COLOMBIA CLEAN ENERGY PROGRAM

SECOND YEAR WORK PLAN

Revised November 21, 2013

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SECOND YEAR WORK PLAN

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LIST OF ACRONYMS AND ABBREVIATIONS

ACIP	Afro-Colombian and Indigenous Program (USAID Program)
ADAM	Areas for Municipal Level – Alternative Development Program (Áreas de Desarrollo Alternativo Municipal - USAID Program)
ANDI	National Businessmen´s Association (Asociación Nacional de Empresarios de Colombia)
ANLA	National Environmental Licensing Agency (Agencia Nacional de Licenciamiento Ambiental)
APROTEC	Local renewable energy company
BIO-REDD	Reduced Emissions from Deforestation and Degradation (USAID Program)
CAF	Latin American Development Bank (Banco de Desarrollo de América Latina)
CCEP	Colombia Clean Energy Program (USAID Program)
CDM	Clean Development Mechanism
CE	Clean Energy
CELI	Consolidation and Enhanced Livelihoods Initiative (USAID Program)
CIDET	Corporation Center for Technological Research and Development of the Electrical Sector (Corporación Centro de Investigación y Desarrollo Tecnológico del Sector Eléctrico)
CNPMLTA	National Cleaner Production Center (Centro Nacional de Producción mas Limpia y Tecnologías Ambientales)
COP	Chief of Party
COR	Contracting Officer Representative
CP	Cleaner Production
CREG	Power and Gas Regulatory Commission (Comisión de Regulación de Energía y Gas)
DNP	National Planning Department (Departamento Nacional de Planeación)
DO	Development Objective
EC-LEDS	Enhancing Capacity for Low Emission Development Strategies
EE	Energy Efficiency
EPM	Empresas Públicas de Medellín
ESCO	Energy Service Company
FAER	Support Fund for Rural Electrification (Fondo de Asistencia a Electrificación Rural)
FAZNI	Support Fund for the Non-Interconnected Zones (Fondo de Apoyo Financiero para la Energización de las Zonas No Interconectadas)
FNR	National Royalty Fund (Fondo Nacional de Regalías)
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIS	Geographic Information System
GOC	Government of Colombia
IFC	International Finance Corporation (World Bank Group)
IPSE	Institute of Planning and Promotion of Energy Solutions in the ZNI (Instituto de Planificación y Promoción de Soluciones Energéticas para las ZNI)
IR	Intermediate Result
ISAGEN	Public private energy utility corporation
LCA	Life-Cycle Assessment
LEDS	Low Emission Development Strategies

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M&E	Monitoring and Evaluation
MADR	Ministry of Agriculture and Rural Development (Ministerio de Agricultura y Desarrollo Rural)
MADS	Ministry of Environment and Sustainable Development (Ministerio de Ambiente y Desarrollo Sostenible)
MFI	Micro-finance institutions
MIDAS	Más Inversión para el Desarrollo Alternativo Sostenible (USAID Program)
MME	Ministry of Mines and Energy (Ministerio de Minas y Energía)
MRV	Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Actions
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
OPIC	Overseas Private Investment Corporation
PPA	Public Private Alliance
PROURE	Program of Rational and Efficient Use of Energy and Other Forms of Non-Conventional Energy (Programa de Uso Racional y Eficiente de Energía y Fuentes No Convencionales)
RE	Renewable Energy
SRE	Sustainable Rural Energization
SME	Small and Medium Enterprises
SNSM	Sierra Nevada de Santa Marta
Tt	Tetra Tech (Prime Contractor)
UPME	Mining and Energy Planning Unit (Unidad de Planeación Minero Energética)
USAID	United States Agency for International Development
USAID DCA	Development Credit Authority
ZNI	Non-Interconnected Zones (Zonas no Interconectadas)

1. INTRODUCTION

1.1 OBJECTIVE OF THIS DOCUMENT

This work plan describes changes to various aspects of CCEP's implementation strategy based on the experience and lessons learned during the first year of activities. Some of these changes were initially presented and discussed during a strategic review meeting with USAID in March 2013. The overall objectives of this strategic realignment are:

- To make necessary changes to current technical approach to introduce greater flexibility, additional technical focus / capabilities / throughput and more dynamic implementation procedures
- To make necessary changes to the budget within the current contract ceiling to support the strategic realignment of the activities
- To clarify / update remaining inconsistencies in the language of the contract which still includes typos and incorrect institutional roles and requirements that could create misunderstandings during the next four years of the program.

Some of these changes also involve a rearrangement of roles between Tasks 1, 2 and 3 reflecting not only the more technical, concrete project-development nature of Task 2 and Task 3 teams and the more policy oriented and capacity building nature of Task 1's team, but also the geographic headquarters of the three CCEP working groups in Bogota, Medellin and Cali. Thus, for example, macro-scale renewable energy resource mapping originally conceived to be handled by Task 2 and limited initially to the ZNI is being articulated by the Task 1 team based in Bogotá as an integral part of the creation of an enabling environment for RE penetration on a broader national scale in conjunction with national agencies such as UPME, CREG and IPSE. Similarly, the lead in structuring and promoting new financial mechanisms and incentives for EE/RE investment have been shifted from Task 3 based in Medellin to Task 1 in Bogotá, where interaction with key GOC and private sector decision makers as well as the Mission is fluid, while the Task 3 team concentrates and takes lead in assuring that concrete CCEP projects reach the energy savings and emissions reduction targets in our PMP and in training and dissemination of existing and new financial mechanisms and incentives once enacted.

1.2 PROGRAM GOALS AND OBJECTIVES

The Colombia Clean Energy Program (CCEP) is a 5-year (January 2012-January 2017) project designed to increase access to renewable energy sources and energy efficient practices in Colombia through a combination of project development support, technical assistance, and enabling environment reforms. CCEP is USAID/Colombia's flagship clean energy activity, funded under the Presidential Initiative on Climate Change The overall goals of USAID's environment program are strengthening environmental governance, low carbon growth, conservation of significant biodiversity, and support to adapt to climate change.

USAID/Colombia's Strategic Framework for FY 2010 to FY 2014 overall goal is to improve economic and social conditions of vulnerable Colombians with effective rights-based institutional presence. The Strategic Framework identifies four Development Objectives (DOs) to achieve the Mission's higher level goal. CCEP will directly advance the Development Objective for Environment which will

strengthen environmental governance for the conservation of protected areas and ethnic territories; preserve, restore or improve ecosystem services; ensure the environmental sustainability of natural resource-based livelihoods; mitigate or adapt to the long-term impacts of climate change; and promote the use of renewable and clean energy. The Development Objective for Environment is linked to Foreign Assistance Objective 4, Economic Growth; Program Area 4.8 Environment; and Program Element 4.8.2 Clean Productive Environment and it is supported by three intermediate results (IR):

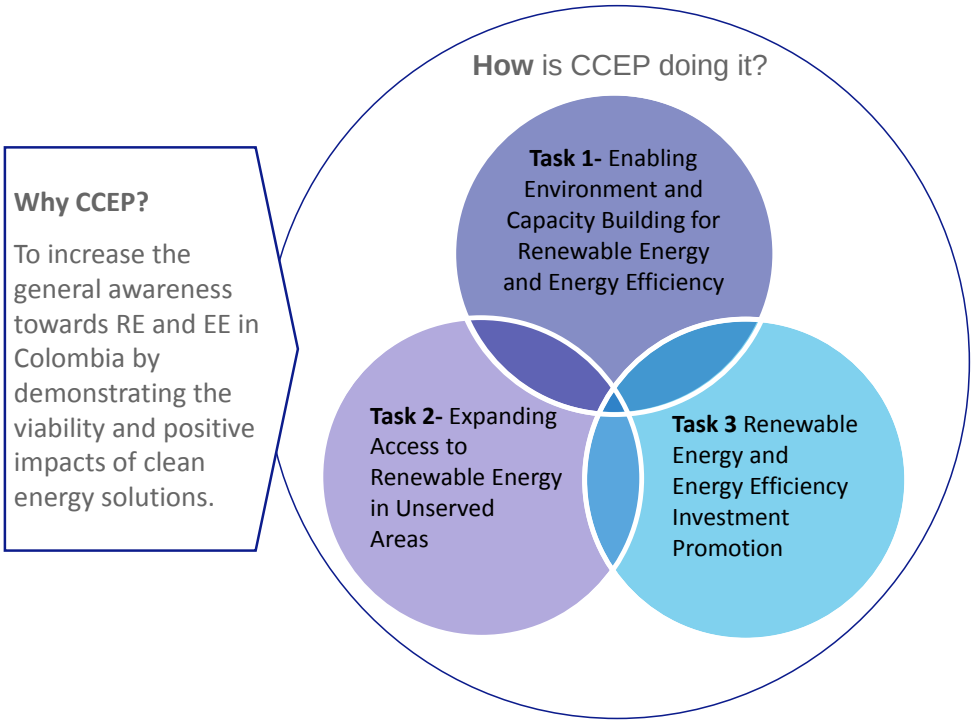
- IR. 4.1 - Environmental governance strengthened
- IR 4.2 – Climate change mitigation and adaptation improved
- IR 4.3 – Conservation of biodiversity improved

CCEP will directly support Intermediate Results 4.1 and 4.2.

1.3 SCOPE OF WORK

CCEP continues to be articulated around three tasks as shown in Figure 1. Each task is summarized below.

Figure 1: CCEP's main tasks



Task 1: Renewable energy and energy efficiency enabling environment and institutional capacity development. (IR. 4.1 - Environmental governance strengthened) Tt is working closely with the Ministry of Mines and Energy (MME), the Mining and Energy Planning Unit (UPME), the Institute of Planning and Promotion of Energy Solutions in the ZNI (IPSE), the Power and Gas Regulatory Commission (CREG) and other institutions to derive access and renewable energy targets, implement renewable programs in the ZNI and implement energy efficiency investment projects in targeted

sectors. Our work seeks to integrate ongoing GOC efforts by MME, UPME, Ministry of the Environment and Sustainable Development (MADS), the National Planning Department (DNP), CREG and other national and regional institutions in the fields of EE and ER planning, policy and regulatory development, identify viable projects and provide capacity building across all technical areas, particularly in PROURE, LEDS, Nationally Appropriate Mitigation Actions (NAMAs) and Monitoring, Reporting and Verification (MRV) processes. Closely linking with Task 3, CCEP capacity building under Task 1 also focuses on stimulating private sector integration of EE and RE technologies and investment opportunities as standard practice by the business sector through assistance in the development and promotion of financial mechanisms in Colombia's banking system, as well as additional stimulus through advisory support for the implementation of UPME's EE/RE tax incentive initiatives. CCEP is also actively seeking cooperation, coordination and development of joint efforts with other US Government agencies such as OPIC and DCA, and international financial institutions such as IFC, IADB, CAF and KfW to generate a dynamic market for EE/RE investments in Colombia. In very close interaction with Task 2, the Task 1 team has also taken the lead in developing some of the macro-level technological tools initially conceived to be developed by the Cali team, as an integral component of creating the methodological and regulatory framework to enable broader impact renewable energy solutions in the ZNI than would be feasible through the concrete ZNI rural RE projects being developed under Task 3. On the other hand, the identification and recommendation of RE pilot projects for implementation, originally conceived to be developed through Task 1, is being led by the RE technological and community development specialists in Task 2.

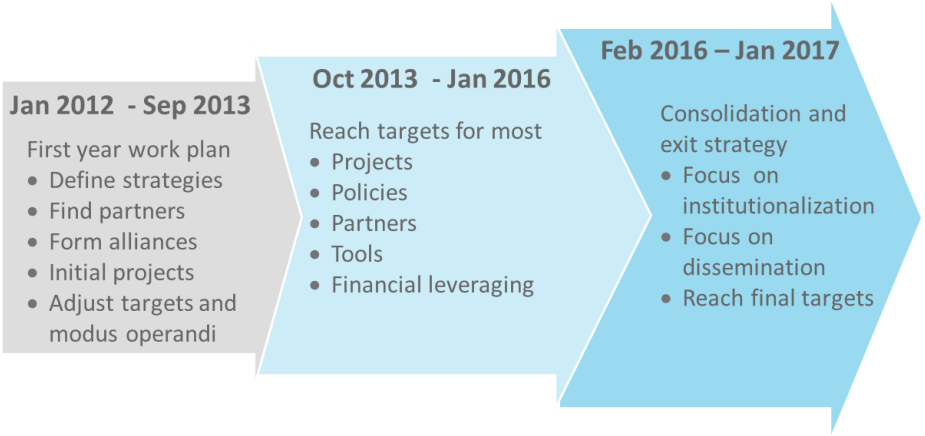
Task 2: Expanding access to renewable energy sources in currently unserved areas. - (IR 4.2: Climate change mitigation and adaptation improved). Our main focus is to stimulate the development of RE projects through technical assistance to IPSE, UPME, other national and regional agencies and NGOs, and the implementation of a mix of projects that includes centralized energy systems (e.g., micro-hydro) and distributed systems (e.g., PV). Our approach focuses on supporting the entire renewable energy project cycle at the micro (concrete project) level: resource assessments and mapping, GIS tools for project identification, cost analysis, and transaction and financing support. We also recognize the need for strong community support for projects through outreach and education and have started deploying participatory approaches to support productive energy use by rural communities. All CCEP renewable energy field projects focus on social, economic, technological and environmental sustainability encompassed in the concept of "sustainable rural energization" (SRE) and leverage institutional and financial support from national, regional and community actors.

Task 3: Energy efficiency and renewable energy investment promotion - (IR 4.2: Climate change mitigation and adaptation improved). Studies show that more than 220 Mt CO_2e in combined emissions reductions can be achieved across all sectors of the Colombian economy in 20 years. CCEP is well positioned to direct programs and facilitate investment for a large portion of this potential. Closely linking to Task 1, we are identifying EE and RE investment opportunities in key sectors, working with several funds credit lines and Energy Service Companies (ESCOS) to develop new mechanisms to fund EE and RE projects, and offering training and advisory services on existing mechanisms to financial institutions, industries and EE/RE project developers. Project development has taken longer maturation and implementation periods than originally envisioned, and the second year work plan addresses this issue through a combination of diversifying project development partnerships with the business development acumen of U.S. small business subcontractor Segura Consulting LLC and the technical reinforcement of the Task 1 Tetra Tech team.

2. WORK PLAN BY TASK

Based on the experience, lessons learned and opportunities discovered during the first year, CCEP's implementation approach will remain much as originally planned. However, it has become clear that adjustments are needed to the vision under which that approach is still possible to be implemented. CCEP's updated vision is illustrated in Figure 2 where there are three main phases under which the implementation approach will continue to be carried out. The key message is that CCEP needs to focus on implementing and reaching most of its targets during the period of Oct 2013 – Jan 2016 in order to allow sufficient time for consolidating and carrying-out an orderly exit strategy. This consolidation period will ensure widespread dissemination and institutionalization of methodologies (technical, community development, business models for rural energy service providers, etc.) during the last period of the program Feb 2016- Jan 2017.

Figure 2: Updated CCEP's implementation vision



In order to achieve this, CCEP must gear up and accelerate the pace at which projects are not only identified and evaluated, but also brought to implementation and construction stage, since it is quintessential to the success of the Program to be able to demonstrate the viability and sustainability of clean energy solutions through concrete projects. This requires a more concentrated effort of resources particularly on Task 2 and Task 3, and increasing funding for Task 1 consultancies, projects and outreach activities.

During the second year work plan CCEP will continue to use a "results-driven" approach to implement the scope of work. CCEP will complete the implementation of its existing portfolio of field projects identified based on the knowledge and experience of our local team leaders, while at the same time spurring projects by geographic cluster and/or with new partners identified during first year implementation. Additional effort will be made to supplement progress made by recently completed or ongoing USAID and other donor projects. CCEP has found that several USAID initiatives have already identified community development bottlenecks that CCEP's productive use renewable energy applications can contribute to surpass, and have the field staffs and USAID due diligence procedures to supplement and accelerate our capacity to identify, design and install energy solutions in a broader range of communities than if we work solely on our own.

This section describes the activities planned under each of CCEP's three tasks during the second year and includes Gantt charts per task showing the implementation schedule for all CCEP activities for the second year.

2.1 TASK 1- RENEWABLE ENERGY AND ENERGY EFFICIENCY ENABLING ENVIRONMENT AND INSTITUTIONAL CAPACITY DEVELOPMENT

2.1.1 Overall approach

The primary objectives of Task 1 are to assist Colombian public and private institutions in creating an enabling environment and institutional capacity for renewable energy, energy efficiency and low emissions development (LEDS). Through this Task, CCEP focuses specifically on supporting intermediate result IR 4.1 (Environmental governance strengthened) of USAID/Colombia DO 4.

This component seeks to enhance institutional capacity of the Ministry of Mines and Energy (MME) and related institutions to formulate and implement RE projects, to promote policies to use public funds for sustainable rural energization and leverage private sector investment, and to strengthen the capacity of GOC to implement a low emissions development strategy (LEDS). This component also entails raising public awareness on the technical options and socioeconomic benefits of clean energy paths.

During the second year, Tt will continue to work closely with MME, the Mining and Energy Planning Unit (UPME), the Institute of Planning and Promotion of Energy Solutions in the ZNI (IPSE) and other institutions to derive access and renewable energy targets, implement sustainable renewable energy programs in the ZNI, enable EE/RE investment in industry and other sectors and seek to overcome regulatory barriers to RE for the overall power sector.

