



Mini Competition

Mini Competition against an existing Framework Agreement (MC) on behalf of **Innovate UK**

Subject UK SBS **PS17201 Vehicle to Grid Real World Demonstrators**

Sourcing reference number **UK SBS PS17201**

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Section 1 – About UK Shared Business Services

Putting the business into shared services

UK Shared Business Services Ltd (UK SBS) brings a commercial attitude to the public sector; helping our customers improve efficiency, generate savings and modernise.

It is our vision to become the leading provider for our customers of shared business services in the UK public sector, continuously reducing cost and improving quality of business services for Government and the public sector.

Our broad range of expert services is shared by our customers. This allows our customers the freedom to focus resources on core activities; innovating and transforming their own organisations.

Core services include Procurement, Finance, Grants Admissions, Human Resources, Payroll, ISS, and Property Asset Management all underpinned by our Service Delivery and Contact Centre teams.

UK SBS is a people rather than task focused business. It's what makes us different to the traditional transactional shared services centre. What is more, being a not-for-profit organisation owned by its customers, UK SBS' goals are aligned with the public sector and delivering best value for the UK taxpayer.

UK Shared Business Services Ltd changed its name from RCUK Shared Services Centre Ltd in March 2013.

Our Customers

Growing from a foundation of supporting the Research Councils, 2012/13 saw Business Innovation and Skills (BEIS) transition their procurement to UK SBS and Crown Commercial Service (CCS – previously Government Procurement Service) agree a Memorandum of Understanding with UK SBS to deliver two major procurement categories (construction and research) across Government.

UK SBS currently manages £700m expenditure for its Customers.

Our Customers who have access to our services and Contracts are detailed [here](#).

Section 2 – About Our Customer

Innovate UK

The Innovate UK is the UK's innovation agency – driving innovation to boost economic growth. It works with people, companies and partner organisations to find and drive the science and technology innovations that will grow the UK economy

Innovate UK is an organisation of around 300 staff, drawn mainly from business. It works across the UK, with a head office in Swindon.

With a strong business focus, Innovate UK drives growth by working with companies to de-risk, enable and support innovation. To do this, they work to:

- Determine which science and technology developments will drive future economic growth
- Meet UK innovators with great ideas in the fields they're focused on
- Fund the strongest opportunities
- Connect innovators with the right partners they need to succeed
- Help its innovators launch, build and grown successful businesses

Since 2007 Innovate UK has committed over £1.8 billion to innovation, matched by a similar amount in partner and business funding. They have helped more than 7,600 organisations with projects estimated to add more than £11.5 billion to the UK economy and create 55,000 extra new jobs

Section 3 - Working with Innovate UK

In this section you will find details of your Procurement contact point and the timescales relating to this opportunity.

Section 3 – Contact details		
3.1	Customer Name and address	Innovate UK Polaris House North Star Avenue Swindon SN2 1FL
3.2	Buyer name	Kevin Griffiths
3.3	Buyer contact details	Professionalservices@uksbs.co.uk
3.4	Estimated value of the Opportunity	Up to £210,000.00 excluding VAT
3.5	Process for the submission of clarifications and Bids	<p>All correspondence shall be submitted within the Emptoris e-sourcing tool. Guidance Notes to support the use of Emptoris is available here.</p> <p>Please note submission of a Bid to any email address including the Buyer <u>will</u> result in the Bid <u>not</u> being considered.</p>

Section 3 - Timescales		
3.6	Date of Issue of Mini Competition to all Bidders	26/01/2018
3.7	Latest date/time Mini Competition clarification questions should be received through Emptoris messaging system	02/02/2018 14:00
3.8	Latest date/time Mini Competition clarification answers should be sent to all potential Bidders by the Buyer through Emptoris	06/02/2018 11:00
3.9	Latest date/time Mini Competition Bid shall be submitted through Emptoris	13/02/2018 14:00
3.10	Date/time Bidders should be available if face to face clarifications are required	N/A

3.11	Anticipated rejection of unsuccessful Bids date	19/02/2018
3.12	Anticipated Award Date	19/02/2018
3.13	Anticipated Call Off Contract Start Date	26/02/2018
3.14	Anticipated Call Off Contract End Date	25/02/2022
3.15	Bid Validity Period	60 Working Days
3.16	Framework and Lot the procurement should be based on	CCS RM1089 (Traffic Management Technology 2) – Lot 8

Section 4 – Specification

Introduction

Innovate UK is the UK's Innovation agency. They are a public body, arms length from the Department for Business, Energy and Industrial Strategy (BEIS).

