,980 MW of energy and in a reduction of GHG emissions by 137.46 mmt (until 2027), updating ECBC for BEE and EE policy development for states that will save 163 MW of energy by 2020, WHU policy that will enable an energy saving potential of 700 MW and support for NZEB pilots.

[8] (USD million) BESCOM: 15.83; Cleaner Fossils: 9.49; RRECL: 5.74; MSP: 13.80; CEED: 0.04; TCG: 0.04; Rockefeller foundation: 0.03; BEE: 0.03

4. PROGRESS ON 5 YEAR PROJECT IMPLEMENTATION PLAN

DEVELOPMENT RESULT 1: IMPROVED END-USE ENERGY EFFICIENCY BY SCALING UP AND DEPLOYMENT OF ENERGY EFFICIENCY TECHNOLOGIES

Task 1: Market Driven Energy Efficiency Technology Deployment

Task 1.1 Smart Grids Electric System

TA to Ministry of Power on Implementation of Smart Grid Pilots

Objective: The India Smart Grid Task Force (ISGTF), set up by MOP, is an inter-ministerial group set up to provide policy direction to Smart Grid initiatives in the country. In 2012, the ISGTF shortlisted 14 Smart Grid pilots that are currently at different stages of implementation by various DISCOMs across India. Under these pilots, 50 percent funding is proposed to be covered through a central grant, and the remaining 50 percent is to be contributed by the respective DISCOM.

The PACE-D TA Program, in discussion with MOP, sought to build capacity of various stakeholders to successfully implement Smart Grid pilots in the country and enable their scale-up across all DISCOMs. After consultation with MOP, it was agreed that the Program will offer the following TA:

- Organize regular Progress Review and Capacity Building Workshops (PRCBWs).
- Prepare technical papers on relevant topics.
- Prepare draft Smart Grid regulations.
- Support a selected DISCOM on Smart Grid pilot implementation.
- Facilitate establishment of a network of institutions to provide training on Smart Grid.
- Advise on institutional structure of the NSGM.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- Fifteen organizations with improved capacity to implement Smart Grid (MOP and 14 DISCOMs)
- One new organization established (NSGM)
- One regulation proposed
- USD 83 million previously earmarked public funds utilized to effectively implement Smart Grid pilots
- 4,000 person-hours of training provided
- MW of avoided generation[9]

Status of work-plan activities and deliverables: The following activities were carried out in Year 2:

[9] The savings from the pilot projects are in various stages of estimations as the DPRs are being prepared.

- Organized a study tour to the U.S in January 2014.
- Organized two PRCBWs for the 14 pilots in Puducherry.
- Developed four opinion papers, of which two were formally launched.
- Prepared draft Smart Grid regulations for adoption by State Electricity Regulatory Commissions (SERCs).

In Year 3, the Program:

- Supported the Central Electricity Regulatory Commission for finalization of the Smart Grid Model Regulations for adoption by SERCs.
- Selected Tripura for providing TA to the state DISCOMs in the areas of development of EM&V framework, conduct capacity building workshops, and assist in review of software documentation submitted by vendor and software database, display and report definition.
- Conceptualized and launched Smart-NET to meet the capacity building targets as laid under the National Smart Grid Vision and Roadmap. A WG was established to provide guidance for the development of two Smart Grid courses and roll out strategy of Smart-NET.
- Initiated the design of the capacity building program for two DISCOMs in Haryana for identification and development of DSM projects measures in the state.
- Selected Ajmer DISCOM for TA in the areas of base-lining/planning and pre-implementation analysis, generation and analysis of various reports for each of the Smart Grid functionality selected, regular monitoring and generating recommendation on the loss levels and cost-benefit analysis.

S.No	Activities	Status
I	**Organization of Progress Review and Capacity Building Workshops and launch of technical papers**	
a	Launch of opinion papers on a roadmap for communication and application interoperability	Completed
b	Organization of capacity building workshop I and II	Completed
c	TA for development of templates for selecting service providers (SI, RFP, etc.)	Completed
d	Organization of U.S. study tour	Completed
e	Organization of capacity building workshop III	Completed
f	Launch of opinion paper on Dynamic Pricing	Completed
g	Organization of capacity building workshop IV	Completed
h	Preparation of opinion papers on measurement and verification (M&V) Framework for Smart Grid pilots and leveraging infrastructure being created under R-APDRP for optimal use	Completed[10]
II	**TA to TSECL**	

[10] Completed but yet to be approved

S.No	Activities	Status
a	Selection of pilot for TA	Completed
b	Develop strategy for M&V and baseline development	Scheduled for Jul-Aug 2016
c	Capacity building workshop of the Smart Grid project team	Two workshops conducted, one more scheduled for Jul-Aug 2016
d	Review of the functional and technical specification and business architecture of the software	Scheduled for Jul-Sept 2016
e	Review of end to end testing strategy of the software.	Scheduled for Sept 2016
f	Review of report formats	Completed
g	Review of reporting structure proposed by the vendor	Scheduled for Aug 2016
III	**Recommend institutional structure for NSGM**	
a	Review of national and international institutional structures for country level missions/Programs	Completed
b	Develop a plan for evolving ISGTF structure into NSGM including review of legal setup aspects, staffing plan, process flows, integration of different working structures, analysis of funding sources, etc.	Initiated[11]
IV	**Preparation of Smart Grid Regulations**	
a	Establishment of technical committee	Completed
b	Formulation of first draft of regulations	Completed
c	Presentation I to technical committee	Completed
d	Revision to prepare second draft of regulations	Completed
e	Presentation II to technical committee	Completed
f	Presentation of draft regulations to FOR	Completed
g	Preparation of final draft incorporating FOR comments	Completed
h	Circulation of draft regulations by FOR to SERCs	Completed
i	Monitoring of MW/MWh saved from implementation of draft regulations (subject to adoption of regulations by SERCs)	Post notification of regulations
V	**Establishment of Smart-NET**	
a	Development of Smart Grid Course Outline	Completed
b	Formation of WG	Completed

[11] though deferred on MOP advice, the Program was requested to resume work

S.No	Activities	Status
c	Development of three-day Smart Grid course content	Completed
d	Development of executive orientation modules	Completed
e	Development of roll-out plan and identification of partner institutes and their on-boarding	Completed
f	Finalization of strategy in consultation with MOP and Smart Grid Knowledge Centre	Scheduled for Jul 2016
VI	**Support to Ajmer Smart Grid Pilot**	
a	Base lining/Planning and pre-implementation analysis	Completed
b	Support in installation of equipment	In progress, scheduled for completion in Jul 2016
c	Analysis/Generation of reports	Scheduled for Jul-Dec 2016
d	Consumer feedback	Scheduled for Aug 2016
e	Cost-benefit analysis	Scheduled for Nov 2016
f	Development of scale-up strategy	Scheduled for Dec 2016
VII	**Smart Grid Film**	
a	Initial draft for a short film on "Smart Grid and its Transformative Impact on Utility Operations and Customer Energy Empowerment"	Completed
b	Final draft of the film approval by MOP	Completed

Brief description of activities this year:

Tripura Smart Grid Pilot

- Finalized the scope for TSECL Smart Grid pilot based on the feedback received from TSECL.
- Organized the first capacity building workshop on Smart Grid at TSECL on January 19, 2016. The training program was attended by 25 professionals including the core team at the corporate as well as key officers of electrical division where the Smart Grid pilot is being undertaken.
- Organized the second capacity building workshop on Smart Grid at TSECL on April 26, 2016. The training program was attended by the core team at the corporate office as well as key officers of electrical division where the Smart Grid pilot is being implemented. Approximately 25 utility professionals attended the training program.
- Finalized the report formats for Tripura Smart Grid Pilot, post discussion with TSECL. These report formats are based on key benefit areas i.e. loss reduction, peak load management; outage reporting; quality of power; optimization of assets; consumer involvement etc.

- Discussed the overall EM&V framework with TSECL and subsequently shared the data requirements with TSECL.
- Supported TSECL by providing comments on Draft TERC (Smart Grid) Regulations, 2015 for consideration by TERC.

Ajmer Smart Grid Pilot

- Held meeting with Mr. B.N. Sharma, Joint Secretary, MOP and it was agreed that the Program will:
    - support pilot with Ajmer Vidyut Vitran Nigam Limited (AVVNL), and
    - produce a short film on Smart Grids
- Held meeting with AVVNL to discuss the scope for Smart Grid pilot.
- Finalized the scope for AVVNL pilot which includes implementation of the following Smart Grid functionalities:
    - Automated Metering Infrastructure for automatic energy audit
    - Loss reduction analytics including energy theft monitoring and tamper alerts.
- Selected two vendors - JnJ Powercom Systems Limited (JnJPSL) and Radius Synergies International Private Limited (RSIPL) - for the pilot on the basis of an EOI issued earlier.
    - Each vendor will implement the solution on selected feeder with approximately 500 consumers each.
    - A letter of approval from Managing Director (MD), AVVNL has been issued to carry out the proposed work of installation for the pilot program.
    - A Letter of Intent has been issued to the vendors to initiate the implementation of the pilot. The pilot is expected to start in January 2016.
- Finalized selection of feeder in Ajmer for pilot demonstration in consultation with AVVNL.
- Conducted detailed field survey to map all consumers with poles and distributed transformers, determined requirements for implementation and undertook baseline study.
- Completed a detailed baseline report based on the survey and submitted to AVVNL.
- Finalized the implementation plan in consultation with AVVNL.
- Received go-ahead from AVVNL for pilot implementation.
- Developed consumer engagement brochure and initiated door-to-door awareness campaign for the Ajmer Smart Grid Pilot initiative.
- Partnered with EESL to distribute 3 LEDs each to individual consumers at no cost for the Ajmer Smart Grid Pilot as part of its consumer engagement initiative.
- Facilitated installation of smart solutions for Ajmer Smart Grid Pilot which is expected to be completed by July 2016.
- Completed more than 80% of the installations of smart meters and adaptors in the Satguru feeder by the two selected vendors JnJPSL and RSIPL.

Smart-NET

- Initiated the work on developing two smart grid courses - a three day course for utility technical personals and a half day executive orientation program for top level utility executives.
- Formed the WG for development of the course.
- Conducted the first WG meeting on September 3, 2015 and prepared the draft course outline for the two courses.
- Developed two Smart Grid courses i.e. a three-day course for utility technical personals and a half-day executive orientation program for top level utility executives.
- Conducted the second WG meeting on December 18, 2015 to discuss the draft roll-out strategy and get feedback on the course modules prepared.
- Developed the roll-out strategy for Smart Grid course. The roll-out strategy defines the overall goal and modus operandi of the course, the selection criteria of partner institutes, implementation plan and the roles and responsibilities of the stakeholders involved.
- Drafted an EOI for selection of partner institutes on the basis of the criteria defined in the strategy document.
- Planned and organized the Executive Orientation Program on SG for top management of DISCOMs on January 21, 2016 at Bengaluru which was attended by 30 participants including senior representatives from MOP.
- Organized the third WG meeting on March 18, 2016 to finalize the roll-out strategy and get feedback on the course modules prepared.
- Finalized the roll-out strategy for Smart Grid course and prepared a draft note on seeding program (to fast-track initial roll-out of the course). The seeding program note was submitted to NSGM.
- Finalized the three-day Smart Grid Course post incorporation of WG comments. The first three-day seeding program is planned from July 27-29, 2016 at CENPEID, TPDDL Learning Centre, New Delhi.

Smart Grid Film

- Developed a short film on “Smart Grid and its Transformative Impact on Utility Operations and Customer Energy Empowerment”.
    - Screened the film at the Executive Orientation Program on Smart Grid for top management of DISCOMs on January 21, 2016 at Bengaluru. The film will be screened at various government events and at training workshops to be organized for utilities under the Smart-NET Program.

Challenges/risks: The following challenges impact this intervention:

Tripura Smart Grid Pilot

- Contract negotiations between TSECL and selected aggregator for Smart Grid pilot.

Ajmer Smart Grid Pilot

- Adequate support from field level offices of AVVNL would be required for successful demonstration of pilot.

Support required from USAID: USAID is requested to follow-up with MOP for launch of the half day executive course on Smart Grid and Ajmer Smart Grid Pilot.

Task 1.2.Cost Effective, Net Zero Energy Buildings (NZEBs)

TA to BEE on Market Transformation for Net Zero Energy Buildings

Objective: Globally, NZEBs are becoming the benchmark for new buildings to demonstrate the commitment to CE. In India, it is estimated that 80 percent of the new building stock is yet to be made. Also, several buildings, currently under construction, are planned to conform to the Leadership in Energy and Environmental Design/Green Buildings Rating System India standards which is a penultimate step towards achieving net zero energy status.

Thus, it is important to structure and implement an India-specific NZEB market transformation framework.

Towards this end, the Program is partnering with BEE to provide TA to two NZEB pilots, establish a knowledge portal and update the existing building code. The updated ECBC will also include provisions for RE systems for new buildings to mainstream the use of RE in buildings in India and prepare them for easier eventual transformation to NZEBs.

The Program's NZEB pilot projects -- NU and UHBVNL aim to support BEE's efforts to address EE in the building sector by promoting large-scale development of NZEBs. The demonstration projects will be used as vehicles to highlight the concept of NZEB developments through applicable, cost effective technologies and design strategies. The selected pilot projects are public sector buildings which can build confidence amongst private sector to follow the lead taken by the government agencies.

To this end, the objectives can be summarized as:

- Demonstration and promotion of EE and RE technologies, design strategies, materials, construction and operational practices that can be instrumental in maximizing EE and meeting energy demands entirely/largely from RE sources.
- Creation of public awareness about highly energy efficient buildings and their benefits and encourage stakeholders to design and build NZEB.
- Identification of market and policy barriers in achieving NZEB.
- Identification and development of technical tools, practices and skills that would accelerate the growth of NZEBs across the diverse Indian climatic conditions.

Policymakers and private sector players can direct their resources in developing local markets that are needed for constant supply of these technologies in a cost effective manner. These pilot projects will also build the technical capacity of a range of stakeholders to develop NZEBs across India.

Mainstreaming NZEBs in India requires information dissemination on a large-scale and in a sustained manner. To facilitate this, the Program has developed a NZEB knowledge portal that provides information about EE and RE technologies that are integral to designing NZEBs. Similarly building design strategies that are intrinsic to buildings that consume less energy compared to conventional buildings have also been shared. The portal will also provide a platform to users for discussion with subject matter experts and leading experts

who will be invited to share latest research activities, policy interventions and concepts related to NZEBs.

The portal includes the following features:

- Online knowledge center with complete details of the NZEB definitions, approaches, system boundary, international NZEB policies, strategies, equipment and technologies, various tools for calculations, glossary of terms and terminologies for NZEB.
- Online NZEB Alliance that will feature discussion forum and blogs from EE and RE experts.
- Case studies to demonstrate the feasibility of designing and constructing NZEBs, and the technologies that need to be used in buildings to attain energy consumption neutrality.
- Relevant news and events from India and abroad.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- Three organizations with improved capacity to implement NZEB (BEE, NU, and UHBVNL)
- USD 300 million public funds leveraged
- MW of avoided generation from conventional grid-connected electricity supply[12]

Status of work-plan activities and deliverables: In Year 2, the Program developed a plan to increase awareness and organized an international seminar on NZEBs. It also organized a stakeholder consultation on NZEB design competition and initiated work on the knowledge portal. The Program also initiated providing TA to two NZEB pilots for which an MOU has been signed with the two organizations.

In Year 3, the Program developed a sustainability framework for the knowledge portal in consultation with BEE.

The Program will continue to provide TA for the design and implementation of its existing two pilots based on specific requests for assistance. Meetings with design teams and periodic site visits to the pilots will also be carried out to review and assist in implementation of EE and RE measures in the project.

S.No.	Activities	Status
I	**Increasing awareness of NZEB**	
a	Develop a plan to increase NZEB awareness through seminar, design competition and knowledge portal	Completed
b	Organize an international seminar on NZEB	Completed
c	Conduct stakeholder consultation on the feasibility of design competition and knowledge portal	Completed

[12] An estimate is currently being made

S.No.	Activities	Status
d	Develop a sustainability framework for the NZEB knowledge portal	Completed
e	Launch NZEB knowledge portal	Completed
II	**Support on implementing NZEB pilots**	
a	Secure buy-ins through MOU with pilots	Completed
b	Advise NU on dossier for international competition	Completed
c	Support NU for selection of a winner from international competition	Completed
d	Prepare TA plan for pilots	Completed
e	Implement TA plan for pilots	Ongoing
f	Monitor NZE parameters and display on NZEB knowledge portal	Ongoing
g	Data from NZEB pilot based on implementation and disseminating lessons learnt	Scheduled for 2016-17

Brief description of activities this year: The Program continued to provide TA for the design and implementation of its NZEB pilot projects.

- **NZEB Knowledge Portal**
  - Finalized the portal structure and developed the wireframes for the pages.
  - Completed the data compilation for all the sections (knowledge center, NZEBs, case studies, alliance, etc.) of the portal.
  - Developed the sustainability framework of the portal explaining the strategy for long term sustenance with issues related to hosting, sustainability options, portal funding, alliance memberships, and data management.
  - Discussed the draft version of the portal with BEE and USAID for their interim comments.
  - Shared the portal with key stakeholders for their comprehensive comments on portal content, design, and implementation.
  - Compiled and addressed all the comments received and held a meeting with BEE to review the portal progress and discuss the launch date and event.
  - Prepared presentations on the portal to seek approval from Secretary, BEE and MOP.
  - Prepared notes and presentations to engage private and public sector for the NZEB Portal launch and NZEB Alliance.
  - Continued to connect with academic and research institutions, architectural practitioners, manufacturers and technology providers in the building sector to encourage them to join the NZEB Alliance. The following stakeholders have committed to joining the Alliance:
    - Alliance for Energy Efficient Economy
    - Indian Green Building Council
    - The Energy and Resources Institute

        - Malviya Institute of Technology, Jaipur
        - Center for Environmental Planning and Technology, Ahmedabad
        - Indian Institute of Information and Technology, Hyderabad
        - Covestro (India) Pvt. Ltd. (leading international manufacturer of thermal insulation products)
        - Jaquar (leading manufacturer of water efficient sanitary fittings and fixtures)
    - Continued to update the latest information on the portal (international and national NZEB events, details about case studies, etc.)
    - Launched the NZEB portal on May 27, 2016, by Mr. P.K. Pujari, Secretary, Ministry of Power (MOP), Mr. Raj Pal, Economic Advisor, MOP and Ambassador Jonathan Addleton, Mission Director, USAID.

- **NZEB Pilot**
    - Reviewed NU's tender drawings and documents for the first phase development and shared comments with the design consultant and the client.
    - Attended progress review meeting with NU team and design consultants.
    - Assisted in setting up the technical committee for NU.
    - Held discussions with the NU project management team to organize a steering/technical committee meeting to review the progress of the pilot.
    - Participated in the first steering committee meeting of the NU NZEB pilot project on May 4-5, 2016 at Rajgir, Bihar to discuss strategies and opportunities for NZEB and RE technology specifications.
    - Organized the review meeting on May 13, 2016 in New Delhi to review project progress, tenders and NZEB strategies with Vastushilpa (project architects) and NU team.
    - Participated in the discussions as regards USAID's participation and contribution to the foundation ceremony (to be attended by Honorable President of India) scheduled to be held on Aug 27, 2016 for NU.
    - Initiated the designing of a plaque to summarize the NZEB vision and features of NU to be displayed during the foundation laying ceremony.
    - Held multiple meetings with NU team to finalize the plaque design. Final approvals and guidelines for design from NU team are awaited.
    - Pilot with UHBVN is not progressing, it was agreed that BEE will meet them to streamline its implementation.

- **MNRE Akshay Urja Bhawan Event**
    - Organized a half day workshop on August 5, 2015 at the India Habitat Centre, New Delhi to formulate a vision for New Akshay Urja Bhawan, the new headquarters building that has been proposed for the MNRE in New Delhi. The workshop was attended by academicians, leading architects and engineers, green building experts, and officials from the Central Public Works Department. The Program shared its experience of providing TA to NZEB demonstration projects.
    - Proposed to provide TA in architecture design competition and selection of NZEB-related vendors to MNRE to realize the vision on New Akshay Urja Bhawan as an energy positive building.

Challenges/risks: The pilots are progressing slowly. The main reason for this is the need to follow in-house procedures by the pilot organizations. It is now certain that completion of pilot projects will not coincide with the Program completion, which formally concludes in May 2017. The Program may have to consider devising mechanisms that ensure continuance of NZEB vision of the pilots beyond the Program itself. The Program is also required to disseminate the learning's from these pilots. It may be challenging to extract tangible outputs resulting from PACE-D TA till May 2017.

Support required from USAID: USAID is requested to follow up with MOP and BEE to plan for disseminating the learning and achievements of PACE-D NZEB pilots. It should be kept in mind that these may have to be integrated within the larger context of outreach activities to publicly share the program level outputs and achievements of the Program with stakeholders.

Task 1.3.Waste Heat Utilization (WHU)

TA to BEE on WHU Policy

Objective: The Program is providing TA to BEE for developing a strategy for WHU, and specifically for low grade WHU. The objectives also include developing a strategy paper for BEE to promote through appropriate policy mechanisms the priority technologies. The objective of Year-4 activities is to complete a strategy paper for BEE to promote the priority technologies through appropriate policy mechanisms. This will be done by taking forward the work done in previous years and engaging with key stakeholders.

Intended results: The deliverables expected from the activity are:

- Consultation meeting with Key experts on the WHU technology compendium developed in Year 2
- Release of WHU technology compendium after incorporation of the suggestions from consultation meeting.
- Develop a draft policy paper for BEE.
- Prepare a recommendation report on WHU policy

Status of work-plan activities and deliverables: The Program is supporting BEE in developing and implementing a policy for saving energy through WHU interventions.

In Year 1 and 2, the Program undertook a WHU market assessment study, conducted a WHU pilot feasibility study for a sponge iron unit and developed a background paper outlining the strategies which are being deployed globally for promotion of WHU technologies. The study revealed that despite high potential, the actual penetration of WHU in key sectors is estimated at 30 percent and that there is a need to tap this potential to increase efficiencies.

While some projects have been implemented relating to high temperature WHU, in the case of low temperature WHU, the challenge is even greater, as very little information is available

on market potential and technology diffusion. To address this challenge, the Program prepared a compendium for low grade WHU in Year 2.

In Year 3, the Program initiated the development of a strategy and a policy paper for BEE to promote priority technologies through appropriate policy mechanisms.

S.No	Activities	Status
a	Preparation of the draft WHU technology compendium	Completed
b	Dissemination work for WHU technologies for textile sector, Pali, Rajasthan	Completed
c	Preparation of the draft policy framework	Completed
d	Expert consultation meeting on draft policy framework and its priority technology and sectors programs	Completed
e	Finalization of technology compendium	In progress
f	Stakeholder workshop for discussion on policy paper	To be scheduled in consultation with BEE
g	Finalization of WHU policy	Completed

Brief description of activities this year:

- Prepared a draft working paper on the WHU policy.
- Received comments and feedback from USAID on the draft WHU policy paper in October 2015 and revised the paper to cover all small and medium enterprises, with sector specific inputs on the textile sector. Other modifications on the presentation of a proposed action plan for the policy recommendations have been added based on the comments received.
- Organized a consultation meeting on the draft policy framework and the technology compendium at BEE on April 12, 2016.
- Received following suggestions for modification of the draft policy framework:
    - Re-assess the potential savings in textile mills
    - Include presently available policies for financing WHU implementation as an annexure.
    - Include lists of incentives available state wise – subsidy, IT depreciation benefits, financing mechanism for WHU implementation.
    - Revise the recommendation to include a more detailed action plan, identifying stakeholders, outlining the roles of each stakeholder, the best practice, who will implement the policies, etc.
- Completed the revisions with regard to the policy framework which is currently under review
- Following suggestions were received for revision of the technology compendium
    - Include case studies on heat pumps, VAM deployment and bagasse drying technologies
    - Include applicability of technologies to different sectors, barrier analysis and cost benefit analysis in case studies
- Continued to address the suggestions on the technology compendium.

