This document was prepared for the ETI by third parties under contract to the ETI. The ETI is making these documents and data available to the public to inform the debate on low carbon energy innovation and deployment.

Programme Area: Light Duty Vehicles

Project: Electricity Distribution and Intelligent Infrastructure

Title: Plug-in Vehicle Economics and Infrastructure Project: Electricity Distribution and Intelligent Infrastructure Contract – Request for Proposal

Context:

This project looked at the potential impact of electric vehicles on the UK electricity distribution grid.

Request for Proposal

Title of Services for which Proposals are Requested:

Plug-in Vehicle Economics and Infrastructure Project:
Electricity Distribution and Intelligent Infrastructure Contract

Project Reference Number:
TR1002

Request Issue Date:
4th November 2009

Closing Date:
The proposal is due to be returned by 5:00p.m. 20th November 2009

Components of this Request for Proposal

- This Request for Proposal Document
- The proposal template for completion by the consortium
- The Technology Contract
- The Financial Forms
- Financial Guidance Notes for Participants
- Risk & Uncertainty Register
- Issue Register

Contact for Enquiries:

Ranvir Ramewal
Project Manager
Tel: +44 (0) 1509 202019
Email: ranvir.ramewal@eti.co.uk

Address for Submission of Proposals:

Energy Technologies Institute LLP
F.A.O. Ranvir Ramewal
Holywell Building
Holywell Way
Loughborough
LE11 3UZ
Email: ranvir.ramewal@eti.co.uk

Required Format of Response:

Proposals are to be submitted using the enclosed template and associated annexes. The ETI requires one hardcopy and one electronic copy.

This RfP is not an agreement to purchase goods or services, and the ETI is not bound to enter into a Contract with any Respondent. All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final. The ETI will be under no obligation to explain or justify any such decisions at any time. Furthermore the ETI reserves the right to alter the procurement process or timescale as it considers necessary.

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3. About the Energy Technologies Institute

3.1 Introduction to the Energy Technologies Institute

The Energy Technologies Institute LLP (the ETI) is a private organisation formed as an innovative Limited Liability Partnership between international industrial energy companies and the UK government.

Our mission is to accelerate the development, demonstration and eventual commercial deployment of a focused portfolio of energy technologies, which will increase energy efficiency, reduce greenhouse gas emissions and help achieve energy and climate change goals.

We will do this by leveraging the skills, capabilities and market access routes of our members, working with other organisations worldwide, to take the most challenging large-scale energy projects to full system demonstration, thus bridging the gulf between laboratory proven technologies and full scale commercially tested systems. Our projects will also develop knowledge, skills and supply-chains, and will inform the development of regulation, standards and policy. Hence we aim to overcome major barriers, de-risk the future development and shorten the lead times to market for secure, affordable, low-carbon energy systems for power, heat and transport.

Our portfolio includes programmes in areas such as Wind, Marine, Distributed Energy, Transport, Energy Networks and Carbon Capture & Storage. Further information may be found at www.eti.co.uk.

4. Background to the Project

4.1 Background to the ETI Transport Programme

Transport is one of the three large users of energy and emitters of CO_2 in the UK, with energy use in Transport in excess of 600TWh/year. It is expected that without transformational change, transport energy use and emissions will continue to grow with UK population and disposable income..

UK transport is split into the three broad categories of Aviation, Heavy Vehicles and Light Vehicles. Most of the UK's personal transport is achieved via passenger cars (within the Light Vehicles category). The three potentially viable approaches to low carbon energy sources for Light Vehicles are bio-fuels, hydrogen and electricity.

For Heavy Vehicles, our focus is on technologies to improve the efficiency of using liquid fuels. For Light Vehicles, our current focus is on understanding and enabling the market for plug-in vehicles; both all electric (EV) and plug-in hybrid electric (PHEV) vehicles. This is the Plug-in Vehicle Economics and Infrastructure Project.

4.2 Background to the Plug-in Vehicle Economics and Infrastructure Project

The ETI announced this £11M project in July 2009 and launched the project at the Low Carbon Vehicle Event 2009 (LCV2009) in Millbrook. The project is a core element of Electrification of Transport within Test Bed UK, with UK Government funding of around £300million already committed to infrastructure deployment and vehicle incentives. Government funding of over £100M has also been committed to vehicle technology development. For further details, please refer to the recent ETI Transport Programme brochure[1].

4.3 Overarching Objectives for the Project

The two primary objectives are:

1. **Evaluate the potential role and economics of plug-in vehicles in the low carbon transport system:** generate a quantified understanding of the market potential, cost models and carbon benefits case under defined scenarios of infrastructure investments, government intervention packages and finance model options across a number of key plug-in vehicle type/size/capability points; and

2. **Develop the technology tool-kit for delivering an intelligent infrastructure:** create a verified open interoperability architecture and generate information to aid infrastructure planning (e.g. to indicate how many recharging points are needed and where they should be located, what mix of power levels are required, how the impact

[1] www.eti.co.uk/Libraries/Related_Documents/ETI_Transport_Brochure.sflb?download=true

of plug-in vehicle recharging on the electricity distribution network should be managed, how the overall system can be simplified for consumers, etc).

Stage 1 will achieve this by modelling. Subsequent stages of the project will plan and implement the real-world testing of these models.

This RfP is for the Electricity Distribution and Intelligent Infrastructure Contract within Stage 1 of the project.

4.4 Overall Project Approach

Working with government, industry and key cities, the ETI plans to conduct an extensive evaluation of consumer attitudes and behaviours in purchasing and using plug-in vehicles and the supporting infrastructure. We will conduct UK consumer market research and consult with the users of the Technology Strategy Board's Ultra Low Carbon Vehicle Demonstrators during 2010. This will lead into an extensive evaluation of consumers' attitudes in real-life situations during early commercialisation from 2011 onwards.

The project will also develop a technology 'tool kit' for constructing supporting infrastructure across the UK, including the definition of an open standard architecture and the generation of infrastructure planning information.

The project's first stage will develop a comprehensive set of models comprising vehicles, supporting infrastructure and the consumer response. It will cover technical, behavioural and economic aspects and will enable the potential role and economics of plug-in vehicles to be extensively evaluated.

Subsequent stages of the project will test and validate these models and 'tool kit' by evaluating the response of consumers in real life situations. This will start early in 2011 when a number of different vehicle types from global vehicle manufacturers are expected to reach showrooms.

The first stage, lasting approximately 12 months, will commence in early 2010. The overall project is expected to continue until 2013/2014.

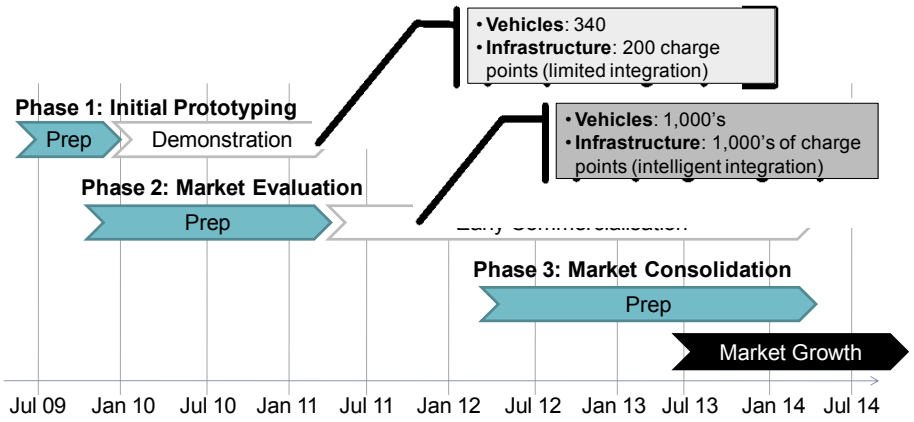
The Electricity Distribution and Intelligent Infrastructure Contract forms one of the three contracts for the first stage of this project.

4.5 Background to the Electrification of Transport in Test Bed UK

The ETI will utilise the outputs of the Plug-in Vehicle Economics and Infrastructure Project to support, inform and facilitate effective long-term benefits from the investments being made around the UK (already at least £300M by 2014 across infrastructure deployment and vehicle incentives).

The timing and scale for these wider investments is summarised below. The ETI project will be integrated with these wider investments by:

- exploiting outputs from the Phase 1 demonstration (the Technology Strategy Board Ultra Low Carbon Vehicle Demonstrator programme);
- supporting preparation for early commercialisation in Phase 2;
- generating a robust evidence base during early commercialisation in Phase 2; and
- using this evidence base to support preparation for market consolidation in Phase 3.



5. Project Structure

5.1 ETI Plug-in Vehicle Economics and Infrastructure Project Structure

The ETI Plug-in Vehicle Economics and Infrastructure Project consists of five stages:

- Stage 1: Concept Design (definition of hypotheses, model development and experimental design)
- Stage 2: Detail Design (planning the implementation of an environment to test the models developed in Stage 1)
- Stage 3: Construction (implementation and pre-commissioning testing environment)
- Stage 4: Operation (data-gathering, analysis and hypothesis/model testing)

	2009		2010				2011				2012	2013	2014
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
Stage 1													
Stage 2													
Stage 3													
Stage 4													

- Stage 5: Exploitation (evaluation, communication, standardisation, etc)

The fifth stage, exploiting the evidence base developed during the project, will continue throughout the life of the project. The project should be designed to enable the evidence base to be exploited as early as possible, with the confidence in the evidence base gradually increasing as the project progresses.