Innovate UK supports business-led research and development through grant funding and other support programmes.

See www.innovateuk.gov.uk

Aims

This tender exercise is needed alongside the Vehicle to Grid competition launched in July 2017 to support Innovate UK (on behalf of the funders) to procure a specialist provider of vehicle data collection services to collect an agreed list of data from funded demonstrator projects vehicles and users.

This data will enable Innovate UK to measure the impact of the projects using a consistent data set across all vehicle trials. It will help evidence the success of the Vehicle to Grid competition by reporting on the projects achievements/outcomes.

Background

Innovate UK, working with BEIS and the Office for Low Emission Vehicles (OLEV) have launched an innovation competition to support Vehicle to Grid technologies via business led R&D projects. The competition closed to application in October, with the winners announced in January 2018. Please refer to the below link or Annex C for further information.

<https://apply-for-innovation-funding.service.gov.uk/competition/29/overview>

Innovate UK and the funders are providing funding of ca £30 million for innovative projects that develop future V2G products, services and knowledge. This amount will be shared between 3 competitions –Feasibility Studies, Collaborative R&D and Real world demonstrators.

V2G is a system where plug-in electric vehicles, such as battery electric cars (BEV) and plug-in hybrids (PHEV), return electricity to the power grid (with consent from their users). This is usually in return for a financial reward or benefit.

Part of the competition is for V2G demonstrator trials in real-world environments at scale. Projects in this competition should last up to 3 years. They range from total project costs of £1.5 million to £9 million.

This tender exercise is needed alongside this V2G competition as Innovate UK (on behalf of the funders) wishes to procure a specialist provider of vehicle data collection services to collect an agreed list of data from demonstrator projects vehicles and users. This will enable them to measure the impact of the projects using a consistent data set across all vehicle trials.

Data will be collected at a project level from the real world demonstrators, with the successful organisation setting out how projects should do this and provide it in a consistent way.

The data collected will be a mixture of quantitative and qualitative data. Some it will be personal data, and possibly commercially sensitive.

Details of data collection requirements expected of successful projects were communicated as part of the V2G competition scope. See Annex A.

In addition, further details of the data Innovate UK now expect to collect are attached to this tender specification. Bidders are welcome to suggest other data that can be collected and will support the overall objectives of the Vehicle to Grid competition.

All winning projects are expected to provide data from their trial vehicles to the appointed data collection agent. Total number of demonstrator projects which will require data collection is 8. The trial projects from which the successful organisation will collect data to involve up to 2700 individual vehicles, both cars and commercial vehicles.

Innovate UK also expect the data collection provider to produce a mid-term and final report of their findings and support Innovate UK's wider dissemination of the competition's result.

Objectives

Innovate UK have identified an initial list of data which they wish to collect. This will be a mixture of data from vehicles, most likely provided via telematics alongside qualitative data

directly from the users/operates/owners of the vehicles involved in the trial. Data will be collected by projects in an agreed way and transferred to the successful organisation to amalgamate and analyse.

Details of the initial list are contained within the Annexes to the document.

Innovate UK expect demonstrator projects to trial vehicles for around 12 months (as per the scope criteria) as part of project that can last up to 3 years in total.

Therefore, Innovate UK's requirement is to have a contractor in place to collect data for a period up to 4 years including a period to agree the exact data collection framework at the start and producing a final report once all trials have finished.

The total length of the trial projects is between 24 and 36 months. The main deliverables of the work are:

1. Work with Innovate UK and the projects to agree the final list of data to be collected from the successful Vehicle to Grid demonstrator projects
2. Collect an agreed list of data from vehicles involved in the demonstrator projects, over 12 months
3. Collect qualitative data from vehicle users/drivers over 12 months
4. Produce an interim/mid-term and final report
5. Facilitate cross project dissemination by hosting an annual project workshop involving all V2G projects funded via this competition and other interest stakeholders

Background to the Requirement

Bidders should be familiar with the V2G competition, and specifically the Real World Demonstrator competition that forms part of it, please refer to the below link or Annex C for further information.