Challenges/Risks*:* The main challenge being faced in meeting timelines is the availability of key decisions to progress on activities, which requires the involvement of BEE. Due to changes in key staff, the expert group meeting which was initially planned for February 2015 could not be scheduled.

Support Required from USAID: Information required from BEE on the case studies on VAM and Heat Pumps.

Task 1.4.Heating, Ventilation and Air Condition (HVAC) Technologies

TA to BEE on Policy Framework for Heating, Ventilation and Air-conditioning Technologies

Objective: Building comfort systems (both cooling and heating) consume a significant amount of energy in buildings and it is essential to arrest this trend. The objective of the TA is to accelerate mainstreaming of energy efficient HVAC technologies in India. The Program is supporting BEE in structuring a policy framework to this end based on an assessment of the market conditions, perception of stakeholders to EE HVAC technologies and barriers to bringing about a market transformation.

Intended results: This intervention will result in:

- One policy proposed (HVAC policy)
- One HVAC market transformation program design

Status of work-plan activities and deliverables: The market transformation study was completed and launched in Year 2. The report of this study recommends inputs for a broad policy framework. Further activities can be planned once BEE advices on the preferred strategies for HVAC market transformation program.

In year 4, EESL requested USAID to provide TA in designing an energy efficient HVAC market transformation program for window and split air conditioners. These two AC products represent the largest and fastest growing segment of HVAC products in India. Any improvement in baseline EE of these products would have amplified effects on the overall EE of HVAC sector in India.

Brief description of activities this year:

- Held several meetings with EESL to understand EESL's requirements and to convey the level of assistance and resources that the Program can extend.
- Prepared the scope of activities required to design the HVAC Program.
- Drafted the MOU to delineate the role and obligations of all concerned parties. The draft MOU with EESL is being reviewed by USAID and is likely to be finalized in the next quarter.

Challenges/risks: Since the PACE-D TA Program is ending in May 2017, it is important that design of the HVAC program is initiated and completed within this timeframe. This task may not materialize if approvals from all concerned entities to begin the program design are delayed beyond the next quarter.

Support required from USAID: It is essential that terms and conditions mutually agreeable to USAID and the Program are finalized at the earliest possible. USAID can expedite the decision making process by frequent and regular consultations with the Program.

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

TA to BEE to Update ECBC

Objective: The ECBC 2007 code is being updated to reflect the latest trends in construction practices, enhanced performance of EE building technologies and materials available in Indian markets. In urban areas, buildings are and will be increasingly designed to harness as much of RE as possible. The code will also be updated to include RE systems that can be used in non-residential buildings.

The Program will compile an updated version of ECBC that will be based on life cycle analysis of the saving potential of all possible energy conservation (EC) measures on 16 prototype buildings in five climatic zones. The draft version of the code will be reviewed by three committees constituted by BEE, namely steering committee, technical advisory committee, and expert WGs for wider consultation.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- One policy/regulation proposed
- One organization with improved capacity to identify and implement CE regulations and guidelines (BEE)

Status of work-plan activities and deliverables: In Year 3, the Program conducted a stringency analysis for the technical update of ECBC, and provided the necessary technical support in following activities:

- Carry out the analysis across the major sections of ECBC: building envelope, lighting systems, comfort systems, electrical systems and compliance processes.
- Facilitate meetings of the WGs to review the progress and findings of the stringency analysis. This exercise will culminate in an interim ECBC Stringency Analysis Report summarizing the findings and the process followed by the Program.
- Facilitate an open and collaborative stakeholder engagement process through four stakeholder workshops, one each for the North, South, East and West Zones, and to present key findings of the stringency analysis and the baseline development in regional stakeholder consultation workshops.
- Complete final ECBC Stringency Analysis Report after collating the observation of participants from the stakeholder workshops. The report will include recommendations from major stakeholders in the construction industry, and officials from regulatory and enforcement agencies. The draft stringency report will be presented to the technical committee for review.

In year 4, The Program will continue with the ongoing work on ECBC update and shall provide the first draft of the revised building code during Q3 of Year 4 (2016).

S.No	Activities	Status
I	**ECBC 2015 Stringency Analysis Report**	
a	Conduct stringency analysis for building envelope	Completed
b	Conduct stringency analysis for lighting	Completed
c	WG meeting(s) to review stringency analysis for building envelope and lighting	Completed
d	Conduct stringency analysis for comfort systems	Completed
e	Conduct stringency analysis for electrical and renewable systems	Completed
f	Prepare the administration and compliance documents, procedures, and process	Completed
g	WG meeting for review of stringency analysis for administration and compliance	Completed
h	WG meeting (s) to review stringency analysis for comfort systems, renewable and electrical	Completed
II	**Regional ECBC Stakeholder Consultation Workshops**	
a	Formation of Technical and Steering Committees	Completed
b	Regional Stakeholder Consultation Workshop in East Zone	Completed
c	Regional Stakeholder Consultation Workshop in West Zone	Completed
d	Regional Stakeholder Consultation Workshop in South Zone	Completed
e	Regional / National Stakeholder Consultation Workshop in North Zone	Completed
f	Meeting with all WGs to review recommendations from the workshops	Completed
g	Prepare final ECBC 2015 Stringency Analysis Report including recommendations from regional workshops on baseline, and stringency analysis	Rescheduled for Jul 2016
III	**Submission of ECBC update**	
a	Draft ECBC update (including feedback from regional and national stakeholder workshops)	Rescheduled for Jul 2016

Brief description of activities this year*:*

- Completed stringency analysis for comfort systems, electrical and RE systems. The study was discussed with WGs on July 9, 2015.
- Developed a background note, invitation letter template, and draft participant list on the regional and national level stakeholder technical advisory committee workshop.
- Completed stringency analysis for all the sections of ECBC.
- Organized WG meetings as detailed in Table 1 for review of stringency analysis results of building envelope, comfort systems, lighting systems, electrical and RE systems and, administration and compliance norms.
- Finalized the participant list, agendas and invites for regional and national stakeholder workshops.

- Conducted regional workshops in Mumbai, Bengaluru, and Kolkata and one national workshop in New Delhi to discuss the ECBC update progress, process, and draft recommendations.
- Incorporated recommendations of the WG members, regional workshops and national workshop in the analysis.
- Uploaded templates for soliciting further technical inputs on the recommendations made by the Program on the technical update of the ECBC 2016, on the PACE-D website. This activity was done to ensure that a larger group of stakeholders participate in the update, and also adequate time is given to experts for a careful review of the stringency analysis before they share feedback with the Program.
- Interacted with LBNL and CII to discuss the EE potential in data centers and possible inclusion of the same in ECBC 2016.

Table 1 WG and Stakeholder Meetings conducted during July 2015 - June 2016

S.No	Activities	Date
a	WG Meeting – Compliance and Administration	November 2015
b	WG - Building Envelope Additional Meeting No 1	December 2015
c	WG - Electrical and Renewable Systems Additional Meeting 1	November 2015
d	WG– Comfort Systems Additional Meeting No 1	November 2015
e	WG – Comfort Systems Additional Meeting No 2	November 2015
f	WG – Comfort Systems Additional Meeting No 2	December 2015
g	WG – Lighting Systems Additional Meeting No 1	December 2015
h	Meeting with chairs of all WGs	January 7, 2016
i	Meeting with RAMA (Comfort system WG members and association of HVAC manufacturers)	January 6, 2016
j	Regional Stakeholder Consultation Workshop in West Zone	January 12, 2016
k	Regional Stakeholder Consultation Workshop in South Zone	February 3, 2016
l	Regional Stakeholder Consultation Workshop in East Zone	February 5, 2016
m	Meeting with chairs of all WGs	April 29, 2016
n	Meeting with LBNL and CII to discuss the possible inclusion of data centers	April 29, 2016
o	National Stakeholder Consultation Workshop in New Delhi	May 27, 2016

Challenges/risks:

- WGs constituted to review the progress of update process, are not able to meet as regularly as required largely due to conflicts in schedule of the members. Thus the update process may take longer than expected.
- The challenge is to schedule convenient dates for WG members and BEE officials for the WG and steering committee meetings.

Support required from USAID: Regular follow ups with BEE on the meeting date for the Steering Committee Meeting.

TA to BEE on ECBC Accreditation Program

The Program is working with BEE to develop and launch the ECBC Accreditation examination for building professionals. As a part of this initiative, a scheme for certifying ECBC building professionals has been developed by the Program. BEE, along with the Council of Architecture (COA) and Indian Institute of Architects (IIA), plans to launch the first exam by second quarter of 2016. Draft reference material, question bank, and sample question paper has been prepared by the Program to support BEE on its initiative. A MOU was expected to be signed in October 2015 among BEE, COA, and IIA to take this initiative further but has been delayed.

No activities were undertaken during the reporting period.

Challenges/risks*:* BEE to identify a partner institution to conduct the first ECBC accreditation examination.

Support required from USAID: USAID to discuss with BEE the need to expedite the ECBC examination initiative so that the PACE-D TA Program can provide the required TA before the Program ends in 2017.

TA to Government of Rajasthan (GOR) for ECBC Implementation

Objective: While Rajasthan issued a notification for mandatory ECBC compliance in March 2011, no details of the compliance process were made available to stakeholders. The key components of ECBC implementation are compliance procedures, building bylaw amendment, and enforcement mechanism.

The Program is supporting the UDH, GOR; RRECL and Jaipur Development Authority (JDA) to develop and implement a state specific strategic road map for ECBC roll-out on a pilot basis for Jaipur.

Intended results*:* This intervention will result in:

- One policy/regulation implemented (ECBC)
- Three organizations with improved capacity to identify and implement CE regulations and guidelines (UDH, GOR; RRECL and JDA)

The ECBC implementation framework adopted by Jaipur could be further replicated by other cities in the state and with appropriate modifications to other cities in India.

Status of work-plan activities and deliverables*:* In Year 3, the Program carried out ECBC state-level implementation activities including facilitating the formation of task force, and capacity building of a cadre of consultants and government officials to enforce ECBC in the states. Other activities include:

- Recommendation of amendments needed in bylaws (legal local guidelines for building construction in urban areas) to incorporate ECBC compliance as a pre requisite to building sanction process and gaining occupancy license for new buildings.
- Outlining of complete ECBC compliance procedures for Jaipur municipal area including:
    - Sequence of procedures for demonstrating compliance and gaining approval from ECBC implementation authorities
    - Penalties and fees
    - Dispute resolution
    - Performance reporting
    - Compliance checklists and forms
    - Submission drawings and documents for demonstrating compliance

In year 4, the Program will focus on ongoing state level ECBC implementation work.

S. No	Deliverables	Status
a	Establishment of Task Force and convening its first meeting	Completed
b	Drafting of ECBC compliance mechanism for Jaipur	Completed
c	Convening of second Task force meeting	Completed
d	Organization of a stakeholders awareness workshop	Awaiting GOR concurrence
e	Recommendation of amendments to building bylaws for Jaipur	Completed
f	Convening of third task force meeting and confirmation of compliance process and enforcement mechanisms	Post GOR concurrence

Brief description of activities this year:

- Compiled the recommendations for amendments to building bylaws of Jaipur.
- Met with the Principal Secretary, GOR to discuss assistance required by the state government for organizing a stakeholder awareness workshop in the state.
- Prepared a draft letter to be issued to Urban Development Housing Department and Additional Commissioner by the Principal Secretary.
- Developed the handbook on ECBC implementation guidelines and compliance procedure. The same has been handed over to BEE for their approval and launch.

Challenges/risks*:* The technical capacity of RRECL and other state agencies to comprehensively understand ECBC is inadequate; the major reason being that the state is implementing a building energy code for the first time. However, RRECL has decided to overcome this problem by holding awareness programs to inform stakeholders and officials about ECBC. This is expected to help the Program in executing its mandate. The state government has taken initiative in this but interdepartmental approvals and management have led to delays in organizing the workshop.

Support required from USAID:

- Discussion on way forward on ECBC implementation.
- Finalization of dates to conduct the awareness program in Rajasthan.

- Approval of handbook on ECBC implementation guidelines and compliance procedures from BEE

TA to Governments of Karnataka and Rajasthan to Develop and Implement State Level Energy Efficiency Policies

Objective: The Program is engaged with the GOK, through KREDL, and the GOR, through RRECL, to provide TA in the area of policy, regulatory and institutional strengthening for large-scale EE deployment in the state.

- The state of Karnataka faces several challenges such as energy and peak deficits and increased dependence on short term power purchase, etc. The state also depends pre-dominantly on conventional energy sources with a huge dependence on coal-based generation for meeting its current as well as rapidly growing energy and peak demand.
- The state is also grappling with issues such as demand supply gap, higher subsidy, higher transmission and distribution (T&D) losses and energy security. Also, the state's energy requirement is growing continuously and is expected to increase with higher growth rate in near future.

To sustain continuous growing requirement in the environment of depleting conventional energy sources and geographical challenge, relying only on supply side option is not an economically viable option. There is an urgent need to increase end use efficiency which would in turn result in reduced demand to be met.

The GOK has also emphasized the importance of EE and its role in addressing the development challenges faced by the state. The state government had announced "The Karnataka RE Policy 2009-14" in 2009 to promote and harness the RE and EE potential in the state. Subsequently, the GOK and KREDL undertook several measures at the policy, regulatory and program implementation levels to promote the EE sector in the state. However, in spite of these efforts, large-scale deployment of EE in the state has not happened due to certain limitations in the existing framework. The Program has provided necessary support to KREDL in development of a separate "Karnataka Energy Efficiency and Conservation Policy 2014-19" with the objective of promotion and large-scale deployment of EE measures in the state.

Similarly, the GOR and RRECL have also taken several initiatives at the policy, regulatory and programmatic levels to promote large-scale deployment of EE. However, the existing framework has certain limitations and possesses several challenges which can be conquered through development of state specific comprehensive EE policy. The Program has provided necessary support to RRECL in development of "Comprehensive Energy Efficiency Policy" for the state of Rajasthan with the objective of promotion and large-scale deployment of EE measures in the state.

The policies will provide long term vision for driving EE and EC across different consumer categories in the states and also help to establish them as leading states for deployment of large-scale EE programs.

The Program provided necessary support to KREDL in development of draft EE and EC policy for the state. It also provided support to KREDL in addressing the comments received from the various stakeholders. KREDL has submitted the revised draft policy document to the DOE, GOK. DOE is in the process of notifying the same through cabinet approval. Upon notification, the Program, is expected to provide necessary support to KREDL in implementation of policy document through development of EE and conservation action plan for the policy period.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- Two policies proposed (EE policy for each state)
- Four organizations with improved capacity to develop and implement Energy Efficiency and Energy Conservation (EEEC) policy (Energy Departments of GOK and GOR, KREDL and RRECL)
- USD 5 million expected to be leveraged from public and private funds for implementation of EE and conservation projects;(INR 150 million in each state)
- 28 MW (130 million units (MU)) of electricity savings over policy tenure through implementation of EE measures in different consumer categories; (50 MU in Karnataka and 80 MU in Rajasthan)

Presently, none of the state designated agencies or state governments have issued a separate and dedicated policy for EE. The approach adopted under the Program in the two focal states has the potential to create replicable and scalable models. The state designated agencies of other states may also consider development of their state specific policy which will help them to put in place an overarching framework for identification, development, implementation, M&V of EE programs to tap huge energy savings potential.

Status of work-plan activities and deliverables:

S.No.	Activities	Status
I	**Development of an EEEC Policy for the state of Karnataka**	
a	Input on draft EE policy document prepared by KREDL	Completed
b	Summary note for proposed approach for development of sector-wise Target Setting Model- Karnataka EE Policy	Completed
c	Preparation of draft Karnataka EEEC Policy	Completed
d	Preparation of revised Karnataka EEEC Policy	Completed
e	Policy notification by GOK	Awaited
f	Implementation support	Scheduled post policy notification
II	**Development of Comprehensive EE Policy for the state of Rajasthan**	
a	Development of detailed model on sectoral target settings	Completed

S.No.	Activities	Status
b	Summary note for proposed approach for development of sector-wise Target Setting Model	Completed
c	Draft comprehensive EE Policy for the state of Rajasthan	Completed
d	Revised draft comprehensive EE Policy for the state of Rajasthan	Completed
e	Policy notification by GOR	Awaited
f	Implementation support	Scheduled post policy notification

Brief description of activities this year:

- Karnataka
  - Followed up on the current status of the draft policy in GOK regarding the state cabinet's approval. EE policy is currently awaiting cabinet approval.
- Rajasthan
  - Followed up on the current status of the draft policy in GOR regarding the state cabinet's approval.
  - Received inputs from RRECL which were incorporated in revised policy document. RRECL has made some changes in the draft policy document and is in the process of submitting this document to DOE, GOR for finalization.
  - Provided inputs to RRECL on certain changes proposed by RRECL. RRECL has finalized the draft policy document and has submitted the same to DOE, GOR for finalization.
  - Followed up with RRECL on the current status of the draft policy submitted to GOR for comments / suggestions.
  - Planned to provide necessary support to RRECL and DOE, GOR in finalization of policy document through stakeholder consultation.

Challenges/risks: The state designated agencies have little or no experience in designing, planning, implementing, monitoring and verifying EE and EC programs. Also, most of the existing programs are being implemented through government grants and subsidy. The implementation of EE and EC programs through public private partnership and through involvement of ESCOs is currently limited.

Upon notification of the policy by the state governments, the Program proposes to address these challenges/risks by providing necessary support to KREDL and RRECL in development of EE and EC programs/schemes for the policy period. The action programs/schemes would include amongst others: the details of the various EE programs, their objective, program implementation schedule, funding requirements, possible sources of funding, expected savings, monitoring and reporting framework, roles and responsibilities, business models and awareness campaign.

Support required from USAID: Continued engagement with state energy departments of Karnataka and Rajasthan for follow-up on policy notification.

TA to Haryana Electricity Regulatory Commission to Develop and Implement Demand Side Management Regulations

Objective: The Program is engaged with HERC to provide TA for development and implementation of DSM regulations. The present strategy to meet the growth in electricity demand through increasing power generation through conventional sources is likely to have significant negative impacts on the environment and is considered financially unsustainable. Globally there is adequate experience to indicate that DSM can play a key role in reducing demand for electricity and thus reduce the financial requirements for power generation.

While some states have issued DSM regulations, there has been very limited effort to identify and implement large-scale DSM projects. The Program will facilitate HERC and DISCOMs to pro-actively identify and implement such projects.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- One regulation proposed and implemented (DSM Regulations)
- Three organizations with improved capacity to identify and implement CE regulations and guidelines (HERC and two DISCOMs)
- 400 person-hours of technical training on DSM
- USD 3 million expected to be leveraged from public and private funds for implementation of DSM projects
- 20 MW of energy savings

The approach adopted under the Program in Haryana has the potential to create a replicable and scalable model for identifying and implementing DSM projects in the country leading to achievement of India's energy saving targets.

Status of work-plan activities and deliverables:

S. No	Activities	Status
a	Preparation of draft DSM regulations	Completed
b	Organizing of stakeholder consultations for DSM regulations	Completed
c	Preparation of final draft of DSM regulations	Completed
d	Notification of DSM regulations in state gazette	Ongoing
e	Preparation of draft guidelines for Cost Benefit Analysis of DSM programs	Completed
f	Preparation of final guidelines for Cost Benefit Analysis addressing comments/suggestions of HERC/Stakeholders	Completed
g	Preparation of draft guidelines for EM&V of DSM Programs	Completed
h	Organization of first workshop for DISCOMs on DSM project planning	Completed
i	Preparation of final guidelines for EM&V of DSM Programs addressing comments/suggestions of HERC/Stakeholders	Completed

S. No	Activities	Status
j	Organization of second workshop for DISCOMs for finalizing DSM projects	Scheduled for Aug 2016 (Tentative)
k	Organization of first DSM Advisory Committee Meeting	Completed
l	Organization of second DSM Advisory Committee Meeting	To be scheduled

Brief description of activities this year:

- **Guidelines on Cost Benefit Analysis of DSM Programs:**
  - Prepared the draft guidelines and submitted the same to the Commission for its comments/suggestions.
  - Submitted the revised guidelines to the Commission for further consideration and notification based on its comments/suggestions received.
  - Presented the revised guidelines to the Commission and sought inputs/suggestions on the same.
  - Submitted the final guidelines to the Commission for further consideration and notifications.

- **First Capacity Building Workshop for Distribution Utilities:**
  - Organized its first capacity building workshop on "Identification and Development of DSM Projects for DHBVNL and UHBVNL" on July 7 -8, 2015 at Panchkula, Haryana. This workshop was attended by more than 25 participants from DHBVNL, UHBVNL, HERC and the Haryana Renewable Energy Department.
  - Prepared the workshop proceeding report and submitted the same to the Commission as well as both the distribution utilities.

- **Guidelines on EM&V:**
  - Prepared the approach note and draft Table of Contents for the development of guidelines on EM&V.
  - Developed the draft guidelines on EM&V and submitted the same to Commission for comments/suggestions.
  - Gave detailed presentation on the revised guidelines to the Commission and sought inputs/suggestions on the same.
  - Incorporated the comments/suggestions received from the Commission, modified the guidelines, and submitted the final document to the Commission for further consideration and notifications

- **Second Capacity Building Workshop for DISCOMs:**
  - Initiated planning for the organization of the second workshop in the month of October 2015 either at Hissar or Gurgaon for the distribution utilities.
  - Prepared the draft concept note and agenda for the organization of the second workshop for DISCOMs.
  - Met with MDs of both DISCOMs as well as HERC in this regards. Discussed with HERC and DSM Cell Members of DHBVNL and UHBVNL for organization of second workshop, its time frame and draft agenda.

- **Support in Constitution of DSM Advisory Committee:**
    - Provided necessary support to the Commission in constitution of DSM Advisory Committee which includes preparation of list of possible members, preparation of the letters for all the members requesting them to nominate the concerned person, etc.
    - Developed the draft agenda for the first DSM Advisory Committee meeting to be organized in the month of October 2015 and submitted the same to the Commission.
    - Followed up with the Commission for the constitution of DSM Advisory Committee. The Commission issued gazette notification dated January 13, 2016 with respect to the constitution of DSM Advisory Committee in compliance with the provision of Regulations 8 of DSM Regulations. It specifies the names of the convener, secretary and other members who will assist the Commission to drive the DSM program implementation in the state of Haryana.

- **Support in Conducting First DSM Advisory Committee Meeting:**
    - Provided necessary support to HERC in organizing and conducting the first DSM Advisory Committee Meeting on June 14, 2016. This meeting was attended by the Chairman, member, secretary, director (tariff), DSM cell members of DHBVNL and UHBVNL, energy economist (BEE) and industrial associations such as CII and PHD Chamber of Commerce and Industry.
    - Presented the key components of DSM Regulations pertaining to preparation and submission of DSM Plan by the Distribution Licensee to the HERC for the approval.
    - Presented the possible sector specific DSM projects and its overall technical potential for the inclusion in the DSM Plan.
    - Presented the draft agenda for the second workshop and its tentative time frame for the organization of the same.

- **Support to DISCOMs:**
    - Met the MD of DHBVNL and UHBVNL and discussed potential quick gain DSM projects. The Program will provide necessary support to the DISCOMs to prepare all related documentation for DSM Programs for further submission to HERC for approval.
    - Followed up with both the distribution utilities and provided necessary support in finalization of quick gain DSM project. Distribution utilities have decided to implement the statewide EELP targeting domestic sector and submitted the program document to HERC for the approval.

- **Support to HERC:**
    - Provided necessary support to HERC in reviewing the DSM program document submitted by both the distribution utilities for the implementation of EELP. The Program identified the major gaps in the document and highlighted the same to the Commission for further communication to distribution utilities.