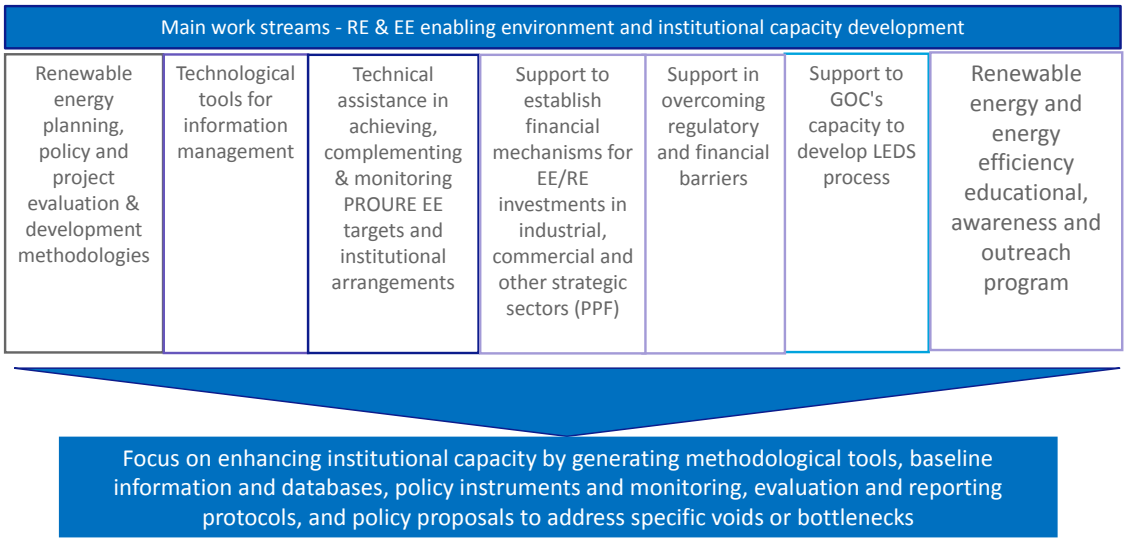
Seeking to consolidate first year processes while undertaking additional work fronts in response to private and GOC partner demands, the approach under which second year activities will be carried out is illustrated in Figure 3. Moreover, as indicated before, CCEP's focus during the second year is on building-up on necessary resources to accelerate the implementation of identified work streams which include:

- Assisting in the development of practical methodologies for sustainable rural energy planning and policy formulation, and for RE project screening, identification, formulation, finance, implementation, management and impact evaluation at the national level by IPSE, UPME and MME as well as at decentralized levels by ZNI departments, municipalities, communities and concessionaires or other energy service providers.
- Providing support to IPSE, UPME and CREG in the design and construction of geographic information systems (GIS), renewable energy resource maps and other technological tools for information management of technical and strategic value for energy planning and power service regulation in the ZNI (in support of IPSE and UPME).
- Providing technical assistance to UPME for achieving current PROURE energy efficiency policy targets (Indicative Action Plan 2010-2015) as well as to address voids in current formulation by supporting UPME's efforts to design PROURE's second Indicative Action Plan due in 2015, including achievable EE/RE targets. CCEP will continue to provide technical support to UPME and ANLA in the implementation of EE/RE tax incentives promulgated in December 2012 with its assistance. CCEP will also provide technical assistance in identifying and designing appropriate institutional arrangements to promote PROURE implementation, such as possible Public Private

Alliances (PPA), and developing Monitoring, Reporting and Verification (MRV) instruments to gauge accomplishment of PROURE's 2015 and next phase targets (in support of MME and UPME).

- Continue analyzing bottlenecks, particularly regulatory and financial barriers, inhibiting greater participation of renewable energy sources in Colombian power generation and commercialization, and proposing viable policy, regulatory and financial adjustments to overcome those obstacles.
- CCEP will continue to support and promote the establishment of financial vehicles and incentives to promote private sector investment in energy efficiency and renewable energy technologies in specific industrial and commercial establishments, such as a multi-donor "Clean Energy Project Preparation Facility (PPF)" to facilitate EE/RE investment project structuring.
- Contributing advisory services and energy specific expertise to the LEDS teams and ministerial counterparts established with support of USAID and other donors, particularly in the Ministries of the Environment (MADS), of Mines and Energy, of Transportation and of Commerce, Industry and Tourism. Work in this area will focus on M&E on the GOC's efforts to formalize a NAMA on renewable energy in the ZNI.
- Initiating a renewable energy and energy efficiency education, awareness and outreach program focused on increasing general knowledge of clean energy applications and enabling different stakeholders and the public in general to have access to concrete demonstration and information on the benefits of these solutions. The overall impact sought from these activities is to dissipate misconceptions related to EE/RE technology costs and efficiency in order to gain support of the public for efficient energy use and increased participation of RE in the energy basket.

Figure 3: Task 1 Main work streams



2.1.2 Planned activities under each subtask

During its second year of implementation CCEP plans to focus on the activities described in this section using the above framework.

a. Work Stream 1.1 Renewable energy planning, policy and project evaluation and development methodologies

CCEP will continue working with UPME, IPSE and MME in developing practical methodologies for rural energy planning, policy formulation and RE project screening, identification, formulation, finance, implementation, management and impact evaluation at the national level, as well as at decentralized levels by ZNI municipalities, communities and energy service companies. The main focus will be on the specific activities in the following table.

Activities Work Stream 1.1	Description
Departmental Sustainable Rural Energization Plans PERS	PERS projects in target regions representing diverse settings and institutional arrangements are under way to develop and implement a replicable set of rural and renewable energy planning, policy-making, project evaluation and development methodologies, as well as technological tools for information management by integrating, updating and modernizing ZNI information systems to be shared among UPME, IPSE and local actors in the departments where available partners can be found. **Main Results**: A rural renewable energy planning methodology including project evaluation and development approaches, and technological tools for information management and policy making at regional and national levels.

	Milestone 1- December 2012 - CCEP signed the Association Agreement No 110-2012 with UPME, IPSE and University of Nariño (UDENAR) for the development of PERS Nariño Phase I as the initial pilot study[1] **Milestone 2-** September 2013 – UPME and CCEP to sign Association Agreement with University of Tolima and other regional partners for the development of PERS Tolima **Milestone 3-** October 2013 – UPME, Chancellery and CCEP to sign Association Agreement with SENA and other regional partners for the development of PERS Guajira, with the country's highest solar and wind resource potentials. **Milestone 4** February 2014 – Completion of PERS Nariño Phase 1; A second phase of PERS Nariño, has been approved to be financed through regional royalties' budgets; 13 subregional renewable energy projects have been identified for possible Task 2 intervention. **Milestone 5**: September 2014 - Completion of other 2 Departmental PERS. **Milestone 6**: April 2015 - nation-wide sustainable rural energy planning and project design methodology and technological tools adopted by UPME on the basis of lessons learned from the three PERS projects implemented.
RE resource, technology and economic cost evaluation tools	CCEP is evaluating the best approach to update and integrate a renewable energy resource mapping platform with specific modeling capabilities to associate and optimize around resource (wind, solar, hydro, biomass), technology configurations, economic factors and policy incentives. This platform will be developed with CREG and UPME as part of the former´s design of electricity tariff structures for RE vs. diesel generation options in the ZNI and as an effort to integrate datasets and tools developed during the PERS and other ongoing methodological studies by UPME. **Main results**: An energy sector database to be hosted in the public geo-portal platform developed by the Instituto Geografico Agustin Codazzi –IGAC and administered by the MME entities (most likely by UPME). **Milestone 1-** January 2014. Delivery of RE (solar and wind) resource mapping for all Colombia, including technological cost analysis and the identification of sustainability models in the off-grid zones (ZNI) regions as input to CREG's new ZNI tariff resolution to be promulgated by February 2014. **Milestone 2**- December 2014 Add other RE resources, using other sources of information (universities and private companies and NGOs); updated technology costs and sustainability models for RE and hybrid systems for ZNI as well as the national interconnected system (SIN).
RE project screening and evaluation tools (Homer,	In parallel to the macro approach to RE resource, technology and cost evaluation, CCEP has compiled RE project-specific data for a number of localities in the ZNI

[1] This agreement joins UPME/IPSE/U Nariño/CCEP technical, administrative and financial forces in order to build a long term Rural Sustainable Energization Plan for the Department of Nariño (2012-2030).

RetScreen, others)	and undertaken internal modeling exercises geared to transfer or update specific modeling capabilities through a capacity / training activity to be implemented once that stakeholders, format, location and potential dates are established. **Main results**: Strengthening UPME´s Homer modeling capacity and facilitate the development of these capacities in other energy sector entities such as IPSE and CREG. **Milestone 1-** January 2014 Provide workshops to the UPME´s Homer team, using the data information collected for CREG´s RE resource mapping, PERS Nariño and Task 2 Pacific and Sierra Nevada projects **Milestone 2**- June 2014 Coordinate with UPME the diffusion of this tool to other energy sector entities.

b. Work Stream 1.2 RE Resource assessment mapping and technological tools for information management

During CCEP's second year joint work with GOC regarding biomass and hydro resource assessment and mapping will be revitalized through the experience gained in the ongoing initiative Sustainable Rural Energization Plan for Nariño (PERS) and the coming PERS Tolima and PERS Guajira projects. These initiatives's planning components entail work to carry out resource assessments and mapping in rural areas of each department. Progress made under PERS Nariño will provide models to accelerate the work planned in the other regional PERS initiated during CCEP's first year.

Another initiative to advance during CCEP's second year is the hydro energy resource evaluation which was undertaken by U. Javeriana for UPME and when completed will provide inputs to CCEP's GIS efforts by the end of 2013.

During CCEP's second year we will concentrate on developing and completing an assessment of renewable energy resources in ZNI areas, and mapping those resources in relationship to un-electrified population centers in a comprehensive database, in conjunction with the renewable resource and technology evaluation analysis carried out by with CREG.

In terms of the technology tools and databases, CCEP GIS expert results regarding the status of several institutions' databases and geographic information systems and technological tools for information sharing and management of information required for developing energy solutions in the ZNI, showed strong differences in definitions, methodologies and datasets between the different institutions involved. These shortcomings are also an important component of the PERS Nariño GIS efforts during the second semester of 2013, and will provide a methodological platform for UPME's national energy information system in 2014.

The following activities are expected to be carried out during CCEP's year two work plan:

Activities Work Stream 1.2	Description
GIS support – regional scale	CCEP has participated actively in establishing the methodologies and geo-referenced datasets for rural energy planning and project design in the framework of

Activities Work Stream 1.2	Description
	the PERS Nariño project, and will continue to support GIS platform design and implementation in other regional PERS projects through 2014. **Main results**: Develop regional geo-referenced energy market datasets. **Milestone 1-** March 2014 Define methodological inputs, and reliable geo-referenced datasets on rural energy demand and supply patterns for the Department of Nariño **Milestone 2**- December 2014 replicate the methodologies and geo-referenced procedures on rural demand and supply patterns for other two regions of Colombia.
GIS support – national scale	In order to advance in this activity, CCEP decided to apply a strategy that includes (a) using the information collected though the different PERS under development to update and unify UPME and IPSE renewable energy resource and energy use GIS layers for the regions analyzed; (b) monitor and integrate additional geo-referenced hydro-energy and bioenergy resource data bases being developed through contracts by UPME/COLCIENCIAS; and (c) CCEP is also supporting completion of nation-scale solar and wind resource mapping for the Power and Gas Regulatory Commission CREG (see 1.4), which will be shared with the whole energy sector through a "mines and energy geo-portal" being developed by MME and the national Geographic Institute Agustin Codazzi (IGAC). **Main results**: Develop national geo-referenced datasets on RE that will be hosted in the IGAC platform and administered by the MME, with distinct applications for CREG (ZNI tariff analysis) and UPME/IPSE (national and project planning, respectively). **Milestone 1**- September 2013. Update the software datasets of renewable energy resource maps and energy technology supply in the ZNI using information provided by WESTEVA, CREG and CCEP. **Milestone 2** - January 2014. Provide an average or "levelized" cost analysis (COP/kWh) of electricity generated per region and per technology including investment, O&M and other costs related to the installation and maintenance of the system over a period of 20 years, considering scales (community size/load curves) and resources (individual/mixed/hybrid technologies). Deliver scenarios and options for each ZNI in Colombia using a least-cost modeling analysis for selected scales (community size/load curves), resources, technologies and comparison to diesel generation or interconnection **Milestone 3** – January 2014. Deliver layered maps in an interactive way, so the user of the program can click on each region, and the map will provide the information about the most efficient technology mix and its cost of generation (COP / kWh) **Milestone 4** - October 2014 Integrate additional layers of RE resources and technology costs to the software developed for CREG ZNI tariff definitions, in conjunction with UPME. **Milestone 5** - December 2014: Integrate the geo-referenced information system resulting from the Regional Sustainable Rural Energization Plans (PERS), the results of the CCEP/CREG mapping project and other studies developed by universities and private institutions, in a common energy sector platform to be administered by MME or UPME.

Activities Work Stream 1.2	Description
Data compilation, analysis and consolidation	CCEP has worked with UPME and IPSE in developing methodologies that can consolidate the institutional data banks on rural electrification and RE projects in the ZNI. The purpose is to consolidate the information in the energy sector platform that will be administered by the MME. **Main results** Compilation, analysis and consolidation of institutional data banks on rural electrification and RE projects in the ZNI. **Milestone 1-** December 2014: Compile most of the institutional data sets available data in a unique national energy sector platform to be administered most likely as a subsystem within UPME's energy sector information system.

c. Work Stream 1.3 Technical assistance in achieving, complementing and monitoring PROURE energy efficiency targets

During year two, once UPME's new tax incentive evaluation group and budget is operational, CCEP will again focus on evaluating the impacts of PROURE to date, designing monitoring and evaluation procedures to measure progress in achieving targets, and supporting UPME in designing its second PROURE action plan for the period 2015-2020. These and other year two activities under this task are described in the following table.

Activities Work Stream 1.3	Description
Technical Support to UPME on PROURE EE & RE targets, impacts and MRV	CCEP has a part time consultant working with UPME and T1 leader (COP) on PROURE EE & RE targets. Initial evaluation was completed and additional support is needed during second year in developing Monitoring, Reporting and Verification (MRV) instruments to gauge accomplishment of PROURE's 2010 – 2015 targets, as jointly required by UPME and MADS. **Main results**: Perform an assessment of the achievements and lessons learned from the PROURE 2010-2015 Indicative Action Plan (IAP-1), assist UPME to design an IAP-1 monitoring, reporting and evaluation scheme; and propose the evaluation and assessment instruments to monitor impacts of the next PROURE Action Plan (IAP-2 2015-2020). **Milestone 1-** December 2013 Design a monitoring and evaluation scheme to determine, quantitatively, the progress and achievements of PROURE's Indicative Action Plan 2010-2015, including a set of indicators specific to each and every one of its cross-cutting and sectorial sub-programs, and an operational strategy for its implementation. **Milestone 2-** February 2014 In-depth analysis of the current state of energy efficiency and renewable energy in Colombia, identifying the impacts or effects PROURE has had at the institutional, market and consumer sector level. This document was requested by UPME to feed into the design of institutional arrangements under study for EE/RE promotion. **Milestone 3**- March 2014 Propose recommendations to formulate a second PROURE´s Indicative Action Plan 2015-2020, including proposed strategic focus on action, impact and implementation mechanisms for evaluation, reporting and

Activities Work Stream 1.3	Description
	monitoring. **Milestone 4**- April-October 2014 Provide follow-up technical assistance to UPME in designing the PROURE Indicative Action Plan 2015-2020 **Milestone 5**- November 2014 UPME publication of PROURE Indicative Action Plan for the period 2015-2020
Tax incentive support to UPME	Technical support to UPME in promoting its EE/RE tax incentive mechanism, evaluating the-initial batches of applications for tax exemptions, and in organizing its internal tax evaluation team and procedures under the recently approved restructuring of the entity. **Main results**: Promote UPME´s EE/RE tax incentive mechanism **Milestone 1-** October 2013 Support UPME in creating an evaluation mechanisms to quickly respond to the companies applying for tax exemptions **Milestone 2**- March 2015 strengthen the current mechanisms to broaden its application to other EE investments to be contemplated within the 2015-2020 Action Plan.

d. Work Stream 1.4 Support in establishing financial mechanisms for EE/RE investments in industrial, commercial or other strategic sectors

As part of CCEP activities directed to create a policy and market enabling environment, the program has found a lack of incentives and financial mechanism that can really foster new investments and project implementation. The curret credit lines and subsidies are helping few companies that took advantage of other programs or third party studies that financed the pres feasibility studies, but these mechanisms are not promoting new investments in sectors that are energy intensive or have a great environmental impact.

CCEP has found an opportunity to promote EE and RE investments, by providing technical, commercial and financial assistance in the early stages of project preparation that can appeal decision makers to engage on ambitious investments.