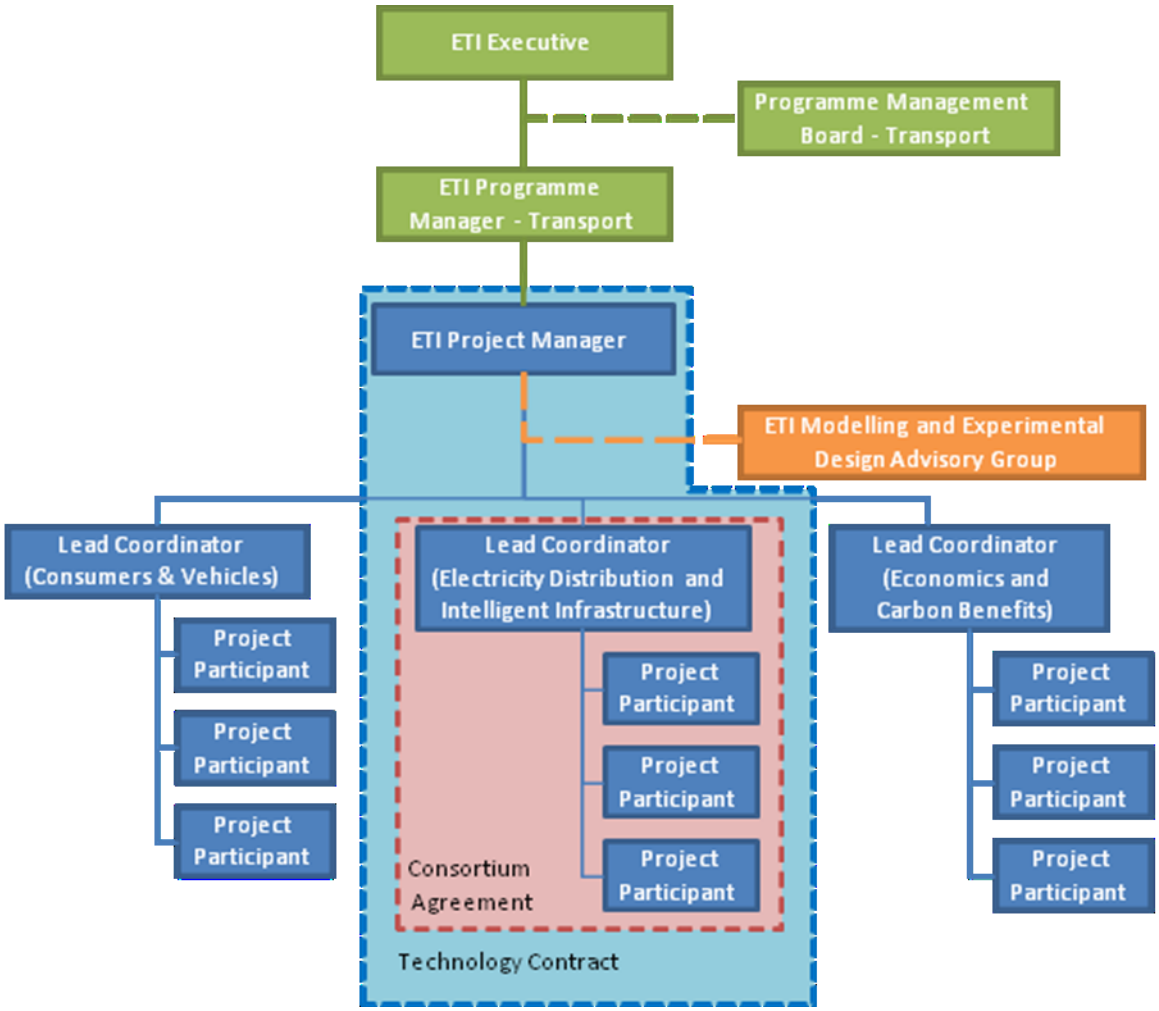
Stage 1 of the project consists of three contracts:

- Consumers and Vehicles
- Electricity Distribution and Intelligent Infrastructure
- Economics and Carbon Benefits

This Request for Proposal is for the Electricity Distribution and Intelligent Infrastructure Contract.

5.2 ETI Project Management and Governance Structure

The primary interface between the ETI and the consortium will be between the ETI Project Manager and the Lead Coordinator. Each of the three contracts in Stage 1 of the project will have a separate Lead Coordinator.



Role of the Lead Coordinators

The Lead Coordinator will be responsible for all aspects of delivery to the ETI and for coordination between the project participants. The Lead Coordinator will act as the primary interface between the ETI and the consortium.

The ETI has appointed the following organisations as Lead Coordinators for the three contracts in Stage 1 of the project. The Lead Coordinators should communicate directly with one another to ensure the interdependencies between the contracts are fully defined (both as inputs and outputs) and the management approach is agreed at the proposal stage.

Contract	Lead Coordinator and Primary Point of Contact
Consumers and Vehicles	Ricardo **Name:** Dave Greenwood **Job Title:** Project Director, Advanced Technology **Location:** Shoreham-by-Sea, West Sussex **E-mail:** David.Greenwood@ricardo.com **Tel:** +44 (0) 1273 794194

Contract	Lead Coordinator and Primary Point of Contact
Electricity Distribution and Intelligent Infrastructure	IBM **Name:** Gavin Jones **Job Title:** IBM NE EMEA Leader, Energy & Utilities **Location:** Farnborough, Hampshire **E-mail:** JONESGC@UK.IBM.COM **Tel:** +44 (0) 1252 558470 / +44 (0) 7711 537366
Economics and Carbon Benefits	Arup **Name:** Neil Butcher **Job Title:** Engineering Manager **Location:** Solihull, West Midlands **E-mail:** Neil.Butcher@arup.com **Tel:** +44 (0) 121 213 3349 / +44 (0) 7785 250895

Role of the Project Participants

Each Project Participant will be responsible for one or more work packages and for reporting progress directly to the appropriate Lead Coordinator.

Role of the ETI Project Manager

The ETI Project Manager will act as the primary point of contact between the three Lead Coordinators and the ETI. The ETI Project Manager will be responsible for ensuring the interdependencies between the three Stage 1 contracts are managed effectively and that the overall project is delivered to the required Time, Cost and Quality.

The ETI Project Manager, and primary point of contact for the consortium with the ETI, is:

Name: Ranvir Ramewal
Job Title: Project Manager
Location: Loughborough, Leicestershire
E-mail: ranvir.ramewal@eti.co.uk
Tel: +44 (0) 1509 20 20 19 / +44 (0) 7841 278 476

Role of the ETI Modelling and Experimental Design Advisory Group

The ETI Modelling and Experimental Design Advisory Group has a key role in the delivery of this project. This group will include the ETI industry members and government. Lead Coordinators will be required to participate in this advisory group. Other consortium members may also be required to attend these meetings as the subject matter may require. The meetings will generally be held on a monthly cycle.

Role of the ETI Programme Manager

The ETI Programme Manager has responsibility for the overall delivery of the Transport Programme and for ensuring the business benefits identified in the ETI technology strategy are delivered by the project.

Role of the Programme Management Board - Transport

The Programme Management Board – Transport (PMB) is a key element of the ETI's internal governance structure. In general, the project participants will not be required to interact directly with the PMB.

5.3 Contracting Approach for the three Stage 1 Contracts

The contracting structure will comprise two contracts for each consortium:

(a) A Technology Contract between the ETI and jointly with the consortium members (Lead Coordinator and Project Participants); and

(b) A Consortium Agreement between the consortium members only.