- Provided necessary support in reviewing the revised documents submitted by the distribution utilities and approving the program document. The Commission has given in principal approval for the implementation of statewide EELP.
- Followed up with HERC to understand the current status of the finalization of two guidelines such as CEA and EM&V of DSM Programs. HERC has finalized both the guidelines and are in the process of issuing the same through gazette notification.

Challenges/risks: The DISCOMs have little or no experience in DSM project design, planning and implementation. Resistance is also expected from DISCOM management to spend scarce funds on DSM projects that may result in reduced energy consumption and thus overall reduction in revenues.

The Program proposes to address these challenges/risks by providing training to DISCOMs which will highlight the benefits from DSM projects and thus the need to allocate resources. Specific case studies from utilities from India and abroad will be used to orient and train DISCOM officials on DSM projects.

The guidelines on cost benefit analysis and EM&V will improve the DISCOM's capacity to implement DSM projects to address CE issues.

Support required from USAID: Engaging with HERC to organize the second DSM Advisory Committee meeting.

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

Technical Assistance to develop and Roll out EE Financing Mechanisms

Objective: The Program will develop and support innovative financing mechanisms for EE which will be crucial for accelerating the commercial deployment of market-driven EE projects. It intends to facilitate the development of new financial instruments, processes, and investment pools to enhance resource availability to scale-up EE deployment, encourage market development, enable investors to increase investments, and make markets more efficient.

Intended results: The TA is expected to result in the following by the end of 2017:

- Two organizations with improved capacity to identify and implement financing for EE projects (BEE and TCCL)
- 400 person-hours of training on EE project financing
- USD 1.6 million expected to be leveraged from public and private funds for implementation DSM projects
- 10 MW of avoided capacity

The approach adopted under the Program with TCCL has the potential to create a replicable and scalable model for other FIs to set up similar financing schemes for EE projects.

Status of work-plan activities and deliverables: In 2013, the Program reviewed existing international and national EE financing mechanisms and prepared a report on EE finance which proposed seven financing mechanisms.

Subsequently, three financing mechanisms were selected for detailed elaboration and launch. Activities undertaken on these three mechanisms include:

- **Corporate Energy Audit Program (CEAP)**: The Program is working with TCCL to roll out the CEAP pilot and has identified an initial list of TCCL's potential clients for CEAP.
- **Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) and Venture Capital Fund for Energy Efficiency (VCFEE)**: The Program is supporting BEE to launch the PRGFEE and the VCFEE. The Program reviewed the RFPs for PRGFEE and VCFEE and conducted a survey of ESCOs and FIs to identify the potential for an EE project pipeline for the two funds.

TA is also being provided to BEE to operationalize EE Financing Platform.

S. No	Activities	Status
I	**Preparatory Activities**	
a	Review of existing international and national EE financial mechanisms	Completed
b	Prepare and launch a report on the review of EE financing mechanisms	Completed
c	Design a bouquet of financial mechanisms	Completed
d	Identify partner institutions for anchoring/launching	Completed
II	**CEAP with TCCL**	
a	Completion of discussions with TCCL Clients for identifying EE projects opportunities	Ongoing
b	Selection of EE Auditors (for first client)	Completed
c	Review of EE Audit Reports (for first client)	Completed
d	Support TCCL clients in developing project loan documents	Scheduled for Jul-Sept 2016
e	Provide overall TA to TCCL for CEAP Program implementation	Post loan sanction
f	Recommendations for TCCL to mainstream EE project finance	Scheduled for Jul-Sept 2016
g	Project implementation and monitoring	Scheduled for 2016-17
III	**Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)**	

S. No	Activities	Status
a	Support BEE by preparing RFP documents for launching PRGFEE	Completed
b	Review of RFPs for selection of implementing agency and fund manager	Completed
c	Preparation of guidelines for FIs and banks for assessment of EE projects	Completed
d	Support BEE in preparing a projects pipeline that could avail PRGFEE	Completed
e	Support implementing agency to roll-out PRGFEE	On request
f	Conduct training for PRGFEE clients - FIs and ESCOs	On request
g	Monitor energy savings & funds leveraged	Scheduled for 2015-17
IV	**Venture Capital Fund for Energy Efficiency (VCFEE)**	
a	Support BEE by preparing RFP documents for launching VCFEE	Completed
b	Assist BEE in selecting fund manager	Dropped on BEE advise
c	Support BEE in preparing a projects pipeline that could avail VCFEE	Completed
d	Support implementing agency to roll-out VCFEE	On request
e	Conduct training for VCFEE clients - FIs and ESCOs	On request
f	Monitor energy savings and funds leveraged	Scheduled for 2015-17
V	**Mainstreaming of EE Finance Program to Other Indian Banks/FIs**	
a	Engagement of lending institutes	On request
b	Define a policy for EE financing under EEFP	On request
VI	**Energy Efficiency Financing Platform**	
a	Update training modules	Completed
b	Manual for EE financing	Completed
c	Training and capacity building for selected FIs for EE finance	Two trainings delivered
VII	**Preparation of note for BEE for consideration of EE finance under priority sector lending**	Dropped on BEE advise

Brief description of activities this year:

- **CEAP**:

- Met with four clients of TCCL and finally zeroed in on SEACO, an automotive component manufacturing facility in Pune for the first energy audit.
- Facilitated the release of an invitation inviting proposals for selection of energy audit agency for CEAP clients in August 2015.
- Evaluated the proposals received and See-Tech Solutions Private Limited was selected.
- Completed the WTEA and IGDPR of SEACO and presented the results to SEACO in December 2015.
- Prepared the IGDPR of SEACO, a casting suppliers company and a client of TCCL, and presented the same to TCCL. TCCL has indicated that they would await results of SEACO for FY 2015-16 and then review SEACO's funds requirements. The Program proposes to engage with banks and FIs (other than TCCL) to consider CEAP as a part of their ongoing lending programs. The Program proposes to organize a meeting with TCCL to take this forward.

- **Preparation of Guidelines on EE Financing:**
  - Made further revisions to the guidelines on request from BEE. This revision included a review by an international specialist prior to its review by BEE.
  - Received comments on guidelines on EE financing in December 2015.
  -
  - Incorporated the feedback received on the EE Financing Guidelines from the committee constituted by BEE. The report has been revised based on the comments received from the committee members and the same is under review.

- **ESCO report:**
  - Printed the Market Assessment Potential Report for PRGFEE and VCFEE and submitted the copies to BEE. The ESCO survey report will help determine the potential pipeline of projects which could seek funding from PRGFEE and VCFEE.

- **EE opportunities at RVPN substations:**
  - Submitted the report on EE investments to EESL and RVPN.
  - Made a presentation to the Chairman, RVPN on the EE opportunities in RVPN substations.
  - Addressed the comments received from RVPN and submitted the same to EESL and RVPN for the further consideration.
  - EESL submitted proposal for implementation of two pilot projects to RVPN.
  - Decided that Program would monitor the result upon implementation of two pilot projects by EESL

Challenges/risks: TCCL is undertaking EE project financing activity for the first time as a special activity. It is likely that there could be internal constraints that create a challenge for EE project financing. The Program proposes to address these challenges/risks through extensive interaction with TCCL's senior management and demonstrate that EE project financing is a sustainable activity from a business perspective. Other EE financing activities are dependent upon BEE requests.

Support required from USAID: No support is required from USAID at this stage.

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

The activities under this task are being delivered together with activities in other tasks and have been discussed above.

DEVELOPMENT RESULT 2: INCREASED SUPPLY OF RENEWABLE ENERGY BY SCALING-UP RENEWABLE ENERGY TECHNOLOGIES

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

TA for Transforming the Solar Rooftop Market in the Indian States of Karnataka, Rajasthan and MP

Objective: Solar rooftop systems offer multiple economic benefits compared to centralized fossil fuel-based generation projects and even large, grid-connected solar PV projects. The GOI has provided a significant policy push by increasing the solar PV target for 2020 from 20 GW to 100 GW by 2022, with 40 GW slated to come from solar rooftop systems. This presents a major challenge, as the solar rooftop sector in India is still in its early stages of development. The solar rooftop market is now entering a phase of rapid and intense market transformation. The key challenge for the sector at this juncture is the gaps in the market eco-system, which include appropriate regulations, interconnection procedures, capacity building, financing guidelines, lease agreements, and the need for new and customized business models. All these issues need to be addressed in parallel in order for the market to scale up and even approach the GOI's ambitious target of 40 GW.

The Program had initiated its solar rooftop interventions, prior to the official announcement of the revised national targets (five times higher than previous targets). The Program has been working with state partners on the potential and attractiveness of the rooftop sector for future solar PV investment. The strategy of the Program is to increase the level of deployment of solar rooftop systems from a "kilowatt scale" to a "megawatt scale" by supporting the design and implementation of new policy, regulatory, programmatic, and financing processes. It has been working with different Indian stakeholders to put in place some of the building blocks for the solar rooftop eco-system:

- **Policy**: The Program assisted MPUVNL in finalization of its solar rooftop policy for distributed RE sources. The policy included detailed guidelines on the implementation of solar rooftop systems, the business models to be followed for the deployment of these systems, the technical standards and certifications required for these systems and the financial incentives available with consumers for the development of these projects. The policy also outlined the detailed interconnection guidelines for the utilities and consumers developing these systems, the interconnection framework, the business models, incentives, targets, interconnection process, guidelines, etc. for prospective solar rooftop installers.

- **Gross Metering Framework**: The Program finalized and published the White Paper on Gross Metering and also organized a webinar on Gross Metering in March 2016. The paper outlined the need and benefits of Gross Metering for key stakeholders including distribution utility, end consumers, third-party investors, etc. Further, the paper highlighted key design parameters and proposed feed-in-tariff for developing framework for Gross Metering in the state. The paper was also shared with AREAS and it was appreciated by S K Shukla, Head of AREAS.

- **Interconnection Framework for Solar Rooftop Systems**: The Program provided assistance to DISCOMs in Karnataka, Rajasthan and MP in developing and deploying a framework (i.e. set of technical rules, process and guidelines) for solar rooftop projects to interconnect with the utility grid. In the previous quarter, the Program provided assistance to MPUVNL and the state DISCOMs in the design and development of the interconnection framework for solar rooftop deployment in the state of MP.

Intended results: Specifically, the TA is expected to result in the following by middle of 2017:

- Two policies proposed and implemented (Solar Policy in Karnataka targeting 2,000 MW of deployment till 2021 leveraging USD 2,300 million in investments and Net Metering policy in MP).
- Three regulations proposed and implemented (Net Metering in Rajasthan and MP, and Gross Metering Framework in Karnataka).
- Nine organizations (DOE, GOR; DOE, GOK; KREDL; KERC; BESCOM; JVNNL; RERC; RRECL; MPUVNL; Madhya Pradesh Electricity Regulatory Commission with improved capacity to transform solar rooftop market.
- 200 MW solar capacity addition (150 MW in Karnataka and 50 MW in Rajasthan) leveraging USD 233 million of public and private funds.
- 2,000 person-hours of training provided.

Status of work-plan activities and deliverables: In Year 2, the Program provided specific inputs related to the promotion of the decentralized solar PV systems on rooftops to KREDL for its Solar Policy 2014. It also worked with DOE, GOR and RRECL in developing a White Paper and a policy directive for the promotion of solar rooftop systems in the state. In addition, the Program provided detailed inputs to RERC for the release of Net Metering regulations.

In Year 3, the Program undertook a detailed analysis of global best practices to devise a detailed process for interconnection of solar rooftop systems for BESCOM. The interconnection process included the forms, formats, roles and responsibilities of stakeholders and processes to be followed for the deployment of solar rooftop systems. The Program worked with BESCOM and other key stakeholders to roll out its Net Metering scheme, introduce the interconnection process to its engineers and provide technical back-up support for process improvement, training and capacity building. It developed a White Paper on Gross Metering to identify the need and benefits of Gross Metering for key stakeholders including distribution utility, end consumers, third-party investors, etc. The paper also developed key design parameters and proposed feed-in-tariff for developing framework for Gross Metering in the state. In addition, the Program delivered a presentation to KERC for adoption of Gross Metering concept and filled joint comments with BESCOM on

the discussion paper issued by KERC on adoption of Gross Metering in Karnataka. It also continued to provide technical backstopping support by participating in expert technical and process committees set up by BESCOM to advise it on the roll-out and implementation of solar rooftop scheme.

The Program also made detailed presentations to Secretary, DOE, GOR and the management team at JVVNL on the key requirements and challenges for interconnecting solar rooftop systems. It also assisted JVVNL to develop and deploy the process for interconnecting solar rooftop systems.

The Program is also providing TA to DOE, Government of Madhya Pradesh (GOMP) on Net Metering policy framework and its implementation.

S.No	Activities	Status
I	**Solar rooftop in Karnataka**	
a	Inputs for Solar Policy 2014	Completed
b	Analysis of international best practices on interconnection	Completed
c	Recommendation of detailed process for interconnection including forms and formats	Completed
d	Adoption of the interconnection framework including forms, formats, processes, systems, empanelment procedures etc. for BESCOM	Completed
e	Training BESCOM staff	On request (participated in 3 training programs)
f	Preparation of a tripartite agreement between BESCOM, rooftop owner and third party investors for facilitating third party solar rooftop models	Completed
g	Technical backstopping by participation on technical and process committees	Ongoing
h	Support on outreach and communication	Completed
i	Re-design of the interconnection process based on feedback from developers and other utility personnel	Completed
j	Preparation of White Paper on Gross Metering	Completed
k	Stakeholder consultation on Gross Metering	Completed
l	Recommendation of regulations on Gross Metering	Completed
m	Presentation to KERC on 'Gross Metering and International Experience'	Completed
n	Institutional capacity building	Ongoing
o	Hand-holding support	Ongoing
p	Finalization and release of White Paper on Gross Metering	Completed
q	Organization of a Webinar on 'Gross Metering for Solar Rooftop Deployment by BESCOM'	Completed
r	Development of business models for BESCOM for solar rooftop implementation	Ongoing
II	**Solar rooftop in Rajasthan**	

S.No	Activities	Status
a	Support to GOR, DOE in developing policy for deployment of solar power in Rajasthan	Completed
b	White Paper and recommendation of policy directive on promotion of solar rooftop for Energy Department and RRECL	Completed
c	Inputs on net metering regulations to RERC	Completed
d	Presentation on key requirements and challenges for interconnecting solar rooftop systems to Energy Department and RRECL	Completed
e	Assistance to JVVNL to design, develop and deploy the process for interconnecting solar rooftop systems	Completed
f	Adoption of the Interconnection Framework including forms, formats, processes, systems, empanelment procedures etc. for JVVNL	Completed
g	Launch of the solar rooftop scheme	Completed
h	Hand-holding support	Ongoing
i	Organization of a two day training program on 'Solar Rooftop Deployment for Utilities' with JVVNL	Completed
j	Organization of a regional one day training program on 'Solar Rooftop Deployment for Utilities' in Jaipur	Completed
III	**Solar rooftop in MP**	
a	Inputs for finalization of MP draft Net Metering Policy 2015 and comments on Net Metering Regulations 2015	Completed
b	Presentation on key requirements and challenges for interconnecting solar rooftop systems to Energy Department and MPUVNL	Completed
c	Finalization of Rooftop Policy for the state of MP	Completed
d	Assistance to MPUVNL and the state DISCOMs to design, develop and deploy the process for interconnecting solar rooftop systems	Completed
e	Adoption of the interconnection framework including forms, formats, processes, systems, empanelment procedures, etc. for MP	Ongoing
f	Organization of a training programs on Solar Rooftop Deployment for Utilities with MPUVNL	Ongoing
g	Assistance to MPUVNL on development of Pre-Feasibility Report and Detailed Project Report (DPRs) for Indore and Bhopal	Ongoing

Brief description of activities this year:

- **BESCOM**

- Facilitated a cumulative capacity addition of 12.07 MW of solar rooftop in BESCOM's licensee area as of June 26, 2016.
- Developed a White Paper on Gross Metering in Karnataka which was discussed with KREDL and KERC for inputs and suggestions.
- Presented the White Paper in a stakeholder consultation workshop organized on September 11, 2015 with policy makers, regulators, distribution utilities, developers and research institutes, etc. to deliberate on the need, benefits and key implementation parameters of Gross Metering.
- Incorporated the inputs and suggestions received from KREDL and KERC during the stakeholder consultation.
- Finalized and submitted the revised White Paper to DOE, GOK, KREDL and BESCOM for further consideration and necessary action.
- Followed up with DOE, GOK to discuss the next steps. DOE agreed to share the White Paper with KERC to develop the necessary regulatory framework.
- Appraised the Chairman, KERC on the Program's White Paper on Gross Metering. Based on the invitation from KERC Chairman, the Program made a joint presentation on Gross Metering with BESCOM in December 2015.
- Finalized and released the White Paper on Gross Metering for Solar Rooftop for BESCOM.
- Finalized and submitted comments to KERC on its discussion paper on Gross Metering.
- Provided inputs to BESCOM in finalizing the Tripartite Agreement for Rooftop Solar Net Metering Scheme. The first version of the agreement was developed by the Program during Year 3.
- Organized a webinar on Gross Metering for solar rooftop on March 18, 2016.
- Participated in the technical and process review meetings convened by BESCOM and assisted in developing a PPA and a single line diagram for Gross Metering as well as the mechanisms for interconnecting high capacity solar rooftop plants with their evacuation grid.
- Designed a detailed stakeholder survey to understand the challenges faced by stakeholders in the development and deployment of solar rooftop installations.

- **JVVNL**
  - Facilitated a total commissioned capacity of 2.98 MW of net metered solar rooftop in Jaipur city circle during the reporting period.
  - Finalized the process for interconnecting solar rooftop systems.
  - Initiated the approval process for Net Metering of solar rooftop project applications by JVVNL.
  - Met with MD, RRECL and CMD, JVVNL to explain the details of the technical support provided to JVVNL in finalizing the formulation of implementation guidelines, procedures, and interconnection agreement for implementation of Net Metering in Rajasthan.
  - Suggested to DOE, GOR to have an interaction with the solar rooftop developers and explore a Gross Metering mechanism. Mr. Malhotra, Principal Secretary (Energy), GOR suggested the Program to conceive a 5 MW pilot "Jaipur Solar Rooftop Program" based on the Gandhinagar solar rooftop program.

- Met with the DSM cell of JVVNL, City 1 division and City 2 division office to discuss the issues faced for implementation of the Net Metering framework in Rajasthan and provided corrective measures for the same.
- Participated in the "Workshop on Solar Rooftop Systems" organized by RRECL and shared the work undertaken by the Program with partners in Rajasthan.
- Finalized the content for a two-day training program for JVVNL utility personnel.
- Organized a two-day training program for JVVNL on solar rooftop deployment on January 7-8, 2016 in Jaipur.
- Organized the first regional training program on March 3, 2016 on solar rooftop deployment for utility personnel from JVVNL, North Delhi Power Limited, Ajmer and Jodhpur DISCOMs, RRECL and other MNRE channel partners involved in solar rooftop deployment.

- **MPUVNL**
  - Conducted a meeting with MD and other senior officials of MPUVNL on September 23, 2015 to review various Program interventions.
  - Made a presentation on key requirements and challenges for interconnecting solar rooftop systems.
  - Shared the draft Net Metering Framework (forms, formats, guidelines, agreements, etc.) for their internal deliberation and finalization.
  - Conducted discussion on handholding assistance that could be offered for finalization and launch of net metering based solar rooftop initiative.
  - MPUVNL shared the draft net metering policy on which the Program provided its technical inputs prior to its finalization.
  - Reviewed the Net Metering Regulations 2015 and provided comments and technical inputs upon request from MPUVNL
  - Provided inputs for finalization of Net Metering policy and regulations for MPUVNL and shared documents (forms, formats, application, and interconnection agreements) developed for the roll out of Net Metering framework in other states such as Karnataka and Rajasthan.
  - Designed and organized a stakeholder consultation workshop on developing an implementation framework for solar rooftops in MP.
  - Delivered a detailed presentation to MPUVNL on the Interconnection Process based on the support provided by the Program for finalization of the implementation framework of solar rooftops in the states of Karnataka and Rajasthan.
  - Finalized the key interconnection documents (forms, formats, application, interconnection agreements, and single line diagrams).
  - Finalized the solar rooftop policy for MP in partnership with MPUVNL and the state DISCOMs.
  - Designed and finalized the Interconnection Framework for solar PV rooftop project interconnection (forms, formats, application, processes, single line diagrams, systems and interconnection agreements) in partnership with MPUVNL and the state DISCOMs.
  - Participated in stakeholder consultation workshop for finalization of MP solar rooftop policy and interconnection framework.

- Reviewed the draft RFP document on solar rooftop and agricultural pump-sets of MPUVNL and provided comments/suggestions on the same.
- Provided extensive inputs towards the finalization of the solar pumping policy.
- Followed up on the signing of the MOU between IOCL, OIL and MPUVNL.

Challenges/risks: No specific challenges/risks envisaged in the roll-out of the scheme. However, the success of the schemes depends on incentive structures.

Support required from USAID: No support is required from USAID at this stage.

TA for Building Capacity of Key Stakeholders for Market Transformation of Solar Rooftop in India

Objective: The Program has been working with a variety of Indian stakeholders to put in place some of the building blocks for the solar rooftop eco-system with inputs for policy and regulation with states of Karnataka and Rajasthan. However, substantial gaps such as institutional capacity, financing, business models and implementation mechanisms for policies and regulation still exist. Therefore, the Program is engaged in building the capacity of key stakeholders by orienting their staff on tools, models, methods and practices for transforming the solar rooftop market in India. The key related activities include:

- **Solar Rooftop Evaluation Tool (SRET)**: Financing remains a key challenge due to the limited knowledge and bandwidth amongst banks and FIs to evaluate solar rooftop projects. To address this, the Program has developed a comprehensive evaluation tool that aims to assist banks and FIs to evaluate and fund solar rooftop projects, and thereby enhance the availability of debt for these projects.

- **Best Practices Guide (BPG)**: The Program is partnering with GERMI to develop a BPG for solar rooftop deployment. The BPG aims to bring standardization and uniformity in the solar rooftop design process and enhance the overall efficiency of implementation of solar rooftop programs undertaken at the state or local level. The BPG will also assist stakeholder's leapfrog the learning curve of solar rooftop technology by extracting the learning from similar programs across India and selected locations around the globe, and apply it to India as a whole.

- **Training**: A training program for utility engineers and management was needed to create a pool of common and applicable knowledge for effective implementation of solar rooftop programs by the distribution utilities. The Program has developed a comprehensive training program that addresses issues such as the basic understanding of the solar rooftop sector and the projects, the variability in understanding on solar rooftop projects, experience and access to resources to effectively implement solar rooftop programs through more uniform understanding of the solar rooftop interconnection process by key policy, regulatory and administrative stakeholders.

Intended results: The following results are expected to be achieved:

- 1,500 person-hours of training delivered

- A rooftop finance tool developed for adoption by financing institutions nationally
- A BPG available to the stakeholders nationally

Status of work-plan activities and deliverables: In Year 3, the Program undertook the following activities:

- **Solar Rooftop Evaluation Tool (SRET)**: The SRET was launched in September 2015 at an event in Mumbai. It was discussed there that the Program will talk to agencies including SBI-Capital Markets India Limited, Industrial Development Bank of India (IDBI), TCCL, IREDA, Punjab National bank, etc. to adopt the tool. IREDA showed interest and the Program worked with IREDA and its partner credit rating agencies to customize its project rating framework using the SRET. During Jan-Mar 2016, the Program worked with IREDA and its five rating agencies on the risks associated with solar rooftop deployment, how these risks can be identified, evaluated and addressed using the rating framework. IREDA adopted suggestions into its project evaluation process. During Apr-Jun, 2016, the Program initiated discussions with various agencies for the adoption of the SRET. The Program met and held discussions with the Asian Development Bank, the World Bank and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) for using the SRET for lines of credit being provided by them to their partner banks for solar rooftop financing. The Program also initiated a dialogue with various banks and aggregators to move forward on deployment of the SRET and convert it into a web-based platform. Related discussions were held with three firms - Oorjan, InfraEx and SunFund. Based on the SRET, the Program has also developed a checklist for banks and FIs for financing residential solar rooftop projects.