<https://apply-for-innovation-funding.service.gov.uk/competition/29/overview>

The collection and pooling of data from the demonstrator trials is vital to gaining an understanding of the benefits of V2G and user acceptance. Data collection details are specified in the competition scope.

This tender is to appoint an independent third party organisation to define a common format for data deemed of value and to collect the data from the demonstrator projects. Data will be anonymised for analysis and publication at the end of the project.

Innovate UK expects that projects will collect data for their own purposes at a project level. However, a condition of funding is that V2G demonstrator projects share the agreed data sets with Innovate UK and that failure to do so could result in funding being terminated.

Please see Annexes A and B for more details.

- Annex A - V2G trial data collection
- Annex B - V2G_data_collection-detailed specifications

Trial projects will collect and report vehicle data monthly throughout the trial for at least 85% of operation.

Innovate UK will be the contracting organisation, but a project steering group with officials from BEIS and OLEV will also shape the project's delivery.

Innovate UK's Innovation Lead - Vehicle to Grid will be the main point of day to day contact for the provider.

Scope

1. Work with Innovate UK and the projects to agree the final list of data to be collected
2. Collect an agreed list of data from vehicles involved in the demonstrator projects, over 12 months
3. Collect qualitative data from vehicle users/drivers over 12 months
4. Produce an interim/midterm and final report
5. Facilitate cross project dissemination by hosting an annual project workshop involving all V2G projects funded via this competition and other interest stakeholders

6. Provide Data Reporting Requirement, Trial statistics, Annual reports, Final reporting and Workshops.

Examples of activities that could be undertaken to help bidders identify and promote V2G demonstrator projects could include but is not limited to regular collaborative workshops to enable knowledge sharing between trial projects, dissemination events, websites, or case studies

Requirement

The focus of the contract is to collect data from V2G trial/demonstrator projects as per the above.

In addition, Innovate UK expect as a minimum:

- Kick off and monthly progress meetings in the start-up phase (early 2018)
- Quarterly progress reporting during data collection phase
- Final report meetings and project completion meeting

Timetable

The V2G competition timetable is broadly as follows:

July 2017 – V2G competition opened

October 2017 – Competition closed

January 2018 – Decision on successful projects

April 2018 – Demonstrator projects likely to start – they could last up to 3 years depending on what projects request.

April 2019 – First annual project collaboration/dissemination event

April 2020 – Second annual collaboration/dissemination event

April 2021 – All projects should be complete

Data collection timetable

February 2018 – Start work with appointed contractor to review successful bids and propose data collection methodology

April 2018 – start discussions with successful projects on proposed methodology. Expect to take up to 3 months as projects get underway

Mid to late 2018 – possible start of data collection regime.

Mid to late 2019 – Produce mid-term report (dependent on trial projects having progressed sufficiently)

Final report produced from late 2020 early 2021

Section 5 – Evaluation of Bids

The evaluation model below shall be used for this Mini Competition, which will be determined to two decimal places.

Where a question is 'for information only' it will not be scored.

To maintain a high degree of rigour in the evaluation of your bid, a process of moderation will be undertaken to ensure consistency by all evaluators.

After moderation the scores will be finalised by performing a calculation to identify (at question level) the mean average of all evaluators (Example – a question is scored by three evaluators and judged as scoring 5, 5 and 6. These scores will be added together and divided by the number of evaluators to produce the final score of 5.33 ($5+5+6 = 16 \div 3 = 5.33$))

Pass / fail criteria		
Questionnaire	Q No.	Question subject
Commercial	FOI1.1	Freedom of Information Exemptions
Commercial	AW1.1	Form of Bid
Commercial	AW1.3	Certificate of Bona Fide Bid
Commercial	SEL2.10	Cyber Essentials
Quality	AW6.1	Compliance to the Specification

Scoring criteria			
Evaluation Justification Statement			
In consideration of this particular requirement the Contracting Authority has decided to evaluate Potential Providers by adopting the weightings/scoring mechanism detailed within this Mini Competition. The Contracting Authority considers these weightings to be in line with existing best practice for a requirement of this type.			
Questionnaire	Q No.	Question subject	Maximum Marks
Price	AW5.2	Price	25%
Quality	AW6.2	Reporting of the Vehicle to Grid demonstrators	10%
Quality	AW6.3	Collect, securely store, and review the data	20%
Quality	AW6.4	Activities that will be undertaken to identify and promote V2G	20%
Quality	AW6.5	Reporting cadence and structure you deem appropriate	25%

Evaluation of criteria

Non-Price elements

Each question will be judged on a score from 0 to 100, which shall be subjected to a multiplier to reflect the percentage of the evaluation criteria allocated to that question.

