EXPRESSION OF INTEREST (EOI)

Title of Consulting Service: Preparation of Master Plan for Public Charging Infrastructure (PCI) on Major National Highways for Electric Vehicles (EV).

Method of Consulting Service: National

Project Name : Preparation of Master Plan for Public Charging Infrastructure (PCI) on Major National Highways for Electric Vehicles (EV). EOI : WECS/EOI-06/079-80 Office Name: Water and Energy Commission Secretariat Office Address: Singh durbar Kathmandu

Funding agency : Government Budget

Abbreviations

CV	-	Curriculum Vitae
EA	-	Executive Agency
EOI	-	Expression of Interest
EV	-	Electric Vehicles
GON	-	Government of Nepal
PAN	-	Permanent Account Number
PPA	-	Public Procurement Act
PPR	-	Public Procurement Regulation
PCI	-	Public Charging Infrastructures
TOR	-	Terms of Reference
VAT	-	Value Added Tax
WECS	-	Water and Energy Commission Secretariat

Table of Contents

Section I.	A. Request for Expression of Interest	5
Section II.	B. Instructions for submission of Expression of Interest	7
Section III.	C. Objective of Consultancy Services or Brief TOR	9
Section IV.	D. Evaluation of Consultant's EOI Application	23
Section V.	E. EOI Forms and Formats	26

A. Request for Expression of Interest

Request for Expression of Interest

Government of Nepal (GoN)

Name of Employer: Water and Energy Commission Secretariat

Date: 14-04-2023 10:00

Name of Project: Preparation of Master Plan for Public Charging Infrastructure (PCI) on Major National Highways for Electric Vehicles (EV).

- 1. Government of Nepal (GoN) has allocated fund toward the cost of Preparation of Master Plan for Public Charging Infrastructure (PCI) on Major National Highways for Electric Vehicles (EV). and intend to apply portion of this fund to eligible payments under the Contract for which this Expression of Interest is invited for National consulting service
- 2. The Water and Energy Commission Secretariat now invites Expression of Interest (EOI) from eligible consulting firms ("consultant") to provide the following consulting services: The Water and Energy Commission Secretariat (WECS) was formed to assist in the formulation of plans and policies related to water and energy resources. The government aims to reduce greenhouse gas emissions from the transportation sector by promoting the adoption of electric vehicles (EVs). Despite tax incentives and cost-effectiveness, the lack of adequate EV infrastructure remains a major barrier to EV adoption in Nepal. WECS plans to prepare a master plan for EV public charging infrastructure on major national highways by engaging national consultants through competitive bidding to bridge the infrastructure shortage and reduce "range anxiety" among EV users.
- 3. Interested eligible consultants may obtain further information and EOI document free of cost at the address Water and Energy Commission Secretariat, Water and Energy Commission Secretariat Singh durbar Kathmandu Bagmati Province Nepal during office hours on or before 02-05-2023 12:00 or visit e-GP system www.bolpatra.gov.np/egp or visit the client's website [https://wecs.gov.np/]
- 4. Consultants may associate with other consultants to enhance their qualifications.
- 5. Expressions of interest shall be delivered online through e-GP system www.bolpatra.gov.np/egp on or before 02-05-2023 12:00
- 6. In case the last date of obtaining and submission of the EOI documents happens to be a holiday, the next working day will be deemed as the due date but the time will be the same as stipulated.
- 7. EOI will be assessed based on Qualification 40.0 %, Experience 50.0 %, and Capacity 10.0 % of consulting firm and key personnel. Based on evaluation of EOI, only shortlisted firms will be invited to submit technical and financial proposal through a request for proposal.
- 8. Minimum score to pass the EOI is 60

B. Instructions for Submission of Expression of Interest

Instructions for Submission of Expression of Interest

- 1. Expression of Interest may be submitted by a sole firm or a joint venture of consulting firms and the maximum number of partners in JV shall be limited to three.
- 2. Interested consultants must provide information indicating that they are qualified to perform the services (descriptions, organization and employee and of the firm or company, description of assignments of similar nature completed in the last 7 years and their location, experience in similar conditions, general qualifications and the key personnel to be involved in the proposed assignment).
- 3. This expression of interest is open to all eligible consulting firm.
- 4. In case, the applicant is individual consultant, details of similar assignment experience, their location in the previous 4 years and audited balance sheet and bio data shall be considered for evaluation.
- 5. The assignment has been scheduled for a period of 12 Months. Expected date of commencement of the assignment is 15-08-2023.
- 6. A Consultant will be selected in accordance with the QCBS method.
- 7. Expression of Interest should contain following information:

(i) A covering letter addressed to the representative of the client on the official letter head of company duly signed by authorized signatory.

- (ii) Applicants shall provide the following information in the respective formats given in the EOI document:
 - EOI Form: Letter of Application (Form 1)
 - EOI Form: Applicant's Information (Form 2)
 - EOI Form: Work Experience Details (Form 3(A), 3(B) & 3(C))
 - EOI Form: Capacity Details (Form 4)
 - EOI Form: Key Experts List (form 5).
- 8. Applicants may submit additional information with their application but shortlisting will be based on the evaluation of information requested and included in the formats provided in the EOI document.
- 9. The Expression of Interest (EOI) document must be duly completed and submitted by electronically only using the forms and instructions provided by the system.
- 10. The completed EOI document must be submitted on or before the date and address mentioned in the "Request for Expression of Interest". In case the submission falls on public holiday the submission can be made on the next working day. Any EOI Document received after the closing time for submission of proposals shall not be considered for evaluation.

C. Objective of Consultancy Services or Brief TOR

Terms of Reference

1. Background

The Government of Nepal (GoN) formed the Water and Energy Commission (WEC) in 1975 with the aim of developing its water and energy resources in an integrated and accelerated manner. Afterwards, in1981, a permanent WEC secretariat was formed and given the name Water and Energy Commission Secretariat (WECS). The primary function of WECS is to assist government ministries and other organizations involved in water resources in the formulation of plans and policies pertaining to the water and energy sector. WECS is responsible for assisting concerned government ministries in developing plans, policies, and strategies for the development of the water resources and energy. Likewise, it is also responsible for providing opinion, advice, and recommendations on the bilateral and multilateral issues linked to energy and water resources.

The GoN considers electric vehicles to be one of the best options for reducing greenhouse gas (GHG) emissions from the transportation sector in order to meet its climate change policy targets. Furthermore, in the coming years, EVs are expected to provide Nepal Electricity Authority with an increasing opportunity to capitalize on entirely new sources of demand while increasing revenue from EV consumers. The dramatic increase in global fuel prices, along with the government's commitment to promote EV adoption through tax incentives, contributed to the gradual increase in the EV demand. In order to reduce the amount of emissions from the transportation sector caused by ICE (Internal Combustion Engine) vehicles, EVs are thought to be a viable option for both short-distance and intercity travel provided that there are sufficient charging infrastructures available in the major highways of Nepal. According to the Electric Vehicle Association of Nepal (EVAN), there are approximately 34000 EVs in the country, representing 1% of the total vehicle fleet. More than 80% of these are three-wheelers used for public transportation and remaining 20% comprises electric two-wheelers and electric cars.