- **Best Practices Guide (BPG)**: The Program, in partnership with GERMI, finalized the BPG and submitted the draft to MNRE for its review and comments. The executive summary of the guide was launched after receiving and incorporating MNRE's comments in June 2016.

S.No	Activities	Status
I	**Financing tool**	
a	Mapping the policy and regulatory framework for solar rooftop development	Completed
b	Mapping of the key technical requirements	Completed
c	Evaluating the risks associated with the solar rooftop business model	Completed
d	Evaluating the commercial contracting terms (PPA) and outlining the key issues related to the commercial contract between the buyer and the developer	Completed
e	Risk-appropriation mechanism	Completed
f	Testing the tool on a couple of live projects	Ongoing
g	Presentations of the tool at workshop/events and to Financial Institutions (FIs)	Completed
h	Finalization of the manual	Completed

S.No	Activities	Status
i	Used the 'Risk Section' in the tool to restructure the credit rating framework for IREDA to support their 50 MW loan program for solar rooftop project	Completed
j	Checklist developed for financing residential solar rooftop projects.	Completed
k	Discussions with banks, FIs and aggregators to adopt the tool	Ongoing
l	Develop an appraisal note for IREDA	Completed
II	**Best Practices Guide (BPG)**	
a	Study/survey of existing national and international policies and regulations; administrative procedures and practices; and technical standards	Completed
b	Critical analysis of these policies and regulations; administrative procedures and practices; and technical standards and draft manual	Completed
c	Stakeholder consultation	Completed
d	First draft of the BPG	Completed
e	Final draft of the BPG	Completed
f	Release of the BPG	Completed

Brief description of activities this year:

- **Solar Rooftop Evaluation Tool (SRET)**
  - Developed and shared the tool in a workshop in Mumbai on September 11, 2015. It was received well by the participating FIs.
  - Developed a comprehensive User Manual to provide step-by-step guide on how to use the SRET.
  - Held discussions/meetings with MNRE, State Bank of India and Punjab National Bank on the usage of the tool in their loan appraisal process, as a follow up to the workshop.
  - Helped IREDA to to evaluate a 10 MW financing proposal using the framework developed under the SRET. The risks involved in the solar rooftop power project built in the tool were referred to restructure the framework for credit rating by IREDA to support its program to finance 50 MW solar rooftop power projects.
  - Identified the key risks and potential risk mitigation measures for IREDA for financing such proposals.
  - Secured approval from IREDA and its credit rating agencies for the rating framework recommended by the Program.
  - Initiated dialogue with Asian Development Bank (ADB), the World Bank as well as GIZ for their respective lines of credits to partners in India.
  - Initiated dialogues with Oorjan, InfraEx and SunFund to develop SRET into a web-based platform.
  - Developing detailed guidelines for IREDA to help them evaluate solar rooftop proposals.

- **Best Practices Guide (BPG)**

- Worked with GERMI and completed the drafting of the chapters and compiling of the BPG.
- Completed the first draft of the chapters, in partnership with GERMI during Oct-Dec 2015.
- Shared the first draft of the guide internally for discussions.
- Worked on finalizing the guide based on internal feedback and suggestions.
- Completed the final draft of the BPG in partnership with GERMI.
- Made a presentation to MNRE and shared the draft with them for their go ahead.
- Followed up with MNRE for BPG launch and public release.
- Launched the BPG (Executive Summary) for implementation of state-level solar rooftop programs in India on June 7, 2016 during the first national workshop on solar rooftop organized by MNRE at Vigyan Bhawan, New Delhi. The BPG was formally launched by the hon'ble Minister of State with Independent Charge for Power, Coal, New and Renewable Energy and Mines in the GOI, Mr. Piyush Goyal. This Guide attempts to lay out a comprehensive and efficient solar rooftop implementation support process into a single document. It captures global and national best practices and learnings. The Guide primarily addresses grid-connected rooftop systems, under both net metering and gross metering connectivity.

Challenges/risks: Availability of appropriately experienced and qualified manpower under the Program delayed certain activities under this intervention.

Support required from USAID: No support is required from USAID at this stage.

TA for Development of a Comprehensive RE Policy in Karnataka

Objective: The Karnataka RE Policy 2009-14 notified on January 19, 2010, was the first of its kind policy by the state with a specific focus on the development of the RE sector. The policy tenure of 2009-14 witnessed successful capacity addition of 2,087 MW, but it fell short of the target envisaged in the policy document. There were certain issues such as the withdrawal of Accelerated Depreciation/Generation-based Incentive benefits from wind projects, fuel availability issues faced by biomass plants, ecology sensitive issues for development of small hydro in Western Ghats, etc. which caused slowdown in RE capacity addition in the state. Moreover, the earlier policy was valid until 2014, hence, the state government chose to undertake a comprehensive review of RE Policy and develop a new RE policy for the next period. The Program supported KREDL in the development of comprehensive RE Policy for the new control period. The exercise was undertaken with an objective to address shortcomings and barriers encountered during earlier policy regime and to further accelerate RE deployment in the state.

The Program under took comparative analysis of the RE policies of various states and presented key learning in terms of innovative programs/schemes, incentive framework, institutional framework as relevant for wind, small hydro, biomass, cogeneration and solar power development that provided useful insights during development of comprehensive RE policy.

Keeping in view the long term vision of GOK for harnessing the available RE potential in the state, a target of around 3,600 MW over policy tenure of six years (2014-2020), has been proposed under the RE Policy. The comprehensive RE policy covers the operative period, objective, capacity addition targets, eligibility conditions, regulatory framework, government and institutional structure for implementation of RE projects, high level committee for RE, innovative RE Programs such as repowering, wind-solar hybrid projects, etc., procedures for applications and allotment, implementation timelines, incentives and financial support mechanisms and governance structure.

Upon notification of the policy, the Program will coordinate with KREDL and provide implementation support for various programs to be undertaken in pursuance of the RE policy.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- One policy proposed targeting deployment of 3,600 MW of RE
- Leveraging USD 4,200 million in investment

Status of work-plan activities and deliverables:

S.No	Activities	Status
a	Comparison of RE policies of various states	Completed
b	Development of draft RE policy for Karnataka	Completed
c	Presentation on draft RE Policy for First Steering Committee Meeting	Completed
d	Participation in meetings/stakeholder consultation on draft RE policy	Completed
e	Presentation on draft RE Policy for Second Steering Committee Meeting	Completed
f	Policy approval and notification	Awaiting GOK decision
g	Policy implementation support	Awaiting GOK decision

Brief description of activities this year:

- Made multiple follow ups with KREDL and DOE, GOK to ascertain the status of the draft comprehensive RE policy. KREDL has reviewed and incorporated some changes in the RE policy and resubmitted it for cabinet's approval. The period of the policy has now been changed to 2016-2022.

Challenges/risks: GOK is yet to notify the comprehensive RE policy. Delay in notifying the policy will make it difficult to achieve the specified targets in a timely manner. Also, in order to achieve the target set under the policy, it is important that KREDL develops a detailed implementation roadmap.

Upon notification of the policy, the Program will provide necessary assistance to KREDL and GOK in preparation of the implementation roadmap, and design and development of innovative programs in order to achieve the specified targets during the policy period.

Support required from USAID: No support is required from USAID at this stage.

TA to BESCOM to evaluate, design and implement business models for solar rooftop implementation based upon the key challenges identified

Objective: The key objective of this task is to assist in the rapid scaling up of solar rooftop implementation.

In Year 4, the program focused on identification of challenges for solar rooftop scale-up in BESCOM and rapid scale-up of grid connected solar rooftop program in BESCOM region in Karnataka.

Status of work-plan activities and deliverables:

S. No	Activities	Status
I	**Identify challenges faced by stakeholders in scaling up solar rooftop implementation**	
a	Project kick off meeting (Minutes of Meeting)	Completed
b	Report on parameter list for questionnaire design	Completed
c	Questionnaire	Completed
d	Report on Survey Results	Ongoing
e	Stakeholder Consultation Workshop	August 2016
II	**Conceptualize, evaluate, design and implement business models for solar rooftop implementation in BESCOM**	
a	Report on evaluation of business models for key stakeholders	Sept 2016
b	Stakeholder consultation workshop and model finalization	Sept 2016
c	Report on detailed program design of the finalized model	Oct 2016
d	Report on assistance provided to BESCOM for site identification	Nov 2016
e	Submission of RFQ, RFP	Dec 2016
f	Commercial Agreement	Jan 2016
g	Report on pre-bid assistance	Feb 2016
h	Report on TA in bid evaluation	Mar 2016

Brief description of activities this year:

- Organized the project kick off meeting with BESCOM.
- Prepared and shared the detailed plan for identification of challenges

- Prepared the questionnaire for consumers, developers and BESCOM
- Commissioned the survey

Challenges/Risks: No major challenges seen as of now.

Support required from USAID: No support is required from USAID at this stage.

TA for Developing an Off-Grid Policy for the State of MP

Objective: MP has created an independent organization dedicated to the development of the off-grid RE sector in the state. However deployment of off-grid RE solutions has not accelerated in a big way due to the limited cross-sectorial uptake of these technologies and limited cross departmental cooperation in this area. This is due to the lack of a specific policy or regulatory framework for the proliferation of off-grid RE technologies across sectors, departmental programs and other developmental initiatives in the state.

Development of an off-grid RE policy for MP can enhance focus on off-grid electrification and also catalyze new off-grid energy delivery models. The off-grid policy will not only identify the areas for off-grid RE deployment but will also analyze the possibility of using a wide variety of support mechanisms/specific end users for enhancing financial support for off-grid schemes from the state government using inter-departmental programs/budgets. The Program aims to provide assistance to the state agency in developing the basic background material and strategy for the off-grid policy for MP.

The off-grid policy will provide the required overall framework for the deployment of off-grid-based RE projects/systems using a market-based approach.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- One policy proposed for off-grid development in the state of MP

Status of work-plan activities and deliverables:

S.No	Activities	Status
a	Scoping and initial meetings for the discussion paper on off-grid policy for MP	Completed
b	Research and discussions with key stakeholders	Completed
c	Draft discussion paper for development of an off-grid policy for MP	Completed
d	Stakeholder consultation	On request
e	Final discussion paper for development of an off-grid policy for MP	On request

Brief description of activities this year:

- Met with MD, MPUVNL on September 23, 2015 to highlight and review the status on the Program interventions. Inputs were sought from the MD and thereafter, the draft

policy document was resubmitted to MPUVNL for inputs/suggestions and further submission to DOE, GOMP.

- Continued multiple follow ups with MPUVNL to ascertain the status of the draft policy. DOE, GOMP is yet to notify the same.
- Published the draft off-grid RE Policy, 2015 on the Program's website. The SSEF reached out to the Program for the framework of the off-grid RE policy with the view of drafting a similar policy for the state of Uttar Pradesh. The Program shared all the relevant documents with SSEF.

Challenges/risks: GOMP was unable to finalize the policy framework since Year 2 of the Program. The new MD of MPUVNL is keen to finalize the policy framework and present it to GOMP for approval. The Program will work with MPUVNL to finalize the framework.

Support required from USAID: No specific support is required from USAID at this stage except ongoing follow up by both the Program and USAID with GOMP.

TA to MPUVNL to build its Institutional Capacity

Objective: The objective of this intervention is to build the institutional capacity of MPUVNL to enable it to deliver its mandate effectively. In this context, the Program is providing TA to MPUVNL on two sub-interventions:

- **Establishment of a Centralized Monitoring Centre (CMC)***:* One of the biggest challenges in evaluating the impact of RE investments and devising policies and incentive structures for future deployment is the availability of actual performance data from systems across the country. Although MNRE and State Nodal Agencies (SNAs) mandate the capture and sharing of real time performance data for all systems above 5 kW, there is a lack of appropriate processes, protocols and platforms for the shared data.

  MPUVNL, the SNA of GOMP, has been grappling with this problem for years. The core challenge is whether to set up an alternate system to capture data directly from generating plants or to use the data that was being generated by its vendors.

  MPUVNL requested the Program to assist it in addressing this particular challenge. The Program evaluated both options and recommended the design of a CMC which will use software solutions and database management systems (DBMS) to capture data from the vendor's servers, transfer the data to a MPUVNL server and use a DBMS to collate, analyze and present performance data in an appropriate form.

  Initially, the CMC will assist MPUVNL in monitoring the performance of off-grid solar PV systems and can later be scaled-up to monitor other off-grid system applications like bio-gasifiers, solar-wind hybrid system, solar pumps, etc.

  The CMC will assist MPUVNL in monitoring the performance of off-grid systems and learning from it will facilitate the design of more inclusive and targeted programs. The approach adopted for the establishment of the CMC at MPUVNL would set a model

for capture of performance data which can be replicated nationally or at the state level.

- **Preparation of a Manual on Vendor Policy**: MPUVNL is presently catering to different class of vendors/suppliers such as developers, manufacturers, battery pack suppliers, PV module/pack suppliers, etc. With proliferation of solar PV and other programs, the number of vendors/suppliers has increased manifold and difficulties/complexities of ensuring performance check/quality checks have increased tremendously. Further, the after sales support and operation and maintenance of facilities/support during the operation phase has been a major challenge and limitation for large deployment of decentralized/distributed solar programs in the state. The limitation of availability of service and support network, delay in providing support services/spare parts, etc. across all districts results in agitation and erosion of consumer faith in solar PV programs.

  In order to overcome the above mentioned issues, it was decided to develop a standard manual on vendor policy for MPUVNL by compiling best practices across states, interacting with vendors for realistic assessment of risk factors and assessing key learning from process of empanelment of channel partners. This manual will specify standard terms and conditions along with empanelment process, tendering process, evaluation/monitoring framework and standard procedures for after sales and support which would be useful for MPUVNL in the long run.

Intended results: Specifically, the TA is expected to result in the following by 2016:

- One organization with improved capacity
- One framework proposed for capture, analysis and presentation of performance data that can be replicated nationally
- One policy manual for MPUVNL defining standard procedures for evaluation/monitoring and after sales support that can be replicated nationally
- USD 130,000 of public funds leveraged

Status of work-plan activities and deliverables*:* In Year 2, the Program undertook a detailed analysis of both approaches and presented the options to MPUVNL. Based on the feedback, a DPR was developed with option two as the viable model for implementation. The DPR incorporated the detailed system design, infrastructure requirements, cost estimates and roles and responsibilities of key stakeholders. The Program also developed a RFP which would be the basis for selection and contracting of the CMC developer by MPUVNL. Based on the DPR and the RFP, MPUVNL has requested MNRE for a budget sanction for CMC implementation.

In January 2015, MPUVNL requested the Program to provide necessary support in the development of a Manual on Vendor Policy. The Program undertook a detailed review of the existing vendor policies/guidelines/procedures followed by nodal agencies of various states. It also carried out comparative analysis and identified best practices adopted in the selection and empanelment of the vendors. Subsequently, the Program initiated work on development of draft vendor guidelines based on the best practices identified through comparative

analysis of guidelines/procedures adopted by various state agencies. The Program will present the draft manual to the MPUVNL and other key stakeholders and finalize the same through stakeholder consultation.

S.No	Activities	Status
I	**Centralized Monitoring Centre (CMC)**	
a	Detailed option analysis	Completed
b	Preparation and submission of DPR	Completed
c	Preparation and submission of RFP documents	Completed
d	Design of the bid process management	Completed
e	Floating of RFP and pre-bid meeting	Awaiting budget sanction from MNRE
f	Evaluation of bids	New proposed date after budget sanction
g	Formation of steering committee within MPUVNL	Post selection of vendor
h	Implementation assistance	Post selection of vendor
II	**Manual on Vendor Policy**	
a	Initial meetings with MPUVNL for scoping study and for finalization of contours	Completed
b	Background research and comparative study of various RFP, vendor-related rules/procedures from other select SNAs	Completed
c	Draft vendor and after sales support policy/manual	Completed
d	Presentation to MPUVNL/prominent vendors about the draft vendor and after sales support policy/manual	Completed
e	Finalization of vendor and after sales support policy/manual	After receiving and incorporating comments from MPUVNL
III	**TA for Net Metering implementation**	Ongoing

Brief description of activities this year*:*

- **Centralized Monitoring Centre (CMC)**:
  - Held discussions with MD, MPUVNL, focused on the objectives, contours and important technical and commercial conditions for CMC implementation.
  - Provided an explanation on their incorporation under the RFP.
  - Followed up with MNRE with respect to funding request for CMC implementation in MP.
  - Communicated the feedback received from MNRE back to MPUVNL.
  - Facilitated MPUVNL again to send a request letter to MNRE for seeking funds for implementation of CMC in the state.

- Followed up with MNRE for budget allocation. Dr. V.K. Jain, Director, MNRE agreed to visit MP to discuss the sanction of CMC budget with MPUVNL during April 2016.
- Followed up with MPUVNL to discuss the next step and way forward for the implementation of CMC. MPUVNL is yet to receive budget allocation from MNRE. MPUVNL is planning to allocate necessary budget from its own fund for implementation of CMC. The Program has shared DPR as well as revised RFP document with MPUVNL for further consideration.

- **Manual on Vendor Policy**:
  - Interacted with vendors (on suggestion of the MD, MPUVNL) to seek their inputs/suggestions in recent tender process followed by MPUVNL as well as various components of the proposed manual/guidelines.
  - Reviewed the vendor policies, guidelines, and procedures followed by SNAs of various states such as Chhattisgarh, Tamil Nadu, Andhra Pradesh, Maharashtra and Rajasthan.
  - Carried out comparative analysis of different processes adopted by different states such as a) Empanelment process – Chhattisgarh. Tamil Nadu, Andhra Pradesh and b) Tendering and Operation and Maintenance process- Chhattisgarh, Maharashtra, Rajasthan.
  - Prepared a detailed presentation covering background research, comparative study and draft contours for the proposed vendor policy manual. This presentation forms the basis for initiating the development of draft policy manual for the MPUVNL.
  - Developed the background paper and draft guidelines based on the best practices identified through comparative analysis of guidelines/procedures adopted by various state agencies.
  - Developed the draft vendor guidelines for MPUVNL and submitted it internally for the discussions.
  - Revised the draft guidelines based on the comments and suggestions of the internal deliberations.
  - Finalized the background paper and draft vendor manual and submitted both documents to MPUVNL for its comments and suggestions.
  - Met with MD, MPUVNL and other senior officials of MPUVNL to seek their inputs/suggestions on the same.
  - Followed up with MPUVNL in order to seek their inputs/suggestions on the vendor manual.
  - Held discussions on RFP documents on solar PV, LED street lighting and decentralized distributed generation prepared by MPUVNL
  - Carried out detailed review of two RFPs i.e. Solar PV and Agricultural Pump-sets and submitted to MPUVNL for further consideration.

- **Net Metering implementation:**
  - Developed a draft Net Metering Policy document for solar rooftop projects implementation in MP
  - Drafted a petition to seek amendments in the Net Metering regulations of MP.

Challenges/risks*:* The implementation of CMC critically depends upon the allocation of budget by MNRE and hence may result in delays. Presently, MPUVNL is considering implementation of CMC through their own funding.

Support required from USAID*:* No support is required from USAID at this stage.

TA to Develop a Framework for Development of RE Hybrids in the States of Karnataka and Rajasthan

Objective: Wind and solar energy resources are characterized by inherent intermittency due to seasonal and daily variations leading to challenges in management of the grid and infrastructure. Thus, hybridizing wind and solar resources provide a number of advantages ranging from complementarily in generation, shared infrastructure like evacuation and access as well as improved facility management. Such projects can improve the electricity generation from particular regions as well as lead to cost optimization due to sharing of infrastructure. The development of RE hybrid projects has a huge potential in states which boast good wind and solar resources.

However, the benefits from these projects are yet to be mapped and captured in appropriate policy and regulatory frameworks. The Program aims to work with the governments of two focal states (Karnataka and Rajasthan) to develop enabling policy and regulatory frameworks after identifying, mapping and monetizing the benefits associated with such projects.

Intended Results: The Program is assisting the DOE, GOK and DOE, GOR (through KREDL and RRECL) to create an enabling policy and regulatory ecosystem for the deployment of wind-solar hybrids in these states. Such an ecosystem can be replicated in other states.

Specifically, the TA is expected to result in the following by the end of 2017:

- One benefit framework proposed for the development of wind-solar hybrids that could be replicated nationally
- Two policy interventions/modifications proposed based on benefits framework for the development of wind-solar hybrids (one for each state)
- Two regulations proposed based on benefits framework for the development of wind-solar hybrids (one for each state)
- Six organizations (DOE of two states, two SNAs - RRECL and KREDL, and two SERCs) with improved capacity to identify and implement RE hybrid program
- 100 MW RE capacity addition

Status of work-plan activities and deliverables: In Year 3, the Program analyzed the key benefits for development of RE hybrid projects; and assisted the SNAs in developing a White Paper and guidelines for development of the suitable RE hybrid program in the states. The mode for development of the White Paper was via stakeholder discussions with developers, regulator, SNAs and state utilities. The White Paper focused on the national perspective and will be used as a reference tool to propose policy and regulatory interventions.

S.No	Activities	Status
a	Initial scoping meetings in two states	Completed in Karnataka
b	Background research and information gathering	Completed
c	Preparation of draft White Paper on program design and implementation roadmap for RE hybrid project	Completed
d	Presentation of draft White Paper to DOE, SNAs and SERCs	Completed for Karnataka
e	Development of guidelines for development of RE hybrid program	Rescheduled for October 2015
f	Organization of a stakeholder workshop	Completed in Karnataka
g	Finalization of White Paper and recommendation of policy and regulatory interventions	Completed for Karnataka

Brief description of activities this year:

- **Karnataka**
  - Held a meeting on September 10, 2015 with KREDL to discuss the framework for deployment of RE Hybrid Project. The discussion included potential of establishing a pilot RE Hybrid Project at Mavinhuda in Belgaum and the possible TA.
  - Held another meeting on September 10, 2015 to discuss the framework for deployment of RE Hybrid Project.
  - Conducted a Stakeholder Workshop on September 11, 2015 at Bengaluru to present the detailed framework for development of RE Hybrid prepared by the Program.
  - Developed a white paper incorporating all inputs and comments received from the workshop.
  - Finalized the "White Paper on Framework for Development of RE Hybrids in Karnataka" after incorporating suggestions received from stakeholders at the consultation workshop organized in Bengaluru.
  - Updated the draft White Paper addressing comments received during internal deliberations and submitted to USAID for review and finalization.
  - Shared the "White Paper on Framework for Development of RE Hybrids in Karnataka" with the Principal Secretary, Energy, GOK and MD, KREDL for their inputs and comments.
  - Requested for a meeting with KREDL to present the Program's findings and to discuss next steps as regards drafting a policy for RE Hybrid.
  - Followed up with KREDL on the white paper for its feedback and discussions.
  - Delivered a presentation on "Development of framework for RE Hybrids in Karnataka" in Knowledge Exchange Program scheduled in Bengaluru on June 30, 2016.
  - Delivered a presentation on DRE Hybrid Framework in Karnataka to the Chairman, members and other senior officers of KERC and seek their inputs/suggestions on the same.
  - Submitted comments on the draft Wind Solar Hybrid Policy of MNRE.

- **Rajasthan**
    - Initiated preliminary activities to develop a White Paper on framework for development of RE Hybrid in Rajasthan, which would be similar as prepared for Karnataka.
    - Held initial round of discussions with key stakeholders to gather primary data required for developing framework for RE Hybrid in the state.
    - Developed data templates for wind and solar generation, sub-station details, wind and solar potential in various districts, etc. and the same have been forwarded to RRECL for simulation and further analysis.
    - Developed a draft White Paper on Framework for development of RE Hybrids in Rajasthan on the similar line of White Paper developed for the state of Karnataka.
    - Upon receipt of the requested data and information from RRECL, the Program will do necessary changes in the draft White Paper and submit the same to the various stakeholders for discussions and deliberations.