Activities Work Stream 1.4	Description
Definition of financial mechanisms for EE/RE investment	The "Clean Energy Project Preparation Facility-PPF", whose overall concept, structure and business plan was developed by CCEP during first year and amply discussed with all these stakeholders, including financial models, application and screening procedures, application forms, etc. CCEP will continue to engage funding partners within the international donor and Colombian banking communities, seeking to define the mission, organizational structure, duration and operational procedures by early 2014 and spur its operation by mid-2014. The PPF is conceived to augment or replace CCEP's own clean energy project development efforts under Task 3. During the second year work plan, CCEP seeks to support the development of other

	financial mechanisms, such as municipal bonds, to foster public sector investment in clean energy public lighting, municipal waste-to-energy projects, etc., in cooperation with Mission and DNP/Ministry of Finance efforts. Additional incentives will be discussed and promoted with UPME and ANDI in the framework of their anticipated PPP for energy efficiency in the industrial sector, and with the banking sector. **Main results:** Creation of a PPF financial mechanism to promote private sector investment in EE/RE and implementation of additional financial mechanisms or incentives for EE/RE investment by municipal governments and other strategic allies. **Milestone 1**– March 2014. Final approval of PPF business plan, administrative and managerial structure and operating procedures by initial founding cosponsors. **Milestone 2**– Summer 2014. Approval of cosponsor funding by respective stakeholders; Staff recruitment and initial funding set up. **Milestone 3**– Fall 2014. Start-up of PPF services **Milestone 4**– March 2015. Draft proposal of additional financial mechanisms for clean energy investment funding **Milestone 5**– Fall 2015 Implementation of all financial mechanisms and incentives for EE/RE investments developed during second year Work Plan

e. Work Stream 1.5 Support in overcoming regulatory and financial barriers to EE/RE power generation and distribution

CCEP has established several activities to identify different types of barriers to the implementation of EE and RE projects in Colombia, as well as actions to overcome them. These activities include supporting UPME (PROURE EE & RE targets, tax incentives, etc.), creation of a clean energy project preparation facility (PPF), and demonstrating paths to overcome some of the identified barriers to EE/RE by implementing projects through Public Private Alliances and other educational and capacity building activities that will be developed during year two, as described below:

Activities Work Stream 1.5	Description
Technical support to GOC regarding ZNI tariff and subsidies	As indicated in the GIS section of work stream 1.2, a new methodology for defining allowable tariffs for ZNI energy generators and distributors is scheduled to be promulgated by early 2014 by the Power and Gas Regulatory Commission (CREG). Besides the RE resource assessment and mapping described in Work Stream 1.2, CCEP is also working with CREG on RE system sustainability models and rural off-grid energy service business models to feed the tariff design. Though CREG tariffs will take diesel prices and subsidies into consideration, it is the MME which is in charge of designing and financing diesel subsidies in the ZNI, which can reach over 85% per gallon. Due to rotation in top officials and advisors at the MME, CCEP was unable to define the scope of a study requested by the vice minister on the economic costs and environmental externalities of diesel subsidies initiated with EC-LEDS for MME. In addition to providing support in designing the new ZNI tariff structure, CCEP has also identified the opportunity to provide

Activities Work Stream 1.5	Description
	technical assistance to the GoC in developing new concession or other legal models that would effectively motivate private companies to invest in profitable RE or hybrid solutions in the ZNI. CCEP expects the new Minister to be receptive to pursue such a study, leading to policy recommendations on much needed reforms to the diesel subsidy system. **Main result:** Support to CREG, MME and rest of energy sector on the identification of sustainability models in the off-grid zones (ZNI) regions and on identification of direct and indirect economic, social and environmental costs of diesel subsidies in the ZNI. **Milestone 1**- November 2013 Incorporation of sustainability models, RE resource mapping and "levelized" cost analysis in the draft design of the new ZNI tariff structure. **Milestone 2**- December 2013 Agreement with MME on TORs for an in-depth analysis of the economic, social and environmental costs of diesel subsidies for ZNI power generation, and/or new contract models for economic arrangements between MME and private companies to provide up to 24-hour energy service in the ZNI. **Milestone 3**- Summer 2014. Finalize diesel subsidy study and/or energy service contract models and formulate corresponding policy recommendations
Transaction support to development of large scale RE power generation projects for the National Interconnected System (SIN)	Regulatory and economic barriers to RE generation and distribution have been clearly identified by study groups and international agencies (such as IFC, IADB, etc.). CCEP has been approached by a number of private sector energy companies in Colombia (CELSIA, ISAGEN, ENEL Green Power-EGP, etc.), ESCOS and multilateral financial community (such as IADB's climate change department) interested in developing large scale solar, wind or hybrid systems for the national interconnected system (SIN). Given the current and foreseeable regulatory climate, RE generation projects of over 20 MW will not likely be viable in Colombia during the lifetime of CCEP. However, site-specific solar, wind resource and geothermal evaluations are ongoing in several locations throughout the country, and several "up-to-20MW" projects are nearing technical and financial maturation but requiring transaction support and policy leverage requested of CCEP. For example: - IADB's climate change department has mobilized sufficient financial resources to fund at least three up-to-20MW wind power projects;; - With USTDA support, CELSIA is designing a 20 MW hybrid wind (16MW)-solar (4MW) project in Juan de Acosta; - ENEL GP is structuring up to 25 20-MW "in tandem" solar systems (500 MW total). Therefore, a major opportunity for CCEP to contribute to overcoming the well-studied regulatory and financial barriers to RE power generation and distribution is to provide facilitation support to a number of these initiatives to spur investment and implementation of those most viable. **Main results**: Transaction support to private investors, international funding agencies and GoC institutions in overcoming barriers to develop at least one 20 MW wind, solar or hybrid RE generation project in Colombia by end of 2015, accompanied by working documents, workshops and/or regulatory proposals to facilitate large scale RE generation, transmission and distribution within the SIN. **Milestone 1**- March 2014 CCEP participation in developing the tender documents to

Activities Work Stream 1.5	Description
	call for international bids for up-to 20 MW wind generation investment projects for IADB funding. **Milestone 2**- June 2014. On the basis of progress made by **–** and continued discussions with – CELSIA, EGP and other private sector companies undertaking site specific RE resource evaluation and project engineering designs, for CCEP to support complementary studies to facilitate financial closure and permits required to develop large scale RE generation projects. **Milestone 3**- November 2014. CCEP will implement the evaluations and workshops agreed upon in Milestone 2 by end of 2014.
Overcome barriers to EE/RE by promoting policies and institutional arrangements through Public Private Alliances	For a number of years, UPME, MME and other entities have been discussing institutional arrangements to promote PROURE policies and EE/RE investment in Colombia. In July 2013, a consultancy financed by UPME/UNDP finalized analysis of 8 institutional options and proposed a very broad-ranging PPA between a large number of public and private sector agents. In subsequent discussions with ANDI (national businessmen' s association) and with CCEP, UPME now expects to announce a more operational bilateral MOU with ANDI alone by end of September 2013, and is seeking cooperation from CCEP to put it into effect during next year's Work Plan. CCEP support would take the form of specific technical consultancies and/or integration of the PPF's industrial EE/RE components as a financial mechanism for the PPA (see Work Stream 1.3). **Main results**: Operational design, initial operation and consolidation of one or more PPAs between UPME and private sector associations to promote EE/RE policy and investment starting in the industrial sector (ANDI/2013) and other sectors such as construction, transportation or commercial and building sector with parties to be determined once the UPME/ANDI initiative takes off (2014). **Milestone 1-** December 2013. MOU between CCEP and UPME/ANDI defining scope and nature of cooperation in consolidating their PPA. **Milestone 2** – February 2014. Selection with UPME of one or more additional sectors to develop PPAs to promote EE/RE policy and investment in respective sectors of the Colombian economy. **Milestone 3** – April 2014. MOU between CCEP and new PPA(s) developed following Milestone 2, defining scope and nature of cooperation in consolidating it/them. **Milestone 4** – July 2014. Definition of a medium term institutional strategy for EE/RE promotion as a result of the UPME/ANDI PPA. **Milestone 5** – December 2014. Formulation and presentation to UPME/MME of a long term institutional arrangement for EE/RE promotion on the basis of experiences to date with the PPPs mentioned above.

f. Work Stream 1.6 Support to GOC's capacity to develop LEDS process

In practice, USAID has deployed many consultants and support to MADS and DNP for the overall development of the LEDS process, and CCEP has therefore focused more specifically on supporting the involvement of energy sector agencies such as MME, UPME and IPSE in the LEDS process in

Colombia. A close working relationship has been established with the MME's LEDS consultant, working on specific topics and committees. Support provided has ranged from participating in EC-LEDS public seminars and workshops to providing opinions and information on RE /EE topics that could influence the design and development of a NAMA for ZNI. CCEP is also in a position to engage energy sector companies in the implementation of LEDS policy and strategy. It is expected that during CCEP's second year a similar approach on as needed bases will be followed particularly to support MME's LEDS consultant as indicated below.

Activities Work Stream 1.6	Description
Continued support to EC-LEDS energy-related consultants, workshops and activities	CCEP will continue to make specific contributions on clean energy options and initiatives to EC-LEDS related consultancies, work groups, workshops and documents on an as-needed basis during year two, much as it has participated since project start-up. CCEP has provided and will continue to provide technical and institutional support particularly through MME's EC-LEDS consultant, and is cooperating with UPME in incorporating climate change variables in its battery of energy models. **Main results**: Provide technical and institutional support to the MME's EC-LEDS team, UPME and the other energy sector institutions and companies involved. **Milestone 1-**December 2013 Participate in the workshops and provide the information to facilitate the job of the MME´s EC LEDS team, as well as UPME and other agencies involved. **Milestone 2**- December 2014 Provide the technical backup to the MME´s EC LED´s consultant, UPME energy modelers and other energy sector agencies involved in the EC-LEDS process.
Proposal for a Colombian NAMA on Renewable Energy for ZNI off-grid communities	Preliminary discussions were completed with the GOC on the benefits of this NAMA that could be implemented by IPSE as part of the Colombian Low Emissions Development Strategy. CCEP assisted this initiative stemming from the GOC by submitting the necessary information regarding the current pipeline of clean energy projects under the program. During year two CCEP will provide support to develop a broader-based portfolio of RE projects in the ZNI and to define the regulatory and monitoring and evaluation components of the NAMA. **Main results**: Provide support to develop a broader-based portfolio of RE projects in the ZNI and to define the regulatory and monitoring and evaluation components of the NAMA **Milestone 1-** October 2013 provide information about current and foreseeing CCEP RE projects and technical assistance to the EC-LEDs consultant. **Milestone 2**- December 2014 Submit guidelines on RE project formulation, finance, implementation and M&E to the GoC/LEDS team responsible for designing the NAMA on RE for ZNI.

g. Work Stream 1.7 Renewable energy and energy efficiency educational, awareness and outreach program

RE and EE educational and outreach efforts are an integral part of the CCEP work plan, aimed at gaining policymakers', business sectors' and other general public support for clean energy development paths, fundamental for being able to implement necessary regulatory and policy changes favorable to clean energy solutions and for eliciting behavioral change conducive to a wider adoption of clean energies. CCEP acknowledges the importance of demonstrating the viability of clean energy solutions and has therefore decided to carry out certain iconic projects whose main goal is to educate not only the general public and future generations, but whose impact will reach GOC officials and leaders by setting an example as to the kind of effective and efficient clean energy solutions that are feasible and could be implemented in Colombia. CCEP is also aware of the importance of communicating and increasing the awareness of clean energy options to Colombia's energy sector and GOC through its participation in different events, campaigns, concerts, publications, conference and symposia.

Activities Work Stream 1.7	Description
RE and EE educational projects	CCEP has designed and is planning to co-finance and implement a series of RE systems to be deployed in the Bogota Botanical Garden. This educational activity will demonstrate the different uses and benefits of several types of RE systems. The project will include an ecological and interactive waking path with hand-on displays to educate visitors on clean energy opportunities and solutions and explain the benefits of clean energy solutions right in the middle of the capital city. **Main results**: Design and implement three RE systems at the Bogotá Botanical Garden, including an ecological and interactive waking path with hand-on displays to educate visitors on clean energy opportunities and solutions. **Milestone 1** December 2013: Complete installation of a solar water pump for an interactive demonstration fountain; **Milestone 2** April 2014: Complete installation of a solar water heating system for the "Tropicario" greenhouse where the Victoria Amazonica needs water to be kept at between 19 and 24 degrees Celsius in order to thrive; **Milestone 3** April 2014: Complete installation of a 40 kW gasifier using biomass residues from the Garden's tree trimming that would supply approximately 30% of its daily power demand. **Milestone 4** May 2014: Test, deliver / transfer RE systems
RE and EE heightened awareness and outreach activities	During year two CCEP envisions continuing and building up on the activities carried out, by assigning more time and budget to design and host various workshops and awareness events to promote renewable energy (RE), energy efficiency (EE), best practices, and regulation to the energy market. **Main results**: Design and host various national, regional, technology-specific and/or subsectoral workshops and awareness events, documentaries or publications on the social, environmental and economic benefits of renewable energy, energy efficiency best practices and examples of successful regulatory and RE/EE market development **Milestone 1 –** March/April 2014. In partnership with the Andean Alliance for Energy and Environment (AEA) and/or other international or national initiatives, co-host a 2-day national workshop to promote the development of an efficient fuel stove market,

	aimed at wood stove manufacturers, NGOS, national standards bureau, micro finance institutions, USAID programs and others who have approached CCEP promote massification of modern technologies for pervasive fuel wood consumers. **Milestone 2 –** June/July 2014 - In partnership with ANDESCO, host a debate on introducing renewable energy to the energy market, as well as energy efficiency practices including pro-efficiency regulation, which would include sector representatives and policy makers.

h. Specific project status and implementation plan of selected projects

A brief synopsis of Task 1's first year project pipeline, implementation status and pending steps for moving forward rapidly as of August 2013 is presented in the following table, which serves to illustrate the progress made, challenges confronted, steps taken to complete them in the shortest time possible and shifts in strategy proposed for second year work.

Status of major Task 1 Activities –2013

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
EE/RE Tax Incentive Resolution 563	CCEP Completed activity to encourage energy efficiency and renewable energy investments in Colombia. CCEP worked closely with UPME for the drafting and promulgation of Resolution 563, granting 16% VAT and 20% income tax deductions for EE/RE investment projects in Colombia.	CCEP jointly organized – with ANLA, MADS, UPME and ANDI, the dissemination workshops in order to explain procedures on how to apply for these incentives. CCEP has provided technical and administrative resources to support implementation of the Resolution.	Ongoing support for this resolution started in mid-2012. Resolution 563 promulgated Dec-12 Workshops April – May -13 Review of proposals – April- Sept -13. M&E Aug-13 to Jul-14	October 2013 Support UPME in creating an evaluation s mechanis m	March 2015 Broden its application to other EE investments			
Colombia Clean Energy Project Preparation Facility	CCEP made progress on the design and creation of a CCEP Preparation Facility (PPF), a fund that would finance part of the detailed engineering studies necessary for an informed decision-making process regarding investments in energy efficiency and renewable energy projects.	The PPF – in business plan stage, would be ideally co-funded by other sponsors in addition to CCEP and would outlive this Program, ensuring sustainability in time of the effort to promote EE investment.	3 workshops were held in Bogota, with financial institutions, international donors and Colombian companies and ESCOs, to socialize and obtain feedback. CCEP continues to move forward with the PPF business plan.	March 2014 Final approval of PPF business plan	Summer 2014 Approval of funding cosponsor	Fall 2014 PPF Start up	March 2015 Drfat proposal for municipality RE investement fund	Fall 2015 implement ation of all financial mechanis ms
CREG ZNI Tariff Methodology	CCEP supported development of a unified and integrated energy sector database to feed into the new off-grid tariff methodology being designed by CREG, and which will be hosted in the geo-portal platform developed by the IGAC.	In January 2014, CCEP will provide all solar and wind resource mapping for Colombia, including technological cost analysis and the identification of sustainability models in the off-grid zones (ZNI) regions.	Contract with Westeva - Ken Westrick signed on Aug 13. End results expected Nov 13	January 2014 Deliver (solar, wind) resource mapping	Summer 2014 Finalize diesel subsidy study	December 2014 Add other RE resouces		

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
PERS Nariño	CCEP supported the design of a Sustainable Rural Energization Plan for the Department of Nariño. The 12 month team analysis involves UPME, IPSE, CCEP, University of Nariño and the Governorship of Nariño.	Includes: a 3,200 rural household, commercial and industrial energy survey in 13 sub-regions; a GIS on rural energy demand and energy resources; an assessment of rural productive activities and energy needs and options to enhance value-added; the formulation of rural energy development strategies for 2013-2030; and, the design of project portfolio.	Ongoing project to be completed by Dec -13. The last milestone associated with the project report and closure is planned to be completed by Dec-13. A workshop to present results is planned for mid-Nov-13	Feb 2014 completion PERS Nariño	March 2014 Define methodological outputs	December 2014 replicate the methodologies		
Educational & Demonstrative RE Project for the Bogota Botanical Garden	CCEP designed RE solutions for the Bogota Botanical Garden (JBB) as an important educational and demonstrative project within the city and to demonstrate importance of a renewable energy.	Project includes a 40 kW gasifier system; a solar water heating system; and an isolated solar water pump.	Agreement signed Oct -13. Implementation to start Nov-13.	December 2013 Installation of water pump	April 2014 Complete installation of solar heating and gasifiers	May 2014 Test and deliver		
Rational and efficient use of energy and alternative energy sources program-PROURE	CCEP initiated assessment of the achievements and lessons learned from the PROURE 2010-2015 Indicative Action Plan, using a designed monitoring and evaluation scheme; and proposing the evaluation and assessment instruments to monitor impacts of the next Plan of Action.	National survey to determine the goals and objectives of the current National Indicative Plan for the Rational and Efficient Use of Energy (PROURE).	Ongoing; national survey has been designed and launched, to be complemented with personal interviews to strategic stakeholders and experts. Reports on PROURE impact assessment, M&E instruments, guidelines and final publication of 2015-2020 IAP	Dec 2013 M&E of PROURE IAP 2010-2015	Dec 2013 Impacts and effects of PROURE	March 2014 recommendations for new action Plan	Oct 2014 formulate the new PROURE IAP 2015-2020 activities	November 2014 New IAP 2015-2020 IAP

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
PERS Tolima	CCEP initiated structuring of this activity associated with the design of a Sustainable Rural Energization Plan for the Department of Tolima. PERS involves UPME, the University of Tolima, EGETSA (Energy Generating Company from Tolima), ENERTOLIMA (Energy Company from Tolima), DNP (National Planning Department), local NGOs and the Governorship in Ibague, Tolima.	The Government of the Department of Tolima requested UPME to implement the PERS strategy in this Department, using the tools, survey system, field work preparation, analysis of information system, project schemes, manuals and equipment designed and used in the Nariño Plan. The main operator is the University of Tolima.	Project designed and multi-party agreement ready to be signed in October 2013. Project implementation begins Nov-2013 to be completed by November 2014.	Nov 2014 completion PERS Tolima	Feb 2015 Follow up			
PERS Guajira	CCEP initiated structuring of this activity associated the design of a Sustainable Rural Energization Plan for the Department of Guajira. This PERS involves Chancellery, CCEP, UPME, SENA, CorpoGuajira and other local NGOs.	Provide technical, administrative and financial resources and efforts in order to design the PERS Guajira, adapting the tools and methodologies used in the Nariño Plan to regional particularities, in addition to providing an administrative unit with funding. The main operator is to be CORPOGUAJIRA and the SENA renewable energy center will take technical lead for the project.	CEP expects to sign the Associative Agreement before the GOC period of "Ley de Garantías." Start of activities expected for Nov-2013. CCEP assistance will include time put in by its T1 team and consultants, as well as monetary and technical resources.	Dec 2014 completion PERS Guajira	Feb 2015 Follow up			

2.1.3 Strategic and operational adjustments

During the second year the focus of this component will mostly remain the same but will be adjusted to address some of the lessons learned during the first year. The main strategic and operational modifications to be implemented during CCEP's year two are described below.