EVs are not expensive than their ICE counterparts, public interest in EVs is growing and their perception is also shifting. However, despite the cost effectiveness of EVs in comparison to their fossil fuel counterparts as well as the government's tax and financial incentives, most individuals are still reluctant to adopt electric vehicles due to a lack of adequate EV infrastructure. Studies have shown that lack of sufficient charging stations is one of the major barriers in adoption of

electric vehicles. Most EV owners often complain of "range anxiety," a situation in which EV users are anxious about a lack of charging infrastructure and limited battery capacity. This master-plan intends to bridge the charging infrastructure shortage by establishing a robust network of fast charging stations along the major highways of Nepal. In order to bridge the gap as stated earlier, WECS through the utilization of government fund intends to prepare a master plan of EV Public Charging Infrastructure on major national highways by engaging national consultant through competitive bidding.

a. EV Public Charging Infrastructures

Basically, EV charging stations are a set of power electronics that safely supply regulated electricity from the grid to the vehicle batteries. Different types of chargers provide varying current and voltage levels as per the vehicle-battery requirements. Most vehicles are equipped with a slow or moderate AC on-board charging mechanism that can be used to power vehicles directly from a common home plug. DC fast-chargers, on the other hand, deliver direct current to the vehicle battery, bypass the onboard converter, and charge at faster rates. In addition to this, charging infrastructures should also include a level of intelligence that handles user authentication, vehicle communication, data gathering and monitoring, and hassle-free payment.

b. Technical Details

The technical details regarding the charging stations used globally are briefly discussed below.

Slow AC Charger

The most common form of charger refers simply to plugging a car or two-wheeler into a standard three-pin 5-amp (type D) or 15-amp (type M) wall outlet.

Moderate AC Charger

Requires the installation of a dedicated EV charger to a 15-amp circuit and can have a charging rate of 2.5 kW to 20 kW.

DC Fast Charger

Typically used when the vehicle demands a fast charge. It requires the installation of dedicated grid infrastructure as well as a dedicated three-phase power supply that consumes substantially more amperage than AC chargers. To obtain a higher charging rate for their larger batteries, heavy vehicles like public buses often require DC fast chargers.

	Specifications		
Level 1 DC Chargers	Public DC chargers with output voltage of 48 V/72 V Power outputs of 10 kW–15 kW Maximum current of up to 200 amps		
Level 2	Public DC chargers with output voltage up to 1000 V		
DC Chargers	Power outputs of 30 kW–150 kW		
PopularDCfastchargingconnectorscurrentlybeingusedglobally	 CHAdeMO: Nissan and other Japanese companies like Mitsubishi SAE Combo Charging System (CCS): BMW, GM, VW, and other carmakers Supercharger: Tesla standard connector GB/T: Chinese Automakers as well as Indian Automakers like Mahindra and Tata electric cars use this standard 		

Source: <u>https://www.power-sonic.com/blog/the-ultimate-guide-to-dc-fast-charging/</u>

DC fast charging types



c. Charging power and energy requirements of various vehicle segments

	Battery Size	Slow Charging	Fast Charging
Two-wheelers	1–3 kWh	0.5–1 kW	2–3 kW
Three-wheelers	3–7 kWh	0.5–1 kW	2–3 kW
Cars	15–80 kWh	3-kW	20–100 kW
Buses/ Supercars	100–400 kWh	7–50 kW	50–500 kW

d. Highway DC Fast Charging station

Highway rapid charging stations are intended to serve long-distance commuters and commercial vehicles. These charging stations will be larger facilities with a variety of charging connectors incorporating both fast and slow charging alternatives. Priority list of National Highways for installation of charging stations based on population density of connecting cities, flow of vehicles and potential number of EV users in the future.



2. Objectives of the study

The master-plan foresees the installation of EV charging stations on the national highways of Nepal. The charging stations will primarily be installed at optimum intervals between 25-100 kilometers near highway intersections and towns along Nepal's national highways. Some of the specific objectives of this master-plan are enlisted below:

• To promote the rapid adoption of electric vehicles in Nepal by ensuring safe, reliable, accessible, and affordable charging infrastructure along national highways

- To initially assist the establishment of EV Charging Stations and, eventually, to develop a market for the EV Charging business.
- Support the cost-effective and timely rollout of EV charging infrastructure, encouraging parallel investments from private sectors.
- Build an adequate public EV charging station network to enable EV rollout.
- Encourage electricity distribution system readiness to adopt new demand created by EV charging stations.

3. Scope of Work

The scope of this proposed master plan should encompass the following (but not limited to):

- Preparation of Standards/ Guidelines for Public Charging Infrastructures.
- Regulations regarding connectivity with the grid such as power factor, load factor, harmonics, voltage deviations etc.
- Safety standards required for the grid to be ensured through existing regulations.
- Standards/specification of equipment/ products to be used in charging infrastructure considering the interoperability of the device and the agency responsible for it.
- Specifications for the fast and slow charging and AC and DC chargers.
- Assessment of the capacity of the distribution network to supply the load of the electric vehicles.
- Identify the optimum number and suitable locations, density and penetration of the charging infrastructure along National Highway as per statistics of national Highway (SNH 2020/2021).
- Priority of rollouts of EV Public charging infrastructures.
 - Phase I (1-3 years)
 - Phase II (3-5 years)
 - Phase III (5^+ years)
- Propose the suitable implementation plan for the above identified charging infrastructures.
- Assess the stability and adequacy of the existing power source, which will connect the charging stations to the grid.

- Perform a Grid Impact Study (GIS) of the heavy vehicle integration since they need extremely fast charging, that results in very high charging loads (at the multiple-megawatt scale) if many such vehicles charge simultaneously.
- Assess the availability of suitable land/location and the appropriate mode of obtaining land (leasing or using public places)
- Perform an assessment of 'Road Gradient' on the mileage of EVs while accessing the location of the charging infrastructures.
- Create and maintain a safe national online database (having restricted access to concerned authority) of all the public charging stations.

4. Study Area

The study area shall encompass Nepal's National highways as per statistics of national Highway (SNH 2020/2021), however, the list can be changed on the basis of suggestion from the consultant if found suitable by the WECS.