Challenges/risks: The SNAs have little or no experience in RE hybrid project design, planning and implementation. The Program proposes to address these challenges/risks through presentations and discussions to highlight benefits from RE hybrid projects.

Support required from USAID: No support is required from USAID at this stage.

TA to Develop and Implement Renewable Energy Purchase Obligation (RPO)- Compliance Monitoring Framework in Rajasthan

Objective: RPO compliance monitoring is crucial to ensure that the RPO targets are met and that non-compliance is brought to the regulator's attention for necessary regulatory action. The Program is engaged with RRECL/RERC to provide TA in the area of development of a registry for all obligated entities, design of forms/formats for reporting/compliance monitoring, and development of web-enabled tools for ease of access to information and ensure transparency in the process. Another important objective is to create a framework/institutional arrangement in order to streamline RPO compliance monitoring/enforcement framework in the state.

The Program developed a report on RPO-CMR framework and submitted it to RRECL. The report provided a detailed outline for establishing RPO-CMR cell, standard formats for RPO compliance data collection and RPO information manual. Subsequently, the Program also made a detailed presentation to RERC. This would be a unique initiative by RRECL/RERC, which could set an example for other states/SERCs to follow since no similar regulatory mechanism has been initiated in India.

Intended Results: Specifically, the TA is expected to result in the following by the end of 2017:

- One existing organization with improved capacity
- One replicable framework for RPO compliance and monitoring

Status of work-plan activities and deliverables:

S.No	Activities	Status
a	Structure of the RPO Compliance Monitoring Framework	Completed
b	Design of RPO Cell	Completed
c	RPO compliance monitoring cell including systems, processes, manpower, reporting and control	Completed
d	Formats and forms for data capture and reporting	Completed
e	Presentation on RPO Compliance Monitoring framework in AREAS meeting	Completed
f	Presentation on RPO Compliance Monitoring framework to FOR	Completed
g	Submission of report to FOR on RPO Compliance framework for adoption by other states	Completed

Brief description of activities this year:

- Met with RRECL officials and briefed them on the importance of RPO-CMR and the web tool for regular monitoring, tracking and recording the status of RPO compliance.
- Discussed the status update on RRECL's effort in collecting the information from captive power producers/open access users as directed by RERC on Supreme Court's judgment. MD, RRECL requested the Program to continue to provide assistance to RRECL on activities related to RPO compliance monitoring.
- Requested RRECL to constitute a WG for operationalizing the RPO framework.
- Initiated the background research, website layout, etc. for developing the web tool for RPO compliance.
- Initiated the background work for the development of a web tool for RPO Compliance Monitoring with focus on user requirements, website layout, etc.
- Developed the background note and draft agenda for the first WG meeting under the DOE, GOR.
- Developed and delivered a presentation on RPO-CMR at the FOR consultation meeting. The objective was to deliberate on the current issues and sensitize other state regulators on the need to develop a RPO compliance framework.
- Customized the report/manual on RPO compliance framework prepared for the state of Rajasthan and submitted the same to FOR for onwards distribution to regulators of various states.
- Participated in AREAS meeting at Pune and delivered a detailed presentation on RPO Compliance Monitoring Framework.
- Supported RRECL in collating the information about obligated entities CPP/OA users and compiling their data in a structured manner and to create excel database for the past compliance period (2007 to 2015).
- Provided support to RRECL to discharge its responsibility of reporting RPO compliance status of obligated entities for the past control period as per directions of RERC.
- Suggested RRECL to create an institutional framework for the next compliance periods.

- Facilitated RRECL constitute a WG comprising the representation from DISCOMs, SLDC, RVPN, RERC, Electrical Inspectorate. Principal Secretary, DOE, GOR will chair the WG.
- Received invitation at the first meeting of the WG, from the Chairman, RRECL, to make a presentation for kick starting the process of RPO web tool development.
- Made a presentation on "Support for Implementation of RPO Compliance Monitoring and Web Tool Development for RRECL" at the first meeting of the state level group on March 16, 2016 at Jaipur.
- Initiated the development of the foundation work for the web tool through the development of an "Accredited Process Guidelines", which covered guidelines and step-wise description of the process for accreditation of every obligated entity in the state, in line with the eligibility conditions stipulated under RPO regulations notified by RERC.
- Shared a draft of "Accredited Process Guidelines" with RRECL for their comments and feedback.
- Initiated the background work for the development of URS document based on functionalities requirements as deliberated during WG meeting.
- Prepared a draft of URS document and shared internally for comments. The URS document is planned to be completed by July 2016 and will form the basis for further coding/software development of a web tool for RPO compliance monitoring.
- Made a presentation on "Support for Implementation of RPO Compliance Monitoring and Web Tool Development for RRECL" at the Knowledge Sharing Workshop held at Bengaluru on June 30, 2016.
- Shared a draft of Web Hosting Requirement for development of web tool for RRECL's comments and feedback.
- Presented the beta version of the web tool on RPO compliance monitoring framework to RRECL team for their feedback and comments.
- Carried out detailed discussions with RRECL IT team to understand the existing IT infrastructure and discussed the modalities for hosting of the RPO compliance monitoring tool on RRECL's website.

Challenges/risks: The following challenges are anticipated:

- RRECL and RERC lack adequate and relevant experience in RPO-CMR design, planning and implementation.
- The Program suggested the structure, roles and responsibility of the RPO-CMR cell to RRECL which sent the proposal to DOE to constitute the RPO-CMR cell, but approval is still pending.

Support required from USAID: No support is required from USAID at this stage.

TA to develop framework for RE infrastructure like solar parks through Public-Private Partnership (PPP)-based investment models in Rajasthan

The aim of this activity is to identify suitable business models that can be adopted to promote investments in large-scale RE assets such as solar parks.

Brief description of activities this year:

- Presented the outline of different business models to encourage private sector participation in solar parks to MD, RRECL along with the ADB team. MD, RRECL, suggested that the Program develop the business model outlined and present the same to the existing private companies (Infrastructure Leasing & Financial Services Limited, Adani and Essel) who have established a joint venture and or signed MOUs with Rajasthan.
- Presented and submitted the inception report to USAID.
- Made presentation to ADB to identify synergies in the work being undertaken by both the funding agencies to take forward investments in the solar parks.
- Made a presentation to RRECL (Mr. Dosi) on the project update and presented some PPP models that RRECL can consider while developing the solar parks in the state. RRECL suggested the Program to present business models to the private solar park infrastructure developer.
- Made presentation to Mr. Malhotra, Secretary Energy, GOR.
- Met with ILFS to discuss business models. It was suggested that the Program meets with Mr. Alok, Revenue Secretary, GOR who is also on the board of all the solar parks. The Program received a go ahead from USAID to connect with Mr. Alok for the project.
- Arranged to schedule a meeting with Mr. Alok and identify suitable beneficiary for the assignment.
- Decided to drop the activity in case of no active engagement from RRECL/GOR after discussing with USAID.
- Decided to develop and publish a paper on the solar parks business models on suggestion from USAID.

The GOR officials (RRECL) did not accord priority on utilizing TA for this subject from the Program. The Program needed sensitive details from RRECL and its Solar Park partners. Despite several requests RRECL declined sharing information and instead requested an independent analysis by the Program. Also the Principal Secretary Energy, who had requested the work was transferred and no interest was shown for this specific action by his successor. USAID and ADB were aware of this series of developments and changes in priorities and personnel at RRECL. Subsequently ADB decided not to pursue the program.

TA to Design City-wide 5 MW Solar Rooftop Program in Partnership with RRECL and JVVNL

Objective: The Program has received a request from the GOR and RRECL for assistance for the design and implementation of a city level rooftop program for the city of Jaipur. If successful, similar programs can also be launched for the cities of Ajmer and Jodhpur. The Program will assist RRECL in the design of the program and handhold RRECL to bid out of the city-wide program. The Program aims to use a PPP approach for the implementation of city-wide 5 MW solar rooftop program. The key aim of the PPP approach would be to successfully develop large-scale city level programs through the following:

- **Business Model**: Showcasing a business model for solar rooftop project development using large-scale development of both public and private rooftops in a PPP mode. This is particularly important in states across India as most retail consumers lack the financial and technical resources to develop and install rooftop systems.
- **Policy**: Providing policy, regulatory and technical clarity for large-scale replication of solar rooftop projects in the emerging regime of Net/Gross Metering and achievement of expanded solar rooftop targets. This includes devising and laying down specifications, configurations and norms for these small dispersed un-schedulable systems with buy-in from policy makers, regulators and electricity utilities. This clarity has the potential to provide the framework for development of a large generation base in the future.

The project will identify potential sites for development as solar rooftops and showcase the methodology to be adopted by the state for the proliferation of the solar rooftop program.

Status of Work-plan activities and deliverables*:*

S. No	Activities	Status
I	**Project Preparation**	
a	Inception meeting with RRECL	Completed
b	Preparation of concept note on commercial assessment of RESCO based model	Completed
c	Preparation of Inception Report	Completed
II	**Analysis and Strategy – Due Diligence**	
a	**Regulatory due diligence -** Evaluation of regulatory aspects applicable for solar rooftop projects in Rajasthan	Ongoing
b	**Commercial due diligence** - Identification of tariff for different categories, assessment of project profitability based on decision making factors like payback period, Internal Rate of Return, Return on Equity	Ongoing
c	**Technical due diligence -** Impact assessment and associated risks of key technical parameters on project viability	Rescheduled - awaiting go ahead from RRECL
d	Site visit, survey, selection and site key parameters assessment and development of technical assessment inputs.	Rescheduled -awaiting go ahead from RRECL
III	**Manage and Structure**	
a	**Business model and structure** - Identification of business models, risks, evaluation of severity, impacts and strategy to mitigate risks and develop approach to reduce risks.	Ongoing
b	**Final version of bid documents** - Developing bid	To be undertaken

S. No	Activities	Status
	documents in consultation with RRECL	
IV	**Design and Evaluation**	
a	**Bid process completion** - Coordinate with RRECL for announcing the bid, stakeholders pre-bid meeting, and closing of bid process.	To be undertaken
b	**Bids technical and financial evaluation -** Opening of bids and evaluation of technical and financial proposals of eligible and qualified bids.	To be undertaken
c	**Scale-up strategy report for Rajasthan Cities** - Discuss with RRECL and develop a strategy for scaling the city-wide solar rooftop projects /program in Rajasthan	To be undertaken

Brief description of activities this year:

- Organized an inception meeting with RRECL officials in Jaipur on February 19, 2016 to share the information and ideas about the project and available business models. At this stage, it was intimated that the government buildings are available for implementation of the solar rooftop projects. The project timelines were also discussed with RRECL. RRECL informed the Program that a letter was to be sent by the Energy Secretary, GOR to various state departments to identify sites for implementation of solar rooftop projects.
- Developed a concept note to assess the commercial viability of the RESCO based solar rooftop system. The purpose of the concept note was to estimate the cost of generation from solar rooftop and analyze whether any benefits would flow to the consumers in case of solar rooftop deployment. RRECL provided the data of a government building and requested for the support on undertaking a detailed cost benefit analysis for a third party based solar rooftop system implementation.
- Prepared the inception report based on the inputs from the meetings and research covering existing scenario, policy, regulations, assessment of solar potential, business models, implementation schedule, etc.
- Prepared the due-diligence report covering the regulatory, commercial and technical aspects in detail.
- Initiated plans to undertake the site visit to analyze and validate the technical issues and their impact associated with each site.
- Finalized the regulatory due-diligence report.
- Finalized the commercial due-diligence report.
- Decided to conduct the technical due-diligence after finalization of the potential sites by RRECL.
- Held meeting with MNIT, Jaipur and discussed on implementation of solar rooftop systems project in MNIT campus.
- Conducted preliminary site visit to MNIT to understand the existing arrangement and macro level feasibility.

- Planned to conduct focused site visits for detailed technical due diligence of the identified sites within the campus of MNIT, after receiving the consent from MNIT
- Selected the RESCO model for implementation of solar rooftop systems based on the regulatory and commercial due-diligence and consultation with RRECL
- Engaged in preparing a draft model RFS for selection of qualified bidders as part of bid process management for RRECL
- Engaged in preparing contractual and legal agreements, as applicable for RRECL to conduct the bid**.**

Challenges/risks: Non-availability of list of potential sites poses a challenge which also impacts the technical due-diligence activity of the project.

Support required from USAID: Discuss with RRECL to secure the list of identified buildings by RRECL to progress on technical due diligence of sites and preparation of bid documents.

Task 2: Market-driven RE technology Deployment

TA on Commercial & Industrial Pilots to Public Sector Undertakings (PSUs) for Deploying Solar Projects

Objective: PSUs have a huge potential for RE deployment due to their:

- High cost of energy
- Ability to invest
- Access to appropriate land and infrastructure

The Program is working with two PSUs—IOCL and IR—as potential partners with sufficient capacity to undertake large-scale RE deployment, especially decentralized solar rooftop systems.

Indian Oil Corporation Limited (IOCL): IOCL has tremendous potential to deploy RE across its supply chain including refineries, townships, warehouses and retail outlets. It has requested the Program to assist its foray into decentralized solar deployment with specific focus on the design and deployment of solar rooftop installations. Based on this request, the Program is providing TA to IOCL to deploy solar rooftop systems on its refineries and petrol pumps:

- *Refineries*:
    - Develop 5 MW of solar rooftop at Panipat, Baroda and Barauni refineries under MNRE's PSU scheme.
- *Petrol Pumps:*
    - Implement a Program for solarisation of 1,000 petrol pumps.
    - Prepare a guidebook for solarisation of petrol pumps.

- *Solar Park:*
    - The Program is also providing support to IOCL and OIL to establish 1,000 MW in solar park(s). These two PSUs are uniquely positioned to tap this opportunity due to their ability to invest, enhance size of the energy portfolio

and develop into integrated energy companies. As a part of this initiative, the Program will help IOCL and OIL to develop the basic investment framework for this endeavor.

- **Indian Railways (IR):** IR has pledged to achieve ambitious green targets under the 'Railway Vision 2020' including 10 percent electricity from renewable sources and 15 percent reduction in energy use. At 2011-12 consumption levels, the achievement of a 10 percent RE target would result in generating 860 MW. In this context, the overall target implementation of solar rooftop projects for the IR is 200 MW by 2022.

  One of the biggest energy costs for the IR is the cost of procuring power from DISCOMs for operation of its stations, workshops and office installations. IR has vast land and rooftop space resources available which can be leveraged for distributed solar PV systems.

  In 2014, IR received an allocation of 15 percent centralized financial assistance/viability gap funding for the establishment of 50 MW of solar rooftop systems under MNRE's scheme.

  The Program started engaging with the IR through the SECI for the establishment of solar rooftop under SECI's own program. IR independently requested the Program for TA to implement 50 MW under the MNRE scheme, while the SECI scheme was still under discussion.

  The Program supported IR to procure 50 MW equivalent of solar rooftop power under the RESCO model for which the procurement will be undertaken through its regional offices. For this propose, the Program assisted the IR Board to develop a model RFP and PPA which can be directly bid out by zonal offices. It conducted a stakeholder consultation for all ZR offices to discuss the bid documents, PPA clauses and bidding process with the representatives from these zones. It helped IR during RFP and Request for Qualification (RFQ) stage to provide the clarifications to the ZR as well as to the developers on the bid documents.

  The Program is also supporting IR to procure 100 MW equivalent of solar rooftop power under the RESCO model for which the procurement will be undertaken through its regional offices (ZR). The Program supported Railway Board, in a series of zonal meetings held at Rail Bhawan, to explain the objective and approach of solarizing the station along the selected routes. All the stations along the selected routes will be solarized under RESCO model except the stations with capacity less than 10 kW. ZR will identify the stretch of the route in their respective zone and will conduct the bidding for the same, under 100 MW program.

  The Program is also helping in customizing the MBD for 100 MW to incorporate the revised CFA scheme by MNRE and the corrigendum issued for 50 MW program.

  Railway Energy Management Company Limited (REMCL): REMCL is a subsidiary of IR. It is exploring business opportunities in green energy including generating, selling its power and providing consultancy in economic power procurement for IR based on competitive bidding and through energy exchanges. The key potential

business area of REMCL includes development of green energy project for IR e.g. wind and solar energy project, bringing cost efficiencies in energy management, providing consultancy business in wind and solar sector, develop EE projects for IR and power procurement and its management.

REMCL has received a mandate to support IR in deploying RE of 1 GW capacity till 2022. REMCL also aims to develop RE projects as an Independent Power Producer to supply electricity to the consumers other than IR. Regarding same, it is seeking TA from the Program. REMCL intends to explore the potential to deploy solar and wind projects. The Program is supporting REMCL in developing a strategy to deploy RE.

Intended results*:*

Indian Railways (IR): The Program will continue to assist IR in the development of CE projects. Specifically, the TA is expected to result in the following by the end of 2016:

- 50 MW of deployment of solar rooftop capacity.
- Finalization of bids for 100 MW solar rooftop capacity power project
- One (1) organization with improved capacity to procure solar power through RESCOs/developer and integrate low voltage distributed systems in their own network
- USD 67 million funds leveraged (including USD 10.50 million public funds)
- Strategy for large scale ground mounted projects.

Indian Oil Corporation Limited (IOCL): The Program will assist IOCL in developing solar rooftop installations across its refineries and petrol pumps.

The Program will also facilitate establishment of a joint venture between IOCL and MPUVNL to set up a solar park in MP.

Specifically, the TA is expected to result in the following by the end of 2016:

- 5 MW of deployment of solar rooftop capacity installation on refineries
- 3 MW of deployment of solar rooftop capacity installation on petrol pumps
- One (1) organization with improved capacity to procure solar power and integrate low voltage distributed systems in their own network
- USD 13 million funds leveraged (including USD 2 million public funds)
- Model documents for replication within IOCL.

A Strategy will be developed for REMCL to procure RE from solar and wind to optimize the cost of procurement and to meet the RPO obligations.

Status of Work-plan activities and deliverables: In Year 3, the Program undertook the following key activities:

- **Indian Railways (IR)**:
    - Mapped the key technical, commercial, policy, and regulatory risks associated with solar rooftop power from RESCOs/developer.
    - Allocated these risks to parties more suited to address it.

- Structured commercial arrangements to procure power.
- Defined roles and responsibilities of key stakeholders.
- Developed formats and processes for bidding.

- **Indian Oil Corporation Limited (IOCL)**:
  - Mapped the critical policy and regulatory frameworks associated with solar rooftop across states
  - Prepared detailed feasibility reports for 5 MW across three refineries
  - Assisted in completion of MNRE forms for allocation of subsidy under the PSU rooftop scheme.

S.No	Activities	Status
I	**Indian Railways (IR)**	
a	Mapping key risks associated with project and their impact on commercial arrangements	Completed
b	Development of state-wise policy and regulatory analysis for deployment of solar rooftop	Completed
c	Mapping and benchmarking RFPs for solar rooftops	Completed
d	Preparation of draft model PPA and RFP	Completed
e	Site visits to selected railway stations and facilities	Completed
f	Finalizing model PPA, RFQ and RFP	Completed
g	Facilitation of stakeholder consultations	Completed
h	Implementation support at RFQ and RFP stage	Ongoing
i	Presented approach for the deployment of 100 MW to the ZR in a series of meeting.	Completed
j	Customization of MBD for 100 MW solar rooftop power project	Ongoing
II	**Indian Oil Corporation Limited (IOCL)**	
a	Recommendation of strategy for securing allocation from MNRE	Completed
b	Mapping state-wise policy and regulatory frameworks	Completed
c	Site assessments at three (3) refineries	Completed
d	Preparation of detailed feasibility report for three (3) refineries	Competed
e	Preparation of standard documents for procurement	IOCL has prepared the standard documents by itself
f	Bid process management	Completed for 5.75 MW
g	Allotment of Engineering, Procurement and Construction contracts	Completed for 3 MW
h	Implementation support	Ongoing

S.No	Activities	Status
i	Scale-up plan for refineries and other solar rooftop installations	Ongoing
j	Conduct an event in September 2015 to share experiences to accelerate solar energy deployment by PSUs	Completed
III	**Railway Energy Management Company Limited (REMCL)**	
a	Conducted a kick off meeting with REMCL to present the methodology to develop a RE procurement strategy for REMCL.	Completed
b	Data required to develop the strategy was collected from REMC.	Completed
c	Development of strategy	Ongoing
IV	**IOCL Solar Park**	
a	Report on state selection for solar park development	Completed
b	Report on the framework for site selection for solar park	Completed
c	Report on GIS mapping of the selected sites	July 2016
d	Report on financial attractiveness of sites	August 2016
e	Report providing techno-commercial assessment report of selected site(s)	November 2016
f	Report on required approvals and statutory clearances	November 2016

Brief description of activities this year:

Indian Railways (IR)*:*

- Developed detailed financial models and carried out sensitivity analysis for various scenarios.
- Prepared a status paper helping IR gather internal approval for the 50 MW solar rooftop work.
- Finalized the contents of the RFS and PPA for selecting RESCOs for implementation.
- Completed the solar rooftop feasibility assessment for selected sites (five) for identifying buildings and potential at the sites.
- Discussed the final versions of the MBDs (RFQ, RFP and PPA) with IR and submitted the same to them.
- Finalized the MBDs for the procurement of 50 MW of solar rooftop by IR.
- Assisted IR in developing and delivering presentations on the salient features of the MBDs and selection of the suitable rooftop for solar installation at the Railways Zonal meet on December 1, 2015 held in Kolkata.
- Prepared an updated status on Net Metering regulations in all the states across India to help ZR in understanding applicable regulations for solar rooftop projects.
- Supported various zones of IR issue notices for the release of tender documents and RFQ for the 50 MW solar rooftop program.

- Provided assistance to IR to promote the bid documents to increase outreach amongst solar developers, revise the MBD and issue corrigendum based on the feedback from developers and ZR.
- Supported the ZR in the RFQ application evaluation process.
- Supported the ZR in presenting the approach for the deployment of 100 MW to the ZR in a series of meeting at Rail Bhawan.
- Assisted in customizing the MBD for 100 MW to incorporate the revised CFA scheme by MNRE and the corrigendum issued for 50 MW program.
- Supported IR in organizing a developers meeting and pre-application conference for NR and provided clarifications to the developers on the MBDs.
- Prepared the evaluation template for NR which helped them evaluate 15 applications received at the RFQ stage.
- Delivered presentations to all ZR on the route-based clusters being designed for the development of the 100 MW solar rooftop program to be announced soon by IR. In a series of three meetings held in May 2016, the Program shared the route wise deployment of solar rooftop of 100 MW with the ZR and sought their comments.
- Made an inception presentation on the strategy for deployment of 1 GW RE capacity by 2022. Data sharing and strategy development teams were put in place.

Indian Oil Corporation Limited (IOCL):

- Finalized of the DPR of the Panipat Naptha unit
- Detailed the costing for investments (Previously, IOCL undertook the preparation of standard documents which were used by Vadodara and Barauni refineries for procurement of solar rooftop based projects on the site assessment reports prepared by the Program. There were some technical issues identified by IOCL for the Panipat solar rooftop project, specifically on the interconnection and safety measures which have been addressed by the Program. Also, the financial analysis, including detailed costing for components was undertaken.)
- Conducted a couple of meetings with IOCL during which the decision was made to assist IOCL and OIL to develop a 500 MW-1,000 MW solar park. IOCL and OIL are developed the business case for the development of the solar park and have requested assistance from the Program for developing the investment case for the solar park(s). The broad outputs of the engagement are:
    - Decision from IOCL to go ahead and develop a solar park in partnership with OIL.
    - Identification of location and size of the solar park.
    - Finalization of evacuation from the solar park.
    - Business model for the solar park.
- Finalized a report on selection of MP as the preferred state for solar park development for IOCL.
- Facilitated initial discussions between IOCL and MPUVNL on the MOU, JV design and work flow streams as well as land identification.
- Developed a framework for evaluating the attractiveness of different sites.
- Participated in a site visit to Chhatarpur, MP to evaluate the suitability of site proposed by MPUVNL.
- Met with the Collector, Chhatarpur and Sub-Divisional Magistrate, Bijawar and discussed issues with land ownership of the site proposed by MPUVNL.