The main immediate adjustment required to thrust implementation of some of the activities described above is reinforcing technical personnel at the Bogota office under the current Task 1 leader for two main reasons:

- CCEP's initiatives during first year have generated an increased work load to the Bogota team coming from the GOC national agencies and segments of the private sector that are eager to implement clean energy strategies and projects. Existing staff in Bogota can only appropriately respond to these demands with the additional personnel proposed below.
- There are several Task 2 and Task 3 activities that in practice have been carried out under Task 1 through the Bogota team due to macro nature of their scope which is separate from the micro nature of the scope of the rest of the activities carried out under Task 2 and Task 3. Examples of these macro activities are: Developing of financial instruments, consolidation of Private-Public Partnerships (PPP), energy resource evaluation, etc.

Specifically there is a need to hire two full time mid-level technical individuals:

1) An Energy Policy Analyst. This individual is needed to support Task 1 locally with the identification, analysis and formulation of RE/EE policies, planning instruments, regulatory development and economic incentives, and to carry out other required interactions with UPME, MME, CREG and IPSE. The Energy Policy Analyst will be responsible for supporting the overall planning and implementation of the Program through direct support to the COP, DCOP and Task 1 leader in Bogota, as well as interactions with Task 2 and Task 3 teams in field offices.

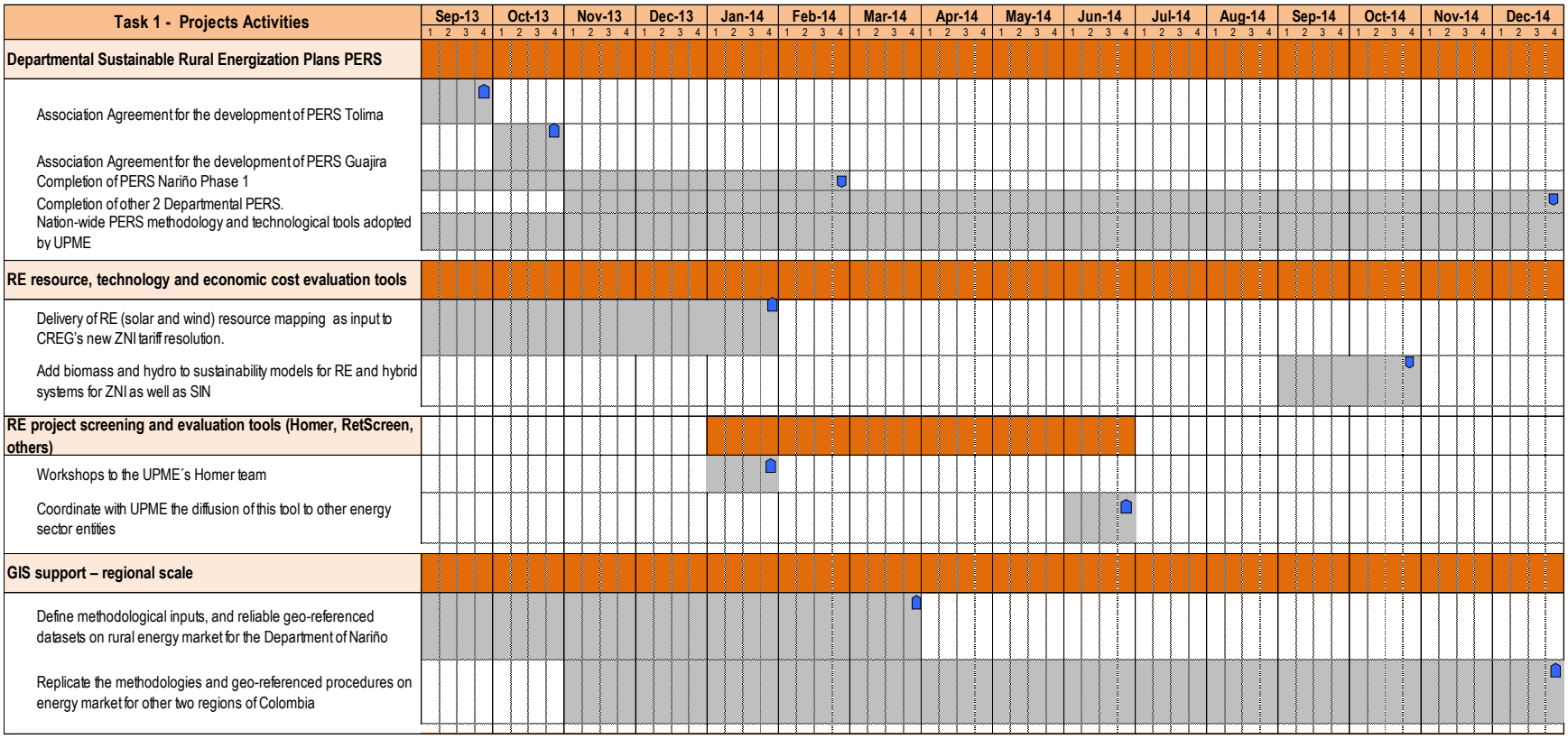
2) An Energy Engineer. This individual is needed in Bogota to provide energy-specific support to task 1 policy and project promotion and support task 2/task 3 projects´ institutional and financial follow up with GOC, private sector and other partner institutions headquartered in Bogotá, since task 2 and 3 field teams are based in Cali and Medellin, respectively.

   Draft job descriptions are included in Appendix A

In addition, the implementation of Task 1 activities during Year Two will require involvement of a strong local consultant pool for specific technical support to the GoC and private sector institutions associated with the preceding initiatives.

2.1.4 Gantt chart

Figure 4: Task 1 Projects Gantt chart



Task 1 - Projects Activities	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
GIS support – national scale																
Update the software datasets of RE resource maps and energy technology supply in the ZNI																
Provide an average or "levelized" cost analysis in Colombia (COP/kWh) per region and per technology.																
Deliver information layered maps in an interactive way, providin information about the more efficient technology mix and its cost of generation (COP / kWh)																
Integrate additional layers of RE resources and technology costs to the software developed for CREG and UPME.																
Integrate the geo-referenced information system resulting from the PERS, CCEP/CREG, and other studies.																
Data compilation, analysis and consolidation																
Compile institutional data sets in the IGAC´s energy sector platform.																
Technical Support to UPME on PROURE EE & RE targets, impacts																
In-depth analysis of the current state of EE & RE, identifying PROURE impacts, to feed the design of institutional arrangements under study for EE/RE promotion																
Design a M&E scheme to determine, quantitatively the progress PROURE Action Plan 2010-2015																
Propose recommendations to formulate a second PROURE Action Plan 2015-2020																
Tax incentive support to UPME																
Support UPME in creating an evaluation mechanisms to quickly respond to the companies applying for tax exemptions																
Strengthen the current mechanisms to broaden its application to other EE investments to be contemplated within the 2015-2020 Action Plan.																

Task 1 - Projects Activities	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Definition of financial mechanisms for EE/RE investment																
Final approval of PPF business plan, administrative and managerial structure and operating procedures by interested cosponsors																
Approval of cosponsor funding by respective stakeholders; Staff recruitment and initial funding set up.																
Start-up of PPF services																
Draft proposal of additional financial mechanisms for UPME/ANDI PPP and for municipality clean energy investment funding																
Implementation of financial mechanisms and incentives for EE/RE investments																
Technical support UPME regarding EE tax incentive regulation																
Design possible additional policies with MME and MADS																
Support regulation diffusion and capacitation																
Technical support to GOC regarding ZNI tariff and subsidies																
Incorporation of sustainability models, RE resource mapping and "levelized" cost analysis.																
Agreement with MME for an in-depth analysis of the economic, social and environmental costs of diesel subsidies for ZNI power generation.																
Finalize diesel subsidy study and formulate corresponding policy recommendations.																
Transaction support to development of large scale RE power generation projects for the National Interconnected System																
CCEP participation in IADB international bids for up-to 20 MW wind generation investment projects																
Site specific RE resource evaluation and project engineering designs																
CCEP expects to implement the evaluations and workshops agreed upon in Milestone 2 by end of 2014																

Task 1 - Projects Activities	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Overcome barriers to EE/RE by promoting policies and institutional arrangements through Public Private Alliances																
MOU between CCEP and UPME/ANDI defining scope and nature of cooperation in consolidating their PPA.																
Selection with UPME of one or more additional sectors to develop PPAs to promote EE/RE policy and investment in respective sectors of the Colombian economy.																
MOU between CCEP and new PPA(s) developed following Milestone 2, defining scope and nature of cooperation in consolidating it/them.																
Definition of a medium term institutional strategy for EE/RE promotion as a result of the UPME/ANDI PPA.																
Formulation and presentation to UPME/MME of a long term institutional arrangement for EE/RE promotion.																
Continued support to EC-LEDS energy-related consultants, workshops and activities																
Participate in the workshops and provide the information to facilitate the job of the MME´s EC LEDS team.																
Provide the technical backup to the MME´s EC LED´s consultant, UPME energy modelers and other energy sector agencies involved in the EC-LEDS process.																
Proposal for a Colombian NAMA on Renewable Energy for ZNI off-grid communities																
Provide information about current and foreseeing CCEP RE projects and technical assistance to the EC-LEDs consultant.																
Submit guidelines on RE project formulation, finance, implementation and M&E to the GoC/LEDS team responsible for designing the NAMA on RE for ZNI.																
RE and EE educational projects																
Installation of a solar water heating system for the "Tropicario" greenhouse																
Installation of a solar water pump for an interactive demonstration fountain																
Installation of a 40 kW gasifier using biomass residues from the Garden's tree trimming that would supply approximately 30% of its daily power demand.																
Test, deliver / transfer RE systems																
RE and EE heightened awareness and outreach activities																
Debate on introducing RE to the energy market, as well as EE practices including pro-efficiency regulation, which would include sector representatives and policy makers.																
Participate in national or international events, seminars or workshops in an effort to increase RE/EE awareness.																

Milestone completed

2.2 TASK 2- EXPANDING ACCESS TO RENEWABLE ENERGY SOURCES IN CURRENTLY UNSERVED AREAS

2.2.1 Overall approach

Under this component CCEP seeks to promote and construct renewable energy applications in rural communities through a participatory process for community development with the aid of a multi-disciplinary team. This team includes engineering specialists, economists and community development specialists familiar in working with community-based organizations. In parallel with the community participatory process, a technical process is undertaken by CCEP for each locality involving RE resource evaluation, analysis of local productive activities, energy demand and supply analyses and forecasts, analysis of energy technology options and costs.

The principal objective of Task 2 is to encourage the development of innovative, commercially viable renewable energy projects utilizing rural entrepreneurs in accordance with the requirements of earmarks from the U.S. Congress. Task 2 directly supports Intermediate Result 4.2 – Climate change mitigation and adaptation improved.

CCEP updated RE project selection criteria is shown in the textbox to the right. Criteria still includes the potential for demonstrating productive uses of energy in a commercially sustainable manner and requiring at least 50% global leveraging, not project by project.

Criteria considered for selecting year two projects:

- Demonstrating the potential for productive use applications to increase the commercial viability of off-grid systems
- Ability to attract third party investment, leveraging up to 50% cosponsorship (public, private, or community)
- Demonstrating the feasibility of community run energy service companies for the operation and maintenance of small scale renewable energy projects
- Demonstrating technical and financial feasibility of converting diesel micro grids to RE hybrid systems.

CCEP's work during the second year will focus on strategic set of projects that advance Task 1 objectives or serve a specific demonstration purpose.

The following figure shows the five revised development stages and the main activities carried out under each stage. Through these project development stages, Task 2 projects advance within CCEP's approach from project pre-selection to project monitoring and evaluation.

Details and timelines for the implementation of selected projects are included in section 2.2.2e.

Figure 5: Task 1 Project development stages

Projects in CCEP's pipeline move through each of those five development stages. Specifically, at each locality selected the CCEP field team works with the community to determine its geographic and economic boundaries in order to assess its energy resources and needs for both domestic and productive activities. CCEP then introduces the community to the concept of renewable energy applications (appropriate to those needs), gauge their interest in developing an RE project, and assess the resources both monetary and human that the community will be able to contribute or access for the project.

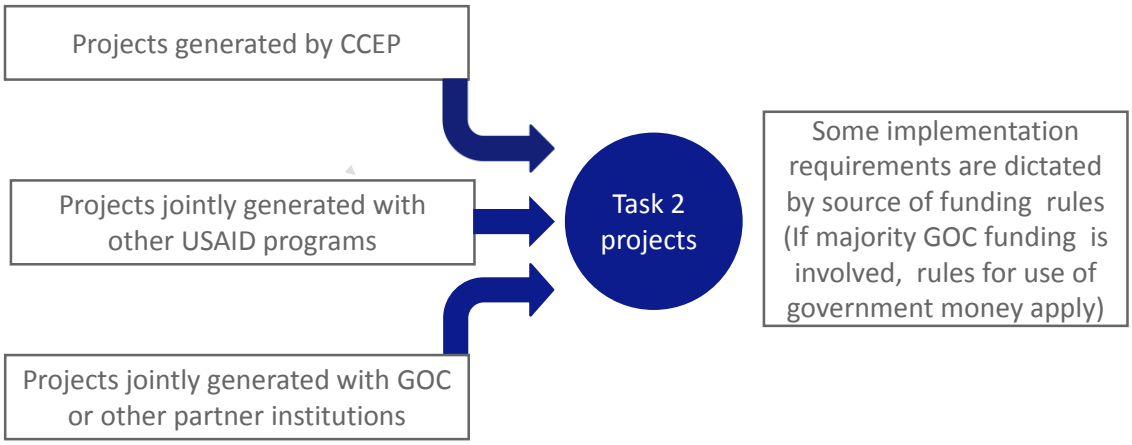
Once the community and CCEP agree to move forward, the project team organizes a set of responsible committees to participate in the design, construction and O&M of the project. In cases where partner public and non-governmental organizations have their own community participation committees or mechanisms, CCEP proposes to adapt to these as long as the basic premises of community involvement and empowerment in all phases of project selection, approval, finance, oversight and control of implementation are respected to assure sustainability and ownership, in compliance with USAID and CCEP requirements of transparent administrative, financial and social appropriation procedures.

More than 15 other projects are in the pipeline – 2 or 3 already under assessment and the rest pre-identified as options for year two. However, the strategic focus outlined in this work plan (and separate budget realignment and contract modification documents) seeks to shift from a target of 80 communities with 2,000 beneficiary households to larger scale projects benefitting 16,000 beneficiaries in off-grid communities. The shift in strategy also involves diversifying partners, clustering projects by region and/or co-financing source, engaging SMEs and MFIs in creating rural markets for specific RE technologies and focusing on hybrid solutions for larger scale municipal seats in the ZNI – the latter given the GOC's commitment to providing 24 hour electricity service to 38 specific localities by 2014, mainly through costly diesel generation or grid extension.