5. Key task to be performed

a) **Review Work**

The consultant should carry out extensive review of master plans on the public charging infrastructures/ stations carried out by various countries. During the review, the consultant shall also take into consideration the documents, reports, papers, standards, guidelines, related to previous similar study. The review of plans, policies, acts, regulations and ordinances regarding public charging infrastructures/ stations be carried out. further, consultant shall also review international standards, policies and practices during the review.

b) Data collection

The study team shall collect available existing data and information on traffic studies such as origin and destination study, geometric property of Highway, types of EVs (in operation) and their charging guns, appropriate charging infrastructure locations, transmission lines and distribution lines, Gird Impact, available from different institutions such as the Ministry of Physical Infrastructures and Transport, Department of Roads, Department of Survey, Nepal Electricity Authority, Rastriya Prasaran Grid Company Limited, non-governmental and private sectors.

c) Field work

The field work shall cover accessing the availability of suitable land at/ around the identified locations for building the public charging infrastructure along the major highways. Furthermore, the consultant shall conduct a field assessment of the distribution network's capacity to supply the load of the electric vehicles in the identified location. Additionally, they should assess the stability and adequacy of the existing power source, which will connect the charging stations to the grid.

Consultant shall request for prior approval of proposal regarding site visit and site selection. WECS representative will be monitoring field work during site visit.

d) Report Preparation

It is anticipated that by the time the Consultant submits Draft Report, its team will have fair idea of the outcome that will be put in the Report. As evidenced in the Objectives above, the basic purpose of the entire study project is to prepare a master plan, however, the Consultant shall provide all data (raw and processed), field data and supporting study (input data, framework, parameters, output) used in this study along with report. For each report, hard copies and soft copies shall be provided. Additional details on these reports are described below.

I. Inception report

Within one months of the effective date of contract, the Consultant shall submit an Inception Report. The inception report shall include the detailed information and methodology of this study and shall also specify the details for the field visit. Consultant will also elaborate: (i) other main tasks, (ii) work and staffing plans, and (iii) reporting program

Also, Consultant shall organize for detailed presentation on Inception report in WECS meeting hall. WECS will comment on the report as per objective, scope and spirit of the ToR. WECS may also invite the technical support group (TSG) experts and concerned professionals in this Workshop. All the comments and suggestions provided by WECS shall be incorporated in the revised Inception Report. At least 5 hard copies of the initial and revised inception report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

II. First Interim report

The Consultant shall submit the first interim report within 4 months from the effective date of the contract. The first interim report shall include the following guidelines and standards:

(i) Standards/ Guidelines for Public Charging Infrastructures:

The report shall include layout of a standard charging infrastructure which the consultant shall propose as the Standard Public Charging Infrastructure (PCI). The layout shall include the appropriate number of bays for charging, the area required for a typical PCI, number and layout of fast and slow charging ports and Civil & Electrical engineering drawing of the PCI.

- (ii) Regulations regarding connectivity with the grid such as power factor, load factor, harmonics, voltage deviations etc.
- (iii)Safety standards required for the grid to be ensured through existing regulations.
- (iv) Standards/specification of equipment/ products to be used in charging infrastructure considering the interoperability of the device and the agency responsible for it.
- (v) Specifications for the fast and slow charging and AC and DC chargers.

Consultant shall organize for detailed presentation on First Interim report in WECS meeting hall. The consultant shall have the responsibility to defend the quality, authenticity and appropriateness of the data. WECS will comment on the report as per objective, scope and spirit of the ToR. All the comments and suggestions provided by WECS and TSG members shall be incorporated in the revised First Interim Report. At least 5 hard copies of the initial and revised First Interim report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

Additionally, the consultant shall provide 5 hard copies of the approved guideline and standard of a standard public charging infrastructure (PCI).

III. Second Interim Report

Within 7 months of the effective date of the contract, the Consultant shall submit the second Interim report. The second Interim report shall also include field report which shall contain all the information and data obtained from field visit. All the information shall be supported by photographs/digital evidence.

Field report shall contain the following:

- (i) Field assessment of the capacity of the distribution network to supply the load of the electric vehicles.
- (ii) Identify the optimum number and suitable locations, density and penetration of the charging infrastructure.
- (iii)Field assessment of the stability and adequacy of the existing power source, which will connect the charging stations to the grid.
- (iv) Field assessment of the availability of suitable land/location.
- (v) Perform an assessment of 'Road Gradient' on the mileage of EVs while accessing the location of the charging infrastructures

Consultant shall organize for detailed presentation on First Interim report in WECS meeting hall. WECS will comment on the report as per objective, scope and spirit of the ToR. All the comments and suggestions provided by WECS and TSG members shall be incorporated in the revised Second Interim Report. At least 5 hard copies of the initial and revised Interim I report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

IV. Draft Report

The Consultants shall submit First Draft Report within 11 months from the effective date of the Contract. Draft report should include all the study results with executive summary, main report, supporting report and data book.

Further, the consultant shall organize one-day Residential workshop for presentation on Draft Report. WECS will comment on the report as per objective, scope and spirit of the ToR. WECS may also invite the experts and concerned professionals in this Workshop. All the comments and suggestions provided by WECS shall be incorporated in the revised Draft Report. At least 5 hard copies of the initial and revised Interim I report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

V. Final Report

The Consultants shall submit Final Report within 12 months from the effective date of the Contract. After receiving comments and suggestions from WECS and groups of experts on the Draft report, the consultant shall prepare the Final report incorporating all the comments and suggestions. The Final Report will incorporate all the data and information collected in presenting the final output. The report will summarize and discuss the results together with conclusions, recommendations and lessons learned for future projects of this nature. In addition, with final report, within this period, workshops, trainings, handing over models and data as well as transfer of technology shall be completed. The submitted Final report shall be in manner acceptable to WECS. The final report shall be approved by WECS for the final payment. Ten hard copies and a soft copy of Final Report shall be submitted. The consultant shall submit all data (primary, secondary and analyzed), database files, model executable file with input, parameter and output files, results, finding, texts, map, photographs, image and supporting information in hard and soft copy both along with submission of Final Report.

6. Expected Human Resources:

Professional	No.	Qualification and Experience	Man Months
		Key Expert	
Team Leader	Minimum Master's degree in Electrical Engineering or Equivalent and more than 15 years of general experience and have completed at least one project in transmission line master planning/ EV charging station master planning/ Transportation master planning. Additionally, he/she should have completed at least one project in relevant field.		б
Senior Electrical Engineer	1	Minimum Master's degree in Electrical Engineering or Equivalent and more than 10 years of general experience. Shall have at least 2 years of specific experience in transmission line/ distribution/ grid planning project. Additionally, he/she should have completed at least one project in relevant field.	9
Senior Transportation Engineer	1	Minimum Master's degree in Transportation Engineering or Equivalent and more than 10 year of general experience. Shall have at least 2 years of	9

The following professionals with stated qualifications are proposed for the assignment.