- Finalized and submitted the framework for evaluating the attractiveness of different sites.
- Developing the potential power sale options for IOCL.

Railway Energy Management Company Limited (REMCL)

- Conducted a kick off meeting with REMCL on May 25, 2016 to explain the methodology to develop a RE procurement strategy for REMCL.
- Collected the data required from REMCL to develop the strategy.
- Initiated the work on developing the strategy.

Challenges/Risks:

IOCL Solar Park:
Challenges may arise post land allocation by the GOMP/MPUVNL for the development of the park. However, there is a delay in work mainly on account of delay in the execution of the MOU between IOCL and MPUVNL.

The data available at the Centralized Information System of IR is not sufficient to conduct the study to develop the RE procurement strategy. The study will be conducted based on certain assumptions that need to be confirmed by REMCL.

Support Required from USAID: No support is required from USAID at this stage.

TA to Develop and Roll out Rural Pilots

Objective: Solar irrigation, when promoted through appropriate models, offers tremendous potential in reducing the demand for agriculture sector power consumption and dependence on diesel for irrigation, thereby improving the financial health of DISCOMs as well as enhancing rural livelihoods. The Program is working on two such models: (a) a grid-connected solar pumping project in Karnataka under the Surya Raitha Scheme of GOK, and (b) a shared service model for solar irrigation in Bihar.

Grid-connected solar pumping project in Karnataka

A grid-connected solar pumping project in Karnataka is being implemented under the Surya Raitha Scheme of GOK. The Surya Raitha Scheme comprises of three (3) components: (a) estimating economics of the program for BESCOM and GOK; (b) support during design, implementation and monitoring of pilot; and (c) support for scaling up at the state level. Under this initiative, the farmers will replace their existing pumps with the energy efficient net metered solar water pump sets. The various benefits expected to be accrued to the farmers are:

- Farmers become net power generators completely eliminating energy usage for agriculture and earn a tariff for net energy exported.
- Improve agrarian livelihood by providing farmer cash income for “growing” solar energy as a remunerative cash crop.
- Conserve the environment through a built-in incentive to conserve groundwater and energy use in pumping.

- Enhance the quality of irrigation by providing farmers reliable, uninterrupted, daytime power supply.
- Reduce the carbon footprint of groundwater irrigation by reducing electricity and diesel use in pumping water.
- Improve finances of the power sector by liberating DISCOMs from the deadweight of farm power subsidies.
- Reduce T&D losses by replacing grid power by locally generated power.

The Program will provide TA to design and implement a large-scale grid integrated solar pumping program and generate inputs in designing and scaling a state-wide program.

The Program has so far designed the basic concept, estimated the economics of the pilot program, evaluated the institutional requirements and identified the most appropriate implementation model for launch of the pilot project. It worked with KREDL and BESCOM to evaluate the pilot and provide technical inputs to the DPR for the pilot project implementation at Harobele, a small village/hamlet in Kanakapura Taluk in Ramanagara district of Karnataka State, benefiting 250 farmers.

Intended Results:

- 2 MW of solar deployment
- USD 2 million leveraged for deployment of RE
- One model developed for national scale-up

Status of work-plan activities and deliverables*:*

The project intends to test large-scale grid integrated solar pumping so as to generate inputs in designing a state-wide program. Implementation of the project is expected to be completed by April 2016, post which an evaluation of the same will be undertaken.

S.No.	Activities	Status
I	**Grid-connected solar pumping project in Karnataka - Harobele**	
a	Baseline for the pilot	Completed
b	Finalization of program economics	Completed
c	Review and finalization of the DPR for the pilot	Completed
d	Inputs in the technical specifications of solar irrigation pump sets and controls	Completed
e	Inputs in finalization of the pilot design	Completed
f	Inputs in the bid structure for implementation	Completed
g	Monitoring parameters and plan	Completed
h	Technical evaluation report of bids (if requested by BESCOM)	No request
i	Structure of farmers' cooperative (if requested by BESCOM)	Not requested by BESCOM

S.No.	Activities	Status
j	Submission of White Paper on "Business Models, Lessons Learned, and Best Practices"	Completed
k	Scale-up plan (as part of White Paper)	Completed
l	Submission of first quarterly monitoring report	Aug 2016
II	**Grid-connected solar pumping project in Karnataka – Phase 2**	
a	Report on learnings from Surya Raitha pilot project	Ongoing
b	Monitoring Report - Baseline	Feb 2017
c	Monitoring Report - Post implementation	May 2017
d	Report on techno-commercial due-diligence of the proposal submitted by SunEdison	Aug 2017
e	Stakeholder Workshop: Business Model for scale-up incorporating learnings from Phase-1 pilot	Sept 2016
f	Submission of RFQ, RFP	Nov 2016
g	Report on pre-bid assistance	Dec 2016
h	Report on TA in bid evaluation and contracting	Jan 2017
i	Report on monitoring framework for the program	Feb 2017
j	Report on scale-up plan	Feb 2017

Brief description of activities this year:

- Developed and finalized the white paper on business models, lessons learnt, best practices and scale-up plan under the pilot program for submission to USAID.
- Received updates that BESCOM began implementation of the project which is expected to be completed by April 2016.
- Completed the field visit to the pilot site along with the implementing agency (SunEdison) and held discussions on the ongoing implementation.
    - Till date, SunEdison has been successful in installing 130 of the proposed 256 solar PV pumps (capacity of these pumps would be around 1 MW).
- Work is in progress on the review report of the Surya Raitha pilot scheme.

Challenges/risks:

Surya Raitha: The grid-connected solar pumping project in Karnataka under the *Surya Raitha* Program has been awarded to SunEdison, which is currently implementing the project. The Surya Raitha scheme is receiving positive feedback from a range of stakeholders and can potentially be a game changer in tackling the challenge of irrigation electricity consumption, not only in the state of Karnataka but also in other peninsular Indian

states. The feed-in tariff of INR 9.56 announced by GOK is also quite attractive. What needs to be seen is how the farmers respond after they participate in the project. This has ramifications on the state wide launch of the program. The Program proposes to capture the learning from this pilot and provide inputs to GOK/KREDL/BESCOM to up-scale the initiative.

The pilot is currently under execution and 130 pumps have been installed and the remaining pumps are expected to be commissioned by July 2016.

Support Required from USAID: No support is required from USAID at this stage.

Shared service model for solar irrigation in Bihar

Bihar has low cropping intensity due to limited access and control over water for irrigation. Due to very high peak power deficit it is difficult for farmers to access water for irrigation through power from the grid and thus run on diesel pump sets - own or rented. With increasing price of diesel, the cost of irrigation is increasing. The increase in cost is even higher for water buyers. On the other hand, the state is rich in groundwater availability. Thus the conditions are apt for large-scale adoption of solar pumping technology. The key challenges in this are creating an appropriate institutional mechanism and meeting the financing needs of the farmers.

To address this challenge, the Program is working on a solar pumping initiative in Bihar with BASIX/VAYAM and IGS, a well-known not-for-profit organization. The Program has developed a model for implementation and reached out to the possible donors, and prepared concept notes, presentations and proposals. It has also finalized cost and technical specifications based on actual field requirements.

Intended Results:

- 0.06 MW of solar deployment
- USD 148,000 leveraged for deployment of RE
- Three (3) organizations with improved capacity to implement shared service model (BASIX/IGS, farmer producer organizations, and self-help groups)

Status of work-plan activities and deliverables:

Through this project, the Program intends to test solar irrigation-based micro-grids in a programmatic approach for rural areas. The Program is working with BASIX/IGS on this initiative in Bihar. The sub-task comprises broadly six components (a) development of the model; (b) arranging for finance/funds for execution; (c) field implementation; (d) monitoring and evaluation; (e) planning for up-scaling/replication/designing a Program; and (f) support for replication. Work on development of micro-grids will start only after the solar pumping component is successfully implemented, which is the anchor load.

S.No.	Activities	Status
I	**Shared service model for solar irrigation in Bihar**	
a	Finalization of concept notes, Petition for Review, presentations and customized proposals	Completed

b	Identification of possible donors and pitching to donor	Completed
c	Finalization of costs and technical specifications	Completed
d	Finalization of governance structure	Completed
e	Contracting and field execution	Completed
f	Capacity building of users/operators	July 2016
g	Development of M&E plan and its implementation	M&E plan completed. M&E rescheduled for July 2016
h	Preparation of a White Paper on lessons learned and its presentation in a stakeholder workshop together with a scale-up plan	Completed

Brief description of activities this year:

- Collaborated with IGS as the pilot partner and interacted with CEED which agreed to support the pilot. It offered eight solar pumps of which five were installed. Subsequently, due to poor performance, one system has been un-installed.
- Undertook technical assessment of the performance of the systems. It was found that the sizing of the panels is on the lower side, leading to lower discharge.
- Made application to The Climate Group (TCG) to support four systems, to which it agreed and sanctioned a grant to IGS.
- Developed contracting agreements between IGS and entrepreneurs, and entrepreneurs and water buyers.
- Developed technical specifications for procurement of the pump sets.
- Prepared a RFP to procure and install four solar pumps from TCG.
- Shared the RFP and technical specifications for procurement of four pumps with suppliers, and discussed the quotation process with them.
- Assisted IGS and Vayam in identifying potential solar pump set suppliers and assessing their technical and financial proposals.
- Assessed the proposals and held detailed discussions with potential suppliers.
- Awarded the work order to Claro Energy as it emerged as the preferred supplier.
- Assisted IGS in developing and releasing the purchase order for procuring solar pump sets.
- Initiated discussions with Claro Energy, the identified supplier, on the modalities for execution of the project.
- Provided TA to IGS and Claro Energy in commissioning the pumps at two sites and undertaking a preliminary impact assessment of six other sites which had been commissioned earlier.
- Assisted IGS and Claro Energy in finalizing the sites and troubleshooting installation at the sites.
- Worked with Claro Energy and IGS to place the order for the pumps at the two (2) other sites.
- Developed the M&E framework for this pilot.
- Prepared and finalized the white Paper on business models, lessons learnt, best practices and scale-up plan under the pilot program for submission to USAID.

- Submitted application to SECI to be forwarded to ONGC to support replication of this initiative.

Challenges/risks: No challenges reported at this time

Support Required from USAID: No support is required from USAID at this stage.

TA to Build Capacity of MNRE on Storage Technologies

Objective: Energy storage technologies have a critical role to play in enhancing the deployment of RE technologies. These technologies have the ability to integrate greater amounts of RE to the grid and enhance the use of solar and other stand-alone RE technologies for stand-alone applications. As such, MNRE requested the Program to undertake a detailed study on the potential for application of energy storage technologies in India.

The Program identified three (3) distinct set of applications for energy storage for enhancing deployment of RE technologies. These include (a) improved grid integration, (b) enhanced onsite generation and (c) reliable energy access using a combination of RE and energy storage. It also developed a report which identified the key technologies including the established and emerging technologies, and their characteristics, performance and economics.

In addition, the Program provided recommendations for increasing the deployment of energy storage technologies including the development of an Energy Storage Roadmap for RE integration and the launch of a demonstration program to evaluate technology performance and implementation models across various end use applications. The findings and recommendations of the study were published in a report titled “The Assessment of Role of Energy Storage Technologies for RE Deployment in India”. Based on the recommendations of the study, MNRE has requested the Program to assist them in the following areas:

- Developing a program to set up pilots demonstrating energy storage technology solutions for different applications, and
- Developing a roadmap for increasing deployment of energy storage solutions in India.

The two initiatives are described below:

- Demonstration Program: The demonstration program will improve the understanding of promising energy storage technologies and their performance for various applications. It is expected to lead to deployment of energy storage solutions in large-scale for grid-connected and decentralized applications.
- Roadmap for Energy Storage in India: The roadmap will set the vision and targets for the energy storage including deployment and manufacturing and detail out steps for achieving the targets along with timelines. It will also assist the government in developing appropriate policy interventions and appropriate times.

The Program is in the process of providing assistance to MNRE on the design and implementation of the demonstration program as well as the roadmap for energy storage in India.

Intended results: The Program's assistance to MNRE will lead to the design and development of the following:

- One institution with improved capacity to address CE issues (MNRE)
- One program designed and implemented (National Energy Storage Mission)
- One nationally replicable pilot program designed and implemented
- 10 MW of equivalent RE capacity implemented
- USD 11 million leveraged through RE implementation

Status of work-plan activities and deliverables: In Year 3, the Program supported MNRE launch a pilot program for development of demonstration projects. During the reporting period the Program:

- Assisted MNRE in evaluation of proposals received against the EOIs and provided TA to MNRE for shortlisting ten proposals for funding. The shortlisted proposals are in the process of being approved for funding from the Secretary, MNRE.

The Program is currently in the process of finalizing the Energy Storage Roadmap document. A draft of the same was shared with USAID.

S.No	Activities	Status
a	Provide Technical Support to Expert Group constituted by MNRE on a continuous basis	Dropped
b	Support MNRE for demonstration projects • Identification of end users who would like energy storage applications designed and implemented on facilities a. EOI Process for identification of potential projects b. Shortlist of projects for funding under the program • Development of detailed use of case scenarios and TOR for technology solution providers • Bid process management and evaluation of applications for support under the Program and identification of projects to support • Preparation of project proposals for the identified projects • M&E Support	Identification of end users Completed – EOIs submitted and shortlist for allocation completed - final shortlist awaited from MNRE
c	Develop roadmap for increasing deployment of energy storage solutions in India	Ongoing
d	RFP preparation	Yet to start
e	Report on the assistance extended to MNRE for pre-bid meetings and drafting responses on behalf of MNRE	Yet to start

S.No	Activities	Status
f	DPR preparation for two (2) project proponents	Yet to start
g	Report on the assistance provided to MNRE for evaluation of proposals	Yet to start
h	Bid Process Management Assistance to REIL	Yet to start
i	Report on M&E framework	Yet to start
j	Report on learnings from the entire technology demonstration process	Yet to start
k	Report on policy recommendations and scale-up plan	Yet to start

Brief description of activities this year:

- Held detailed discussions with MNRE on potential demonstration projects
- Facilitated MNRE in the process of following up with stakeholders who could take up demonstration projects.
- Finalized the EOI document which was also published by MNRE.
- Held discussions with SECI, TAIPA and IOCL for submitting EOIs against the MNRE call.
- Assisted SECI in preparing their EOI documents.
- Shared the draft roadmap with Luis Munuera, International Energy Agency and Amol Phadke, Lawrence Berkeley National Laboratory to solicit expert feedback. The roadmap was also sent for in-house editing.
- Held detailed discussions with REIL, Rajasthan and Tower and Infrastructure Providers Association for developing and submitting EOIs for the demonstration projects.
- Assisted REIL in submitting an EOI for the energy storage demonstration program.
- Assisted MNRE on its request in technical evaluation of the 38 EOIs based on the evaluation criteria. The results of the detailed evaluation undertaken by the Program have been shared with MNRE and the final list of shortlisted demonstration projects is awaited. The ten shortlisted candidates are awaiting approval from the Secretary, MNRE.
- Worked on finalizing the roadmap based on the expert feedback received.
- Submitted the Energy Storage Roadmap document to USAID during the quarter Jan-Mar 2016. The comments from USAID have been received which will be incorporated and finalized during the next quarter.
- The Program organized a meeting with REIL for their energy storage work in Andaman Nicobar Island.
- No major activities were undertaken during quarter Apr-Jun 2016.

During the next quarter, after the announcement of the shortlisted energy storage projects by MNRE, the specific areas of support to such projects will be discussed and finalized with MNRE.

Challenges/risks:

- Post EOI evaluation, which was completed in December 2015 by the Program for MNRE, the outcome of final beneficiaries is still awaited.
- MOU between REIL and MNRE is also awaited.
- Key driver is the buy-in from MNRE.

Support required from USAID*:* Discuss with MNRE for further guidance on the level of engagement by the Program.

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

TA to Develop and Roll Out RE Financing Mechanisms

Objective: One of the key areas of work for the PACE-D TA Program is to facilitate scale-up and investments in RE generation capacity. Over the last two and a half years, the Program has worked on a number of emerging areas with the objective of scaling-up capacity addition and investments in RE by working towards the design and development of new and innovative financing instruments such as Green Bonds, Off-grid Debt Fund and a DRE-CF.

Intended results: Specifically, the TA is expected to result in the following by 2017:

- FIs with improved capacity to implement innovative financing instruments for financing RE projects training on RE financing
- Investment leveraged from public and private funds for implementation of RE projects
- RE capacity addition

The approach adopted under the Program for the design and deployment of Green Bonds and the Off-grid Debt Fund has the potential to create a replicable and scalable business model for other FIs to set up similar financing schemes for financing CE projects.

Status of work-plan activities and deliverables: In Year2, the Program's activities were focused on building on Year 1 initiatives with a more detailed approach on RE financing within the following three identified mechanisms:

- **Off-Grid Fund**: The Program provided TCG to develop a debt fund for financing off-grid projects in India. The key objective of the fund is to provide debt financing in the space of off-grid energy applications. While TCG will provide grant for the formation of the fund and investments undertaken, the vision is to develop a fund that can leverage market capital and hence offer market driven returns. Subsequent to the Program providing the TA to TCG, the board provided its consent for the launch of the Off-Grid Fund. Currently, TCG is in the process of completing the formalities with the host of the Off-Grid Fund facility, namely Oiko Credit and its Indian counterpart, Maanaveeya Development and Finance Pvt. Ltd. The future requirement of the TA from the Program by TCG will be decided after the launch of the fund.

- **Green Bonds**: Green Bonds are standard fixed-income financial instruments (bonds) where the proceeds are exclusively utilized for financing climate change related projects or programs. Globally, Green Bonds has been growing exponentially since 2013, with fresh issuances in last two years accounting for over 80 percent of the total outstanding. As of November 2015, the international market size for labeled

Green Bonds is USD 97.8 billion, which includes USD 41.8 billion of fresh issuance, making 2015 as the biggest year ever in the history of issuance of Green Bonds. The Program has been working with a number of institutions such as IREDA, PTC India Financial Services, YES Bank and IIFCL, in building their capacity for the launch of Green Bonds. The Program will engage with FIs specifically focusing on Green Bonds and provide TA to link them with the international investors for accessing international funds leading to successful issuances.

- **DRE-CF**: The Program established partnership with the Chhattisgarh Renewable Energy Development Agency (CREDA) to develop the DRE-CF which aims to garner soft funds through grants, corporate social responsibility (CSR) contributions, etc. which it will utilize for the development of off-grid projects in the state. The Program assisted CREDA in the design and development of the fund and raising investments for the fund. It made several efforts to reach out to corporates and presented the concept of the DRE-CF as well. However, the priority of corporates shifted towards investing in sanitation projects due to GOI's Clean India Initiative. As such, it was challenging to seek investments from the corporates for establishing the DRE-CF for CREDA. Subsequently, the Program decided not to pursue further on this activity.

S.No	Activities	Status
I	**Preparatory Activities**	
a	Review of existing international and national RE financing mechanisms	Completed
b	Prepare and launch a report on their view of RE financing mechanisms	Completed
c	Design a bouquet of financial mechanisms	Completed
d	Identify partner institutions for anchoring/launching	Completed
II	**Off-grid Debt Fund (with TCG)**	
a	Signing of MOU	Completed
b	Draft of business plan presentation	Completed
c	Developing Financial Model	Completed
d	Stakeholder (TCG and team) consultation	Completed
e	Finalization of Information Memorandum (Business Plan as basis) including Business Plan	On request from TCG
f	Presentations to potential Investors	After (e)
g	Stakeholder Event	After (f)
h	Review of Documentation for formation of Anchor Charter, Fund Structure (financial and legal)	On request from TCG
i	Develop Standard Operation Procedures and Operational policies/structure of the fund	On request from TCG
j	Submission of White Paper on Lessons Learned	After launch of Off-Grid Fund

S.No	Activities	Status
III	**Green bonds**	
a	White Paper/concept note on Green Bonds	Completed
b	Organization and participation of events on Green Bonds	Completed
c	Outreach to potential anchor institutions, speaking with merchant bankers, multilateral agencies, etc.	Completed
d	Establish network with international investors, documentation of discussions and feedback and schedule meetings with IREDA, TCCL and other FIs. TCCL and or other potential FIs	Completed
e	Execution of MOUs/Agreements between IREDA /TCCL/other FIs and International Investors and International Financing Institutions	MOU with IIFCL signed; MOUs shared with IREDA, Yes Bank and PFS for Signing
f	Secure in-principle approval for launch of Green Bonds from at least one of the four institutions: IREDA, IIFCL, PFS and YES Bank	Ongoing
g	*Phase- I: Creating awareness with investors & issuers*	
g.1	Summary notes on the roundtables	Completed
g.2	Summary report on highlights of the GIIC event	Ongoing
g.3	Final paper on 'India Opportunity'	Ongoing
h	*Green Bond Issuance*	
h.1	MOU signed with at least 1 issuer	Ongoing
h.2	Bond issuance Program Design completed	Ongoing
h.3	Green certification for at least 1 bonds issue	Ongoing
h.4	Investor connect for 1 potential issuer completed, including brief presentation	Ongoing
h.5	Engagement of all necessary service providers completed for 1 investor	Ongoing
h.6	At least 1 Green Bond issuance	Ongoing
IV	**Decentralized Renewable Energy-Community Fund (DRE-CF)**	
a	Presentation on the Fund to CREDA	Completed
b	Prepare concept note (for CREDA) and presentation to corporates for CSR contributions)	Completed
c	MOU signing	Completed
d	Stakeholder workshop (for CREDA)	Completed
e	Road shows and meetings for raising awareness amongst corporate and raising first round of capital	Completed
f	Defining the internal rules, systems, procedures and institutional structures of the fund within CREDA	Dropped

S.No	Activities	Status
g	Structuring of programs for which the CSR funds will be routed	Dropped
h	Hand holding support	Dropped
i	Dissemination Strategy Paper	Dropped

Brief description of activities this year:

- **Off-grid Debt Fund**:
  - Currently, TCG is in the process of completing the formalities with the host of the Off-Grid Fund facility, namely Oiko Credit and its Indian counterpart, Maanaveeya Development and Finance Pvt. Ltd. The future requirement of the TA from the Program by TCG will be decided after the launch of the fund.

- **Green Bonds:**
  - Undertook the finalization of scope of work with IREDA, IIFCL, Yes Bank and PFS.
  - Discussed the concept of hedging cost reductions with IREDA. IREDA requested for assistance for greening of the tax free bonds planned for issuance in the third quarter.
  - Held detailed meetings and prepared proposal for greening of the instrument.
  - Held discussions with IIFCL which confirmed its interest to work on Green Bonds during May- June 2016.
  - PFC expressed its interest to IIFCL to become an anchor investor for green bonds earlier. However PFC informed to currently develop its own green bond. IIFCL informed that they will actively participate in events/ forums on green finance anchored by USAID and remain actively interested in the TA offered by the Program.
  - IREDA's board of directors approved execution of MOU with USAID for Green Bonds-related TA. However, MNRE has not cleared the file despite several follow up attempts.
  - Finalized the MOU for execution between USAID and YES Bank, subsequent to the USAID's meeting with YES Bank in Mumbai on Green Bonds, Development Credit Assistance and IDF-MF. USAID submitted the MOU to Yes Bank for execution.
  - Held discussions with the Climate Bond Initiative on Green Bonds. Based on Climate Bond Initiative's ongoing discussions with a few Indian banks and international investors, the Program decided to engage Climate Bond Initiative to work closely with Indian Bank for issuing at least one Green Bond for investment in RE projects.
  - Held three roundtables in April and May with potential GIIC participants and other stakeholders (regulators and ministries). The objective of the roundtables was to create awareness among institutional lenders and investors, RE developers, EE companies and IR about the use of Green Bonds as a source of financing and to discuss specific issues related to issuing green bonds issuance. GIIC India event was held on June 30, 2016 in

London. This event gave Indian Green Bonds issuers a platform to interact with international investors. (12 issuers from India were present at the event).
    - Created a company investment profile and presentation template for GIIC participants.