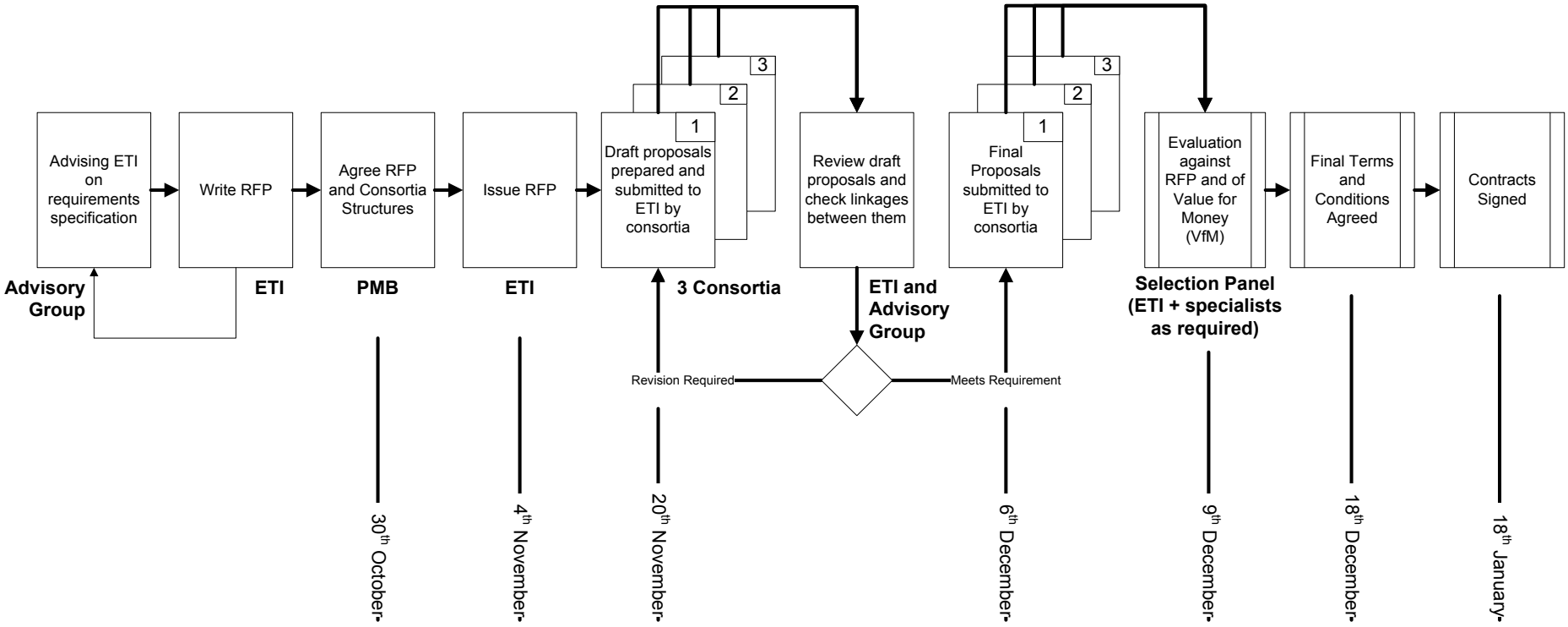
A copy of the standard ETI Technology Contract for this project is attached at **Annex A**

The consortium members will be required to execute a Consortium Agreement between themselves prior to signature of the Technology Contract with the ETI. While the ETI will not be a party to the Consortium Agreement, the ETI must approve the final version of the Consortium Agreement before it will execute the Technology. A model Consortium Agreement is available from the ETI if required.

6. Timeframe / Procurement Process

On receipt of the proposal, the ETI will undertake a review of the compliance of the proposal against the requirements defined in this RfP. The consortium will be required to work with the ETI to iterate and refine the proposal as required in parallel to the negotiation of mutually agreeable contract terms and conditions.

The ETI reserves the right to alter the procurement process or timescale as it considers necessary.



7. Review and Assessment of the Proposal

7.1 Review and Assessment Criteria

The proposal submitted will be reviewed and judged primarily against the criteria listed below.

- Completeness of information content, structure and quality of Proposal (against areas listed in Section 2 of this RfP)
- Compliance with the specification defined in this RfP
- Project Organisation including Consortium or Subcontract Participants engaged
- Project approach including planning, management and assurance
- Compliance with ETI Technology Contract
- Knowledge, skills and experience of the consortium
- Price and/or Value for Money
- Issues raised in Due Diligence response

This RfP is not an agreement to purchase goods or services, and the ETI is not bound to enter into a Contract with any Respondent. All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final. The ETI will be under no obligation to explain or justify any such decisions at any time. Furthermore the ETI reserves the right to alter the procurement process or timescale as it considers necessary.

7.2 Knowledge, Skills and Experience

The generic and specific competencies for the Electricity Distribution and Intelligent Infrastructure Contract are defined below:

- Generic Competencies:
    - The ability to provide a long-term strategic insight into the UK electricity sector (including generation, transmission and distribution), going out to 2050. This must provide a detailed view, based on:
        - an understanding of the current UK electricity distribution network;
        - an understanding of the current methods for planning electricity distribution network installations and upgrades;
        - an understating of the communication architectures appropriate to the future management of such national infrastructure.

    - The ability to understand and evaluate the impact wider technology changes may have on the UK electricity sector (e.g. a transition to a 'Smart Grid').

- Specific Competences:
    - a demonstrable and detailed understanding of the existing UK electrical distribution networks and the associated engineering requirements;
    - a proven ability to evaluate, analyse and develop models for existing electricity distribution networks;
    - a demonstrable track-record of systems integration for critical national infrastructure, covering both hardware and software aspects;
    - a proven capability to interpret existing standards and develop new standards where required for electricity systems;
    - a proven capability to interpret existing standards and develop new standards where required for communication architectures;
    - an in-depth understanding of the safety and durability issues associated with electrical installations in outdoor environments to which the public have access;
    - a proven track-record in long-term strategic planning (covering technical and economic aspects) for UK electricity distribution networks; and
    - an in-depth understanding of the legislative and regulatory environment in which the UK electricity sector operates.

7.3 Statement of Compliance

The Respondent shall provide a statement that the Proposal is fully compliant with the Specification and all other aspects defined in this Request for Proposal, or shall state clearly any exceptions, deviations, alternative approaches or additions to the required Specification, with justification.

Note that in the absence of any specifically stated deviation in this section of the Proposal, in the case of any subsequent dispute, the ETI's specification will take precedence over the Proposal. Additional comments and clarifications should also be listed where appropriate (for example to clarify interpretation of requirements), but these must be differentiated from any deviations / exceptions above.

7.4 Ownership of Proposal and Confidentiality

Once the proposal has been issued to the ETI, the ETI will take ownership of the proposal and its contents. Any Intellectual Property (IP) contained within the proposal, provided it is explicitly highlighted as so, will remain the property of the originator. In the unlikely event that

the proposal is not successful, the ETI will have the option to obtain the explicitly highlighted IP at reasonable cost.

The Lead Coordinator and agreed project participant organisations must sign a Non Disclosure Agreement with the ETI to allow the parties to define the project in more detail and to agree the terms of the Technology Contract and Consortium Agreement. This will be provided once the consortium members have been identified.

7.5 Replacement of Key Personnel

In addition to the requirements of the ETI's conditions, the Lead Coordinator or Consortia members shall not be allowed to appointment a replacement for any Key Personnel without having provided the ETI with a full CV and an interview, if the ETI deem necessary. The ETI shall have the right (acting reasonably) to refuse the request for a newly designated member of Key Personnel if in the reasonable opinion of the ETI they do not meet the minimum skills and experience required to deliver the Services, in which case the Lead Coordinator or Consortia members shall source and propose another more suitable individual.

7.6 Intellectual Property

Any project commissioned by the ETI will be subject to the appropriate ETI terms and conditions (the proposed Technology Contract for this project is attached at **Annex A**.

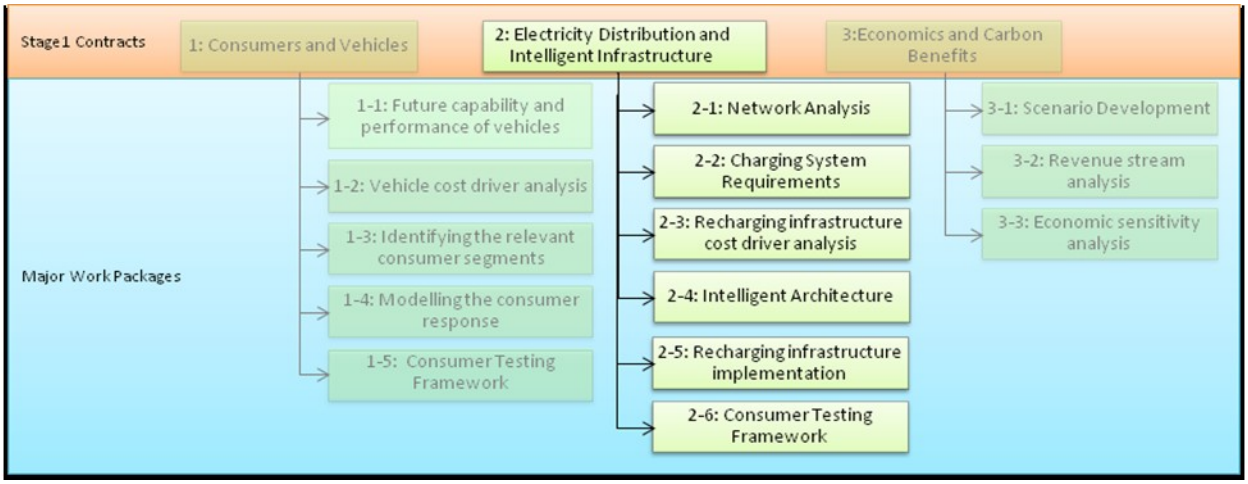
Given the nature of the outputs expected from this project, it is anticipated that the ETI would look to own the Arising IP that is created under the Project.

The Respondent must complete Annex F, providing details relating to any Background IP and Background Patents of the Respondent and providing certain information relating to the anticipated Arising IP.