Professional	No.	Qualification and Experience	Man Months			
		specific experience in transportation management and planning. Additionally, he/she should have completed at least one project in relevant field.				
Electrical Engineer	1	Minimum Bachelor's degree in Electrical Engineering or Equivalent and have more than 5 years of general experience. Shall have at least 1 year of experience in transmission line and distribution line project. Additionally, he/she should have completed at least one project in relevant field.	8			
Automobile / Mechanical Engineer	1	Minimum Bachelor's degree in Mechanical/ Automobile Engineering or Equivalent and more than 5 years of general experience. Shall have at least 1 year of experience in EV related projects. Additionally, he/she should have completed at least one project in relevant field.	5			
GIS Expert	1	Minimum Bachelor's degree in Geomatics/Civil Engineering or Equivalent and more than 5 years of experience in GIS. Shall have at least one year of specific experience in Transmission line/ Transportation planning.	3			
Economist/ Financial Expert	1	Minimum Bachelor's degree in Economics/ Finance/Commerce or Equivalent and more than 5 years of experience in financial analysis. Shall have at least one year of experience in economic/ financial analysis of infrastructure related project.	2			
Electrical Sub Engineer	1	Minimum Diploma in Electrical Engineering or Equivalent and more than 2 years of experience in electrical survey/ distribution line/ grid impact study and relevant works.	б			
Surveyor/ Civil Sub- Engineer	1	Minimum Diploma in Civil/ Geomatics Engineering more than 2 years of experience in relevant field.	7			
	Non-Key Expert					
Computer operator	1		12			
Support Staff	1		12			

Note: CV of key experts shall be evaluated. The responsibility of the experts is, but not limited to, the following:

7. Reporting Requirement and Duration of Service

The consultant shall complete the entire study project within 12 months from the date of signing the agreement with WECS. It is responsible of the consultant to plan in detail the work schedule and expert man months schedule to complete the assigned work within the assigned time frame.

SN	Report	Delivery Schedule
1	Inception Report	Within 1 months after signing the contract
2	First Interim Report	Within 4 months after signing the contract
3	Second Interim Report	Within 7 months after signing the contract
4	Draft Report	Within 11months after signing the contract
5	Final Report	Within 12 months after signing the contract

8. Terms of Payment

Payment shall be made according to the following schedule:

SN	Report	Number of Copies	Payment percentage
1	After Submission and Approval of Inception Report	5 copies	15%
2	After submission and Approval of First Interim	5 copies (+5 Copies of guidelines)	20%
3	After Submission and approval of Second Interim Report	5 copies	25%
4	After organization of Workshop and approval of Draft Report	5 copies	20%
5	After submission and approval of Final Report	10 copies	20%

Consultant shall request the WECS for the payment of the offered job with valid bills.

9. Language of the Report:

All the reports shall be prepared and submitted in English.

10. Technology Transfer

Consultant shall organize 7 working days training program under technology transfer. This shall include 10 participant covering technical officers from government organization. Consultant shall prepare detail training manual. Consultant shall provide training covering data acquisition, processing, modelling result analysis and interpretation.

11. Property Rights

Property rights WECS shall have the sole authority on all data (primary, secondary and analyzed), database files, model executable file with input, parameter and output files, results, finding, texts, map, photographs, image and supporting information collected during the survey. The consultant shall refrain from using any of the information in any other studies without receiving prior approval from WECS. Failing to get prior approval from WECS in such cases may result in black listing of the consultant in WECS future works.

D. Evaluation of Consultant's EOI Application

Evaluation of Consultant's EOI Application

Consultant's EOI application which meets the eligibility criteria will be ranked on the basis of the Ranking Criteria.

i)	Eligibility	&	Comp	leteness	Test
			- · I.		

Sl. No.	Criteria Title	Compliance
1	Registration of the Company/Firm	
2	Tax Clearance/Tax Return Submission for the FY 2078/79	
3	VAT/PAN Registration	
4	EOI Form 1: Letter of Application	
5	EOI Form 2: Applicantâ€ [™] s Information Form	
6	EOI Form 3: Experience (3(A) and 3(B))	
7	EOI Form 4: Capacity	
8	EOI Form 5: Qualification of Key Experts	
9	In case of a natural person or firm/institution/company which is already declared blacklisted and ineligible by the GoN, any other new or existing firm/institution/company owned partially or fully by such Natural person or Owner or Board of director of blacklisted firm/institution/company; shall not be eligible consultant.	
10	If the corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV shall not be eligible to participate in procurement process till the concerned Court has not issued the decision of clearance against the Corruption Charges.	
11	Power of Attorney	

ii) EOI Evaluation Criteria

A. Qualification

Sl. No.	Criteria	Minimum Requirement
1	Team Leader	Minimum Master's degree in Electrical Engineering or Equivalent and more than 15 years of general experience and have completed at least one project in transmission line master planning/ EV charging station master planning/ Transportation master planning. Additionally, he/she should have completed at least one project in relevant field.
2	Sr. Electrical Engineer	Minimum Master's degree in Electrical Engineering or Equivalent and more than 10 years of general experience. Shall have at least 2 years of specific experience in transmission line/ distribution/ grid planning project. Additionally, he/she should have completed at least one project in relevant field.
3	Senior Transportation Engineer	Minimum Master's degree in Transportation Engineering or Equivalent and more than 10 year of general experience. Shall have at least 2 years of specific experience in transportation management and planning. Additionally, he/she should have completed at least one project in relevant field.
4	Electrical Engineer	Minimum Bachelor's degree in Electrical Engineering or Equivalent and have more than 5 years of general experience. Shall have at least 1 year of experience in transmission line and distribution line project. Additionally, he/she should have completed at least one project in relevant field.
5	Automobile / Mechanical Engineer	Minimum Bachelor's degree in Mechanical/ Automobile Engineering or Equivalent and more than 5 years of general experience. Shall have at least 1 year of experience in EV

Sl. No.	Criteria	Minimum Requirement
		related projects. Additionally, he/she should have completed at least one project in relevant field.
6	GIS Expert	Minimum Bachelor's degree in Geomatics/Civil Engineering or Equivalent and more than 5 years of experience in GIS. Shall have at least one year of specific experience in Transmission line/ Transportation planning.
7	Economist/ Financial Expert	Minimum Bachelor's degree in Economics/ Finance/Commerce or Equivalent and more than 5 years of experience in financial analysis. Shall have at least one year of experience in economic/ financial analysis of infrastructure related project.
8	Electrical Sub Engineer	Minimum Diploma in Electrical Engineering or Equivalent and more than 2 years of experience in electrical survey/ distribution line/ grid impact study and relevant works.
9	Surveyor/ Civil Sub-Engineer	Minimum Diploma in Civil/ Geomatics Engineering more than 2 years of experience in relevant field.

