Request for Expression of Interest [REOI]
(Consulting Services-Firms Selection)

SELECTION OF CONSULTING SERVICES FOR: "EMISSIONS REDUCTIONS GENERATED BY ENERGY EFFICIENCY SERVICES LIMITED, INDIA OR ANY OF ITS SUBSIDIARY COMPANIES."

Procurement Reference Number: EESL/06/2020-21/Emission Reduction Dated: 06.05.2020

1. Background

Energy Efficiency Services Limited (EESL) (www.eeslindia.org) is a public sector entity promoted by the Ministry of Power, Government of India as a Joint Venture of four Government owned undertakings – NTPC Limited, Power Finance Corporation Limited, REC Limited and POWERGRID. Each of their websites are available here:

NTPC: www.ntpc.co.in
Power Finance Corporation: www.pfcindia.com
REC Limited: www.recindia.nic.in
Powergrid: www.powergridindia.com

EESL is implementing the world's largest energy efficiency portfolio across sectors like lighting, buildings, electric-mobility, smart metering and agriculture at a scale. Programs are a combination of business models and status of various programs are as under: Programs implemented thus far include:

Sector	Physical achievement
LED bulb Program	362 million LED bulbs replaced
Streetlight replacement	11 million replaced
Decentralized solar	102 MW to date
Buildings	10,000 buildings retrofitted
Smart meters	1.2 million installed thus far
Agricultural pumpsets	70,000 installed
Electric charging stations	110 installed

Through its almost ten years since establishment and the development of a $500 million company operating more than 10 different energy efficiency programs, EESL will have likely contributed significantly to emission reductions in climate mitigation. However, whether these emission reductions indeed took place, or took place at the expected levels, or even whether they continue to generate emission reductions today is unknown since project activities have not been monitored for such impacts.

As a new phase of carbon and environmental markets begins to emerge, whilst at the same time, a new phase of renewable energy market development begins, effort is being made to ensure that the two are linked. The need for carbon finance is now exacerbated as India grapples with fiscal support

needed to support economic growth but without affecting budgetary allocations made pre-Covid for basic development needs.

This means that carbon reductions must be monetized, and environmental externalities are internalized to the fullest. EESL intends to take a leadership role in creating the market conditions to enable the transition to a lower carbon energy system in India – and truly integrate climate considerations into energy planning to the extent possible.
In fulfilment of the above objectives, EESL intends to seek interest from the international community on the purchase of emission reductions from its portfolio of projects. Emission reductions may be used for voluntary or mandatory compliance purposes, and depending on the needs of the buyer, their processing will be customized accordingly.

A brief description of the projects/programs is contained below.

2. Program Descriptions

A. LED distribution – rural India

Between 2014-2019, 362 million LED bulbs were distributed. Areas covered were [Rajasthan, Uttar Pradesh, Maharashtra, Bihar, Jharkhand, Jammu & Kashmir, Kerala (to name a few) and in mostly urban areas. Carbon credits were not captured as lights were largely bought and resold – no financial outlay beyond the resale was involved as the entire investment per bulb was recovered at the time of sale.

This program is now being expanded with a focus on rural areas where the penetration has been low – affordability is low; income levels are between 200-500 USD/month and the affordability is significantly lower. Bulbs therefore need to be subsidized further – likely down to sale at INR 15-20/9W LED. The total potential across the county is an additional 300 million bulbs and will be implemented with carbon finance.

B. Solar power for rural agricultural use

Figure 2- Decentralised Solar Project Implementation Location : Village- Butibori, District- Nagpur, Maharashtra

EESL has initiated a first of its kind large scale program where existing agricultural "feeders[1]" are taken off the grid and fed through cheaper solar power, i.e. "solarized" through the installation of PV on vacant/unused lands at the substations of state utilities or wastelands near the substations. The solar power plant is installed near the substation, with average capacities of approximately 700kW but could be larger, depending on the size of the land and the number of pumpsets connected to the substation. A 1-MW

1 In electricity distribution, feeders are voltage power lines that transfer power from a substation to a transformer.

solar plant can support around 300 pumps[2]; when pumping demand is low (e.g. during the rainy season), excess solar power if any, is fed to the grid. This project significantly helps reduce losses for the state utility (in this case, the state utility of Maharashtra) by reducing the expenditure levels for agricultural power – by almost INR 2/unit.