8. Technical Requirements

8.1 Contracts and Major Work Packages

As stated above, Stage 1 of the project consists of three contracts, with each contract being formed by a number of Major Work Packages.



8.2 Information Flow Between the three Stage 1 Contracts

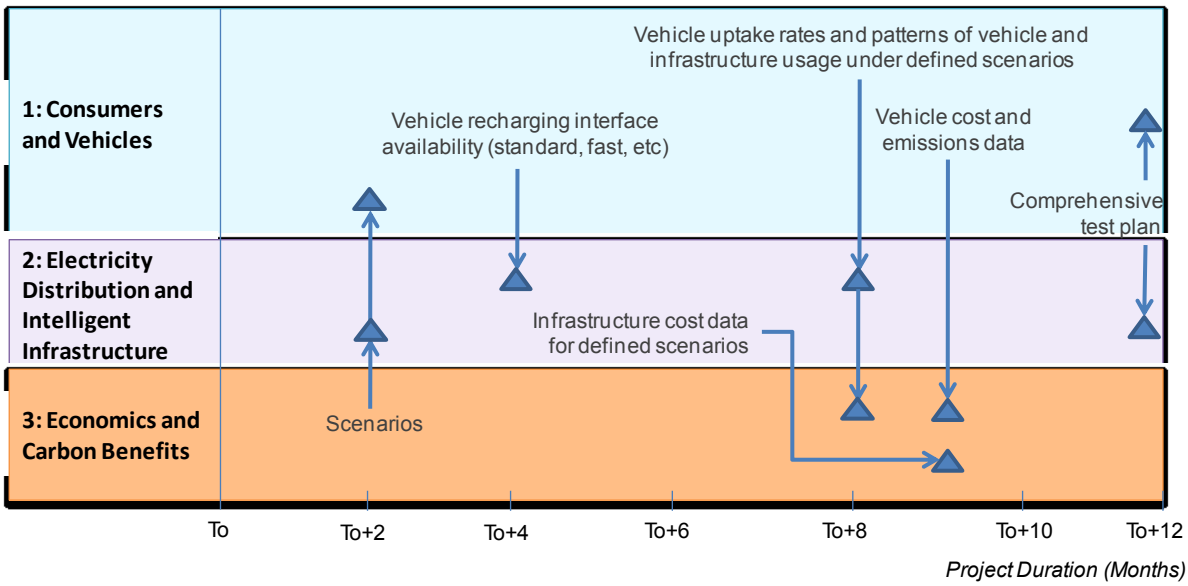
There will be key interrelationships between the three stage 1 contracts.

The critical information flow (but not in its entirety) between the three contracts is outlined below together with preliminary timing, which will form the key input/output control points. Specific format, detailed content and actual timing of these inputs/outputs will need to be developed and defined by the consortium in the proposal (both as input dependencies and output deliverables).

For the Electricity Distribution and Intelligent Infrastructure contract, the key interdependencies are:

- Inputs:
    - the agreed scenarios will be provided by the Economics and Carbon Benefits contract;
    - the vehicle recharging interface availability data will be provided by the Consumers and Vehicles contract;
    - vehicle uptake rates and patterns of vehicle and infrastructure usage under defined scenarios will be provided by the Consumers and Vehicles contract;
- Outputs:
    - infrastructure cost data for defined scenarios will be feed into the Economics and Carbon Benefits Contract;

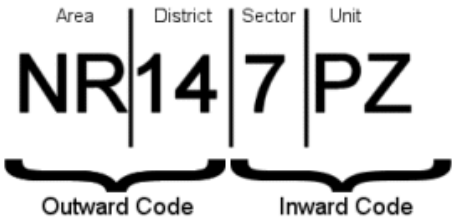
- the comprehensive test plan will be developed by both the Consumers and Vehicles and Electricity Distribution and Intelligent Infrastructure contracts, but the responsibility for the final deliverable will be within the Consumers and Vehicles contract;



8.3 Overarching Requirements

Proposals should be based on the following requirements. Any additional assumptions considered necessary by the consortium should be clearly stated within the proposals.

- The project outputs should enable the ETI and its members to understand the long-term evolution of the plug-in vehicle market (i.e. out to 2050) under a set of forward looking scenarios to be proposed and agreed with the ETI and its members.
- Generally, most recently available data should be used as the baseline for the forward looking analysis;
- A qualitative assessment is required of the impact changes to any assumptions made could have on the conclusions (e.g. a major modal shift from road to rail, significant changes to land use patterns, etc.).
- The forward looking analysis should reflect potential future UK mass market and should not be limited to activities or policy initiatives currently underway.
- The project should provide a high-level strategic view for the UK mass market, based on a more detailed analysis of a representative sample of locations, vehicle technologies and consumers. In general, the detailed analysis for the representative sample of locations should be conducted by grouping streets together at the 'Sector' level of the postcode; i.e.



- A number of models will be developed within the project. Where the output of a model developed in one contract is required as an input to another contract, it should be planned that the organisation that developed the model should also operate/run it for the purposes of this project. However, the models and the underlying data should all be deliverable to the ETI for future use.

- The work should reference or build on studies or knowledge that already exists or is currently being developed rather than duplicate it. The work should give a comprehensive strategic view. Hence, the scope and limitations of such existing studies should be evaluated and explained such that the ETI and its members can evaluate the adequacy of these sources at appropriate review points in the project.
- The work should concentrate on the main factors affecting the plug-in vehicle system. Project plans should be structured such that these contributors can be (a) identified; (b) prioritised; and (c) quantified/modelled to a level of fidelity commensurate with the relative priority (to be agreed via appropriate stage gate review(s) with the ETI and its members).
- Project proposals should be developed to include a project plan with key decision gates and review points defined. Decision gates and review points with the ETI and its members should include (but not be limited to):
    - A review point when the key factors affecting the consumer response, etc have been identified;
    - A stage gate when the factors affecting consumer response, etc have been prioritised and a recommendation of the level of analysis and modelling required for each has been proposed;
    - A review point once the appropriate set of models has been developed and initial conclusions can be presented;
    - A stage gate or review point at any other points in the project where a significant decision affecting project outcomes is required.
- Where uncertainty or risk exists in the project plan, this must be quantified (both probability and impact) within a risk register. A probabilistic assessment (e.g. Monte Carlo analysis) of total project cost and duration is required showing the 10%, 70% and 90% confidence levels.
- The ETI should be given access to any technical working papers during the life of the project, to enable early visibility of the project outputs. However, formal deliverables should take the form of detailed technical reports.
- The project should enable a realistic assessment of whole life cycle carbon emissions, with a comparison against the base case and the scenarios developed in the Economics and Carbon Benefits Contract (WP3-1).

8.4 Project Scope and Required Deliverables - Electricity Distribution and Intelligent Infrastructure Contract

This RfP is for the Electricity Distribution and Intelligent Infrastructure Contract. The tables below outline the major Work Packages, corresponding Scopes and Deliverables for this contract only.

WP	Scope of Work - Electricity Distribution and Intelligent Infrastructure	Deliverables

2-1	**Network Analysis**
	
	PURPOSE: To determine what barriers may exist within the UK electricity distribution system, develop potential mitigation strategies and create a macro-level model to enable city-level planning of charging infrastructure deployment.
	
	• Identify the potential network constraints on both the low voltage (LV) and high voltage (HV) networks. This should include (but not be limited by): limits to peak power capacity, limits to acceptable duration of sustained peak demand, negative impacts on local power quality, etc.
	• Identify the differences between the network implications in providing charging point infrastructure for homes, within public areas, workplace, etc, in large inner cities and that for residential, suburban and rural use.
	• Evaluate the different types of distribution network implemented across the UK and identify a small number of generic network types.
	• Determine how much of the UK distribution network falls into each of these generic network types. This will enable the relevance of the conclusions of the project to be interpreted for the whole UK.
	• Identify the major factors affecting macro-level distribution network capacity and upgrade costs (e.g. density of residential and industrial land-use, distance to a major distribution network 'node', etc)
	• For each generic network type, create a macro-level model into which the major factors affecting macro-level distribution network capacity and upgrade can be input. The output should be a macro-level model for the distribution network, with a definition of the current network capacity and upgrade costs (e.g. for each cell on a 1km x 1km grid). This model should enable the input of known network constraints.
	• Determine the suite of potential reinforcement/mitigation options which are or could potentially be available for deployment on new and existing networks
	• Consider the potential benefit/impact other technologies (e.g. Distributed Energy, Combined Heat and Power, etc) could have on the provision of electricity supplies for plug-in vehicle recharging.
		• Detailed technical report(s) covering the scope of work.
		• Computer model(s) for UK electricity distribution networks enabling evaluation of:
		  ○ Current network capacity
		  ○ Network constraints
		  ○ Upgrade costs
		• Copies of the data sources used.

WP	Scope of Work - Electricity Distribution and Intelligent Infrastructure	Deliverables

2-2	**Charging Network Requirements**
	
	PURPOSE: To evaluate the different ways in which recharging infrastructure may be provided in the UK and recommend the requirements for the UK deployment.
	