Score: 40.0

B. Experience

Sl. No.	Criteria	Minimum Requirement
1	General Experience of consulting firm	General Work Experience of the firm in the National/ Provincial level Infrastructure Development. The completed projects/tasks having contract amount/value less than NRs. 2 million (incl VAT) shall not be considered for evaluation.
2	Specific experience of consulting firm within last 7 years.	Work experience of the firm in Transportation planning/ EV Planning/Transmission line Planning/Infrastructure development planning at national or provincial level. The completed projects/tasks having contract amount/value less than NRs. 2 million (incl VAT) shall not be considered for evaluation

Score: 50.0

C. Capacity

Sl. No.	Criteria	Minimum Requirement
1	Financial Capacity.	Financial Capacity of the Firm in NRs (Average Annual Turnover (AAT) in million NRs of the best three fiscal years in last seven consecutive fiscal years)

Score: 10.0

Minimum score to pass the EOI is: 60

Note : If the corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such consultant's proposal shall be excluded during the evaluation.

E. EOI Forms & Formats

E. EOI Forms & Formats

- Form 1. Letter of Application Form 2. Applicant's information Form 3.Experience *(General, Specific and Geographical)* Form 4. Capacity
- Form 5. Qualification of Key Experts

1. Letter of Application

(Letterhead paper of the Applicant or partner responsible for a joint venture, including full postal address, telephone no., fax and email address)

Date:

To,
Full Name of Client: ______
Full Address of Client: _____

Telephone No.: _____

Fax No.: ______ Email Address:

Sir/Madam,

- 1. Being duly authorized to represent and act on behalf of (hereinafter "the Applicant"), and having reviewed and fully understood all the short-listing information provided, the undersigned hereby apply to be short-listed by *[Insert name of Client)* as Consultant for *{Insert brief description of Work/Services}.*
- 2. Attached to this letter are photocopies of original documents defining:
 - a) the Applicant's legal status;
 - b) the principal place of business;
- 3. **[Insert name of Client]** and its authorized representatives are hereby authorized to verify the statements, documents, and information submitted in connection with this application. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.
- 4. **[Insert name** of Client) and its authorized representatives are authorized to contact any of the signatories to this letter for any further information.¹
- 5. All further communication concerning this Application should be addressed to the following person,

[Person]

[Company]

[Address]

[Phone, Fax, Email]

6. We declare that, we have no conflict of interest in the proposed procurement proceedings and we have not been punished for an offense relating to the concerned profession or

¹ Applications by joint ventures should provide on a separate sheet, relevant information for each party to the Application.

Standard EOI Document

business and our Company/firm has not been declared ineligible.

- 7. We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm, JV member or sub-consultant, and the expert(s) will be disqualified from short-listing and participation in the assignment.
- 8. The undersigned declares that the statements made and the information provided in the duly completed application are complete, true and correct in every detail.

Signed

Name

:

:

For and on behalf of (name of Applicant or partner of a joint venture):

2. Applicant's Information Form

(In case of joint venture of two or more firms to be filled separately for each constituent member)

- 1. Name of Firm/Company:
- 2. Type of Constitution (Partnership/ Pvt. Ltd/Public Ltd/ Public Sector/ NGO)
- 3. Date of Registration / Commencement of Business (Please specify):
- 4. Country of Registration:
- 5. Registered Office/Place of Business:
- 6. Telephone No; Fax No; E-Mail Address
- 7. Name of Authorized Contact Person / Designation/ Address/Telephone:
- 8. Name of Authorized Local Agent /Address/Telephone:
- 9. Consultant's Organization:
- 10. Total number of staff:
- 11. Number of regular professional staff:

(Provide Company Profile with description of the background and organization of the Consultant and, if applicable, for each joint venture partner for this assignment.)

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3. Experience

3(A). General Work Experience

(Details of assignments undertaken. Each consultant or member of a JV must fill in this form.)

S. N.	Name of assignment	Location	Value of Contract	Year Completed	Client	Description of work carried <i>out</i>
1.						
2.						
3.						
4.						
5.						
6.						
7.						

3(B). Specific Experience

Details of similar assignments undertaken in the previous seven years

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Assignment name:	Approx. value of the contract (in current NRs; US\$ or Euro) ² :
Country:	Duration of assignment (months):
Location within country:	
Name of Client:	Total No. of person-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current NRs; US\$ or Euro):
Start date (month/year): Completion date (month/year):	No. of professional person-months provided by the joint venture partners or the Sub- Consultants:
Name of joint venture partner or sub-Consultants, if any:	Narrative description of Project:
Description of actual services provid	Jed in the assignment:

Note: Provide highlight on similar services provided by the consultant as required by the EOI assignment.

Firm's Name:

² Consultant should state value in the currency as mentioned in the contract

3(C). Geographic Experience

Experience of working in similar geographic region or country

(In case of joint venture of two or more firms to be filled separately for each constituent member)

No	Name of the Project	Location (Country/ Region)	Execution Year and Duration
1.			
2.			
3.			
4.			
5.			
6.			
7.			

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4. Capacity

4(A). Financial Capacity

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Annual Turnover		
Year	Amount Currency	

- Average Annual Turnover

(Note: Supporting documents for Average Turnover should be submitted for the above.)

Standard EOI Document

4(B). Infrastructure/equipment related to the proposed assignment³

No	Infrastructure/equipment Required	Requirements Description
1.		
2.		
3.		
4.		
5.		

³ Delete this table if infrastructure/equipment for the proposed assignment is not required.

5. Key Experts (Include details of Key Experts only)

(In case of joint venture of two or more firms to be filled separately for each constituent member)

SN	Name	Position	Highest Qualification	Work Experience (in year)	Specific Work Experience (in year)	Nationality
1						
2						
3						
4						
5						

(Please insert more rows as necessary)

EOI Document for Preparation of a Master Plan for Public Charging Infrastructure (PCI) for Electric Vehicles (EV) on Major National Highways.

D. Evaluation Criteria (Evaluation of Consultant's EOI Application)

Consultant's EOI application which meets the eligibility criteria will be ranked on the basis of Ranking Criteria as detailed below.

i) Eligibility & Completeness Test	Compliance
Copy of Registration of the company/firm	
Tax Clearance/Tax Return Submission for Fiscal year 2078/79	
VAT/PAN Registration	
Power of Attorney	
Self-Declaration	
EOI Form 1: Letter of Application	
EOI Form 2: Applicant's Information Form	
EOI Form 3: Experience (3(A) and 3(B))	
EOI Form 4: Capacity	
EOI Form 5: Qualification of Key Experts	

Note: Only the Firms or JV(s) fulfilling the Eligibility & Completeness Test criteria mentioned above shall be eligible for further evaluation. The EOI application of those Firms or JV(s) which do not fulfill the above criteria shall not be evaluated further.

ii)	EOI Evaluation Criteria			
SN	Description		Weightage	Marks
1	Proposed Key Professionals for the Study (Qualification & Experience)			40
Ι	Qualification of the Key Personnel in relevant Discwill be distributed among the list of key Personnel /Prbelow:Team LeaderSr. Electrical Engineer; Sr. Transportation EngineerElectrical Engineer; Automobile/Mechanical Engineer;GIS Expert; Economist/ Financial ExpertElectrical Sub-Engineer; Surveyor/Civil Sub-Engineer	2.00 1.50 0.50		10
II	Experience (As per ToR) of the Key Professionals:			30
Α	Team Leader		1X5 = 5	