Due consideration has also been given in our second year Task 2 strategy to the electoral calendar and legal restrictions posed on GOC funds and contracts from four to six months before May 2014 presidential elections, depending on the nature of the institution and the contractual or cooperation agreement under consideration. Thus great efforts have been made by the CCEP team to comply with all technical, administrative and legal prerequisites necessary to assure that GOC funds committed by partners will be effectively assigned by October 2013, for implementation during FY 2013/2014. CCEP will continue to structure project co-financing agreements with other GOC partners at the national, regional and municipal levels by the same month, and is already engaging private sector energy companies and foundations to partner in Pacific Coast, Guajira and Nariño afterwards.

During the second year we plan to continue the identification, selection and implementation of additional projects taking into consideration that CCEP will be working in parallel with various sources of projects as illustrated in Figure 6.

Figure 6: Task 2 Source of RE projects



Depending on the source and extent of participation of co-financing partners, there are different technical and procedural requirements that vary from partner to partner. When the co-financing partner is IPSE, for example, it requires detailed engineering studies regardless of the size of the project. These more stringent requirements generate additional time and cost during the formulation of each project, as has been experienced with all projects formulated during first year with this institution.

During most of year two, additional projects with GOC partners may be designed and structured, but public investment budgets for implementation cannot be assured due to electoral legislation and administration changes. CCEP focus regarding GOC institutions will thus shift to (a) complete implementation of first tier projects financed by October 2013; (b) Provide technical and financial assistance to GoC partners and private companies interested in designing and structuring larger scale RE projects for ZNI municipal seats (such as La Primavera); (c) substantially advancing or finalizing methodologies and procedures. CCEP will also work with private foundations, NGOs and private energy companies to promote rural renewable energization projects in off-grid localities within their jurisdictions.

2.2.2 Planned activities under each Work Stream

Based on the progress made, the hurdles encountered during CCEP's first year of implementation and the need to accelerate the pace of reaching the point where CCEP's incentive fund can be used for these studies and steps, we are proposing to do the following:

- Expand the use of partners' own community organization and participation schemes
- Establish longer term community development commitments
- Concentrate CCEP's team on defining and implementing the energy components of third party development projects or processes.

During the second year, CCEP's will also seek to assure new partnerships with USAID operators and Colombian agencies working in specific rural communities to hasten the pace of RE project development, while at the same time maintaining the full cycle approach to develop and implement projects already under design or discussion with current or potential partners.

a. Work Stream 2.1: Cost analysis of renewable and hybrid options

CCEP has developed simple cost analysis models for renewable energy options in the context of its micro-level project portfolio – small-scale biomass gasification (5-100 kW); mini hydro plants (1 to 150 kW); photovoltaic systems; solar refrigeration, distillation and water heating; etc. While at the same time, CREG hired and published consultancies on renewable generation and distribution costs for higher-scale power schemes, in the context of its design of new country-wide ZNI electricity tariffs. By end of first year, CCEP's will systematize an RE/hybrid technology cost database, seeking to integrate these findings the second year into a specific modeling platform to be agreed upon with UPME, IPSE and/or CREG.

CCEP has been working on different cases analyzing grid extension/diesel/RE/hybrid cost comparison and evaluation models for rural electrification are also being developed by UPME in the context of the PERS Nariño project. As part of this effort CCEP is also planning to prepare a list of indicators such as geographic location, population density and system configuration as well as the value in linking productive activities with renewable energy utilization. The testing ground for these activities is encapsulated in the Nariño Rural Energization Plan. Results and lessons learned from that activity will provide a reference point for this cost analysis of renewable hybrid options.

During year two, CCEP will continue working closely with UPME, IPSE and CREG to develop shared methodologies for systematic cost analysis of renewable and hybrid energy sources as part of their standard operating procedures. In developing the shared methodology, CCEP has considered testing and evaluating the practicality of using RE planning software such as HOMER or other similar tools to evaluate renewable and hybrid options. CCEP already reached out to HOMER's developer in the USA and other local experts with experience in using this tool. During the second year we are planning to schedule at least one initial training session and additional sessions could be considered as necessary.

Activities Work Stream 2.1	Description
Cost Anlaysis Models	CCEP is comparing the information adquired during the project design with other sources, including information provided by consultant WESTEV, results from the 3 PERS, and information provided by UPME and IPSE. Using this information CCEP will use HOMER software data base to provide cost alalysis to the RE solutions not included in WESTEVA´s consultancy (hydro and biomass). **Main result:** Identification of sustainability RE system models in the off-grid zones (ZNI) regions. **Milestone 1**- July 2014 Obtain comprenhesive hydro information for the ZNI, with historic measurements. **Milestone 2**- Oct 2014 Obtain comprenhesive biomass information for the ZNI, with historic measurements. **Milestone 3**- December 2014. Use the HOMER software to provide cost per region following WESTEVA´s model.

b. Work Stream 2.2: Project identification, implementation and sutainability

CCEP's major concern is to assure that all its rural renewable energization projects will be technically, socially, environmentally and economically sustainable, and will favorably impact the quality of life and economic activities of beneficiary communities. Technical and environmental sustainability are assured by the high quality designs, components, safeguards and installation techniques involved in our projects. These are elements contributed to projects by CCEP and partner institution engineers, consultants and contractors – all extraneous to the intended beneficiary communities.

Social and economic sustainability can best (if not only) be assured through active community involvement, appropriation and management of the energy solutions installed.

Given the concerns described avobe, CCEP selects projects based on the productive use of energy, and community organization and appropriation. For each specific project CCEP recollects the needs and economic activities that can be enhaced with the use of energy.

In all cases, CCEP will identify and promote opportunities for productive use of renewable energy in beneficiary communities, supporting the creation or strengthening of community-based SMEs, by providing proper enterprise development services to rural and clean energy entrepreneurs involved in the development, design, installation, operation, and maintenance of rural renewable energy systems – not only associated with specific field projects but also to promote creation of rural renewable energy markets on a broader scale. Support will include technical training or business development skills. Technical assistance will be provided to financial institutions to expand enterprise or consumer financing for household or community scale renewable energy systems, focusing not only on direct beneficiary project communities but opportunities gauged during CCEP's first year implementation.

As indicated in preceding sections, capacity building efforts have initially focused on the first tier infrastructure projects, as an input in the design of future community participation strategies. It starts from the beginning of the project as active community involvement is encouraged during project identification, assessment and implementation. The community´s hands-on participation during the construction phase will familiarize them with the technology implemented and give them practical tools to troubleshoot system operation and management. Furthermore, a series of training and technical assistance initiatives are planned and implemented to prepare the community through committees and individual efforts to maintain and operate the system. CCEP's community assistance seeks to strengthen community capacity in terms of financial management, fee collection for services, bookkeeping, and organizing micro enterprises to manage the systems.

During year two CCEP will evaluate the lessons learned in projects developed, which will guide future CCEP implementation and the training and technical assistance provided to communities for infrastructure project implementation, community participation, and commercialization of renewable energy systems.

Activities Work Stream 2.2	Description
Project identification and implementation	CCEP has designed and is implementing the pipeline of projects included in table "Status of Task 2 Rural RE Project Portfolio – 2013". For each specific project main results and milestones are detailed.

c. Work Stream 2.3: Capacity building for rural energy SMEs

During the course of first year implementation, CCEP detected needs and possibilities of market development with regards to efficient wood stoves, solar lamps, solar fencing, LEDS lighting and energy efficient appliances. CCEP initiated contacts with microfinance institutions to study the feasibility of gearing already developed financial products to create a market for renewable energy and energy efficiency goods and services such as mentioned, in the ZNI and in urban small businesses.

In conversations with Finamerica, a micro finance entity with 25 years of experience financing the poorest population of the country and presence in rural areas, CCEP found an opportunity to develop a market for RE and EE products and financial services to facilitate productive activities and improve the quality of life of CCEP targeted populations.

Activities Work Stream 2.3	Description
Develope financial products to create market for RE/ EE goods and services	CCEP has identified potentials to create local markets for RE/EE goods and services. Assisting the development of these markets will foster access to RE to small and widely dispersed populations, and promote EE practices. **Main result:** Develop a market for some RE/EE equipment and services. **Milestone 1**- July 2014 develop a market development business plan for one or more specific types of EE/RE goods or services **Milestone 2**- December 2014. Start implementation of that market.

d. Work Stream 2.4: Impact evaluations

During year two CCEP will undertake evaluations to quantify the impact that rural energization has on a number of key factors such as economic growth and job creation, education, conflict reduction, and improved health service delivery. Baseline studies will be finalized for selected project beneficiary communities to provide before and after comparisons, and randomized evaluation methodologies will be designed to compare communities with and without access to electricity and other energy services. The methodologies to be developed will benefit from the analysis of the 3,200 household, commercial, industrial and institutional surveys designed with CCEP methodological assistance in the PERS Nariño project, which provides a rich database on socioeconomic and technological conditions of energy use under varying conditions of electricity and other energy service access.

For the first tier projects, CCEP will focus its evaluation on the methodologies, instruments and tools used to implement the projects, which will help CCEP improve the process and enhance the potential results of future projects. The rest of the projects will include this dimension, together with the impacts related to energy use, climate change and economic growth expected from the projects.

Activities Work Stream 2.4	Description
Project impact evaluation	During the design of each RE project, a baseline study is stablished in orther to measure changes in the quality of lives of the beneficiaries, Monitoring is perform along project implementation, and after project completion CCEP performs an impact evaluation to verify the changes aimed to accomplish at the begginig of the project. For each specific project an impact evaluation is programmed in the Pipeline Projects Table "Status of Task 2 Rural RE Project Portfolio – 2013".

e. Specific project status and implementation plan of selected projects

A brief synopsis of Task 2's first year project pipeline, implementation status and pending steps for moving forward rapidly as of August 2013 is presented in the following table, which serves to illustrate the progress made, challenges confronted, steps taken to complete them in the shortest time possible and shifts in strategy proposed for second year work.

Status of Task 2 Rural RE Project Portfolio – 2013

Project	Description	Main results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
San Antonio MHP project (SNSM)	Involves grant for refurbishing the micro-hydroelectric power plant (MHP) and installation of renewable energy systems at Kogui Education and Health Centers at the San Antonio village in the Sierra Nevada de Santa Marta (SNSM) benefiting about 320 children and all school staff	Repairs and expansion for a small MHP (1,5 kW), Improved cook stove, water purification system, small wood plot, 17 solar lamps (LED)	Project M&E – Construction completed and transferred to beneficiaries; follow up focuses on fuel wood plot consolidation	Feb 2014 Follow up			
Arusi, Partado, Termales- Nuqui – MHP project (Choco)	Involves construction of MHP for towns of Arusi, Partado and Termales in Choco benefiting about 710 people (248 households). The project also includes household meters and installations, street lighting, EE measures and a communal ice factory to be run by the local energy serve company to be set up.	Construction of MHP (100 kW), interconnection lines between towns to support cold chain (ice production) for local artisanal fisheries, and for eco-tourism as well.	Project identification & formulation stage - design, studies and budget details completed and approved by GoC and community partners; permits finalized; pending contractual signatures for start up	Feb 2014 contract signed with the MHP infraestructure constructor, and the organizational assisstance worker	Nov 2014 Completion of infrastructure work	Dec 2014 iniciation of the project for the productive use of energy	Feb 2015. Follow up

Project	Description	Main results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Utria National Park - Nuqui (Choco)	Involves the installation of solar photovoltaic systems to support the local concessionary activities (NGO Mano Cambiada),	Solar systems installation: - Tourism: 4 bungalows Food refrigeration and freezing facilities - Park facilities: Auditorium, Interpretation Center, Playa Blanca bungalow and telecommunications.	Project identification & formulation stage - All design and studies completed and approved by IPSE and PNN; pending public biding to solar systems acquision and installation	Nov 2013 start of infrastructure work	Jan 2014 Completion of infrastructure work	July 2014 Folow up	
Yucal, Nuqui – MHP project (Choco)	Involves the construction of MHP at the village of El Yucal, in Nuqui, Choco benefiting about 450 people (92 Embera indigenous families); includes rice and corn mill, public lighting, household installations and energy efficiency measures	Construction of communal MHP (18kW), mill for corn and rice, and carpentry workshop.	Project identification & formulation stage - All design and studies completed and approved by IPSE; pending last "consulta previa" visit and public bidding to MHP construction	Feb 2014 contract signed with the MHP infraestructure constructor	July 2014 Completion of infrastructure work	Dec 2014 Follow up	
Bunkwimake - MHP project (SNSM)	Involves grant for construction of MHP for the indigenous Arhuaco town and institutional (education, health) facilities in the SNSM benefiting about 1000 people (160 families approx.); solar home lighting for outlying areas (320 families approx.)	Construction of the MHP (10kW), sugar mill (to produce "panela"[1]), Solar dryer (Cacao), Home lighting (LED).	Project identification & formulation stage – all designs and studies completed for MHP, pending approval by IPSE and environmental license	March 2014 ANLA and National Parks authorizations	May 2014 contract signed with the MHP infraestructure constructor	Oct 2014. Completion of infrastructure work	Feb 2015. Follow up

Project	Description	Main results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Palmor MHP project (SNSM)	Implementation of a second 130-150 kW micro hydro turbine for town's growing energy demand. Will benefit approx. 800 families in town and outlying areas	Productive uses include meat packing facility, fruit pulp packing facility, as well as "silos" (dryers) and de-pulping motors for coffee	Project identification & formulation stage – Ongoing technical field visits by CCEP and IPSE	March 2014 Completion of project design	May 2014 contract signed with the MHP infraestructure constructor	Jun 2015. Completion of infrastructure work	Dec 2015 Follow up
Santa Rosa de Guayacan -Bajo Calima, CVC (Valle del Cauca)	Installation of solar system for the indigenous community of Santa Rosa de Guayacan, department of Valle del Cauca, benefiting 122 people 32 households	Installation of solar system for the art & crafts workshop, an efficient stove with its biomass/wood plot, a solar refrigerator, and portable solar systems to provide lighting to households.	Project identification & formulation completed. Pending agreement between CCEP and the Asociacion de Cabildos Indigenas del Valle del Cauca - ACIVA	Feb 2014 contract signed with the infraestructure constructor	Oct 2014. Completion of infrastructure work	Dec 2015 Follow up	
Serranía del Perija	Technical assistance and the installation of 70 photovoltaic solutions for coffee processing, directed to small farmers in Serrania del Perija Guajira department	Installation of solar system for the post harvesting coffee procesing, and provide technical assitance to 70 small farmers	Project identification & formulation stage – Ongoing technical field visits by the Coffee Growers Federation, Chancellery and CCEP	May2014 Completion of project design	July 2014 contract signed with the system provider	Dec 2014. Completion of infrastructure work	March 2015 Follow up
El Cerrejon water pumping projects	Installation of solar pumping systems for the indigenous communities of Fundacion Cerrejon	Installation of solar water pumping systems for the beneficiaries of Fundacion Cerrejon	Project identification & formulation stage – Ongoing technical field visits by Fundacion Cerrejon and CCEP	May2014 Completion of project design	July 2014 contract signed with the system provider	Dec 2014. Completion of infrastructure work	March 2015 Follow up
Sabana Crespo	Involves the construction of MHP at the village of Sabana de Crespo, in Sierra Nevada de Santa Marta.	Construction of the MHP to provide energy to the social infraestructure	Project identification & formulation stage – Ongoing technical field visits by CCEP and SELF	April 2014 Completion of project design	May 2014 contract signed with the system provider	Dec 2014. Completion of infrastructure work	March 2015 Follow up

The expected work schedule and timing for the implementation of these and other projects during CCEP's second year is shown in the Gantt chart included as Figure 9.

2.2.3 Strategic and operational adjustments

Moving forward, during the second year the focus of this component will be expanded and redirected to address some of the lessons learned during the first year:

- Consolidate year one partnerships to push through implementation of its community project portfolio.
- Endeavor to design and develop additional projects towards reaching the 4,000 household target – but strategically selected to demonstrate a representative range of RE technologies, geographic settings, social groups (indigenous, Afro-Colombian, "campesino" populations), business models and partnerships.
- Focus on rural RE market development.