	• Identify the key parameters influencing charging infrastructure requirements (e.g. the vehicle mix across the various type/size/capability categories, consumer usage and recharging behaviours, etc.).
	• Define the different levels of 'intelligence' that could be implemented within the whole system (including the infrastructure and vehicles) and consider the advantages and disadvantages of each.
	• Identify the available standards for the vehicle/infrastructure interface and consider the suitability from a complete system (including the consumer) perspective.
	• Coordinate with WP 3-1 to support the development of the top-level scenarios.
	• Develop a potential system design solution, covering both requirements for the vehicle and infrastructure, for fast charging, including the identification of appropriate levels of power delivery.
	• Explore different technology options and consider how they may evolve over time. This should include (but not be limited to):
	  ○ the potential of both conductive and inductive charging coupling;
	  ○ standard charging (e.g. up to 7kW), fast charging (e.g. up to 18kW), rapid charging (e.g. up to 250kW), etc.
	• Contribute to the whole life cycle analysis of carbon emissions in the *Economics and Carbon Benefits* contract by evaluating the relative efficiencies of the various identified charging technologies.
	• Evaluate the capacity of the global supply chain to support likely rates of infrastructure deployment.
	• Identify and contrast the differing connection requirements and solutions appropriate to commercial premises (e.g. for service stations and workplace charging) compared to domestic premises and public access charging areas.
		• Detailed technical report(s) covering the scope of work.
		• Input to the *Economics and Carbon Benefits* contract of the relative efficiencies of different charging technologies.
		• Copies of the data sources used.

WP	Scope of Work - Electricity Distribution and Intelligent Infrastructure	Deliverables
2-3	**Recharging infrastructure cost driver analysis** **PURPOSE: To evaluate the main cost drivers for plug-in vehicle recharging infrastructure, enabling a realistic forecast to be generated and the cost effectiveness of solutions in WP 2-1, WP 2-2 and WP 2-4 to be evaluated.** • Evaluate the impact plug-in vehicle recharging will have on the electricity distribution network (in terms of overall capacity and local power quality) across the identified scenarios and determine the action and costs associated with mitigation. • Estimate the cumulative cost of suitable mitigation strategies when matched to likely areas of demand and subsequent market development over the projected timeframes • Evaluate the future costs for the charging technologies identified in WP 2-2. • Evaluate the costs associated with back-office and supporting systems implementation for the intelligent architecture. • Evaluate the costs associated with electricity distribution network 'intelligence' upgrades that may be required (e.g. to monitor the electricity demand at a given sub-station or on a specific low voltage (LV) spur). • Consider what future changes may take place to the UK electricity distribution network and the proportion of plug-in vehicle infrastructure cost such changes could offset.	• Detailed technical report(s) covering the scope of work. • Infrastructure cost data for the scenarios defined in WP 3-1. • Copies of the data sources used.

WP	Scope of Work - Electricity Distribution and Intelligent Infrastructure	Deliverables
2-4	**Intelligent architecture** **PURPOSE: To develop an open architecture (i.e. system design requirements) for recharging infrastructure to enable the system to be operated and managed effectively while also enabling compatibility between different business models.** • Consider the issues associated with access to, security and protection of data within a future network based heavily on communications. • Consider the potential for disruption caused by intelligent systems and how failsafe provisions can be made. • Evaluate the potential for demand side management and embedded energy storage to overcome the constraints identified for both new and existing networks. • Evaluate the adequacy and potential of existing power industry mechanisms for systems integration and billing (e.g. Elexon, Electralink and smart metering). Evaluate the implications of electric vehicles in the context of potential future smart grid technology • Develop standard open interoperability architecture for intelligent infrastructure, building on the infrastructure architecture diagram. • Determine the standards imposed on the vehicle design by the intelligent infrastructure. • Develop the supporting function requirements identified in the infrastructure architecture diagram (e.g. load/contention management, billing, charging point location, consumer feedback, etc) to the extent required for use in the demonstration. • Evaluate the cost/benefit case for practicality and timescales associated with implementation of 'Vehicle to Grid' (V2G) and 'Vehicle to Home' (V2H). • Determine the effect future charging technologies such as inductive charging could have on the requirements for the system architecture.	• Detailed technical report(s) covering the scope of work. • A publishable standards paper describing the open interoperability architecture. • Copies of the data sources used.

WP	Scope of Work - Electricity Distribution and Intelligent Infrastructure	Deliverables
2-5	**Recharging infrastructure implementation** **PURPOSE: To determine the regulatory, legislative and commercial issues associated with recharging infrastructure and recommend how they should evolve for the UK deployment.** • Identify the role of regulation related to the investment in, and control of, new charging infrastructure. Identify the specific regulation that may be affected and determine where new regulations are required. • Determine how the regulatory environment should be developed to address this need. • Identify the competition requirements and planning/consent issues surrounding multiple suppliers and post owners/operators operating within a given network area • Consider the key safety issues associated with plug-in vehicle infrastructure. Support WP 1-1 in considering the key safety aspects in the interaction with the vehicles (e.g. recharging in wet weather, ownership and liability associated with the power cable, etc). • Clarify the obligation and risk to supply continuity to charge points and the duty of care to consumers using those points, including durability, safety aspects, normal and abuse conditions • Determine the changes to design requirements for new build networks including revisions to design margins.	• Detailed technical report(s) covering the scope of work. • Copies of the data sources used.

WP	Scope of Work - Electricity Distribution and Intelligent Infrastructure	Deliverables
2-6	**Consumer Testing Framework** **PURPOSE: To contribute to the comprehensive test plan developed in WP 1-5 by defining the requirements for the infrastructure deployment.** • Outline the infrastructure aspects that require testing from WP 2-1 to WP 2-5. • Identify the nature, extent and timing of supporting infrastructure required for delivering the test plan developed in WP1-5 (collaboration with the *Consumers and Vehicles* contract will be required). • Determine the minimum measures and precautions required to ensure the safe and reliable power supply to support consumer testing. • Define the practical data requirements from the consumer testing necessary to support the theoretical analysis and projections. • Determine the key safety factors that will need to considered and addressed to enable large scale consumer testing. • Identify the other 'lines of development' (e.g. training of infrastructure maintenance staff) that will be required to support large scale consumer testing.	• Input to the test plan being developed in WP 1-5, defining the supporting infrastructure required.

8.5 Scope and Deliverables from the Other Stage 1 Contracts

As reference, this section outlines the Scopes and Deliverables for both the Consumer and Vehicles Electricity and Carbon Benefits Contracts.

This section is provided for information only, to aid in identifying and defining the additional input/output control points and dependencies between the Electricity Distribution and Intelligent Infrastructure Contract and the other two contracts associated with the overall delivery for Stage1 of the project.

WP	Scope of Work - Consumer and Vehicles	Deliverables

1-1	**Future capability and performance of vehicles**
	PURPOSE: To develop a model of future vehicle capability and performance, from which long-term infrastructure needs can be determined and plug-in vehicles can be objectively evaluated against conventional vehicles.
	• Evaluate what plug-in vehicle types/sizes/capabilities (e.g. vehicle size, maximum electric range, recharge speed, etc.) will exist longer term (to 2050) and define the key vehicle type/size/capability categories.
	• Evaluate what conventional vehicle (including non plug-in hybrids) performance will be longer term (to 2050) to determine the baseline reference point for the carbon benefit of plug-in vehicles. Include the potential contribution to CO_2 reduction from bio-fuels (e.g. 10% fuel mix by 2020, as stated by the Department for Transport in the Carbon Reduction Strategy document published 15th July 09)
	• Determine the vehicle type/size/capability categories to be evaluated in the large scale consumer testing.
	• Consider the key safety and durability issues associated with plug-in vehicles. Support WP 2-5 in considering the key safety aspects in the interaction with supporting infrastructure (e.g. recharging in wet weather, ownership and liability associated with the power cable, etc).
	• Contribute to the whole life cycle analysis of carbon emissions in the *Economics and Carbon Benefits* contract by evaluating the carbon emissions associated with vehicle production and disposal.
	• Consider the impact these safety issues may have on existing legislation and identify where new legislation may be required.
	• Identify the 'lines of development' (e.g. training of emergency services) required to support plug-in vehicles.
	• Consider the key vehicle durability and servicing issues and the impact they may have on vehicle whole life costs (e.g. battery life and deterioration considering road load, geographical topography, accelerated customer use and abuse, etc)
	• Consider the link to, and impact of, future technology and new model launch roadmaps.
		• Detailed technical report(s) covering the scope of work.
		• A computer model, representing:
		  ○ vehicle size
		  ○ vehicle purchase costs
		  ○ vehicle running costs
		  ○ carbon emissions against the appropriate drive cycles
		  ○ maximum all electric range
		  ○ maximum petrol/diesel range
		  ○ recharge speed / availability of recharging interfaces (standard, fast, etc)
		  ○ dynamic performance (e.g. top speed, 0-60 acceleration, etc.)
		• Definition of the vehicle type/size/capability categories to be used elsewhere in the project.
		• Input to the *Economics and Carbon Benefits* contract of the carbon emissions in vehicle production and disposal.
		• Copies of the data sources used.
		• Recommendation on the different vehicles to be considered for real-world testing.