EOI Document for Preparation of a Master Plan for Public Charging Infrastructure (PCI) for Electric Vehicles (EV) on Major National Highways.

ii)	EOI Evaluation Criteria		
SN	Description	Weightage	Marks
В	Key Professionals4. Automobile / Mechanical Engineer1. Senior Electrical Engineer4. Automobile / Mechanical Engineer2. Senior Transportation Engineer5. GIS expert 6. Economist/ Financial Expert3. Electrical EngineerExpert	6X3.5 = 21	
	 Electrical Sub Engineer Surveyor/ Civil Sub-Engineer 	2×2 = 4	
2	Work Experience of the Firm (Only study completed projects will be considered for evaluation)		50
2a	General Work Experience of the firm in the National/ Provincial level Infrastructure Development. The completed projects/tasks having contract amount/value less than NRs. 2 million (incl VAT) shall not be considered for evaluation.		20
Α	More than 2 Projects	100%	
В	2 projects	80%	
C	1 project	70%	
D	Less than 1 Projects	0%	
2b	Specific Experience of the firm in last 7 years		
	Work experience of the firm in Transportation planning/ EV Planning/Transmission line Planning/Infrastructure development planning at national or provincial level. The completed projects/tasks having contract amount/value less than NRs. 2 million (incl VAT) shall not be considered for evaluation.		30
Α	More than 2 projects	100 %	
В	2 projects	80 %	
C	1 project	70 %	
D	Less than 1 Project	0%	
3	Financial Capacity of the Firm in NRs (Average Annual Turnover (AAT) in million NRs of the best three fiscal years in last seven consecutive fiscal years)		10
	More than 18 Million	100 %	
	16 to 18 Million	80 %	
	Less than 16 Million	0%	
	TOTAL MARKS		100

EOI Document for Preparation of a Master Plan for Public Charging Infrastructure (PCI) for Electric Vehicles (EV) on Major National Highways.

Note:

- Curriculum Vitae (CV) of key professionals must be submitted, along with the expert's due signature and a notarized copy of their Nepal Engineering Council (NEC)'s registration certificate (*for the professionals required to be registered as per NEC Act, 2055 and Regulation, 2057*).
- Academic qualification Certificates must be provided for each expert.
- Notarized copy of certificates of projects completed by the firms shall be submitted.
- The notarized copy of work completion certificate of Firms shall be submitted.
- The certificate of Specific experience of the Firm and Personnel shall be submitted.

Terms of Reference

1. Background

The Government of Nepal (GoN) formed the Water and Energy Commission (WEC) in 1975 with the aim of developing its water and energy resources in an integrated and accelerated manner. Afterwards, in1981, a permanent WEC secretariat was formed and given the name Water and Energy Commission Secretariat (WECS). The primary function of WECS is to assist government ministries and other organizations involved in water resources in the formulation of plans and policies pertaining to the water and energy sector. WECS is responsible for assisting concerned government ministries in developing plans, policies, and strategies for the development of the water resources and energy. Likewise, it is also responsible for providing opinion, advice, and recommendations on the bilateral and multilateral issues linked to energy and water resources.

The GoN considers electric vehicles to be one of the best options for reducing greenhouse gas (GHG) emissions from the transportation sector in order to meet its climate change policy targets. Furthermore, in the coming years, EVs are expected to provide Nepal Electricity Authority with an increasing opportunity to capitalize on entirely new sources of demand while increasing revenue from EV consumers. The dramatic increase in global fuel prices, along with the government's commitment to promote EV adoption through tax incentives, contributed to the gradual increase in the EV demand. In order to reduce the amount of emissions from the transportation sector caused by ICE (Internal Combustion Engine) vehicles, EVs are thought to be a viable option for both short-distance and intercity travel provided that there are sufficient charging infrastructures available in the major highways of Nepal. According to the Electric Vehicle Association of Nepal (EVAN), there are approximately 34000 EVs in the country, representing 1% of the total vehicle fleet. More than 80% of these are three-wheelers used for public transportation and remaining 20% comprises electric two-wheelers and electric cars.

EVs are not expensive than their ICE counterparts, public interest in EVs is growing and their perception is also shifting. However, despite the cost effectiveness of EVs in comparison to their fossil fuel counterparts as well as the government's tax and financial incentives, most individuals are still reluctant to adopt electric vehicles due to a lack of adequate EV infrastructure. Studies have shown that lack of sufficient charging stations is one of the major barriers in adoption of

electric vehicles. Most EV owners often complain of "range anxiety," a situation in which EV users are anxious about a lack of charging infrastructure and limited battery capacity. This master-plan intends to bridge the charging infrastructure shortage by establishing a robust network of fast charging stations along the major highways of Nepal. In order to bridge the gap as stated earlier, WECS through the utilization of government fund intends to prepare a master plan of EV Public Charging Infrastructure on major national highways by engaging national consultant through competitive bidding.

a. EV Public Charging Infrastructures

Basically, EV charging stations are a set of power electronics that safely supply regulated electricity from the grid to the vehicle batteries. Different types of chargers provide varying current and voltage levels as per the vehicle-battery requirements. Most vehicles are equipped with a slow or moderate AC on-board charging mechanism that can be used to power vehicles directly from a common home plug. DC fast-chargers, on the other hand, deliver direct current to the vehicle battery, bypass the onboard converter, and charge at faster rates. In addition to this, charging infrastructures should also include a level of intelligence that handles user authentication, vehicle communication, data gathering and monitoring, and hassle-free payment.

b. Technical Details

The technical details regarding the charging stations used globally are briefly discussed below.

Slow AC Charger

The most common form of charger refers simply to plugging a car or two-wheeler into a standard three-pin 5-amp (type D) or 15-amp (type M) wall outlet.

Moderate AC Charger

Requires the installation of a dedicated EV charger to a 15-amp circuit and can have a charging rate of 2.5 kW to 20 kW.

DC Fast Charger

Typically used when the vehicle demands a fast charge. It requires the installation of dedicated grid infrastructure as well as a dedicated three-phase power supply that consumes substantially more amperage than AC chargers. To obtain a higher charging rate for their larger batteries, heavy vehicles like public buses often require DC fast chargers.