The potential in Maharashtra is approximately 20,000 MW, of which MSEDCL has identified 8,500 MW of capacity capable of being built close to the substations that feed power to segregated agriculture feeders.

C. Rural streetlight implementation

The above-mentioned solar plants are at remote locations of the state where nearby rural areas do not have access to proper public lighting. Gram Panchayats (GP) as local governments have a critical role in ensuring the participation and inclusion of the poor, the marginalized, and vulnerable groups in decision-making. As local people are best placed to know their area, resources and problems, these *gram panchayats* are best placed to liaise with for local economic development and addressing problems of the village/area. Several rural development and social justice programmes are also implemented by the GPs. GPs provide civic services such as drinking water, sanitation, roads, streetlights etc. Based on EESL experience in providing LED street lighting in GPs, and considering the general norm of one streetlight for every 7-10 households, the total number of streetlights for all GPs in India is approximately 31.6 million. Most GPs do not have the requisite streetlights as per the above norm or are using conventional lights such as high-pressure sodium vapor lamps, metal halide lamps, fluorescent tube lights, incandescent lamps and/or CFLs, all of which consume more energy than LEDs. Based on past experience with replacing streetlights, EESL finds that inefficient lights are handed over to the Urban Local Bodies are in fact being used elsewhere. As the demand for public lighting grows in rural areas, given that most household have been electrified, it is quite possible that these old lights get installed. While funding for activities at GP level, including streetlights, is to be met from Central funds (passed on to the States and GPs), at present, apart for Andhra Pradesh, Jharkhand and Telangana where EESL has implemented GP streetlights, there is insignificant

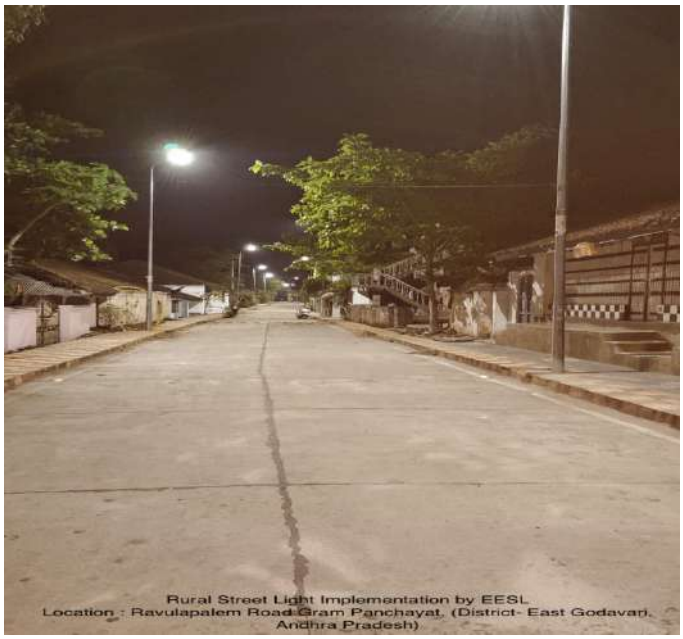

Figure 3 Rural Street Light Implementation, Location: Ravulapalem Road, East Godavari (Andhra Pradesh)

2 Assuming average pump size of 3 HP

public lighting in GPs. This was the situation before Covid and the lockdown; it is likely to get worse as the scale of economic loss begins to emerge.
EESL intends to use carbon finance to meet the shortfall in cashflows, possibly by piggybacking the land space available from the feeders' program for the installation of additional panels and batteries.
The first project is for 100,000 streetlights, with a potential to reach 2.8MM streetlights across all villages of Maharashtra state once carbon finance were available.

D. Electric vehicle charging stations in urban areas

EESL has initiated a nationwide implementation of public charging stations currently made feasible only with a subsidy. However, if carbon finance were to offset the need for subsidy, these subsidies will be removed and the funds returned to the center for other post-Covid priorities. Work has already commenced on implementing 1000 charging station in the next few months and the target is to reach 10,000 stations in the next 2-3 years using carbon finance.

Figure 4 Electric Vehicle Infrastructure Installation by EESL, Location: Khan Market, New Delhi

However, given that battery storage is rapidly emerging as a viable solution, a target of 10,000 stations is planned for commercial spaces across major Indian cities, installed at parking lots or commercial spaces near markets where footfall is high. Converting them to battery-based PCS will enable a decentralized demand side storage of nearly 1400 MW, with each station accounting for 137 KW.