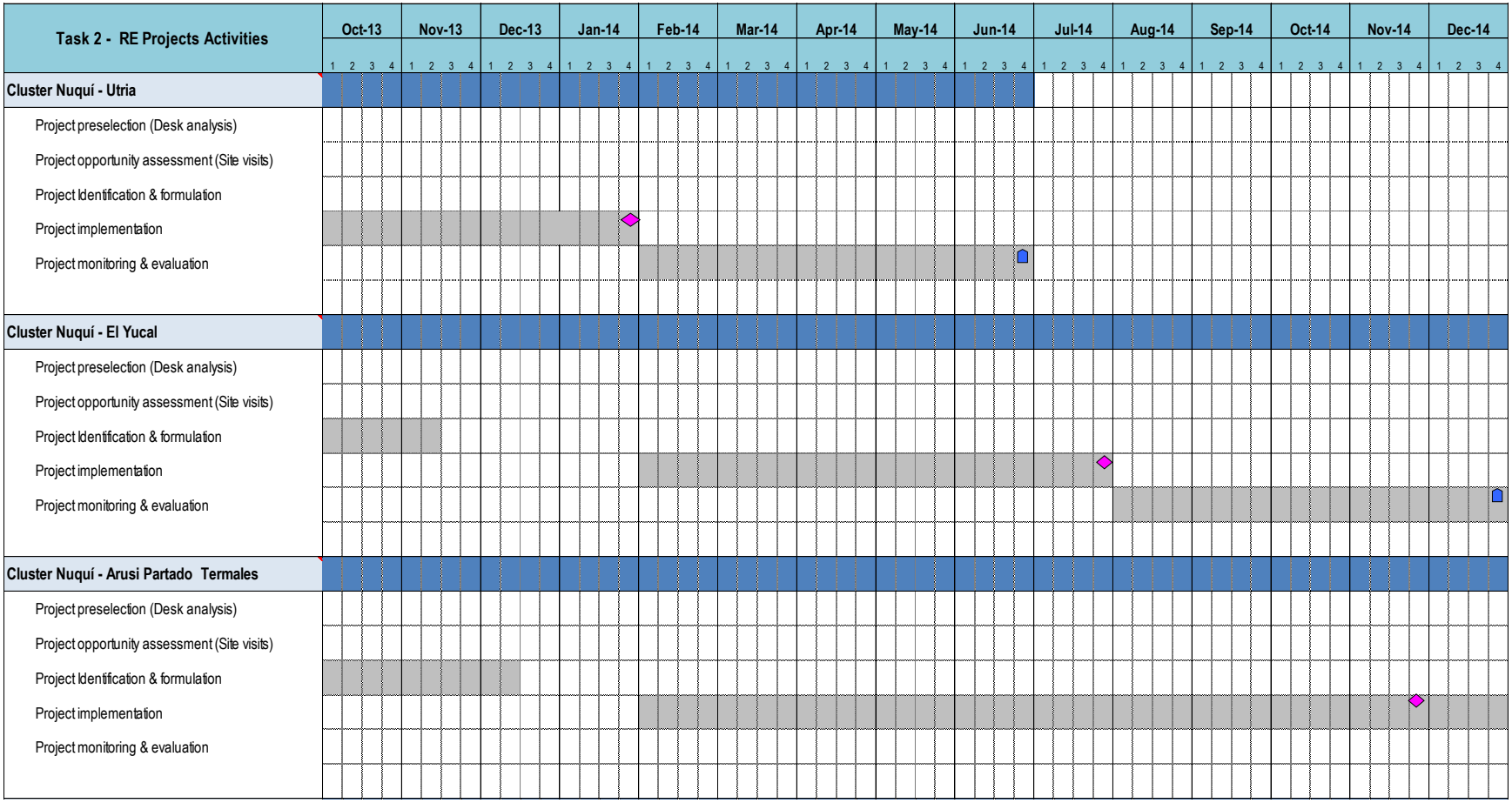
The main operational modifications to be implemented during CCEP's year two are:

- Shifting to a ''cluster' approach to off-grid projects as it pertains to the co-finance requirements. This should enable CCEP to speed execution of projects as funds become available, instead of co-financing each component or waiting until all components have co-finance.
- Focus on getting public partner funding commitments before the government enters an election year by October 2013 and structure pass-through fund arrangements as needed and prepare projects for potential increase of end of fiscal year counterpart funding.
- Finding appropriate pass-through funds and paying reasonable management fees where necessary to take full advantage of project clusters that already have several partners/counterparts like IPSE, DPS, CVC or Chancellery whose funding cycle may not coincide with ours.
- Focus on private sector alliances and market development, particularly during anticipated election season GOC institutional slow-down.

The main immediate adjustment required to thrust implementation of some of the activities described above is reinforcing technical personnel at the Cali office. Specifically under task 2, CCEP is planning to add an electrical engineer and a technical draughtsman/draughtswoman to APROTEC's staff, intensify the role and dedication of its biomass consultant, and designate a budget to hire short-term specialized consultants on an as-needed basis.

2.2.4 Gantt chart

Figure 7: Task 2 Projects Gantt chart



Task 2 - RE Projects Activities	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Cluster SNSM - San Antonio micro-hydroelectric power plant (MHP) project															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															
Cluster SNSM - Bunkwimake - MHP project															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															
Cluster SNSM - Palmor MHP project															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															
Cluster SNSM - Sabana Crespo															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															

Task 2 - RE Projects Activities	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Valle del Cauca - Santa Rosa de Guayacan															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															
Cluster Guajira - El Cerrejon															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															
Cluster Guajira - Serranía del Perija															
Project preselection (Desk analysis)															
Project opportunity assessment (Site visits)															
Project Identification & formulation															
Project implementation															
Project monitoring & evaluation															

2.3 TASK 3 - ENERGY EFFICIENCY AND RENEWABLE ENERGY INVESTMENT PROMOTION

2.3.1 Overall approach

Under this component CCEP is providing technical assistance and training to enable companies to bring industrial/agro-industrial clean energy projects to financial closure and support project sustainability and replication.

The principal objective of Task 3 is to implement interventions to catalyze industry/enterprise investments in EE through a combination of project development, financing facilitation, and technical and business advisory services/technical assistance. Task 3 directly supports Intermediate Result 4.2 – Climate change mitigation and adaptation improved.

During the first year this component focused primarily on small- and medium-size industries, but also considered large facilities that can have replication potential and EE projects in areas of interest to USAID and the GOC. Target industries/companies were identified based on: (i) economic viability of EE/RE investments; (ii) potential impact of EE/RE investments in terms of energy reduction and cost-savings; (iii) potential for a demonstration effect, information-sharing, and replication among similar facilities/companies (e.g., through an industrial association; with industries that are physically clustered); and (iv) complementarity with other donor activities or with specific financial credit lines for EE/RE investments available through national banks and other organizations.

CCEP's work during the second year will build up on the process and lessons learned during the first year and incorporate actions to integrate lessons learned into an updated project development process to adjust it to conditions and requirements found through interactions with the various industries and financial institutions. Our second year work plan also identifies what can be done in the near term to move forward and/or speed up the implementation of selected projects.

Criteria used for selecting projects

- **Geographic priority:** Antioquia, Atlántico, Bolívar, Córdoba, Boyacá, Cundinamarca, Santander, Eje Cafetero, Valle del Cauca
- **Industrial subsectors priority:** Agroindustry; food & beverages; brick & ceramic. Others included since January 2013: Textile sector (excluding confections) and Metal mechanic (including metallurgy)
- **Technologies priority:** Boilers, thermal systems, refrigeration and cooling, furnaces, drying, cooking, combustion, bio digestion, waste to energy etc.

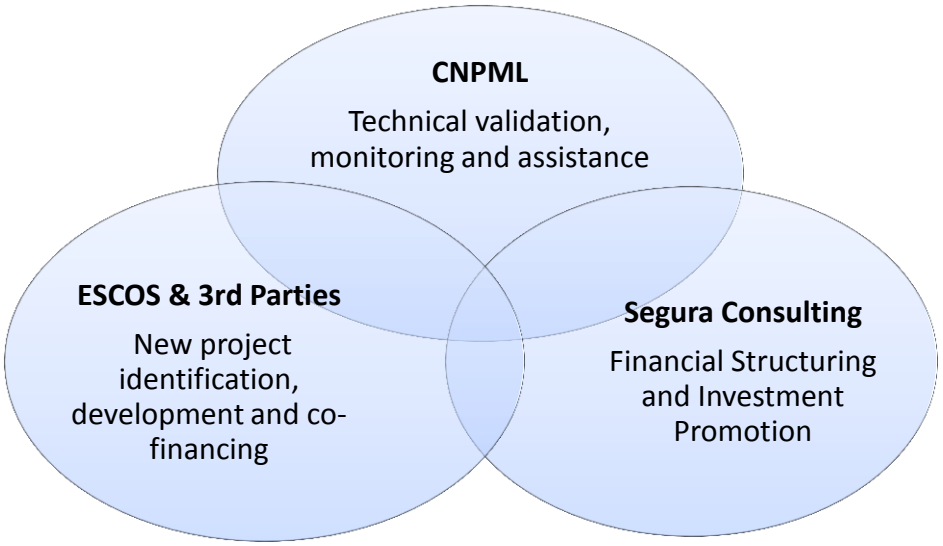
For this reason, CCEP efforts will be coordinated among three main work teams, aimed to expand our current geographical and sectorial capacity and to overcome some of the main issues faced during the first year. These teams will perform specific activities and provide particular expertise, complementing and assisting the endeavor and efforts initiated by any of the other two teams.

The following figure outlines the roles of each party, as well as the interactions among them:

Task 3 some first year lessons learned:

- Although it appears there are sufficient financial instruments in the market, small enterprises continue having difficulties accessing them and medium & large companies do not use them due to terms and conditions offered.
- Although there are numerous clean energy opportunities in the productive sector, companies are taking a long time to develop and mature these projects. In many cases the economic benefits are only marginal and not enough as an incentive, creating the need to seek other supporting arguments such as corporate social responsibility, potential tax incentives or soft financial alternatives to move projects forward.
- On the other hand, a number of non-conventional EE/RE initiatives which could spur significant economic benefits to companies are not developed due to insufficient technical knowledge and experience to generate trust and interest in developing them by company management and engineers.
- Colombia's financial sector is significantly weak regarding technical understanding of the projects and at the same time project developers have gaps in their financial structuring, which results in projects that at the end are not implemented.
- First year experience showed that technical engineering, financial structuring and company decision-maker engagement should be simultaneously – not sequentially – addressed, though this requires complementary skill sets and diversifying project structuring partners.

Figure 8: Task 3 Project work coordination



a. Actvities performed by Centro Nacional de Produccion Mas Limpia - CNPML.

The main focus of Task 3 subcontractor CNPML will be to continue and finish the project pipeline identified during the first year´s Work Plan; provide technical, monitoring and evaluation support to new investments proposals endorsed by other ESCOS, Segura Consulting, the Incentive Fund (Call for Proposals), and / or any other project identification channel where CCEP perceives a strategic opportunity; and develop a cluster of opportunities in the industrial corridor of Yumbo – Valle del Cauca.

The role assigned to CNPML for the duration of the second year work plan is to:

- Complete the current project pipeline focusing in those industries where CCEP had reached top management interest and commitment, have a high potential for greenhouse gas (GHG) emissions reduction, and comply with the industry sector criteria studied during the first year.
- Provide technical and economic support to EE or RE investment proposals identified by other parties, assuring CCEP´s technical validation and assuring proper monitoring and evaluation of investments.
- Assist and promote appropriate EE and RE investments to a cluster of 20 of the companies located in the Yumbo Industrial Corridor, focusing especially on those that are now exceeding the permissible emissions levels and affecting public health. CVC and CCEP agreed in co-financing technical audits for those companies compromised with significant greenhouse gas (GHG) emissions reduction and energy savings.
- Finalize two technical guides for biogas use and EE opportunities for the brick sector, and disseminate these through workshops targeted at industries and project developers. The information is taken from the cases where CCEP provided technical and/or financial assistance, and from other projects financed by the Green Credit Line and other EE project sponsors. These guides detail major clean energy opportunities and the potential in reducing CO2 emissions.

b. CCEP Third Party Alliances

In order to expand the scope of CCEP capacity to identify, select, and implement additional projects, new interested partners had approached and established relations with the Program. These additional partners include local ESCO companies such as MGM Innova Capital, Energia Eficiente e2, and Garper Energy, as well as other companies and institutions specialized in EE /RE such us the Colombian Energy Efficiency Council (various firms), Universidad del Norte, Universidad Pontificia Bolivariana, and minor energy service companies promoted by the Inter-American Bank and BANCOLDEX.

CCEP will pursue the following partnerships:

- CCEP will develop concrete partner alliances though MoUs and/or association agreements with the main ESCOS operating in Colombia. CCEP signed an agreement during the first year with MGM Innova Capital Services, and during this second year CCEP expects to complete partnerships with Garper Energy Solutions and Energia Eficiente e2. MGM, Garper and e2 each have sufficient technical and financial muscle to design and invest their own financial resources in energy efficiency and renewable energy technologies/installations of appreciable scale under energy service contracts with recipient industrial and commercial enterprises
- CCEP will design and develop a project pipeline with each of the new partners, taking advantage of each company's technical expertise. For example, Garper Energy Solutions has successfully implemented energy saving projects in commercial and services enterprises, MGM Innova Capital has a broad experience in implementing energy efficiency processes to ceramic and agro industry sectors, and e2 has already invested over USD $16M in cogeneration and energy efficiency projects.
- The Inter –American Bank and BANCOLDEX are working on the promotion and financial support of other smaller project developers as ESCOS; depending on the evolution of these agreements and capitalization, CCEP will support new proposals derived from those ESCOS.
- CCEP will stress efforts on co-financing and developing the pending and necessary final engineering and business plans for financial closure and decision-making by companies and financial institutions to fund investment on these projects. To this end, developing alliances and partnerships with ESCOs and other project development teams will take place throughout the second year, without having to wait for full implementation of CCEP's Project Preparation Facility (PPF).
- We anticipate that once the PPF being structured and promoted becomes operational and capable of (co)financing the type of final engineering and financial structuring of projects undertaken through ESCOS and third party alliances, CCEP will pass on all new ESCO & third party initiatives to the PPF and continue to monitor, evaluate and close all projects initiated with these partners during Year 2. If the PPF does not materialize and become operational by end of Year 2, CCEP will evaluate the results of this new strategy and assess whether and how to move forward with these partnerships in Year 3.

c. Segura Consulting

In order to shift focus from mostly technically driven project development support to a more financially driven focus, CCEP's technical support will be continued directly through T3 work team or indirectly through third parties, but a much more focused financial support is envisioned to persuade company CEOs and boards of directors on the benefits of making the financial commitments on

technically sound investments. For this purpose, and given the financial and commercial expertise of Segura Consulting partners in Colombia, CCEP had extended their initial scope of work to help with negotiations and provide financial structuring to promising projects.

Segura Consulting will also continue with the design of the longer term Clean Energy Project Preparation Facility (PPF) under Task 1, will complement CCEP's technical team and additional engineering partners with its banking and management skill.

CCEP also will continue implementing training programs to build the capacity of the industrial subsectors selected. Training was also be given to financial institutions to enhance their capacity to understand and correctly assess EE/RE projects based on their technical characteristics, an environmental and economic benefits and risks. CCEP will continue to prepare documentation, training and information materials for the selected industrial/agro-industrial sectors, cross-cutting technologies and existing lines of finance and tax incentives, and develop and hold workshops addressed to ESCOs, engineering firms, project developers and financial institutions not already focused on during year one.

2.3.2 Planned activities under each Work Stream

Based on the progress made and the obstacles encountered during CCEP's first year of implementation we have revised the Work Streams under Task 3 as described below.

a. Work Stream 3.1 -Industrial subsector and/or technology assessment

Based on available statistics and secondary information, as well as previous knowledge and intensive interactions between our technical team and stakeholders such as industrial associations, financial institutions, Ministry of Mines and Energy, Ministry of Environment, UPME, energy service providers, utilities, academia, among others, CCEP identified strategic industrial subsectors and target cross-cutting technologies to focus on during our first year work plan. The assessment, presented as Annex 1 of our Q2/2012 report, weighed economic, social and environmental aspects of energy consumption by different industries and agro industries, resulting in the initial selection of the following subsectors and technologies to focus clean energy initiatives in:

Industrial sector focus	Technical focus
1- Ceramics, glass and brick manufacturing **2- Agro-industrial, food and beverage**	Thermal energy technologies (heat recovery, cogeneration including combined heat and power (CHP) or combined cooling, heat and power (CCHP))

Activities Work Stream 3.1	Description
Update sectorial and technology assessment	UPME – the agency in charge of generating energy technology and energy use data for all sectors – is currently focusing on establishing statistically reliable estimates of energy consumption patterns by key industrial subsectors and types of equipment, seeking to overcome serious information voids needed to design targets and performance indicators for energy efficiency policies and programs in the second PROURE Action Plan (2015-2020). These studies are being performed by a consortium of universities. **Main result:** Assist UPME in establishing energy consumption patterns by key industrial subsectors and types of equipment, thus updating CCEP sectorial and technology assessment **Milestone 1**- May 2014 monitor progress of the studies performed by universities, and contribute technical feedback on methodologies applied. **Milestone 2**- December 2014. As a result of these efforts, CCEP will update its sectorial and technology assessment as input to the year 3 work plan.
Include commercial sector project opportunities	CCEP will continue working on already identified industrial projects and will also expand its sectorial focus to include commercial sector project opportunities, seeking short-lived climate pollutants (SLCP) reductions as well as quick wins for garnering private sector partners. **Main result**: Include commercial sector projects that could have an important contribution on Co2e reductions **Milestone 1**- May 2014 idendify new commercial projects **Milestone 2**- December 2014. Start implementation of some of these new projects

b. *Work Stream 3.2 - Identification of target industries/companies and project development*

Despite team efforts, the pace of project development through end of 2012 was inadequate – only two of the projects were under implementation, and a substantial number had been discarded either because they did not meet CCEP criteria – such as decreasing fossil fuel intensity – or because company management had decided not to go forward. In the first quarter 2013 it was decided to "widen the net" by:

Task 3 Obstacles during first year:

- Initial lack of project proposals meeting technical CCEP and financial bank credit eligibility criteria
- Insufficient commercial bank interest in developing and promoting clean energy lines of finance
- Need for further engineering and financial structuring studies for EE/RE to pass from "identified opportunity" to "bankable project" (overcoming "death valley")
- Meeting original Incentive Fund Manual criteria to co-finance needed studies through grants (12-months w/o subcontracts option)
- Complexity of decision making processes within individual companies

- Adjusting the Incentive Fund Manual to facilitate use of these resources to co-finance necessary additional engineering studies to take projects beyond identification phase,
- Broadening the network of partnerships with additional project developers.