	Specifications
Level 1 DC Chargers	Public DC chargers with output voltage of 48 V/72 V Power outputs of 10 kW–15 kW Maximum current of up to 200 amps
Level 2	Public DC chargers with output voltage up to 1000 V
DC Chargers	Power outputs of 30 kW–150 kW
PopularDCfastchargingconnectorscurrentlybeingusedglobally	 CHAdeMO: Nissan and other Japanese companies like Mitsubishi SAE Combo Charging System (CCS): BMW, GM, VW, and other carmakers Supercharger: Tesla standard connector GB/T: Chinese Automakers as well as Indian Automakers like Mahindra and Tata electric cars use this standard

Source: <u>https://www.power-sonic.com/blog/the-ultimate-guide-to-dc-fast-charging/</u>

DC fast charging types



c. Charging power and energy requirements of various vehicle segments

	Battery Size	Slow Charging	Fast Charging
Two-wheelers	1–3 kWh	0.5–1 kW	2–3 kW
Three-wheelers	3–7 kWh	0.5–1 kW	2–3 kW
Cars	15–80 kWh	3-kW	20–100 kW
Buses/ Supercars	100–400 kWh	7–50 kW	50–500 kW

d. Highway DC Fast Charging station

Highway rapid charging stations are intended to serve long-distance commuters and commercial vehicles. These charging stations will be larger facilities with a variety of charging connectors incorporating both fast and slow charging alternatives. Priority list of National Highways for installation of charging stations based on population density of connecting cities, flow of vehicles and potential number of EV users in the future.



2. Objectives of the study

The master-plan foresees the installation of EV charging stations on the national highways of Nepal. The charging stations will primarily be installed at optimum intervals between 25-100 kilometers near highway intersections and towns along Nepal's national highways. Some of the specific objectives of this master-plan are enlisted below:

• To promote the rapid adoption of electric vehicles in Nepal by ensuring safe, reliable, accessible, and affordable charging infrastructure along national highways

- To initially assist the establishment of EV Charging Stations and, eventually, to develop a market for the EV Charging business.
- Support the cost-effective and timely rollout of EV charging infrastructure, encouraging parallel investments from private sectors.
- Build an adequate public EV charging station network to enable EV rollout.
- Encourage electricity distribution system readiness to adopt new demand created by EV charging stations.

3. Scope of Work

The scope of this proposed master plan should encompass the following (but not limited to):

- Preparation of Standards/ Guidelines for Public Charging Infrastructures.
- Regulations regarding connectivity with the grid such as power factor, load factor, harmonics, voltage deviations etc.
- Safety standards required for the grid to be ensured through existing regulations.
- Standards/specification of equipment/ products to be used in charging infrastructure considering the interoperability of the device and the agency responsible for it.
- Specifications for the fast and slow charging and AC and DC chargers.
- Assessment of the capacity of the distribution network to supply the load of the electric vehicles.
- Identify the optimum number and suitable locations, density and penetration of the charging infrastructure along National Highway as per statistics of national Highway (SNH 2020/2021).
- Priority of rollouts of EV Public charging infrastructures.
 - Phase I (1-3 years)
 - Phase II (3-5 years)
 - Phase III (5^+ years)
- Propose the suitable implementation plan for the above identified charging infrastructures.
- Assess the stability and adequacy of the existing power source, which will connect the charging stations to the grid.

- Perform a Grid Impact Study (GIS) of the heavy vehicle integration since they need extremely fast charging, that results in very high charging loads (at the multiple-megawatt scale) if many such vehicles charge simultaneously.
- Assess the availability of suitable land/location and the appropriate mode of obtaining land (leasing or using public places)
- Perform an assessment of 'Road Gradient' on the mileage of EVs while accessing the location of the charging infrastructures.
- Create and maintain a safe national online database (having restricted access to concerned authority) of all the public charging stations.

4. Study Area

The study area shall encompass Nepal's National highways as per statistics of national Highway (SNH 2020/2021), however, the list can be changed on the basis of suggestion from the consultant if found suitable by the WECS.

5. Key task to be performed

a) **Review Work**

The consultant should carry out extensive review of master plans on the public charging infrastructures/ stations carried out by various countries. During the review, the consultant shall also take into consideration the documents, reports, papers, standards, guidelines, related to previous similar study. The review of plans, policies, acts, regulations and ordinances regarding public charging infrastructures/ stations be carried out. further, consultant shall also review international standards, policies and practices during the review.

b) Data collection

The study team shall collect available existing data and information on traffic studies such as origin and destination study, geometric property of Highway, types of EVs (in operation) and their charging guns, appropriate charging infrastructure locations, transmission lines and distribution lines, Gird Impact, available from different institutions such as the Ministry of Physical Infrastructures and Transport, Department of Roads, Department of Survey, Nepal Electricity Authority, Rastriya Prasaran Grid Company Limited, non-governmental and private sectors.

c) Field work

The field work shall cover accessing the availability of suitable land at/ around the identified locations for building the public charging infrastructure along the major highways. Furthermore, the consultant shall conduct a field assessment of the distribution network's capacity to supply the load of the electric vehicles in the identified location. Additionally, they should assess the stability and adequacy of the existing power source, which will connect the charging stations to the grid.

Consultant shall request for prior approval of proposal regarding site visit and site selection. WECS representative will be monitoring field work during site visit.

d) Report Preparation

It is anticipated that by the time the Consultant submits Draft Report, its team will have fair idea of the outcome that will be put in the Report. As evidenced in the Objectives above, the basic purpose of the entire study project is to prepare a master plan, however, the Consultant shall provide all data (raw and processed), field data and supporting study (input data, framework, parameters, output) used in this study along with report. For each report, hard copies and soft copies shall be provided. Additional details on these reports are described below.

I. Inception report

Within one months of the effective date of contract, the Consultant shall submit an Inception Report. The inception report shall include the detailed information and methodology of this study and shall also specify the details for the field visit. Consultant will also elaborate: (i) other main tasks, (ii) work and staffing plans, and (iii) reporting program

Also, Consultant shall organize for detailed presentation on Inception report in WECS meeting hall. WECS will comment on the report as per objective, scope and spirit of the ToR. WECS may also invite the technical support group (TSG) experts and concerned professionals in this Workshop. All the comments and suggestions provided by WECS shall be incorporated in the revised Inception Report. At least 5 hard copies of the initial and revised inception report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

II. First Interim report

The Consultant shall submit the first interim report within 4 months from the effective date of the contract. The first interim report shall include the following guidelines and standards:

(i) Standards/ Guidelines for Public Charging Infrastructures:

The report shall include layout of a standard charging infrastructure which the consultant shall propose as the Standard Public Charging Infrastructure (PCI). The layout shall include the appropriate number of bays for charging, the area required for a typical PCI, number and layout of fast and slow charging ports and Civil & Electrical engineering drawing of the PCI.

- (ii) Regulations regarding connectivity with the grid such as power factor, load factor, harmonics, voltage deviations etc.
- (iii)Safety standards required for the grid to be ensured through existing regulations.
- (iv) Standards/specification of equipment/ products to be used in charging infrastructure considering the interoperability of the device and the agency responsible for it.
- (v) Specifications for the fast and slow charging and AC and DC chargers.