Where an evaluation criterion is worth 20% then the 0-100 score achieved will be multiplied by 20.

Example if a Bidder scores 60 from the available 100 points this will equate to 12% by using the following calculation: $\text{Score/Total Points available} \times 20$ ($60/100 \times 20 = 12$)

Where an evaluation criterion is worth 10% then the 0-100 score achieved will be multiplied by 10.

Example if a Bidder scores 60 from the available 100 points this will equate to 6% by using the following calculation: $\text{Score/Total Points available} \times 10$ ($60/100 \times 10 = 6$)

The same logic will be applied to groups of questions which equate to a single evaluation criterion.

The 0-100 score shall be based on (unless otherwise stated within the question):

0	The Question is not answered or the response is completely unacceptable.
10	Extremely poor response – they have completely missed the point of the question.
20	Very poor response and not wholly acceptable. Requires major revision to the response to make it acceptable. Only partially answers the requirement, with major deficiencies and little relevant detail proposed.
40	Poor response only partially satisfying the selection question requirements with deficiencies apparent. Some useful evidence provided but response falls well short of expectations. Low probability of being a capable supplier.
60	Response is acceptable but remains basic and could have been expanded upon. Response is sufficient but does not inspire.
80	Good response which describes their capabilities in detail which provides high levels of assurance consistent with a quality provider. The response includes a full description of techniques and measurements currently employed.
100	Response is exceptional and clearly demonstrates they are capable of meeting the requirement. No significant weaknesses noted. The response is compelling in its description of techniques and measurements currently employed, providing full assurance consistent with a quality provider.

All questions will be scored based on the above mechanism. Please be aware that the final score returned may be different as there will be multiple evaluators and their

individual scores after a moderation process will be averaged (mean) to determine your final score.

Example

Evaluator 1 scored your bid as 60

Evaluator 2 scored your bid as 60

Evaluator 3 scored your bid as 50

Evaluator 4 scored your bid as 50

Your final score will $(60+60+50+50) \div 4 = 55$

Price elements will be judged on the following criteria.

The lowest price for a response which meets the pass criteria shall score 100. All other bids shall be scored on a pro rata basis in relation to the lowest price. The score is then subject to a multiplier to reflect the percentage value of the price criterion.

- For example - Bid 1 £100,000 scores 100,
- Bid 2 £120,000 differential of £20,000 or 20% remove 20% from price scores 80
- Bid 3 £150,000 differential £50,000 remove 50% from price scores 50.
- Bid 4 £175,000 differential £75,000 remove 75% from price scores 25.
- Bid 5 £200,000 differential £100,000 remove 100% from price scores 0.
- Bid 6 £300,000 differential £200,000 remove 100% from price scores 0.

Where the scoring criterion is worth 50% then the 0-100 score achieved will be multiplied by 50

In the example if a supplier scores 80 from the available 100 points this will equate to 40% by using the following calculation: $\text{Score/Total Points multiplied by 50}$ $(80/100 \times 50 = 40)$

The lowest score possible is 0 even if the price submitted is more than 100% greater than the lowest price.

Section 6 – Evaluation questionnaire

Bidders should note that the evaluation questionnaire is located within the **e-sourcing questionnaire**.

Guidance on completion of the questionnaire is available
at <http://www.ukpbs.co.uk/services/procure/Pages/supplier.aspx>

PLEASE NOTE THE QUESTIONS ARE NOT NUMBERED SEQUENTIALLY

Section 7 – General Information

What makes a good bid – some simple do's 😊

DO:

- 7.1 Do comply with Procurement document instructions. Failure to do so may lead to disqualification.
- 7.2 Do provide the Bid on time, and in the required format. Remember that the date/time given for a response is the last date that it can be accepted; we are legally bound to disqualify late submissions.
- 7.3 Do ensure you have read all the training materials to utilise e-sourcing tool prior to responding to this Bid. If you send your Bid by email or post it will be rejected.
- 7.4 Do use Microsoft Word, PowerPoint Excel 97-03 or compatible formats, or PDF unless agreed in writing by the Buyer. If you use another file format without our written permission we may reject your Bid.
- 7.5 Do ensure you utilise the Emptoris messaging system to raise any clarifications to our Mini Competition. You should note that typically we will release the answer to the question to all bidders and where we suspect the question contains confidential information we may modify the content of the question to protect the anonymity of the Bidder or their proposed solution
- 7.6 Do answer the question, it is not enough simply to cross-reference to a 'policy', web page or another part of your Bid, the evaluation team have limited time to assess bids and if they can't find the answer, they can't score it.
- 7.7 Do consider who your customer is and what they want – a generic answer does not necessarily meet every customer's needs.
- 7.8 Do reference your documents correctly, specifically where supporting documentation is requested e.g. referencing the question/s they apply to.
- 7.9 Do provide clear and concise contact details; telephone numbers, e-mails and fax details.
- 7.10 Do complete all questions in the questionnaire or we may reject your Bid.
- 7.11 Do check and recheck your Bid before dispatch.

What makes a good bid – some simple do not's ☹

DO NOT

- 7.12 Do not cut and paste from a previous document and forget to change the previous details such as the previous buyer's name.
- 7.13 Do not attach 'glossy' brochures that have not been requested, they will not be read unless we have asked for them. Only send what has been requested and only send supplementary information if we have offered the opportunity so to do.
- 7.14 Do not share the Procurement documents, they are confidential and should not be shared with anyone without the Buyers written permission.
- 7.15 Do not seek to influence the procurement process by requesting meetings or contacting UK SBS or the Customer to discuss your Bid. If your Bid requires clarification the Buyer will contact you.
- 7.16 Do not contact any UK SBS staff or Customer staff without the Buyers written permission or we may reject your Bid.
- 7.17 Do not collude to fix or adjust the price or withdraw your Bid with another Party as we will reject your Bid.
- 7.18 Do not offer UK SBS or Customer staff any inducement or we will reject your Bid.
- 7.19 Do not seek changes to the Bid after responses have been submitted and the deadline for Bids to be submitted has passed.
- 7.20 Do not cross reference answers to external websites or other parts of your Bid, the cross references and website links will not be considered.
- 7.21 Do not exceed word counts, the additional words will not be considered.
- 7.22 Do not make your Bid conditional on acceptance of your own Terms of Contract, as your Bid will be rejected.

Some additional guidance notes

- 7.23 All enquiries with respect to access to the e-sourcing tool and problems with functionality within the tool may be submitted to Crown Commercial Service (CCS – previously Government Procurement Service), Telephone 0345 010 3503.
- 7.24 Bidders will be specifically advised where attachments are permissible to support a question response within the e-sourcing tool. Where they are not permissible any attachments submitted will not be considered.
- 7.25 Question numbering is not sequential and all questions which require submission are included in the Section 6 Evaluation Questionnaire.
- 7.26 Any Contract offered may not guarantee any volume of work or any exclusivity of supply.
- 7.27 We do not guarantee to award any Contract as a result of this procurement
- 7.28 All documents issued or received in relation to this procurement shall be the property of the Contracting Authority.
- 7.29 We can amend any part of the procurement documents at any time prior to the latest date / time Bids shall be submitted through Emptoris.
- 7.30 If you are a Consortium you must provide details of the Consortiums structure.
- 7.31 Bidders will be expected to comply with the Freedom of Information Act 2000 or your Bid will be rejected.
- 7.32 Bidders should note the Government's transparency agenda requires your Bid and any Contract entered into to be published on a designated, publicly searchable web site. By submitting a response to this Mini Competition Bidders are agreeing that their Bid and Contract may be made public
- 7.33 Your bid will be valid for 60days or your Bid will be rejected.
- 7.34 Bidders may only amend the Special terms if you can demonstrate there is a legal or statutory reason why you cannot accept them. If you request changes to the Contract and the Contracting Authority fail to accept your legal or statutory reason is reasonably justified we may reject your Bid.
- 7.35 We will let you know the outcome of your Bid evaluation and where requested will provide a written debrief of the relative strengths and weaknesses of your Bid.
- 7.36 If you fail mandatory pass / fail criteria we will reject your Bid.
- 7.37 Bidders are required to use IE8, IE9, Chrome or Firefox in order to access the functionality of the Emptoris e-sourcing tool.