WP	Scope of Work - Consumer and Vehicles	Deliverables
1-2	**Vehicle cost driver analysis** **PURPOSE: To determine realistic cost forecasts for plug-in vehicles by conducting a robust analysis of the fundamental cost drivers.** • Identify the major cost components in plug-in vehicle development. • Determine the primary cost drivers for each component (e.g. material cost, manufacture cost, etc) • Develop cost forecasts for the primary cost drivers, using scenarios and/or error bounds as appropriate. • Determine what future costs are expected for plug-in vehicles at the various vehicle type/size/capability categories defined in WP 1-1.	• Detailed technical report(s) covering the scope of work. • Computer model(s) forecasting future costs. • Cost data input to the computer database deliverable under WP 1-1. • Copies of the data sources used.

WP	Scope of Work - Consumer and Vehicles	Deliverables
1-3	**Modelling the consumer response** **PURPOSE: To develop a model, representing consumer attitudes to purchasing, and behaviours when using, plug-in vehicles as a function of the key factors affecting the consumer response.** • Consider what factors could influence the consumer response (including usage, recharging behaviours and acceptance). Explore consumer responses to economics and incentives, functionality of vehicles and infrastructure, symbolic value and other factors that consumers consider relevant. • Coordinate with WP 3-1 to support the development and definition of the top-level scenarios. • Evaluate and prioritise which factors could have the greatest effect on the response, and determine the fidelity of model required for each. • Develop a framework model for the consumer response, which includes models for each factor and how they interact. • Develop models for each of the factors identified; representing the effect specific changes in that factor will have on the consumer response. • Gather existing data-sets and conduct additional consumer research where required to inform the model development. • Input to WP 1-4 to support the development of the probabilistic model of charging locations and demand profiles. • Review the prioritisation of factors. Define the verification and validation criteria, develop the testing plan for the models of consumer response and identify which factors should be varied and which controlled in the consumer testing.	• Detailed technical report(s) covering the approach to modelling the consumer response for external peer review. • Detailed technical report(s) covering the analysis and its' conclusions. • A computer model representing the consumer response to the identified factors. • Vehicle uptake rates and patterns of vehicle and infrastructure usage under the scenarios defined in WP 3-1. • Definition of the key factors for the testing plan, as an input to WP 1-5. • Copies of the data sources used.

WP	Scope of Work - Consumer and Vehicles	Deliverables

1-4	**Identifying the relevant consumer segments**
	PURPOSE: To develop and deliver a segmentation model of the consumer vehicle market (representing both ownership and usage) segmented by the factors affecting purchase and use of plug-in vehicles.
	• Identify the key factors that are likely to influence a consumer's decision to purchase or affect their use of plug-in vehicles, and identify the appropriate ranges and values for each variable (e.g. access to fast charging = extensive coverage (100 chargers per km^2) / minimal coverage (1 charger per km^2) for each.
	• Define the key market segments relevant to plug-in vehicles in relation to these factors. Segmentation should refer to whole household requirements.
	• Evaluate the UK light vehicle (passenger car) consumer market in the context of the identified market segments, supported by additional data-gathering as required.
	• Assess the potential number of vehicles, usage patterns (including charging patterns) and CO_2 emissions for each key market segment.
	• Identify the vehicle size/type/capability category that most closely meets the needs of each of the market segments.
	• Identify the existing consumer datasets for the UK (e.g. Experian MOSAIC). Determine whether it is feasible to combine the market segmentation model for plug-in vehicles with these existing datasets. If feasible, generate a combined model. The combined model should provide the following at the 'Sector' level of the postcode (refer to the assumptions section of this RfP for a definition):
	  ○ Potential number of vehicles and mix of size/type/capability categories;
	  ○ Anticipated usage and recharging patterns; and
	  ○ CO_2 and liquid fuel offset.
	• Evaluate the different journey destinations and vehicle charging locations. Develop a probabilistic model of charging locations and demand profiles in a format suitable for input to the electricity distribution network analysis in WP 2-1.
	• Contribute to the whole life cycle analysis of carbon emissions in the *Economics and Carbon Benefits* contract by determining the total daily UK electricity demand profiles under the given scenarios.
	• Recommend the market segments to be targeted for participation in the in-depth data-gathering in the large scale consumer testing.
		• Detailed technical report(s) explaining the approach to analysing and segmenting the UK consumer market for external peer review.
		• A computer model of the market segmentation, including for each segment (broken down by vehicle sizes/types/capabilities defined in WP 1-1):
		  ○ Number of vehicles.
		  ○ Number of miles driven.
		  ○ Amount of liquid fuel consumed.
		  ○ Total CO_2 emissions
		  ○ Any additional factors identified in WP 1-3.
		• A probabilistic model of vehicle charging locations and demand profiles, as an input to the *Electricity Distribution and Intelligent Infrastructure* contract.
		• Input to the *Economics and Carbon Benefits* contract of the total daily UK electricity demand profiles under the given scenarios.
		• Recommendation on the market segments to be targeted for testing.
		• Copies of the data sources used.

WP	Scope of Work - Consumer and Vehicles	Deliverables
1-5	**Consumer Testing Framework** **PURPOSE: To develop a comprehensive plan for testing the consumer response model developed in WP 1-4 and testing the infrastructure aspects identified in WP 2-6.** • Determine the key independent variables for the large scale study and the appropriate levels (conditions) of each variable to be included • Determine the key dependent variables that need to be measured in the large scale study • Assess the potential confounding variables (extraneous factors affecting the outcome but not directly controlled) and design strategies for controlling or otherwise managing their effects • Evaluate the suitability of the candidate locations for implementation of the test plan. • Determine how data should be assimilated from multiple regions, vehicles and trial users. This should also enable a comparison between different vehicle types (e.g. EV vs. PHEV). • Collaborate with WP 2-6 to define the supporting infrastructure required to deliver the test plan. • Create the legal and ethics framework for participating consumers. • Consider the safety aspects that will need to be managed during the consumer testing.	• A comprehensive test plan for determining the validity of the models in real-world testing, including the definition of the supporting infrastructure required from WP 2-6. • A legal and ethics framework for the real-world testing.

WP	Scope of Work - Economics and Carbon Benefits	Deliverables

3-1	**Scenario Development**
	PURPOSE: To agree scenarios and specific questions with the ETI and associated stakeholders for analysis in the *Consumers and Vehicles* and *Electricity Distribution and Intelligent Infrastructure* contracts.
	• Consider generic business models which may be effective during the initial launch/take-off of the market, in order to inform scenario development and system architecture definition.
	• Coordinate with the other two contracts to define the 'economics' scenarios to be used within the project.
	  ○ Consider the economic interventions that may be implemented by government and/or local authorities and how they may evolve over time, including the role of incentives, regulation and taxation.
	  ○ For indirect economic interventions (e.g. for local authorities providing access to bus lanes or free parking), quantify the value to the consumer.
	  ○ Agree with the ETI and its members the scenarios to be used within the project. The scenarios should reflect combinations of economic interventions and how they may evolve over time. This should be done in three stages: (a) identify the different contributor variables; (b) determine appropriate combinations; and (c) agree the combinations to be used.
	• Coordinate with the other two contracts to define the 'functionality' scenarios to be used within the project.
	  ○ Working with the *Electricity Distribution and Intelligent Infrastructure* contract, identify the major categories for infrastructure deployment locations (e.g. home charging, work-place charging, supermarkets, city centre shopping, etc), identify the major categories of recharging point power level (e.g. standard charging, fast charging, etc) and identify the differing levels of system intelligence.
	  ○ Agree with the ETI and its members the scenarios to be used within the project. The scenarios should reflect combinations of the location categories, recharging point power level categories and differing levels of intelligence.
	• Define the scenarios for carbon emissions from the UK electricity generating mix.
	• Consult with the ETI industry members, the UK Government and other key stakeholders (to be agreed with the ETI) to ensure the scenarios and subsequent analysis will answer the specific questions required by each of these stakeholders. Define the specific questions to be answered in WP 3-2 and WP 3-3.
		• Detailed report(s) covering the scope of work.
		• Top-level scenarios, agreed with the ETI members and appropriate stakeholders, for input to the *Consumers and Vehicles* and *Electricity Distribution and Intelligent Infrastructure* contracts.
		• Specific questions, agreed with the ETI members and appropriate stakeholders, to be answered within the report(s) from the *Economics and Carbon Benefits* contract.
		• Scenarios for carbon emissions from UK electricity generation.
		• Copies of the data sources used.

WP	Scope of Work - Economics and Carbon Benefits	Deliverables
3-2	**Revenue stream analysis (including the role of value added services)** **PURPOSE: To evaluate and quantify the contribution new revenue streams may make to the financial feasibility of delivering a plug-in vehicle system in the UK.** • Given the integration of the vehicle and infrastructure, there are potentially new revenue streams (e.g. targeted marketing). Identify what revenue streams may be accessible within plug-in vehicles. • Develop forecasts of the contribution such new revenue streams could make to the overall economics of plug-in vehicles. • Define how these forecasts for such new revenue streams can be validated during consumer testing.	• Detailed report(s) covering the scope of work. • Input to the test plan developed in WP 1-5 for testing the forecasts of new revenue streams. • Copies of the data sources used.