Consultant shall organize for detailed presentation on First Interim report in WECS meeting hall. The consultant shall have the responsibility to defend the quality, authenticity and appropriateness of the data. WECS will comment on the report as per objective, scope and spirit of the ToR. All the comments and suggestions provided by WECS and TSG members shall be incorporated in the revised First Interim Report. At least 5 hard copies of the initial and revised First Interim report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

Additionally, the consultant shall provide 5 hard copies of the approved guideline and standard of a standard public charging infrastructure (PCI).

III. Second Interim Report

Within 7 months of the effective date of the contract, the Consultant shall submit the second Interim report. The second Interim report shall also include field report which shall contain all the information and data obtained from field visit. All the information shall be supported by photographs/digital evidence.

Field report shall contain the following:

- (i) Field assessment of the capacity of the distribution network to supply the load of the electric vehicles.
- (ii) Identify the optimum number and suitable locations, density and penetration of the charging infrastructure.
- (iii)Field assessment of the stability and adequacy of the existing power source, which will connect the charging stations to the grid.
- (iv) Field assessment of the availability of suitable land/location.
- (v) Perform an assessment of 'Road Gradient' on the mileage of EVs while accessing the location of the charging infrastructures

Consultant shall organize for detailed presentation on First Interim report in WECS meeting hall. WECS will comment on the report as per objective, scope and spirit of the ToR. All the comments and suggestions provided by WECS and TSG members shall be incorporated in the revised Second Interim Report. At least 5 hard copies of the initial and revised Interim I report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

IV. Draft Report

The Consultants shall submit First Draft Report within 11 months from the effective date of the Contract. Draft report should include all the study results with executive summary, main report, supporting report and data book.

Further, the consultant shall organize one-day Residential workshop for presentation on Draft Report. WECS will comment on the report as per objective, scope and spirit of the ToR. WECS may also invite the experts and concerned professionals in this Workshop. All the comments and suggestions provided by WECS shall be incorporated in the revised Draft Report. At least 5 hard copies of the initial and revised Interim I report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.

V. Final Report

The Consultants shall submit Final Report within 12 months from the effective date of the Contract. After receiving comments and suggestions from WECS and groups of experts on the Draft report, the consultant shall prepare the Final report incorporating all the comments and suggestions. The Final Report will incorporate all the data and information collected in presenting the final output. The report will summarize and discuss the results together with conclusions, recommendations and lessons learned for future projects of this nature. In addition, with final report, within this period, workshops, trainings, handing over models and data as well as transfer of technology shall be completed. The submitted Final report shall be in manner acceptable to WECS. The final report shall be approved by WECS for the final payment. Ten hard copies and a soft copy of Final Report shall be submitted. The consultant shall submit all data (primary, secondary and analyzed), database files, model executable file with input, parameter and output files, results, finding, texts, map, photographs, image and supporting information in hard and soft copy both along with submission of Final Report.

6. Expected Human Resources:

Professional	No.	Qualification and Experience	Man Months
Team Leader	1	Minimum Master's degree in Electrical Engineering or Equivalent and more than 15 years of general experience and have completed at least one project in transmission line master planning/ EV charging station master planning/ Transportation master planning. Additionally, he/she should have completed at least one project in relevant field.	б
Senior Electrical Engineer	1	Minimum Master's degree in Electrical Engineering or Equivalent and more than 10 years of general experience. Shall have at least 2 years of specific experience in transmission line/ distribution/ grid planning project. Additionally, he/she should have completed at least one project in relevant field.	9
Senior Transportation Engineer	1	Minimum Master's degree in Transportation Engineering or Equivalent and more than 10 year of general experience. Shall have at least 2 years of	9

The following professionals with stated qualifications are proposed for the assignment.

Professional	No.	Qualification and Experience	Man Months
		specific experience in transportation management and planning. Additionally, he/she should have completed at least one project in relevant field.	
Electrical Engineer	1	Minimum Bachelor's degree in Electrical Engineering or Equivalent and have more than 5 years of general experience. Shall have at least 1 year of experience in transmission line and distribution line project. Additionally, he/she should have completed at least one project in relevant field.	8
Automobile / Mechanical Engineer	1	Minimum Bachelor's degree in Mechanical/ Automobile Engineering or Equivalent and more than 5 years of general experience. Shall have at least 1 year of experience in EV related projects. Additionally, he/she should have completed at least one project in relevant field.	5
GIS Expert	1	Minimum Bachelor's degree in Geomatics/Civil Engineering or Equivalent and more than 5 years of experience in GIS. Shall have at least one year of specific experience in Transmission line/ Transportation planning.	3
Economist/ Financial Expert	1	Minimum Bachelor's degree in Economics/ Finance/Commerce or Equivalent and more than 5 years of experience in financial analysis. Shall have at least one year of experience in economic/ financial analysis of infrastructure related project.	2
Electrical Sub Engineer	1	Minimum Diploma in Electrical Engineering or Equivalent and more than 2 years of experience in electrical survey/ distribution line/ grid impact study and relevant works.	6
Surveyor/ Civil Sub- Engineer	1	Minimum Diploma in Civil/ Geomatics Engineering more than 2 years of experience in relevant field.	7
Computer operator	1		12
Support Staff	1		12

Note: CV of key experts shall be evaluated. The responsibility of the experts is, but not limited to, the following:

7. Reporting Requirement and Duration of Service

The consultant shall complete the entire study project within 12 months from the date of signing the agreement with WECS. It is responsible of the consultant to plan in detail the work schedule and expert man months schedule to complete the assigned work within the assigned time frame.

SN	Report	Delivery Schedule	
1	Inception Report	Within 1 months after signing the contract	
2	First Interim Report	Within 4 months after signing the contract	
3	Second Interim Report	Within 7 months after signing the contract	
4	Draft Report	Within 11months after signing the contract	
5	Final Report	Within 12 months after signing the contract	

8. Terms of Payment

Payment shall be made according to the following schedule:

SN	Report	Number of Copies	Payment percentage
1	After Submission and Approval of Inception Report	5 copies	15%
2	After submission and Approval of First Interim	5 copies (+5 Copies of guidelines)	20%
3	After Submission and approval of Second Interim Report	5 copies	25%
4	After organization of Workshop and approval of Draft Report	5 copies	20%
5	After submission and approval of Final Report	10 copies	20%

Consultant shall request the WECS for the payment of the offered job with valid bills.

9. Language of the Report:

All the reports shall be prepared and submitted in English.

10. Technology Transfer

Consultant shall organize 7 working days training program under technology transfer. This shall include 10 participant covering technical officers from government organization. Consultant shall prepare detail training manual. Consultant shall provide training covering data acquisition, processing, modelling result analysis and interpretation.

11. Property Rights

Property rights WECS shall have the sole authority on all data (primary, secondary and analyzed), database files, model executable file with input, parameter and output files, results, finding, texts, map, photographs, image and supporting information collected during the survey. The consultant shall refrain from using any of the information in any other studies without receiving prior approval from WECS. Failing to get prior approval from WECS in such cases may result in black listing of the consultant in WECS future works.