A traditional unsubsidized public charging station (PCS) costs Rs 20 lacs while a battery storage based PCS will be around Rs. 30 lacs due to the incrementally larger battery size of 137 kW. In order to have 4 hours of storage, the costs will be to the tune of Rs. 1.2 crore per location and, and if amortized over 10 years, the cost of storage is upwards of Rs. 5.5 per kWh – making them currently unviable.

Assuming that the PCS captured and owned all carbon credits, and each car is a 2.3liter engine (or 45 miles per gallon of gasoline), each car yields 9kgCO_2 or 12.5kg CO_2e/100km, and that each car travels 25,000 kms per year, the total reductions per car is 3.1/ton yr. At 8 cars/day/PCS or 5% utilization (scenario assumed currently), each PCS will yield 8760 tons CO_2/yr. At a carbon price of USD 8/ton, annual revenues from battery-based charging stations that only USD 70,000 per charging station.

3. Estimated GHG emission reductions from these programs is tabulated below.

Sector	Annual GHG emissions reductions (tCO_2e)	Methodology Used	Year of earliest delivery	Status of carbon asset development
Rural streetlights	Approx.550,000	AMS IIL	Q3, 2021	PRC being pursued for inclusion into Shine using IIL rather than pursue reductions using IIC
LED bulbs	Approx. 240,000	AMS IIC; PoA 10484 called *Shine*	2021	CPA under preparation for immediate Inclusion
LED tubes	Approx. 44,000	AMS IIC	2021	CPA under preparation together with LED bulbs
Decentralized solar PV plants	637,000	AMS ID	2021	CPA under preparation
Public Charging Stations for EVs	In process.	VCS	2022	Methodology being ascertained.

4. Requesting Expressions of Interest

EESL now invites interested buyers of Certified Emission Reductions for use in any compliance regime – such as the Korea Emissions Trading Scheme and/or buyers of voluntary emission reductions (VERs).

Buyers may be end users such as sovereign entities or purchasing units of governments, or intermediaries such as carbon funds, investment funds, traders and brokers. All such entities will be referred to as Parties for the purpose of the REOI.

The objective of this assignment is for EESL to discover the optimal partnership model for monetizing the emission reductions and find the highest sale price for the carbon assets.

Interested Parties should provide information demonstrating that they have the required qualifications and relevant experience to carry out tasks as noted in this document.

5. Parties are expected to indicate the following:

i. Nature of the entity:
    i. Buy-side entities such (1) end use buyer, (2) trader, (3) broker, or (4) fund, or,
    ii. Sell-side entities such as (5) a carbon asset manager
ii. For each of the above-listed entities, indicate what the offering may be – for example, Parties may wish to prepare the asset as well as purchase the emission reductions;
iii. Indicative structure of the transaction – for example, Parties may wish to partake in the investment as well as purchase the emission reductions.
iv. Provide indicative (1) price estimates, (2) volumes sought, (3) vintages required for all the roles listed in (i) above.
v. Anything else that is relevant to achieving the objectives of this REOI.

6. Shortlisting Criteria

i. Intermediaries (i.e. entities including (2), (3) and (4)) will be required to provide financial statements of the firm for the past 3 years.
ii. In the case of end-use buyer, the entity must indicate purpose for purchasing the emission reductions, including whether the credits will be used for compliance or to meet a voluntary target. This will help direct the carbon assets under preparation.

The EOI should be concise – no more than 2 pages if possible – and provide evidence of the above requirements, as shortlisting will be done on the basis of the above information/documents.

7. Confidentiality

All information provided under this REOI shall remain confidential At all times under the purview of this EOI, unless otherwise agreed to by the Company in writing, the selected agency will hold and keep confidential all Confidential Information, and, subject to the terms and conditions, will not divulge or disclose the Confidential Information or make the Confidential Information available to any person or entity.

8. Timelines and Contact Details

Expression of Interest [EOI] must be sent in pdf format to cp@eesl.co.in by 20th May 2020 until 11pm (2300hrs) Indian Standard Time.

This REOI document may be downloaded from https://eesl.eproc.in prior to the deadline for submission of EOI online.

Further information can be obtained at the address below during office hours [*10:00 to 15:00 hours*].

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