WP	Scope of Work - Economics and Carbon Benefits	Deliverables

3-3	**Economic sensitivity and carbon offset analysis**
	
	PURPOSE: To conduct a comprehensive economic and carbon offset analysis of the plug-in vehicle system and evaluate the viability and sustainability of the various combinations of 'economics' and 'functionality' scenarios developed in WP 3-1.
	
	• Assimilate the cost and carbon emission models/datasets from the 'consumers and vehicles' and 'electricity distribution and intelligent infrastructure' strands into a whole system cost and carbon emission model for both plug-in vehicles and conventional vehicles. Incorporate:
	  ○ the cost data from the *Consumers and Vehicles* and *Electricity Distribution and Intelligent Infrastructure* contracts;
	  ○ the revenue streams identified in WP 3-2 to produce a whole system economic model;
	  ○ the carbon emissions associated with vehicle production and disposal from WP 1-1; and
	  ○ the carbon emission from vehicle use (by combining the outputs from WP 1-4, WP 2-2 and WP 3-1).
	• Perform a sensitivity analysis to determine the susceptibility of sustainable economics and carbon emissions to changes in individual parameters (e.g. if local authority economic interventions, such as congestion charging exemption, are subsequently removed). The analysis should consist of the following stages, with opportunity for ETI review at the end of each stage:
	  ○ Define the approach to the sensitivity analysis;
	  ○ Define the specific sensitivities to be analysed; and
	  ○ Perform the sensitivity analysis on these specific sensitivities.
	• Consider the impact of increased demand on future electricity costs.
	• Consider how global macro-economic influences could influence the economics of plug-in vehicles in the UK.
		• A computer model combining:
		  ○ the data from the *Consumers and Vehicles contract;*
		  ○ the data from the *Electricity Distribution and Intelligent Infrastructure* contract; and
		  ○ the data from WP 3-1 and 3-2.
		• Detailed report covering the analysis.

9. Project Proposal Response

The Lead Coordinator is requested to submit a collective Proposal on behalf of all proposed members of its consortium to the ETI. The Proposal shall be arranged in accordance with the structure defined in the Proposal Template attached to this RfP and shall include all the information listed therein.

The Proposal must be written in a succinct manner and must not include imprecise statements, generalities or repeated information. The Proposal must be easily readable with appropriate font sizes, margins, etc. Additional information (such as organisational brochures, etc) may be provided to accompany the Proposal if this is expected to add value (although it is not necessarily required by the ETI), but such additional information will not usually be taken into account when reviewing the Proposal.

The Proposal shall consist of one complete hard copy and one electronic copy. The latter shall be provided in both PDF and Microsoft Word formats.

10. The Proposal Template

10.1 Project Details

Project Start Date		**Project End Date**	
Total Project Cost	**£**		
Risk / contingency budget			

10.2 Confidence Statement

	10%	70%	90%
Total Project Cost			
Total Project Duration			

10.3 Consortium Members

Consortium Leader	
Contact Name	
Company	
Telephone	
Email	

Consortium Participants		
Role	**Contact**	**Company**
Lead co-ordinator		

Participant 1		
Participant 2		
Participant 3		
Participant 4		
etc		

10.4 Project Executive Summary

Please provide a concise Executive summary in no more than 1 page to include but not limited to the following:

- *Project Objectives*
- *Key Outputs & Outcomes*
- *Alignment with ETI Objectives*
- *Project's costs and timeframe*
- *Statement of compliance against:*
    - *the requirements of the project as defined in the RfP;*
    - *the completeness of the information requested; and*
    - *the terms and conditions for the project.*
- Confidence assessment of the project based on its technical and commercial objectives.
- *Other key factors pertinent to the application, innovation, dissemination etc*

10.5 Project Approach and Governance

10.5.1 Project Method

Please describe the method the Consortium will use to manage the Project?

10.5.2 Anticipated Project Organisation Structure

Please provide a Project Organisation diagram and description of participant roles and work-package (WP) responsibilities for the project?

10.5.3 Project Governance & Reporting Mechanisms

Please describe the Project Governance structure (e.g. Project Steering Committee), review structure (e.g. type and frequency of meetings), proposed decision making processes and roles & responsibilities in the reporting and governance framework, in relation to the Project Organisational Structure above?

10.6 Project Process and Outputs

10.6.1 Project Progress Milestones Summary

Please complete the following table summarising the key milestone and deliverables:

M/Stone Ref	Qtr	M/Stone Date	WP	Constituent Deliverables for Milestone	Acceptance Criteria
M x	Q x	d/m/yr	WP x	<Enter>	<Enter>

10.6.2 Project Plan

Please provide a Project Gantt Chart (electronic copy in MS Projects) – **Annex: B1**

The Gantt Chart will show the main Work Packages, Project stages and main Tasks within each Work Package and stage. This should clearly identify:

- *Task durations and dependencies (including any inputs required from the ETI or other parties and any other external dependencies)*
- *Project Deliverables*
- *Relevant milestones*
- *Project Stage Gates, if appropriate (i.e. major review point(s) in the Project)*

10.6.3 Work Package Description Table

For each work package outlined within the Gantt Chart, please complete the Work Package Description Table – **Annex: B2**

10.6.4 Issue, Risk and Uncertainty Management Process

10.6.4.1 Issue Management Process

Please describe the proposed Issue Management Process and how Issues will be managed within the Project. Please complete **Annex C1** *for the current Issues identified?*

10.6.4.2 Risk and Uncertainty Management Process

Please describe the proposed Risk and Uncertainty Management Process and how Risk and Uncertainty will be proactively managed within the Project. Please complete **Annex C2** *for the current Risks and Uncertainty identified?*

10.6.5 Statement of Project Contingencies

Please declare here any cost or time contingency assumptions that have been built into Project Proposals – please note section 10.8.5.

10.6.6 Constraints

Please provide clear statement of any known Project constraints?

10.6.7 Project Controls

Please describe the proposed Project Controls that will be used by the Consortium to ensure the Project is managed efficiently and to Plan?

10.6.8 Project Quality and Data Audit Approach

Please provide details of any Quality Management procedures and processes for monitoring and ensuring quality of data, goods and service provided?

10.6.9 Quality Accreditation

Please indicate and provide details of quality accreditation held (e.g. ISO 9000 or equivalent).

10.6.10 Safety, Legal and Ethics Case

Please provide a Safety Case for the Project and explain the approach, including Health & Safety, Legal and Ethics?

10.7 Resource Requirements

10.7.1 Manpower, Skills, Experience and Qualifications

Please list the key skill capabilities and capacities needed for each work-package. Please state how the Consortium currently meets the skills needs identified, including CVs of key individuals in each Participant organisation where appropriate in **Annex D** *(No more than one page per person).*

If gaps exist in the provision of skills capacity within the Consortium, please state your plans for recruitment, describing the ownership and timescales for this task

10.7.2 Financial

Please provide a summary narrative of funding requested for each Stage and each Payment Milestone within each Stage. (Full details are requested in Section 10.8 & **Annex E***).*

10.7.3 Equipment

Please confirm that lead times for key equipment / software has been identified and included in the Project Plan, and that key suppliers or manufacturers have been sourced?

10.7.4 Supply Chain Management Approach

Please describe how the Consortium will manage relevant Supply Chains?

10.7.5 Other

Please specify any other resource requirements that are important to the delivery of ETI Outcomes?

10.8 Financial

10.8.1 Finance Forms

Please confirm that you have completed the Finance Forms located at **Annex E**. *These are explained in the Financial Guidance Notes accompanying this document. The forms to be completed are:*

- ***Annex E1,*** Participant Budget Form (PBF) worksheets form.
- ***Annex E2,*** Academics Participant Budget Form (PBF) worksheet form.
- ***Annex E3,*** Indexation for Participant Universities form.

10.8.2 Universities and other Higher Education Institutions (HEIs)

Please confirm, where applicable, that you have completed both Annex D and JeS submission?

10.8.3 Funding

For all Participants (other than Industry Members & Universities) where there is reliance on funding from a parent body, evidence must be provided verifying the certainty and provenance of the funds. See guidance notes

10.8.4 Working Capital

All SME's and participants that do not have three years accounts a detailed business plan and explanation is required to demonstrate that the participant has adequate working capital for the life of the project. See guidance notes.

10.8.5 Pricing and Contingency

*Costs for the project should be estimated as accurate as possible and **exclude any contingency**. ETI will agree a cost budget and this will constitute the agreed maximum funding figure.*

*All costs within the forms highlighted in Section 10.8.1 are to be included on an as-incurred expenditure (accruals) basis rather than on a cashflow basis. The ETI will only **pay actual costs** incurred for the achievement of each milestone, up to the agreed milestone budget. There will be no right of offset (under-spend carried forward for offset against overspend) between milestones.*

Please confirm that no contingency has been included in the project cost and expenditure is on an accruals basis. See guidance notes.