- **Infrastructure Development Fund – Mutual Fund (IDF-MF):**
    - Signed the MOU between USAID and IAMCL to provide TA to the latter for increasing investment in RE sector in the country by USD 665 million through the IDF-MF instrument.
    - Held further meetings with investors of various classes including Sean Kidney, Climate Bond Initiative to discuss the investment opportunity for international investors.
    - Undertook discussions with IREDA and PFS to gauge the interest of FIs to invest into the instrument. Based on feedback from IIFCL, the Program is trying to attract tax free bonds issued by financial instrument to invest into IDF-MF.
    - Held discussions with YES Bank which revealed that it is also planning to design and launch an IDF-MF for financing CE projects and is awaiting approval from Reserve Bank of India.
    - Held further discussions with IIFCL. IIFCL remains committed to green IDF issuance but suggested to resume work on it after February 2016. IIFCL's second tier of IDF ran into some difficulties due to low investor interest.
    - No activities undertaken in the last quarter.

- **DRE-CF**:
    - Held meetings with IndiGo and Bank of America (BOA) in which the DRE-CF concept was shared. Both the organizations expressed interest in contributing to DRE-CF.
    - Submitted proposals to that effect to both IndiGo and BOA.
    - Provided clarifications to the BOA on the concept note on the DRE-CF fund for onward submission to its Board of Directors for the upcoming Board meeting. BOA's Board meeting was held in the week of November 2015.
    - Delivered a presentation to BOA on the DRE-CF fund.
    - BOA expressed its inability to support the idea and thereafter discussions were undertaken on other potential ideas. BOA found the Program's work in Bihar interesting and has requested for a concept note on the same.
    - The Program decided not to pursue this activity.

Challenges/risks: The success of the proposed mechanisms depends completely on the buy-in of the partners. For Green Bonds, the hedging costs for Euro and Masala Green Bonds and discernible yield benefits of a green issue v/s. vanilla bond remain a key challenge. Although there are a few examples (Export Import Bank of India) where green bond issuers have seen small yield benefits of issuing Green Bonds, we should wait for a large sample size to make any conclusions of the yield benefits. Further, there are delays due to slow movement by FI's on signing the MOU despite finalizing the scope of assistance required by them.

Support required from USAID: Request support from USAID to follow-up with YES Bank and IREDA and finalize the MOU for execution.

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

30,000 person-hours of training will be provided under the Program to meet the objectives of the interventions discussed in tasks 1-3, 5 and 6.TA to National Institute of Solar Energy to Establish and Sustain the Solar Energy Training Network (SETNET)

Objective: The objective of SETNET is to build skills and capacities to ensure the availability of qualified solar energy professionals to meet the national solar deployment targets. The aim is to provide a structured platform to NISE for solar-related technical and business training by building a strong network of qualified and trained professionals for the booming solar industry.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- One organization with improved capacity to address CE issues (NISE)
- One new institution established to address CE issues (SETNET)
- 10,000 person-hours of technical training

Status of work-plan activities and deliverables: The Program conceptualized SETNET in Year 2 and worked in collaboration with NISE to deliver market-based business mode training. It supported NISE to organize six training programs including a training of trainers (TOT) program.

The Program also provided TA to NISE to manage the partner selection process with a call for EOI that elicited 101 responses and participated in the evaluation committee meeting that reviewed the EOIs and short-listed partner organizations. The Program established SETNET, developed an operational strategy and facilitated the formation of Curriculum and Content Development Team (CCDTs) to develop outlines for training programs.

The Program contracted the CII-GBC to undertake a TNA under SETNET. As a part of this initiative, it developed an inception report, did a pilot survey of eight-ten companies and prepared a preliminary findings report. It also finalized the themes for the training programs for developing the QPs under the NOS, in discussions with SCGJ and NISE. The Program also engaged with the NRDC and SCGJ and shared the preliminary findings of the ongoing work (survey) in order to avoid any duplication of efforts, since NRDC and SCGJ had commissioned the TNA similar to the Program's TNA.

S.No	Activities	Status
a	Facilitate NISE to select SETNET partner institutions	Completed
b	Developing an operational strategy	Completed
c	Conduct a partner consultation	Completed
d	Form and facilitate CCDTs to develop training materials for at least one (1) training program (5 day training program)	Completed
e	Initiate TNA	Completed

S.No	Activities	Status
f	Summary Report – Pilot Studies	Completed
g	Launch SETNET with organization of first training	Completed
h	Facilitate organization of industry interface	To be rescheduled after discussion with NISE
i	Release TNA report	Ongoing

Brief description of activities this year:

- Contracted CII-GBC to undertake the TNA under SETNET. CII-GBC prepared an inception report and submitted it to the Program for its review.
- Organized the first meeting of the TNA task force on October 27, 2015. The task force provided its expert guidance to CII in meeting the goals of the TNA initiative. It also validated the findings of the research done by CII and provided its valuable inputs.
- Discussed with CII as regards engagement with the solar companies for survey responses and for completion of the pilot survey of 8-10 companies.
- Met with the Sector Skill Council for Green Jobs (GJSSC) and finalized the areas to collaborate on TNA.
- Discussed on the modus operandi on the ongoing survey with the solar stakeholders under the TNA.
- Met with NISE and GJSSC and agreed to work with NISE on the outline for the QPs for the NOS for Bhaskar Program, Konark program and Varun Program.
- Urged the NRDC to share its findings of the ongoing work in order to avoid any duplication of efforts.
- Participated in the meeting convened by GJSSC where NRDC and the Program shared their preliminary findings of the TNA carried out for the solar sector. NRDC informed that the report will be ready by February 2016.
- Finalized the Table of Contents of the Phase I Survey Report under the TNA.
- Completed the pilot survey report under the TNA initiative by end of December 2015.
- Submitted the pilot survey report and the Phase I of the survey report under the TNA after holding in-depth consultation with more than 50 solar companies.
- Continued to engage with solar industry experts under the TNA.
- Met SCGJ for finalizing the TA for developing the training manual for Surya Mitra.
- Engaged GSES to develop the training manual for Surya Mitra.

Challenges/Risks: The delay in completion of the TNA is due to similar assignments launched by NRDC and SCGJ. Under the instructions from MNRE, NISE had withheld the SETNET process to develop the QPs and NOS for implementing the training programs under the SETNET. The Program will continue to work closely with NISE and SCGJ and develop the relevant QPs and NOS for standardizing the training programs under development.

Support required from USAID: No support is required from USAID.

Support to AREAS:

The Program is providing support to partner states covering activities in the following key areas: solar rooftop development, RPO compliance monitoring and standard terms for tenders by SNAs. During the project review committee meeting, MNRE proposed that the key learning and the experience gained through these activities can be shared with several other SNAs so as to benefit larger section of SNAs across the country. Accordingly, the Program was invited to make presentations and share its experiences with SNAs at AREAS workshop in Pune.

In the reporting period, the Program undertook the following activities:

- Developed two background papers on "RPO-CMR" and "Development of Vendor Policy Manual".
- Prepared detailed presentation on the above mentioned two themes.
- Participated in AREAS workshop and gave detailed presentation on the above mentioned themes.

TA in Developing a 1.5 Day Training Program on Solar Rooftop for Utility Engineers

Objective: The SETNET, developed by the Program in collaboration with NISE, provides an appropriate institutional framework for the deployment, replication and scale-up of structured training programs for capacity building and institutional strengthening to support the solar initiative of the country. In view of above and for utilities to play a facilitating role in deployment of solar PV based rooftop systems, the Program has developed a unique '1.5 Day Regional Training Program on Solar Rooftop for Utility Engineers' with the following two fold objectives:

1. To provide basic information and overview on technology, policy, regulatory framework and business models on solar rooftop.
2. To provide specific information on grid interconnection process, relevant standards and safety requirements for interconnection and customer interface and process management for grid-connected solar rooftop system.

Intended results:

Specifically, the TA is expected to result in the following by the end of 2017:

- SETNET partners or other qualified training organizations with improved capacity to train utility engineers for grid-connected solar rooftop systems.
- Capacity building of the utilities in different states for successful implementation of solar rooftop program.
- Roll out of five (5) training programs in across various geographical regions of the country.
- 3,600 person-hours of technical training.

Status of work-plan activities and deliverables:

S.No	Activities	Status
a	Development of course curriculum and program strategy	Completed
b	Development of power point presentations for seven (7) training sessions	Completed
c	Packaging of power point presentations for all training sessions	Completed
d	Development of Handbook for Utility Engineers	Completed
e	Development of Trainer's Manual	Completed
f	Organizing first pilot training at JVVNL, Jaipur	Completed
g	Organizing second pilot training at Kolkata	Completed
h	Organizing third pilot training program at Punjab	Completed
i	Organizing fourth pilot program at Hyderabad	Completed
j	Organizing fifth pilot program at Lucknow	Completed
k	Development of QPs and NOS	Completed
l	Organization of one TOT Program	Sept 2016

Brief description of activities this year:

- Met SCGJ to obtain information and decide next steps on development of QPs and NOS.
- Contracted Deepankar Bishnoi, Solar Expert for development of QPs and NOS for the training program
- Developed and finalized the course curriculum and training program strategy, modules for all sessions after incorporating the internal feedback and suggestions, handbook for utility engineers, trainer's manual, learner's manual, roll out plan for the training program, QPs and NOS and packaged the modules of the sessions of the training program.
- Initiated discussions with the host utilities and SETNET partners for organization of the training program.
- Followed up with Rajasthan, West Bengal, Punjab, Uttar Pradesh, Andhra Pradesh and Maharashtra for finalizing dates of the training program in their states.
- Organized Five Regional Training Programs titled "Implementation of Solar Rooftop by Utilities" in Jaipur (Rajasthan), Kolkata (West Bengal), Ludhiana (Punjab), Hyderabad (Telangana) and Lucknow (Uttar Pradesh).
- Trained a total of 281 utility engineers accumulating 2,748 person hours of training.

Challenges/Risks: No challenge envisaged at this point in time.

Support required from USAID: No support is required from USAID at this point in time.

TA in Developing a Five (5) Day Entrepreneurship Development Program (EDP) on Solar rooftop for Entrepreneurs

Objective: The SETNET, developed by the Program in collaboration with NISE, provides an appropriate institutional framework for the deployment, replication and scale-up of structured training programs for capacity building and institutional strengthening to support the solar initiative of the country. In the view of above, the Program has developed a unique 'Five (5) Day Residential EDP on Solar Rooftop for Entrepreneurs' with the following two fold objectives:

1. To provide basic information and raise awareness amongst entrepreneurs on the following:
   - Concept, design and components with specific focus on technical architecture of solar rooftop system/project.
   - Policy and regulatory framework for solar rooftop at the national and state level.
   - Different implementation/business models followed in the solar rooftop market and role of stakeholders.
2. To provide specific information to the entrepreneurs and project managers on the following:
   - Solar rooftop project costing and financing.
   - Preparation of feasibility report, tenders, and techno-economic reports.
   - Solar rooftop project management: Procurement, contract management, financing and work scheduling.

The five (5) day EDP modules will also be developed with a feature to have three (3) day and two (2) day training modules.

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- SETNET partners or other qualified training organizations with improved capacity to train entrepreneurs.
- Capacity building of entrepreneurs in the solar rooftop sector.
- 4,080 person-hours of technical training (including one TOT).

Status of work-plan activities and deliverables:

S.No	Activities	Status
a	Development of course curriculum and program strategy	Completed
b	Development of power point presentations for twenty-two (22) training sessions	Completed
c	Packaging of power point presentations for all training sessions	Draft Completed
d	Development of Handbook for Entrepreneurs	Draft Completed
e	Development of Trainer's Manual	Completed

S.No	Activities	Status
f	Development of QPs and NOS	Completed
g	Organization of one TOT Program	Sept 2016
h	Organization of three pilot trainings	Ongoing

Brief description of activities this year:

- Met SCGJ to obtain information and decide next steps on development of QPs and NOS.
- Contracted Deepankar Bishnoi, Solar Expert for development of QPs and NOS for the training program
- Constituted and convened the technical committee to deliberate on the structure and modules of the training program.
- Developed and finalized the course curriculum and training program strategy, modules for all sessions based on the feedback received by the members of the committee, handbook for utility engineers, trainer's manual, learner's manual, roll out plan for the training program, QPs and NOS and packaged the modules of the sessions of the training program.
- Developed the five day training program with the view of being able to deploy the training program as a modular training program (one three-day training program and one two-day training program).
- Organized the first five-day training program on solar rooftop titled "Five (5) Day Residential EDP on Solar Rooftop" on May 16-20, 2016 at National Institute of Solar Energy (NISE), Gurgaon.
- A total of forty-six (46) participants were trained across 12 states accumulating 1,840 person hours of training.

Challenges/Risks: No challenges envisaged at this point in time.

Support required from USAID: No support is required from USAID at this point in time.

TA in Developing a One Day Training Program on Solar rooftop for Bankers

Objective: The SETNET, developed by the Program in collaboration with NISE, provides an appropriate institutional framework for the deployment, replication and scale-up of structured training programs for capacity building and institutional strengthening to support the solar initiative of the country. In the view of above, the Program has initiated development of a unique 'One (1) Day Training Program on Solar Rooftop for Bankers' with the following objectives:

The primary objective of the proposed training program is to develop comprehensive capacity amongst bankers and FIs to appraise and finance commercial and industrial solar rooftop projects. The specific objectives of the training program would focus on working with the bankers and the FIs to develop the following:

- Basic understanding of the solar rooftop sector in India, the market structure, business models prevalent in the sector and the policy and regulatory framework for solar rooftop project development.
- Key technical, policy, regulatory, commercial and implementation challenges facing solar rooftop projects and mechanisms to address these.
- An improved understanding of the key parameters that drive the viability and sustainability of commercial and industrial solar rooftop projects.
- Enhanced understanding of the various business models for solar rooftop and the technical architecture and commercial arrangements of commercial and industrial solar rooftop projects.
- Categorization of key risks associated with the solar rooftop projects to make informed credit decisions.
- Evaluation of the techno-commercial proposals and sanctioning of the loans.

Intended results:

Specifically, the TA is expected to result in the following by the end of 2017:

- SETNET partners or other qualified training organizations with improved capacity to train bankers.
- Capacity building of bankers in the solar rooftop sector.

Status of work-plan activities and deliverables:

S.No	Activities	Status
a	Development of course curriculum and program strategy	Completed
b	Development of power point presentations	Ongoing
c	Packaging of power point presentations for all training sessions	Ongoing
d	Development of Handbook for Bankers	Ongoing
e	Development of Trainer's Manual	Ongoing
f	Development of QPs and NOS	Completed
g	Organization of one TOT Program	Sept 2016

Brief description of activities this year:

- Initiated discussions on the 'Two (2) Day Training Program on Solar Rooftop for Bankers and Financers'.
- Developed the concept note and agenda for a 'One (1) Day Training Program on Solar Rooftop for Bankers and Financers', to be organized in partnership with IREDA.
- Developed QPs and NOS for the banker's training program.

Challenges/Risks: No challenges envisaged at this point in time.

Support required from USAID: No support is required from USAID at this point in time.

Study Tour to the U.S.

The Program, in partnership with MNRE, organized a U.S. study tour from April 3-13, 2016 that focused on development and deployment of new and innovative applications of RE technologies. Heads of electricity regulatory commission (ERCs), state nodal agencies (SNAs), MNRE and utility officials participated in this study tour. The meetings and the site visits organized during the study tour provided the participants with access to best practices in the area of RE deployment with a focus on energy storage technologies, solar rooftop development, large-scale RE, and facilitate networking opportunities between U.S. and Indian stakeholders. Representatives from central and state government participated in the study tour and met with a range of international stakeholders such as SECI, District of Columbia Sustainable Energy Utility, American Council of Renewable Energy, U.S. DOE, National Renewable Energy Laboratory, California Energy Commission and Sacramento Municipal Utility District. In addition to that, participants also visited private utilities such as Primus Power, Sun Power and Pacific Gas and Electric Company. A total of eight (8) senior officials were part of the U.S. study tour.

Brief description of activities this year:

- Developed and finalized the concept note and the budget, draft letters to MNRE and DOE seeking their approval for participants, list of participants, presentation on learning objectives and travel advisory, agenda and site visits with confirmation, pre-departure information manual and presentations for the pre-orientation meeting, training manual for the RE study tour, wherein the information related to meetings/field visit, details about the organization with whom meetings will be done - their roles and responsibilities, programs, etc., is provided, other relevant documents such as the feedback form and sign-in sheet for the monitoring and evaluation purpose.
- Mailed invitation letters to the nominated participants and followed up with the participants for their confirmation.
- Prepared a detailed responsibility matrix between the PACE–D TA Program team and the Nexant U.S. team.
- Engaged a U.S. visa expert to assist participants.
- Completed all visa formalities and participants review package including documentation related to medical history, passport details, insurance, etc.
- Arranged all logistics and accommodation for the participants.
- Provided information to the participants on ticketing, logistics, etc.
- Participated in the study tour with the participants of central and state officials;
- Conducted meeting at various locations as specified in the agenda. Tour delegates met with relevant organizations at the federal, state and municipal levels.
- Captured insights from the meetings and prepared notes during the meetings and field visits.
- Trained a total of eight (8) participants accumulating a total of 384 person hours of training.
- Finalized the U.S. study tour report and shared the same with USAID.

Third Knowledge Exchange Program for States, Bengaluru

The Program organized the 'Third Knowledge Exchange Workshop for states' at Bengaluru during June 30-July 01, 2016. The workshop covered various thematic issues including RE hybrids, RPO-CMR, solar rooftop program implementation, solar irrigation pump-sets program for agricultural sector, EE policy & regulatory framework, building EE etc. In addition, the Program also organized the field visit during the workshop. Besides four (4) partner states, the workshop was also attended by the state agencies such as State Designated Agencies/SNA, distribution utilities of a few other neighboring states such as Andhra Pradesh and Kerala.

Brief description of activities this year:

- Finalized the concept note and the agenda for the workshop.
- Prepared a list of invitees from partner states and other neighboring states.
- Prepared invitation letters for speakers, guests as well as participants.
- Followed up with participants as well as speakers to seek their confirmation for the workshop.
- Supported in making necessary lodging and boarding arrangements.
- Supported in finalization of field visits and logistic arrangements.
- Prepared background papers and presentations to be delivered during the workshop.
- Participated in the workshop.

In the next quarter, the Program will prepare the proceedings of the workshop highlighting the key learnings of the workshop.

Task 6: Microfinance Support Program (MSP)

MSP: TA to Microfinance Institutions for Clean Energy Lending

Objective: The PACE-D TA Program's MSP component aims to enhance lending for CE deployment through microfinance. It aims to achieve this objective by:

- Creating a TA Package for MFIs for lending to the rural poor for CE
- Rolling out of the TA Package with identified partners
- Creating linkages between RE Suppliers and MFIs
- Policy advocacy to address the policy barriers that MFIs face while lending for RE

Intended results: Specifically, the TA is expected to result in the following by the end of 2017:

- Five MFIs with improved capacity for CE deployment
- Two product suppliers with improved capacity for partnering with MFI institutions on CE deployment
- 8,000 person hours of training provided
- USD 5 million leveraged

Status of work-plan activities and deliverables: In Year 4, the Program undertook the following activities:

- Business Plan Development
- Operational Plan Development

- Training and Capacity Building
- Pilot Implementation
- Investment Showcase
- Technology Showcase
- Market Research
- Development of Aggregator and Agent Business Models
- Support for Scaling Up
- Phone Survey of End-Users
- Development of Manuals and Policy Paper
- Exploration for Establishment of MFI RE Network

The table below lists the details of deliverables/activities planned:

S. No.	Activities	Status
I	**TA Component 1: Financing Retail CE Products and Services**	
a	Identification and shortlisting of potential MFI partners	Completed
b	Assessment and finalization of MFI partners	Completed
c	Identification and shortlisting of energy product/service providers	Completed
d	Business plan development with selected MFIs	Completed
e	Preparation of operational plan development with selected MFIs	Completed
f	Partnership formation between MFIs and energy product/service providers	Completed
g	Identification of training needs and development of training modules	Completed
h	Training for MFIs, intermediaries and end-users	Completed
i	Pilot implementation	Completed
II	**TA Component 2: Financing Micro-Grids based CE Services**	
a	Identification and shortlisting of potential MFI partners	Completed
b	Assessment and finalization of MFI partners	Completed
c	Identification and shortlisting of micro-grid partners product/service providers	Completed
d	Business plan development with selected MFIs	Completed
e	Preparation of operational plan development with selected MFIs	Completed
f	Partnership formation between MFIs and micro-grid partners service providers	Completed
g	Pilot implementation	Completed
III	**TA Component 3: Activities Related to Recommending Off-Grid Policy and Institutional Reforms**	

S. No.	Activities	Status
a	Preparation of a report highlighting experiences related to new implementation models and impacts on end users	Scheduled for 2017
b	Preparation of best practices manual for energy lending	Ongoing
c	Preparation of a paper for inputs for policy on microfinance for CE deployment	Ongoing
IV	**TA Component 4: Scaling Up**	
a	Scale-up of CE lending by selected MFIs	Ongoing
b	Phone Survey	Ongoing
V	**TA Component 5: Leveraging Investments**	
a	Investment Deck	Completed
b	Establish MFI RE Network	Ongoing
c	Investor Roundtables	Completed
d	Partnerships between MFI & Investors	Completed
VI	**TA Component 6: Outreach and Communication**	
a	Outreach and Communication program	Ongoing
b	Informal Microfinance and Energy Network	Ongoing

Brief description of activities this year:

- Completed business plan development and operational design for seven (7) MFIs namely SVCL, Saija, Sarala, ESAF, Swayamshree, BASIX (Vayam) and MSF with the following results:
  - 4 partners have implemented energy lending (ESAF, Sarala, Saija, SMCS)
  - 1 partner has set up micro-grid (Vayam)
  - 1 partner has secured approval from a bank for debt towards a solar pumping based micro-gird (MSF)
- Organized a total of 64 training programs accumulating 7,286.50 person training hours taking the total achievement to 77 training programs and 8,576 person training hours with 56% being participation from women.
- Facilitated the sale of 184,693 CE products through MFIs, across nine Indian states, with 100% women loan clients.
- Leveraged USD 6.4 million in loans disbursed and cash sales in the reporting period taking the total figure of funds leveraged in this segment to USD 6.6 million

- Leveraged USD 7.2 million (INR 46 cr) in investments (The Rockefeller Foundation and Schneider Foundation grants to Vayam, RBL debt investment in MSF; Milaap debt investment in SMCS; DWM debt investment in Saija; IntelleGrow debt investment in Sarala (not specifically earmarked for energy); Blue Orchard debt investment in Saija (not specifically earmarked for energy).
- Developed a Phase II plan as a part of the implementation of the MSP which includes three new components i.e. scaling up TA for the partner MFIs, creating an investor platform and outreach and capacity building to share MFI energy lending successes with other Indian MFIs.
- Developed the work plan for implementation of the Phase II of MSP for the next twelve months. The activities related to leveraging investment have been already initiated since October 2015.
- Developed and produced the new MSP brochure which documents the objective, approach, implementation journey, partnerships and impacts of MSP.
- Continued to support the MFI partners in implementing their business plans which includes:
    - Sarala
        - Supported Sarala in exploring strategic application of agent model to expand energy program to non-microcredit clients in Kolkata. In May 2016, Sarala rolled out 'Solar Ambassador Training' in identified branches to create awareness among selected set of clients who are engaged in micro-enterprise and could potentially be recruited as agents. These trainings helped Sarala to have a better understanding of demand and undertake feasibility analysis of agent model. Pilot of agent model will start in July 2016.
        - Helped Sarala to conduct four 'Front-line Staff Trainings' on sales and marketing of energy products. These trainings helped Sarala loan officers reflect on their existing sales process, identify gaps and plan for improvements in the sales and marketing process. These trainings were also used to develop action plans and goals for the energy lending program for each branch for FY 2016-17.
        - Engaged with Sarala to explore the viability of the "Aggregator Model", under which it intends to provide extended credit in the form of energy products to small Non-governmental Organizations (NGOs) and MFIs. These NGOs and MFIs will sell energy products to their clients and share trade margin with Sarala. Detailed planning and piloting is scheduled to occur from Sept. 2016.
        - Coordinated a due diligence visit of Sarala for IntelleGrow which resulted in Sarala raising debt of USD 0.6 million (INR 40 million) for its micro-credit program.
    - Saija
        - Facilitated Saija in initiating energy lending in UP and Jharkhand in partnership with d.Light.
        - Helped Saija introduce new energy products, mini solar home systems and solar fans, and conducted trainings of staff to promote CE product sales.
    - ESAF

- Prepared three (3) year projections for ESAF and a comparative analysis of energy sales.
- Supported ESAF to develop a MOU in order to develop partnerships with other MFIs under its aggregator model.
- Helped ESAF identify suitable partners for the aggregator model and move forward towards implementation.