CCEP will focus its technical activities to complete assistance to the 10 industries identified in 2012-2013, develop the Yumbo Industrial corridor, and develop new projects in other sectors where ESCOs or other third party partners had performed pre- investment studies and/or have identified opportunities.

New project identification will be directed to develop projects that have a medium to large potential of reducing CO2 emissions, (projects with the potential to reduce more than 100 tons of CO2e emissions per year) and or have a special interest for CCEP such as cluster industries.

Activities Work Stream 3.2	Description
Project identification and Development	CCEP has designed and is implementing the pipeline of projects included in table "Status of Task 3 EE Project Portfolio – 2013" For each specific project main results and milestones are detailed.

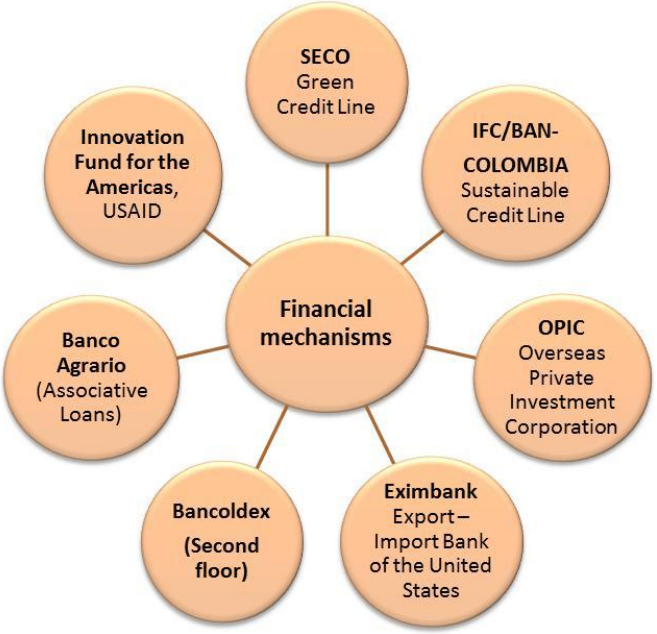
c. *Work Stream 3.3 Technical and financial facilitation of selected projects*

CCEP has identified technology providers and engineering consultants that are interested in providing equipment and/or services. CCEP's team has worked jointly with vendors and technology providers in the identification and selection of the technological alternative that better suits the needs of each individual project.

In parallel, CCEP has identified financial mechanisms and institutions that offer services and products related to EE/RE projects, applicable to the types of projects under development. Figure xx illustrates

at least five financial mechanisms and institutions available in Colombia, as well as three international sources of financing aid that may provide additional funding and help improve the potential of implementation for not so profitable investments. Because it is still in design phase, this figure excludes the agreement CCEP reached with the IFC to work jointly on the project preparation facility.

Figure 9: Identified financial mechanisms



Although CCEP has presented interested companies with the available financing opportunities, and has conducted assessments based on the financial aspects of each company and specific project, top management of some of these companies have taking longer than expected to commit with the implementation phases.

Moving forward, CCEP has therefore added the development of business and investment models and assisting/accompanying companies in structuring project finance to stage 3 of its project development cycle, engaging management and banking expertise from subcontractor Segura Consulting to supplement the technical expertise by subcontractor CNPML and other project developers.

This work stream will be connected to the development of the PPF; therefore particular activities would not be presented during this year.

d. Work Stream 3.4 Training, outreach, and advisory services

During the second year CCEP will intensify training and outreach activities towards three target audiences:

- EE/RE consultants and project developers, in order to improve their technical and financial project structuring capacity, and engage them in EE/RE project structuring through the Incentive Fund.
- Commercial and investment bankers other than those receiving workshops during year one.
- National and international financial and policy-making institutions with interest in developing financial instruments and other actions addressing bottlenecks for private sector investment in EE/RE projects.

CCEP will also prepare and disseminate technical guides on energy efficiency and renewable energy technologies and investments for brick manufacturing and industrial, agro industrial and waste-to-energy biogas opportunities, through two publications and workshops aimed at respective industries and project developers.

Activities Work Stream 3.4	Description
Workshops	CCEP will continue providing traning and workshops on EE/RE to broder audiences as described previously. **Main result**: Training people in EE/RE in technical and financial project structuring capacity. **Milestone 1**- July 2014 Participate or organize 2 workshops on EE/RE. **Milestone 2**- December 2014. Participate or organize 4 workshops on EE/RE.
Technical guides	CCEP is working on technicals guides for the brick manufacturing and industrial, agro industrial and waste-to-energy biogas opportunities. These guides take information from the cases where CCEP provided technical and/or financial assistance. The guides details major clean energy opportunities for the sectors and the potentials in reducing CO2 emissions. **Main result**: 2 sector technical guides **Milestone 1**- July 2014 Guides draft **Milestone 2**- December 2014. Guides completion.

e. Specific project status and implementation plan of selected projects

A brief synopsis of Task 3's project pipeline, implementation status and pending steps for moving forward rapidly as of August 2013 is presented in the following table, which serves to illustrate the progress made, challenges confronted, steps taken to complete them in the shortest time possible and shifts in strategy proposed for second year work.

Status of Task 3 Energy Efficieny Project Portfolio –2013

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Los Cerros (Bricks/ Heat recovery)	Involves use of the residual heat from a neighboring incinerator to avoid burning coal and achieving significant reductions in gas emissions, cost savings associated eliminating coal purchase cost, and creating healthier working conditions for workers.	The construction of new more spacious brick drying chambers with twelve axial fans to ensure proper hot air flow, as well as three centrifugal fans for injecting and extracting air from the drying rooms.Finally, a hot air duct with a total length of 90 meters to bring waste heat from the incinerator to the brick factory.	Ongoing project M&E	Sep 2013 M&E completion	Dec 2013 Project Closure		
Helados Tonny (Foods/Refrigeration)	Involves design and installation of new more efficient refrigeration system for ice-cream factory which reduces 48% of electricity. New equipment was installed in February, 2013.	Installation of new cooling system which includes a centralized system.The centralized system has the capability of regulating cooling requirements according to production, which results in significant energy savings.	Ongoing project M&E	Sep 2013 M&E completion	Dec 2013 Project Closure		

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Santa Rita (Ceramic/Combustion))	Objective is to improving temperature conditions within the furnace, leading to better heat distribution and a more uniform cooking/drying brick process, eliminating the manual feed of coal to the furnace, reducing GHG emissions and reducing emissions of particulate matter and sulfur oxides which also results in healthier working conditions for workers	Installation of an automatic solid fuel combustion system consisting of 4 stockers on each side of the kiln (8 in total). Combustion air is administered by a central fan operated by an electric motor and variable speed drive. The fuel and air delivery system are controlled by a computerized system which relies on kiln temperature readings.	Ongoing project M&E	Oct 2013 M&E completion	Dec 2013 Project Closure		
Ganados y porcinos (Agro industry/ Bigogas use)	Objective is replacing the current consumption of liquefied petroleum gas (LPG) with biogas generated from an anaerobic digestion system, which will process pig manure. Main benefits include reduction of GHG emissions; use of the substrate obtained in the digester as fertilizer and cost savings from LPG purchases.	Involves design and construction of the anaerobic digestion system including the manure collection system, digester, and gas-handling system.	Ongoing project identification and formulation stage	Nov 2013 project Identification	July 14 Project implementation completed	Oct 2014 M&E completion	Dec 2014 Project Closure

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Colanta (Foods/Biogas use)	Improve the wastewater treatment plant by using the methane generated by the UASB reactor in biogas for heat production. MGM Energy Services will conduct the detailed engineering studies.	Biogas use for steam production	Ongoing project identification and formulation stage	Jan 2014 project Identification	Sep 14 Project implementation completed	Dec 2014 M&E completion	April 2015 Project Closure
O-I Peldar	PELDAR is a global glass producing company. The project includes thermal and electrical characterization of the ORC process to implement a heat recovery energy generation for their plant in Zipaquira.	Heat recovery system	Ongoing project identification and formulation stage	April 2014 prefeasibility studies	August 14 Start implementation		
Arcillas de Colombia (Bricks/Heat recovery for drying)	Improve the particle size distribution in the clay mix, waste heat recovery from kiln to drying chambers. Change of kilns (Hoffmann and beehive kilns to tunnel kiln)	To determine in conjunction with the company and its priorities	Ongoing project identification and formulation stage	April 2014 project Identification	Nov 14 Start implementation		

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Pueblo viejo	Improve temperature conditions within the furnace by changing its ceramic kiln.	To determine in conjunction with the company and its priorities	Ongoing project identification and formulation stage	2Q 2014 project Identification	TBD	TBD	TBD
Ladrillera sucres	Improve temperature conditions within the furnace by changing its ceramic kiln.	To determine in conjunction with the company and its priorities	Ongoing project identification and formulation stage	2Q 2014 project Identification	TBD	TBD	TBD
Ladrillera Alcarraza	Production of thermal insulating bricks from the incorporation of organic material in the ceramic mixture. Design and construction of a new drying system.	Implementation of a new ceramics mixture preparation and theconstruction of a new drying system.	Ongoing project identification and formulation stage	2Q 2014 project Identification	TBD	TBD	TBD
Americandy	EE investments and improvements, in various prodution lines	To determine in conjunction with the company and its priorities	Ongoing project identification and formulation stage	2Q 2014 project Identification	TBD	TBD	TBD

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Emcocables	Installation of efficient electric motors and compressed air networks, as well as thermal efficiency of the steam generation process.	Waste heat recovery from heat treating furnaces to drying furnaces, boiler efficiency improvements via control systems, steam network maintenance and retrofitting, heating tanks insulation, and change of electric motors.	Ongoing project identification and formulation stage	2Q 2014 project Identification	TBD	TBD	TBD
Corridor Yumbo	Optimization of combustion in manufacturing firms located in the industrial corridor of Yumbo.	To determine in conjunction with the company and its priorities	Ongoing project identification and formulation stage	Aug 2014 projects Identification	TBD	TBD	TBD

2.3.3 Strategic and operational adjustments

As indicated previously, CCEP's second year plan includes several operational adjustments to address issues encountered on the ground and accelerate the evaluation and implementation of Task 3 projects as listed above, seeking to reach implementation of 20 EE projects and reach PMP targets of energy savings and CO_2e reductions by mid-2015. This calls for a diversification of project formulators and concentration and intensification of efforts by CCEP during the second and third year work plans, front loading the last 18 months resources and focusing efforts in those months towards monitoring and ex-post project evaluation and nation-wide institutionalization and dissemination efforts.

In order to maintain and consolidate a portfolio of at least 20 EE projects advancing, it is necessary to discard firms that fail to complete project structuring cycle within reasonable time frames (4-5 months) and immediately replace them with projects meeting CCEP criteria brought forth by any strategic ally. The second year strategy is to:

- Shifting focus from individual companies, within key industrial sectors, to business clusters or industrial clusters. Cluster industries are generally concentrated geographically and share or interchange goods or services within their value chain. In this context, CCEP has advanced interactions and developing agreements with the following industrial clusters:

  - Yumbo industrial cluster in Valle del Cauca- Agreement with CVC to carry out joint EE work.
  - Bogotá and Barranquilla clusters – Currently under identification, potential partners for these clusters are ANDI and IADB.

- Shifting focus from exclusively T3 team direct technical and financial structuring assistance to a combination of CCEP team efforts with the development of alliances and partnerships with other project developers – such as selected universities, ESCOs, engineering firms and/or associations – to spur additional projects in regions outside Antioquia and Valle del Cauca. This partner diversification strategy includes Public-Private-Partnerships (PPP) with the GoC and investment banks.
- Expanding sectorial focus from only industrial sector to also include commercial and service sector project opportunities.
- Shifting focus from mostly technically driven project development support to a more financially driven focus. Although there are a number of financial instruments available in the market, small and medium enterprises are not making the final financial decision to move forward with the projects. CCEP's technical support will be continued but a much more focused financial support is envisioned to persuade company CEOs and boards of directors on the benefits of making the financial commitments on technically sound investments.

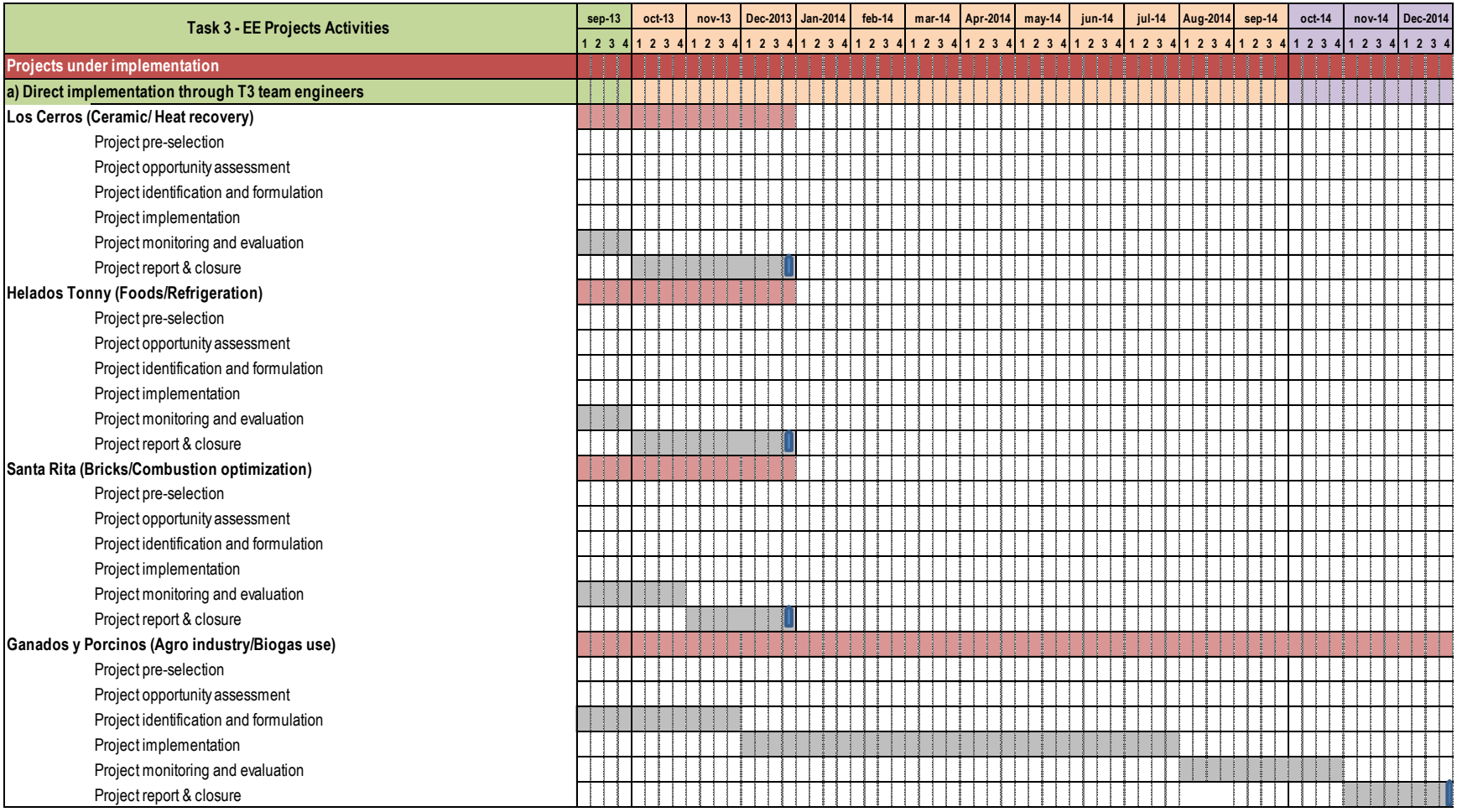
The main immediate adjustment required to thrust implementation of some of the activities described above is reinforcing technical personnel at the Bogota office. Specifically under task 3 CCEP is planning to reinforce the team with the following professionals, supporting not only the Bogota Team but also Segura Consulting:

- Limited participation of a Senior Financial Advisor with broad experience in local investment banking business and known professional among private sector enterprises to promote and help reaching financial closure of CCEP's projects at their top management levels;

- A half to full time senior engineer with broad experience in productive processes based in Bogota to support in the technical selection and promotions of EE projects and;
- A full time mid-level financial professional with experience in financial structuring of projects and business plan design.