10.8.6 Market Rates

Where a participant is proposing to charge market rates, including a profit element, please provide justification. See guidance notes.

10.8.7 Sub-Contracting

Please confirm that, where subcontractors are used:

- *These are not other participants within the project;*
- *If affiliates, no profit has been charged;*
- *If Universities, why they are not participants.*

10.8.8 Overhead Recovery

Each Participant is to state, and explain as necessary, the basis of overhead recovery. Overhead rates will be reviewed and benchmarked for reasonableness.

10.9 Due Diligence

ALL Participants shall confirm that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received by any Participant?

All Participants shall provide Due Diligence Information to the ETI according to the table in **Annex F**.

10.10 Other

Please provide details of any Environmental policy, procedures and / or plans?

10.11 ETI Standard Terms and Conditions

The ETI's standard Technology Contract for this project is contained within **Annex A**. *Please identify key issues for the consortium arising from these proposed terms and conditions.*

11. Annex.

Please refer to the accompanying documents when completing the Annexes

Annex A - ETI Technology Contract for this Project

Attached is the standard ETI Technology Contract for this Project

Tech Contract

Annex B1 – Gantt Chart

Please append a detailed Project Gantt Chart in Microsoft Project or similar. The plan should include Summary Milestones, Workpackage Tasks & Milestones, Key inter-dependencies, Key dates etc

Annex B2 : Work Package Description	
Lead:	
Work Package Synopsis:	
Key Stakeholders (internal & External):	**Key Dependences (Internal & External):**
Activity:	
Work Package Deliverables / Outcomes:	
Highlighted Risks:	

Annex C1 – Issue Register

Please complete Annex C1 – Issue Register Template

Annex C2 – Risk Register

Please complete Annex C2 – Risk Register Template

Annex D – Consortium Skills and Expertise including previous track record

Please provide summary CV abstracts and relevant notable achievements for participants.

Annex E1 - Participant Costs

Each of the Industry Participant Members must complete the Participant Budget Form (PBF) worksheets within the 'Annex E1 Excel file.

Annex E2 – Academic Institutions Participant Costs

Each of the Academic Participant Members must complete the Academics Participant Budget Form (PBF) worksheet within the 'Annex E2 Excel file.

Annex E3 - Indexation for Participant Universities

All UK academic institutions (academic Participants) must complete Annex E3 - the 'Indexation for Participant Universities', which is a hardcopy of the online JeS system.(i.e. you need to complete a copy online and provide a hard copy to the Lead Co-ordinator, who will submit all copies.

Participants may be required to submit further information relating to their analysis and backing data.

Annex F: Due Diligence

1. Details of organisation
Full name:
Registered Office:
Type of Business (sole trader, limited company, partnership etc):
Names of directors/partners/owner:
VAT number:

2. Details of directors, partners or associates
Have any directors, partners or associates of the organisation been involved in any organisation which has been liquidated or gone into receivership? (Yes/No)
Have any directors, partners or associates of the organisation been convicted of a criminal offence relevant to the business or profession? (Yes/No)
Please give (and attach if necessary) full details if you have answered "Yes" to either of the two previous questions.

3. Audited Financial Accounts
Please supply Audited Financial Accounts for the last 3 years for the organisation, or relevant part thereof.

4. Background IP and Background Patents <u>owned by, licensed by, or controlled by you</u>	
4.1	List all Background IP and Background Patents which may be required to be used during the course of the Project and/or for the purposes of using or commercialising any Arising IP.
4.2	Please provide copies of any document evidencing title of the Background IP and Background Patents listed under item 4.1 above (including any assignments) together with, where applicable, copies of all certificates of registration.
4.3	Please provide copies of all such Background Patents.

4.4	Specify whether any Background IP or Background Patents are jointly owned with a third party and the nature of such ownership and provide copies of any documents evidencing or affecting such ownership.
4.5	Specify whether there exists any lien or security or other interest in or over such Background IP and Background Patents and provide copies of any documentation relating to such matters.
4.6	List all licences (including oral licences) or other arrangements in respect of such Background IP and Background Patents granted by you or entered into with third parties and provide copies of all such licences or arrangements (or describe the terms of such arrangements).
4.7	Identify which (if any) Background IP and Background Patents will be made available during the Project and after completion of the Project and the proposed terms upon which such Background IP and Background Patents will be made available to:
4.7.1	ETI members and Programme Associates and Her Majesty's Government; and
4.7.2	Participants.
4.8	Identify all Background IP and Background Patents used by you which will not be made available and explain the reasons for deciding not to make it available.
5. Third Party Background IP and Third Party Background Patents relevant to the Project but which are not licensed to you	
5.1	List all Third Party Background IP and Third Party Background Patents which are not licensed to you which may be required to be used during the course of the Project and/or for the purposes of using or commercialising any Arising IP.
5.2	Describe the necessity of such Third Party Background IP and Third Party Background Patents and its potential effect on the carrying out of the Project and commercialisation or use of the Arising IP after completion of the Project.

5.3	For Third Party Background Patents, please provide copies of such documents.
5.4	Confirm what steps (if any) have been taken to engage in negotiations for any licences or other arrangements in respect of such Third Party Background IP and Third Party Background Patents and provide details.
6.	**Employees and Consultants and IP Rights**
6.1	List and describe all arrangements with employees, consultants and Sub-contractors (and provide copies of all documents relating thereto) regarding:
6.1.1	development or creation of the Background IP and Background Patents and their use of the Confidential Information; and
6.1.2	ownership and rights in Background IP and Background Patents arising during the course of their employment or otherwise.
6.2	To the extent not already described in your replies in this Section 6 and where it is generally relevant to the carrying out of the Project and/or use or commercialisation of the Arising IP, describe all third parties who may have any right, title, or interest in, or right to ownership, possession, or right to use of or access to the ideas, inventions, patents, copyright, trademarks, technology, tooling, software or your other proprietary matters, including any files and records or premises, including but not limited to repair or service agencies, distributors, dealers, third party vendors, customers, design firms, artists, escrows, lessors or lessees, photographers, authors, publications, financing or lending institutions, whether as secured creditors or otherwise, government agencies, partners, co-venturers, parties to cooperative agreements, co-researchers, industry members, employee organizations, universities, students, manufacturers or other customers, or other institutions.
6.3	Describe the particular rights or interests of such parties and provide a copy of all relevant agreements, documents and information.
7.	**Infringement and other claims**
7.1	Provide details of any pending, suspected, threatened or alleged infringement of any of the Background IP or Background Patents listed by you including details of

	any proceedings brought, pending or threatened by or on your behalf or in relation to such Background IP or Background Patents in the last 5 years.
7.2	Identify whether there have been any disputes, proceedings or actions, whether pending, suspected, threatened or concluded within the last 5 years in respect of any of the Background IP, Background Patents, Third Party Background IP or Third Party Background Patents including any interference, oppositions, and any claims relating to infringement, scope, validity or entitlement (excluding office actions) and provide details.
7.3	Provide details of any claims by any employee inventors for compensation in respect of any Background IP or Background Patents.
8. Research and Development Agreements	
8.1	List and provide copies of all research and development agreements, and any funding or other agreements which gave rise to the Background IP and Background Patents listed by you including any Government funding of any kind.
9. Confidentiality and Non Disclosure Agreements	
9.1	List and provide copies of all confidentiality/non disclosure agreements and any other agreements with third parties (including Affiliates) relating to use or disclosure of the Background IP and Background Patents and Confidential Information relevant to the Project and/or use or commercialisation of the Arising IP.
9.2	Describe the rules or regulations set up by you to control and administer Confidential Information.
10. Arising IP	
10.1	Please identify the type of Arising IP which is likely or expected to be created from each part of the Project.
11. Licences of Arising IP	
11.1	Please provide details as to the licences which you would require in respect of the Arising IP including any restrictions as to fields of use, applications, geographic

	locations etc.
12. Insurance	
12.1	Please confirm that you have insurance cover for the following risks and provide copies of the insurance policies and any endorsements: • Property damage • Business interruption • Employers liability • Public liability • Product liability • Professional Indemnity.
12.2	Please provide details of outstanding or pending claims under any of these policies and any circumstances of which you are aware which may give rise to any claim.
12.3	Please provide details of any insurance claims made by you which were refused or settled below the amount claimed, or otherwise uninsured due to deductible, self insured retention or other reason.
13. Litigation	
13.1	Please provide details of, and documents relating to, all current, threatened or anticipated investigations, disputes, litigation, arbitration proceedings, or prosecutions which would be considered material, involving you or any of your officers or employees or former officers or employees in their capacity as such, in particular noting the parties involved, the amounts claimed, details of the matters in issue, assessment of the costs incurred to date and likely to be incurred in the future and the likely outcome together with any legal advice obtained in relation thereto. For the purposes of this section “material” means any matter which would or could affect: • your ability to complete the Project in accordance with the Project Plan within the costs and timeframes specified; • any of the deliverables under the Project Plan and/or • your reputation.