- Swayamshree
  - Rolled out the pilot for Swayamshree, and completed the MOU signing between SVCL, Green Light Planet and d.Light in Behror branch in Rajasthan.
  - Conducted market research to assess demand for energy among Swayamshree clients.
  - Supported Swayamshree implement pilot across 18 branches under which a total of 2,668 solar lanterns were sold as of July 31 2016.
  - Supported Swayamshree in raising investment from Milaap in two tranches. The first round of funding allocated was INR 3.4 million. Milaap subsequently released an additional INR 6.9 million, taking the total funding provided to SMCS to INR 10.3 million.
  - Planned to work with Swayamshree to update its energy finance business plan for the scale up phase.
- SVCL
  - Conducted market research to assess demand for energy among SVCL clients.
- MSF
  - Supported MSF in conducting a preliminary site assessment and focus group discussion for the solar water pumping project in Bolangir, Odisha. The focus group was done with a set of 27 households who will be the beneficiaries of the solar water pump.
  - Proposed two solar water pumps of 2 horsepower size each for a village, benefiting 27 households with a farm size of 15 acres around the village. The village is situated in the severely drought prone region of Bolangir in Odisha.
  - Ensured that the project incorporates the National Bank for Agriculture and Rural Development's subsidy on 'Solar Irrigation Program' and conveyed to both the bank partners i.e. IDBI and RBL. MSP team worked with Claro, the product supplier, in supporting the engagement with RBL.
  - Facilitated RBL's site visit to assess the feasibility of the solar water pumping cluster project in the Kalahandi, Bolangir and Koraput Region (widely referred to as KBK region) of Odisha for MSF. RBL subsequently approved the loan subject to a matching fixed deposit (FD) amount to be provided by MSF in the RBL account. This FD will be released over time matching the release of capital subsidy from the government.
  - Helped MSF to pitch the micro-grid project to IDBI, which agreed to provide funding without the need for the FD collateral. The meeting with the IDBI bank manager was led by the Program working with MSF in Bhubaneswar.

        - Planned to commission the MSF pilot once the money from IDBI is released to Claro Energy, the product partner. The funds are expected to be released by October 2016.
    - Vayam
        - Supported Vayam in completing the installation of the first micro-grid in Gaya, Bihar. The 8.4 kW micro-grid began supplying electricity to 44 households.
        - Supported Vayam to procure equipment for the micro-grids in Gaya. The Program guided Vayam in designing baseline surveys, structuring agreements with entrepreneurs, and building the team's capacity for the procurement of the equipment. After the change in the management, the Program helped the Vayam's new management understand the market context, assess the impact of past activities, and re-examine the organization's strategies.
    - Other
        - Supported three partners--Saija, Vayam and MSF--prepare the EOI for the PACESetter Fund. Each of these proposals was chosen for the second round. The Program worked closely with Saija in preparation of the final proposal. It visited client sites in Chapra, Bihar and identified several entrepreneurs suitable for the model. A mini survey was also conducted to gather energy-related data from households in the vicinity of the entrepreneur. The Program also reviewed the final proposal prepared by Vayam. Assisted Vayam and Saija in preparing the presentation for the selection committee of the PACESetter fund. Based on a request from the partner MFIs, the Program attended and presented Vayam and Saija's proposals to the selection committee.
- Prepared final reports on the market research in two states, Odisha and Uttar Pradesh.
- Conducted consultations with key players in the microfinance sector on the draft policy paper prepared by the Program.
- Organized the first Investor Roundtable on December 8, 2016 in New Delhi with participation of 14 unique institutions. The objectives of the event were to:
    - Showcase the energy lending program of three PACE-D MFI partners.
    - Identify their investment needs and introduce potential investors to these partners.
    - Seek feedback from investors.
    - Support MFI partners in becoming investor-ready and address investment due-diligence requirements.
    - Connect, establish and build relationships with potential investors.
    - Support partners in preparing investor decks to introduce their programs and identify investor requirements from investors.
- Organized an event in Trichy, Tamil Nadu to showcase the ESAF aggregator model.
    - Sixty NGOs and MFIs attended the event. The day-long event was moderated by the Program.
    - The event included an introduction to ESAF aggregator model, product showcase and one-on-one meeting between ESAF and the potential partners.
    - The Program worked with ESAF to prepare term sheet for all the energy products on offer to partners. It also prepared an event report which was submitted to USAID.

    - Twenty one-on-one meetings between the NGOs and ESAF took place at the event.
- Organized the second Investor Roundtable on February 29, 2016 in Mumbai.
    - The Program helped MFI partners showcase their potential for energy lending and plans to scale up energy lending operations at an Investor Roundtable organized at the Trident Hotel in Mumbai in February 2016.
    - The Investor Roundtable facilitated several dialogues between investors and MFI partners, on how MFIs can create a pipeline for investors and mechanisms of investment that is most suitable to help the MFIs achieve scale in promoting CE solutions to the rural poor.
    - Investors largely wanted to understand the potential risks associated with energy lending. The investors engaged in multiple discussions with the Program's MFI Partners during and beyond the investor roundtable.
    - Sarala and IntelleGrow were introduced to each other at the Mumbai Investor Roundtable, leading to the due diligence and investment in Sarala by IntelleGrow.
    - The Program support in facilitating the investment was acknowledged by IntelleGrow in an email to the team.
    - Participants from the investor community included International Finance Corporation, Global Environment Fund, Yes Bank, Grameen Capital, Acumen Fund, TripleJump, IntelleGrow, etc.
    - The Program prepared an event report and submitted it to USAID.
- Organized the second Product Showcase on March 1, 2016 in Mumbai.
    - The Product Showcase was organized in response to the requests from the MFI partners who, after the successful launch of their energy lending pilots, showed interest in learning about new products available in the market.
    - Firms such as Frontier Market, Dharma Life, Mitwa, ONergy, Biolite, Greenway Grameen Infra and Envirofit presented their CE product range including solar home lighting systems, cook stoves, etc.
    - MFIs partners were particularly keen on exploring the clean cookstove space since they are witnessing a lot of demand in their client base for clean cookstoves.
    - The Program prepared an event report and submitted it to USAID.
- Conducted an investor forum in Mumbai at the Sankalp conference on April 20, 2016 and participated in the energy lending session on Day 1 of Sankalp.
    - The roundtable was hosted by Shakti Sustainable Energy Foundation and Intellecap with the intent of facilitating a stakeholder consultation on "Enhancing Capacity to Accelerate Off-Grid Energy, WG on TA for FIs" at the Sankalp pre-launch event. The Program was invited to be on the panel.
    - During the panel discussions, the Program highlighted the following points:
        - Showcased the investment opportunity in MFI energy lending programs through the progress with the seven MFI partners.
        - Described the activities of the MSP component of the Program, its achievements and what MSP validates about MFI based energy lending programs can help address energy access.
    - Networked with potential investors on behalf of MFI partners and facilitated introduction with MFI partners. One such introduction was between DWM and Saija, which subsequently resulted in an energy specific debt investment from DWM in Saija.

- Supported Sarala to help raise investments by organizing an Investor Roundtable and Banker's Meet in Kolkata on June 3, 2016.
    - Showcased the investment opportunity in Sarala energy lending programs.
    - Helped Sarala investors, both existing and prospective, learn about and discuss Sarala's last FY performance (operational and financial).
    - Helped investors understand the various energy lending processes at Sarala and assess its potential.
    - Presented investment opportunities at Sarala over 3-5 years and described the investment mechanisms that would be most suitable to help Sarala achieve scale.
    - Facilitated consultations between investors and Sarala and accelerate the process of investment into Sarala.
- Phone Survey:
    - Completed 400 calls to Sarala clients.
    - Completed 250 calls to Saija clients.
    - Ongoing calls to ESAF energy clients under the survey.

Challenges/risks: Some partners are now thinking about reaching out to non-clients. MSP has identified a model through which the partners can service non-clients (e.g. ESAF aggregator model and Sarala Village Level Entrepreneur model where they can use their existing clients as sales agents). These models are not common in the MFI space and represent a challenge as well as an opportunity.

Several MFI partners have not been able to fully focus on their energy lending programs due to other factors. SVCL and ESAF have both experienced delays in making progress with their energy programs. SVCL has nominated a dedicated focal person on energy as it was for the person hired for energy to join. ESAF is focused on transitioning into a bank and is likely to focus on the energy program in a more sustained way once the challenges of becoming a bank have been addressed.

Support required from USAID: USAID support will be required to facilitate engagement with relevant policymakers in Government to review the policy dimensions of MFI based energy lending programs.

DEVELOPMENT RESULT 3: ADOPTION AND ACCELERATED DEPLOYMENT OF CLEANER FOSSIL TECHNOLOGIES AND MANAGEMENT PRACTICES TO ACHIEVE SUPPLY-SIDE EFFICIENCY FROM EXISTING FOSSIL POWER GENERATION

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

Activities under the task were completed in October 2014.

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

Activities under the task were completed in October 2014.

OTHER ACTIVITIES AND MANAGEMENT SUPPORT

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

Seven (7) meetings of the U.S. Inter-agency Secretariat were organized in the reporting period. The participants provided updates on their respective activities, initiatives and meetings. The meetings were held on August 13, 2015, November 6, 2017 (hosted by USAID), December 18, 2015 (hosted by the Economic, Environment, Science, and Technology), January 29, 2016, February 26, 2016, April 29, 2016 and May 26, 2016. Interagency meeting was not held in September 2015 due to unavailability of most participants.

For the first time, the PACE interagency meeting was held in PACE-D TA Program office on May 26, 2016 which provided a platform for the PACE-D technical team to interact with PACE members.

As part of the Secretariat Function, the Program:

- Developed the PACE Annual Report that provides a yearly round up of key activities under the PACE initiative. The report was circulated at the U.S.-India Energy Dialogue held in the U.S. during September 2015.
- Developed and circulated the PACE Newsletter in January 2016 and May 2016. The newsletter highlights the CE activities done by the seven U.S. agencies working under the PACE initiative.

A staff delegation of the U.S. Congress visited New Delhi in February 16, 2016. The PACE-D TA Program hosted the delegation at one of their program partner's office and provided an overview of the Program and its key activities.

The Program is currently developing the PACE Annual Progress Report that provides a yearly round up of key activities under the PACE initiative.

Task 2: Strategic Planning, Assessment and Analysis

Activities under this task are aligned to activities in CLIN 1 and 2.

Task 3: Build Partnerships between US & Indian Institutions

Activities under this task are aligned to activities in CLIN 1 and 2.

Task 4: Establish Baselines (Monitoring & Evaluation)

Compliance Reporting: The following reports were prepared and submitted to USAID during the reporting period:

- TraiNet reports for each of the four quarters.
- Quarterly progress reports for each of the four quarters.
- Bureau of Oceans and International Environmental and Scientific Affairs (OES) Report for the period April – September 2015.
- MOU status reports for focal states were submitted in January 2016.
- Y3 Annual Report for the project was submitted on August 21, 2015.

Revision of M&E Plan and PMP: The Program revised its M&E Plan and PMP incorporating the indicators and definitions provided in the updated Global Climate Change Indicator Handbook as of June 2015 as well as the design of technical interventions as detailed in the annual work plans. The revised plan was presented to USAID on September 4, 2015. Subsequently, the previous draft of the revised M&E Plan was revised after incorporating the comments from USAID. The final version was submitted to USAID in December 2015.

Training Effectiveness Assessment (TEA): The TEA was completed and submitted to USAID during the Oct-Dec 2015 quarter.

Preparations for Mid-term Evaluation (MTE): USAID/India awarded Social Impact (SI), a US based organization, the contract to conduct the MTE for the Program. SI provides comprehensive M&E services across all sectors, including democracy & governance, health and education, economic growth, energy, environment and natural resource management, and conflict management. A three member SI team comprising of a Senior Evaluation Specialist (Team Leader), Ms. Melita Rogelj; Senior Energy Specialist, Mr. Kailash; an Energy Specialist, Mr. Juned Khan; an Evaluation Specialist; Ms. Carrie Huisman, arrived at New Delhi, PACE-D office on 19 January 2016 for the briefing. PACE-D implementation team completed all the necessary preparatory work for the MTE including setting up a separate Dropbox account for the MTE team to access all relevant documents beforehand. PACE-D team also facilitated the MTE team throughout the month by providing an overview of the Program, adequate administrative support from PACE-D New Delhi office and also assisted in scheduling of the meetings with stakeholders and the necessary follow ups, etc. The draft MTE report was shared by SI with USAID for their comments/feedbacks before final submission of the MTE report.

Preparation of the Program Target Matrix (PTM): The Program prepared and submitted the first draft of the PTM to USAID. The PTM has been developed by the Program which links the program activities with the program targets. It is a vital tool to track the progress on the Program achievements vis-à-vis its targets.

Preparation of MSP Tracker: The Program developed the MSP tracker that tracks the progress on MSP deliverables in terms of person hours of training disaggregated by gender, MFI wise type and number of training events, number of CE products sold disaggregated by MFIs and the amount of funds leveraged through the MSP initiatives.

Preparation of the PACE-D Training Dashboard: The Program prepared and submitted the first draft of PACE-D training dashboard to USAID which includes MSP as well as utility training programs since the inception of the Program. The training dashboard is capable of tracking the progress on PACE-D training programs in terms of person hours of training disaggregated by gender, development result wise tracking of the number and type of training events disaggregated by tasks/activities.

Framework for Systemic Collection and Analysis of Pre and Post Training Feedback: The Program designed the customized support documents such as the participant post-training feedback forms, participants pre-training assessment forms and customized signing sheets for variety of training programs. The Program anchored the systematic collection of the

session wise post-training feedbacks from all participants during the training programs and facilitated the deep dive pre-training assessment analysis and post training feedback analysis for the same.

Preparation of M&E frameworks for key interventions: The Program conducted initial monitoring field visits to the pilot sites in Gaya, Bihar i.e. shared service model for solar irrigation and Karnataka i.e. grid-connected solar pumping project (Surya Raitha Scheme) with a view to contribute towards the development of M&E framework for both the pilots. The initial trip reports and the subsequent development of the M&E framework will take place in the coming months. The Program is in the process of identifying key activities that warrant a M&E framework and a sustainability strategy post project period.

Task 5: Maximizing the Use of Local Partners and Enhancement of their Capacity

Activities under this task were dropped after discussion with USAID.

5. PROJECT MANAGEMENT

CONTRACTUAL ISSUES

In August 2015, the Program discussed the revised budget realignment submitted to USAID. Since the Year 4 budget was under preparation, the Program decided to withdraw the pending requests for budget realignment. The Program agreed to prepare a separate updated request for realignment to reflect the Year 4 work plan, if necessary.

The Program agreed to submit the clarifications to the queries raised by USAID on the revised budget realignment submitted during December 2013.

The Program submitted the following to USAID during the reporting period:

- reallocation of expenses under CLIN 4
- memo on reallocation of expenses under CLIN 4
- revised M&E and PMP documentation
- contract deliverables modification
- memo on realignment budget for the remaining period of the Program
- request for additional obligation of funds

The Program is awaiting communication from USAID on the above as of June 30, 2016

STATUS OF CONTRACT DELIVERABLES

Presented below is the status of standard Contract Deliverables:

S.No	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 June29, 2012.
2.	Branding and Marketing Plan	Within 30 days of the Award date.	Final Branding and Marketing Plan submitted on June 29, 2012
3.	Program Implementation Plan	Within 30 days of the Award date.	Project Implementation Plan submitted on July 22, 2014 together with bullet version of PACE-D Y3 Work Plan.
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.	Submitted Annual Work Plan for CLIN 1 and CLIN 2 to USAID.

S.No	Reporting Requirement	Delivery Date as per contract	Status
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 the date of the award.	M&E Plan and Performance Monitoring Plans were approved on March 9, 2013 after multiple discussions and alterations. Revised M&E Plan submitted to USAID and approval received during the reporting period.
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 several discussions and alterations Revised M&E Plan submitted to USAID and approval received during the reporting period.
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, • July 15, 2013, • Oct 15, 2013, • Jan 15, 2014, • April 15, 2014, • July 15, 2014, • Oct 15, 2014, • Jan 15, 2015, • May 21, 2015, • July 27, 2015, • Oct 20, 2015, • Jan 29, 2016 • Apr 21, 2016 • Aug 01, 2016

S.No	Reporting Requirement	Delivery Date as per contract	Status
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, • July 15, 2013, • Oct 15, 2013, • Jan 15, 2014, • April 15, 2014, • July 15, 2014, • Oct 15, 2014, • Jan 15, 2015, • May 21, 2015, • Aug 4, 2015, • Oct 20, 2015, • Jan 29, 2016 • Apr 21, 2016 • Jul 22, 2016
10.	Annual Progress Report	30 calendar days after the end of the year.	Year 3 Annual Progress Report submitted on August 21, 2015.
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.

ADMINSTRATIVE ACTIONS

Status of Sub-contracts

Under the sub-contracts, each firm/individual has been provided with a Master Service Agreement for the life of the project. Specific output oriented task orders are issued from time to time to all sub-contractors. The Program continued to issue and modify task orders to subcontractors for Year 4 based on the Annual Work Plan developed by the Program and approved by the USAID for CLIN 1 and CLIN 2.

International Deployment

The following specialists were deployed internationally (Indian specialists abroad and international specialists in India) during this year:

Name/Firm	Dates	Purpose
Mr. Saiful Islam, Consultant, Arc Finance	August 20 – Sept 1, 2015	Visit SVCL in Gurgaon, Saija in Patna and Sarala in Kolkata to • review the ongoing pilots of the energy lending program at various MFI partners. • review their processes and provide recommendations. • assess the investment required by the MFI partners to scale-up the energy lending program.

Name/Firm	Dates	Purpose
Ms. Margaret McKay, Officer in Charge-PACE-D TA Program, Nexant Inc.	August 23-29, 2015	Conduct meetings with Nexant team, its major subcontractors and USAID on the following subjects : • progress review of Year 3 work • year 4 work plan initiation process • midterm evaluation • transition of OIC duties from Peter du Pont
Mr. Peter du Pont, Vice President, Nexant Inc.	August 23-29, 2015	Conduct meetings with Nexant team, its major subcontractors and USAID on the following subjects : • progress review of Year 3 work • transition of OIC duties to Margaret McKay
Thomas Kenneth Dreessen, Independent Consultant	September 1-30, 2015	• Review the document on 'Guidelines for assessment of EE projects for Banks/FIs' prepared by the PACE-D TA Program. • Revise the guidelines in line with the current practices, approaches, trends in EE financing, internationally • Submit the final guidelines for assessment of EE projects for Banks/FIs
Margaret McKay, Nexant, Inc.	January 12-20, 2016	• Meet Contracting Officer's Representative and Regional Contracting Officer (RCO) to review the overall performance of the Program. • Assess the progress towards performance improvement objectives including the review of the activities being implemented under the Year 4 Annual Work Plan. • Participate in the MTE kick-off meeting. • Meet subcontractors (Emergent Ventures India, IDAM Infrastructure Advisory Pvt. Limited, Environmental Design Solutions, KPMG Advisory Services Private Limited, etc.,) and the counterparts (MOP, BEE, state governments, etc.).

Changes in Staff

- The M&E and Capacity Building Specialist Mr. Himanshu Dube left the Program on Sept 30, 2015. He continued to work as a short term consultant for a few weeks.

- Nexant shortlisted Mr. Ripu Bhanjan Singh as the new M&E Specialist and the memo for hiring Ripu was submitted to USAID for approval. Approval from USAID was received following which Ripu joined the PACE-D office on November 16, 2015.

- Ms. Kakoli Guha joined as the Office Manager at Nexant Inc. on February 8, 2016. She replaced Ms. Vinita Kathuria.

- Ms. Sneha Bajpai joined as the Admin Executive at Nexant Inc. on April 22, 2016. She replaced Mr. Sunil Kumar.

- Aalok Awalikar, Senior Program Manager, resigned from the Program with effect from May 31, 2016.

6. PROPOSED EVENTS AND TRAININGS DURING NEXT YEAR

LIST OF KNOWLEDGE SHARING AND OUTREACH EVENTS

S. No.	Event	Proposed City	Proposed Date
CLIN 1: Energy Efficiency			
1	CEAP Introductory Meeting for FIs and Banks	New Delhi	August 22, 2016
2	Launch of NU NZEB Pilot	Rajgir	August 27, 2016
3	Ajmer Smart Grid Pilot Launch	Ajmer	September 2016
4	Ajmer Smart Grid Pilot Training	Ajmer	September 2016
5	NSGM Consultation Meeting	New Delhi	October 2016
6	Rajasthan EE policy stakeholder workshop	Jaipur	November 2016
7	CLIN 1 Closing Ceremony	New Delhi	March 2017
CLIN 2: Renewable Energy			
1	USAID REMMP-PACE-D Joint Workshop	New Delhi	August 24-26, 2016
2	National Solar TNA Workshop	New Delhi	August 2016
3	Launch of RPO Compliance Webtool	New Delhi	October 2016
4	Regional Investor Forum	TBD	December 2016
5	Launch of BPG for Interconnection of Solar Rooftop Projects	New Delhi	January 2017
6	International Study Tour on Solar Training	USA	January 2017
7	Launch of the Training Needs Analysis Final Report	TBD	January 2017
8	National Level Investor Forum on Micro-finance	TBD	February 2017
9	Launch of the BPM for Microfinance based Energy Lending	TBD	March 2017
10	International Study Tour on Integration of Solar Rooftop by Utilities	TBD	April 2017
11	National Workshop on Off-grid Policy and Institutional Reform for Energy Lending through Microfinance	TBD	March 2017

LIST OF TRAINING PROGRAMS

S. N0.	Event	Proposed City	Proposed Date
CLIN 1: Energy Efficiency			
1	First Three-day Basic Smart Grid Training Program for Utility Professionals	New Delhi	July 27-29, 2016
2	Second Three-day Basic Smart Grid Training Program for Utility Professionals	Bengaluru	August 2016
3	Third Smart Grid Training Program for TSECL Officials	Tripura	October 2016
4	Second Two-day DSM Training to Haryana Utilities	Haryana	October 2016
CLIN 2: Renewable Energy			
1	Second Five-day Residential EDP on Solar Rooftop	Pune	July 25-29, 2016
2	First Three-day Training of Trainers Program on Solar Rooftop for Utilities	Gurgaon	August 10-12, 2016
3	Second Three-day Training of Trainers Program on Solar Rooftop for Utilities	TBD	October 2016
4	Third Five-day Residential EDP on Solar Rooftop	TBD	November 2016
5	Fourth Five- day Residential EDP on Solar Rooftop	TBD	January 2017
6	Fifth Five- day Residential EDP on Solar Rooftop	TBD	February 2017

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