2.3.4 Gantt chart

Figure 10: Task 3 Projects Gantt chart



Task 3 - EE Projects Activities	sep-13	oct-13	nov-13	Dec-2013	Jan-2014	feb-14	mar-14	Apr-2014	may-14	jun-14	jul-14	Aug-2014	sep-14	oct-14	nov-14	Dec-2014
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Projects under implementation																
b) Implementation through ESCOS																
Colanta (Foods/Biogas use)																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on ESCO contract																
Project implementation (if ESCO accepted)																
Project monitoring and evaluation																
Project report & closure																
Owens-Illinois Peldar (Heat recovery/cogeneration)																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on ESCO contract																
Project implementation																
Project monitoring and evaluation																
Project report & closure																
c) Projects frontloaded from PPF Pipeline																
Arcillas de Colombia (Bricks/Heat recovery for drying)																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																
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Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																

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Pueblo viejo																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																
Ladrillera Sucres																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																
Ladrillera Alcarraza																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																
Americandy																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																

Task 3 - EE Projects Activities	sep-13	oct-13	nov-13	Dec-2013	Jan-2014	feb-14	mar-14	Apr-2014	may-14	jun-14	jul-14	Aug-2014	sep-14	oct-14	nov-14	Dec-2014
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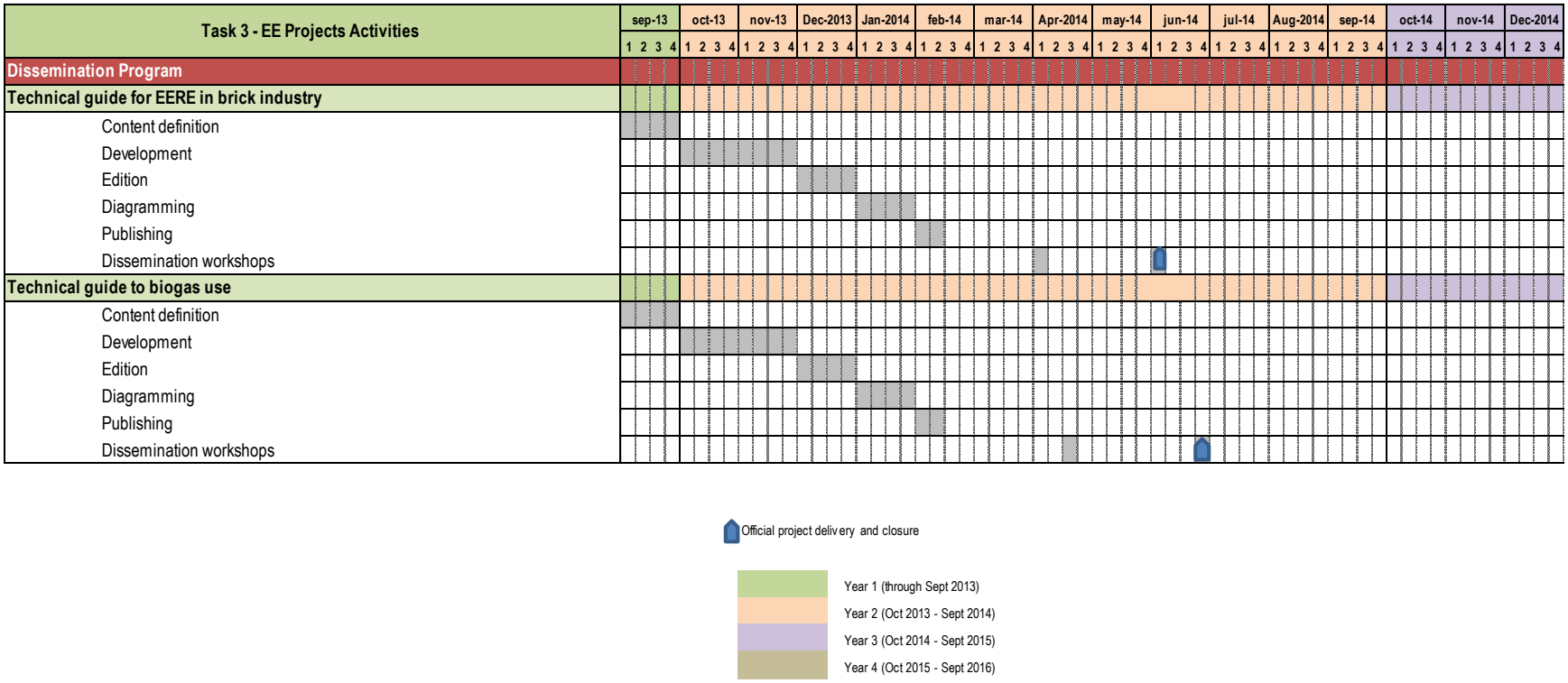
Projects under identificacion																
a) Direct implementation through T3 team engineers																
Twenty Yumbo cluster projects to audit																
Finalize agreement & cluster program design																
Socialize cluster design/ recruit 20 companies																
20 energy audits and opportunity assessments																
Finalize techincal/financial formulation of 7 candidate projects																
Client Decision on project finance																
Implemetation of 7 projects																
Monitoring & evaluation of 7 projects																
Projects report & clousure 7 projects																
b) Additional T3 engineering team: target 7-12,000 tCO2e																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Client Decision on project finance																
Project implementation																
Project monitoring and evaluation																
Project report & closure																
c) Additional ESCO/other partner projects - target 10 implemented																
Establish MOUs																
MGM Energy Services																
Garper Energy																
Other ESCOS/project structure allies																
Develop partner project pipeline under each MOU																
Receive project opportunity profiles																
Assure formal top company manangement buy-in																
Develop and sign formal co-finance subcontracts with developer																
Detailed Engineering and project finance studies																
Client decision on project finance or ESCO contract																
Prroject implementation 10 projects																
Project monitoring and evaluation 10 projects																
Project report & closure 10 projects																
RFPs for Seven EE Investment Industrial Projects																
Define RFP basis: targets/funding/requisites																
Elaborate terms of reference and proceders																
Call for proposals																
Evaluation and selection of 7 proposal																
Develop/sign Incentive Fund grants or subcontractts																
Implementation of 7 projects																
Monitoring & evaluation of 7 projects																
Projects report & clousure 7 projects																


Task 3 - EE Projects Activities
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Dec-2014
1 2 3 4
Dissemination Program
Technical guide for EERE in brick industry
Content definition
Development
Edition
Diagramming
Publishing
Dissemination workshops
Technical guide to biogas use
Content definition
Development
Edition
Diagramming
Publishing
Dissemination workshops
Official project delivery and closure
Year 1 (through Sept 2013)
Year 2 (Oct 2013 - Sept 2014)
Year 3 (Oct 2014 - Sept 2015)
Year 4 (Oct 2015 - Sept 2016)

2.4 INCENTIVE FUND

2.4.1 Overall approach

With more than twenty five percent of program funds anticipated to be funded through the Incentive Fund, CCEP will use its Incentive Fund as a flexible implementation tool to achieve project results through the utilization of local resources, capacity building of communities and local organizations, collaboration with public and private donors, and as a tool that will enable the program to adapt to a changing environment in Colombia.

Incentive Fund funded activities will be based on verifiable program indicators, demonstrate technical soundness between tasks and program objectives, and will leverage to the greatest extent non-program funds and resources and encourage cost-sharing from recipients to promote sustainable programs and ownership through shared-investments.

The CCEP approach to Incentive Fund activities aims to use processes and a framework that can be easily understood by program stakeholders and partners, including USAID, to ensure the speedy and smooth facilitation of programs that will help to achieve CCEP objectives and produce high quality results.

Regardless of the Incentive Fund implementation mechanism used, all mechanisms will emphasize transparency, credibility and accountability, flexibility, and simplicity to ensure timely implementation. Given that grantees and subcontractors will range from communities who may have no prior experience working with donor funding, to organizations or entities that have worked with USAID-programs for several years or more, CCEP staff involved with Incentive Fund activities will always maintain as a key imperative clear guidelines and support for how to work with CCEP and under USG policies, regulations, and procedures. For those new to donor funding for example, CCEP will work with the group to improve their capacity and will build relationships with these groups to ensure sustainability.

Depending on the type of strategic activity envisioned under the Incentive Fund (which will be based on the analysis of opportunities for sustainable and lasting impact, guided by the annual work plan), the overall effectiveness for sound implementation under the Incentive Fund will greatly depend on the determination of the most effective and compliant mechanism for implementation of the activity. CCEP will determine which mechanism(s) are most appropriate for a specific activity, each of which has its own workflow process to ensure compliance with USAID regulations and Tetra Tech policies. In all cases, all activities must be approved by the COP, provided no objection from the USAID COR, or approved by the USAID CO as outlined in this manual and in accordance with USAID regulations prior to execution.

The flexible combination of implementation mechanisms for activities programmed under the Incentive Fund will make it the most effective, particularly given the operating environment in Colombia. For example, a subcontract for detailed engineering design and detailed budget design for different electrification options that comply with GOC´s technical and legal norms may be needed in order to leverage co-financing from GOC investment budgets, to be complemented by a separate grant to a beneficiary community organization for the construction of a micro hydro plant that could supply energy for domestic purposes, ecotourism activities and cold chain systems for artisanal

fisheries. Low-cost environmental permits may also require funding through the Incentive Fund prior to issuing grants for energy projects designed, since the lead time required to obtain permits from regional environmental authorities could delay project implementation if the funding is included as part of a community grant. Short-term technical assistance may be used as part of a grant, subcontract, or independently, to train communities in administrative and technical processes that enable them to strengthen their organizational skills

A brief description of the mechanisms intended for use under the Incentive Fund is provided in the following, table with more detailed information provide further on in the manual:

Mechanism	General Purpose
Grant	Financial assistance or in-kind procurement to support an activity that is in line with CCEP's objectives and the grantees organizational directives. Most of the grants during the second year will be focused on EE Call for Proposals, until the PPF starts operations.
Subcontract	For hiring of an organization or firm to provide CCEP with specific services in support of CCEP objectives and grant activities, especially those activities related to RE infrastructure.

Determining the appropriate mechanism, particularly in the case of whether a subcontract (acquisition) or grant (assistance) should be used, will be a function of the Incentive Fund manager in collaboration with the assigned technical staff, and always under the guidance of the COP. And under all circumstances, the CCEP will prioritize and emphasize acquisition and assistance activities where Public-Private Partnerships are leveraged for sustainable investments and local ownership. Additionally, any exceptions to competition per ADS 303 or the FAR Part 6 will be justified and subject to the same rigorous review and monitoring as all other solicitations.

2.4.2 Call for proposals Incentive Fund

For task 3 projects, CCEP plans to open a Call for Proposals directed to small and medium enterprises or ESCOs that required co financing funds for: pre investment studies, detailed engineering studies or energy efficiency investments.

Using this mechanism CCEP aims to provide incentives for a total amount of USD$500.000 to at least 15 companies or ESCOs that had identify EE opportunities. The detailed guidelines and procedures are under construction, always maintaining the transparency, credibility and accountability, flexibility, and simplicity principles and following the Incentive Manual Grants regulation.

This mechanism will be temporary until CCEP and partners are ready to launch the Project Preparation Facilit PPF for Energy Efficiency investments.

APPENDIX A: Job descriptions Bogota technical staff

Position: **Energy Policy Analyst**

Location: Based in Bogota with travel to Medellin, Cali and other project locations

Supervisor: Chief of Party

Background: The Colombia Clean Energy Program (USAID CCEP) is a sixty-month project funded by the United States Agency for International Development (USAID) and implemented under the leadership of Tetra Tech. The CCEP Program supports government, the private sector, and civil society in increasing the contribution of clean energy resources (renewable energy, energy efficiency, and energy conservation) in Colombia.

The purpose of CCEP is to increase access to renewable energy sources and energy efficient practices in Colombia through a combination of project development support, technical assistance, and enabling environment reforms. The overall goals of USAID's environment program are the strengthening environmental governance, low carbon growth, conservation of significant biodiversity, and support to adapt to climate change. The CCEP is USAID/Colombia's flagship clean energy activity.

The specific objectives of CCEP will be achieved through a combination of policy support and project development activities in the following three task areas:

- Task 1: Renewable Energy and Energy Efficiency Enabling Environment and Institutional Capacity Development.
- Task 2: Expanding access to renewable energy sources in currently unserved areas, which directly address the requirements of earmarks from the U.S. Congress.
- Task 3: Energy Efficiency and Renewable Energy Investment Promotion.

The Energy Policy Analyst will be responsible for supporting the overall planning and implementation of the Program through direct support of the COP, DCOP and Task 1 leader in Bogota, as well as interactions with Task 2 and Task 3 teams in field offices.

General Position Requirements

The Energy Policy Analyst must demonstrate knowledge and experience regarding:

- Technical knowledge of energy efficiency and renewable energy applications;
- Knowledge of Colombia's energy sector and its institutional, regulatory and policy frameworks;
- Experience working with Colombian energy sector institutions
- Capacity to perform economic and technical evaluation of energy projects;
- Ability to work effectively with multidisciplinary Program teams and national counterpart institutions in the public and private sectors;

- Advanced computer skills and ability to use customized Tetra Tech systems in project management;
- Working knowledge of English to comprehend and apply USAID regulations and project reporting requirements.

Other desirable but not indispensable requisites:

- Post graduate degree(s)
- Experience working with international cooperation
- Experience working with Small and Medium Businesses and/or community organizations
- Social and/or environmental impact assessment
- Geographic Information Systems
- Website management

Tasks and Responsibilities

- Provide technical support to the COP and Task 1 leader;
- Provide overall technical support to CCEP's teams, consultants and national counterparts involved in task development;
- Support project work plan development;
- Support training and outreach activities;
- Work diligently to ensure technical quality of Program;
- For CCEP-assisted clean energy projects:
    - Provide continuous support to developers and financial institutions during the project development process,
    - Provide progress reporting to CCEP.
- For community-level clean energy pilot programs and demonstrations funded under the CCEP Incentive Fund program:
    - Support the project formulation and budget screening for pending subcontracts and grants,
    - Support the identification, organization and capacity building of rural SMEs and MFIs, and
    - Support environmental and performance monitoring as part of EMMP and PMP, respectively.
- Coordinate CCEP training courses, workshops and other events together with other CCEP staff
    - Assist in the planning and execution of capacity building programs related to clean energy project development (and other subjects as needed).
    - Provide critical follow up to ensure the application of the learning objectives.

Working post:

Designated working place of Energy Policy Analyst will be the CCEP Project Headquarters office in Bogota. He/she will travel as needed to CCEP project offices in Medellin, Cali and project sites.

Position: Project Energy Engineer

Location: Based in Bogota with travel to Medellin, Cali and other project locations

Supervisor: Chief of Party

Background: The Colombia Clean Energy Program (USAID CCEP) is a sixty-month project funded by the United States Agency for International Development (USAID) and implemented under the leadership of Tetra Tech. The CCEP Program supports government, the private sector, and civil society in increasing the contribution of clean energy resources (renewable energy, energy efficiency, and energy conservation) in Colombia.

The purpose of CCEP is to increase access to renewable energy sources and energy efficient practices in Colombia through a combination of project development support, technical assistance, and enabling environment reforms. The overall goals of USAID's environment program are the strengthening environmental governance, low carbon growth, conservation of significant biodiversity, and support to adapt to climate change. The CCEP is USAID/Colombia's flagship clean energy activity.

The specific objectives of CCEP will be achieved through a combination of policy support and project development activities in the following three task areas:

- Task 1: Renewable Energy and Energy Efficiency Enabling Environment and Institutional Capacity Development.
- Task 2: Expanding access to renewable energy sources in currently unserved areas, which directly address the requirements of earmarks from the U.S. Congress.
- Task 3: Energy Efficiency and Renewable Energy Investment Promotion.

The Project Energy Engineer will be responsible for supporting the overall planning and implementation of the Program through direct support of the COP, DCOP and Task 1 leader in Bogota, as well as interactions with Task 2 and Task 3 teams in field offices.

General Position Requirements

The Project Energy Engineer must demonstrate knowledge and experience regarding:

- Technical knowledge of energy efficiency and renewable energy applications;
- Knowledge of Colombia's energy sector and its institutional, regulatory and policy frameworks;
- Capacity to perform economic and technical evaluation of energy projects;
- Ability to work effectively with multidisciplinary Program teams and national counterpart institutions in the public and private sectors;
- Ability to cooperate with staff from departments and offices to achieve USAID goals and objectives;

- Advanced computer skills and ability to use customized Tetra Tech systems in project management;
- Working knowledge of English to comprehend and apply USAID regulations and project reporting requirements.

Other desirable but not indispensable requisites:

- Post graduate degree(s)
- Experience working with international cooperation
- Experience working with Small and Medium Businesses and/or community organizations
- Social and/or environmental impact assessment
- Geographic Information Systems
- Website management

Tasks and Responsibilities

- Provide technical support to the COP and Task 1 leader;
- Provide overall technical support to CCEP's teams and national counterparts involved in task development;
- Use customized Tetra Tech systems in project management;
- Support project work plan development;
- Support training and outreach activities;
- Work diligently to ensure technical quality of Program;
- For CCEP-assisted clean energy projects:
    - Provide continuous support to developers and financial institutions during the project development process,
    - Provide progress reporting to CCEP.
- For community-level clean energy pilot programs and demonstrations funded under the CCEP Small Grants program:
    - Support the identification of promising demonstration sites, collect supporting information (including environmental screening) for pending grant applications,
    - Support the identification, organization and capacity building of rural SMEs and MFIs, and
    - Support environmental and performance monitoring as part of EMMP and PMP, respectively.
- Coordinate CCEP training courses, workshops and other events together with other CCEP staff
    - Assist in the planning and execution of capacity building programs related to clean energy project development (and other subjects as needed).
    - Provide critical follow up to ensure the application of the learning objectives.

Working post:

Designated working place of Project Energy Engineer will be the CCEP Project Headquarters office in Bogota. He/she will travel as needed to CCEP project offices in Medellin, Cali and project sites.