- 7.38 Bidders should note that if they are successful with their proposal the Contracting Authority reserves the right to ask additional compliancy checks prior to the award of any Call Off Contract. In the event of a Bidder failing to meet one of the compliancy checks the Contracting Authority may decline to proceed with the award of the Call Off Contract to the successful Bidder.
- 7.39 All timescales are set using a 24 hour clock and are based on British Summer Time or Greenwich Mean Time, depending on which applies at the point when Date and Time Bids shall be submitted through Emptoris
- 7.40 All Central Government Departments and their Executive Agencies and Non Departmental Public Bodies are subject to control and reporting within Government. In particular, they report to the Cabinet Office and HM Treasury for all expenditure. Further, the Cabinet Office has a cross-Government role delivering overall Government policy on public procurement - including ensuring value for money and related aspects of good procurement practice.

For these purposes, the Contracting Authority may disclose within Government any of the Bidders documentation/information (including any that the Bidder considers to be confidential and/or commercially sensitive such as specific bid information) submitted by the Bidder to the Contracting Authority during this Procurement. The information will not be disclosed outside Government. Bidders taking part in this Mini Competition consent to these terms as part of the competition process.

- 7.41 From 2nd April 2014 the Government is introducing its new Government Security Classifications (GSC) classification scheme to replace the current Government Protective Marking System (GPMS). A key aspect of this is the reduction in the number of security classifications used. All Bidders are encouraged to make themselves aware of the changes and identify any potential impacts in their Bid, as the protective marking and applicable protection of any material passed to, or generated by, you during the procurement process or pursuant to any Contract awarded to you as a result of this tender process will be subject to the new GSC from 2nd April 2014. The link below to the Gov.uk website provides information on the new GSC:

<https://www.gov.uk/government/publications/government-security-classifications>

The Contracting Authority reserves the right to amend any security related term or condition of the draft contract accompanying this Mini Competition to reflect any changes introduced by the GSC. In particular where this Mini Competition is accompanied by any instructions on safeguarding classified information (e.g. a Security Aspects Letter) as a result of any changes stemming from the new GSC, whether in respect of the applicable protective marking scheme, specific protective markings given, the aspects to which any protective marking applies or otherwise. This may relate to the instructions on safeguarding classified information (e.g. a Security Aspects Letter) as they apply to the procurement as they apply to the procurement process and/or any contracts awarded to you as a result of the procurement process.

USEFUL INFORMATION LINKS

- [Emptoris Training Guide](#)
- [Emptoris e-sourcing tool](#)
- [Contracts Finder](#)
- [Tenders Electronic Daily](#)
- [Equalities Act introduction](#)
- [Bribery Act introduction](#)
- [Freedom of information Act](#)

V2G trial data collection strawman				
Vehicles based on passenger vehicles			Commercial/vehicles not based on passenger vehicles	
The car	The users or owners	Charging of vehicles	Commercial (i.e. non passenger based) vehicles	Charging of commercial vehicles
Type, make and model	demographics of	number of charging events	Type make and model	number of charging events
Battery size/spec	Vehicle ownership model	number of charging events where there was supply to the grid	Payload for trip	number of charging events where there was supply to the grid
Number of trips	Qualitative data on their experiences		number of trips	
			trip length in miles	
For EACH TRIP		For EACH CHARGING EVENT:	trip time in minutes	For EACH CHARGING EVENT:
trip length in miles		Charging start	Time of use	Charging start
trip time in minutes		Charging end	miles in total	Charging end
Time of use		State of charge at start	Battery degradation	State of charge at start
miles in total		State of charge at end		State of charge at end
Battery degradation		Location of charge		Location of charge
		energy supplied to the grid during each V2G event and peak charge rate		energy supplied to the grid during each V2G event and peak charge rate
		Duration of each V2G event		Duration of each V2G event
		Minimum state of charge reached at end		Minimum state of charge reached at end of each V2G event

		of each V2G event		V2G earnings
		V2G earnings		

PASSENGER VEHICLES

DATA REQUIRED	Unit	Comments	Reason
Vehicle data (proposed)			
Maker		Vehicle Manufacturer Info	Basic vehicle data
Type		Vehicle Model	Basic vehicle data
Age		Age since first registered	Basic vehicle data
Miles (odometer) - beginning of trial	miles		Basic vehicle data
Miles (odometer) - end of trial	miles		Basic vehicle data
Battery Technology			Basic vehicle data
Battery Size	kWh		Basic vehicle data
Charging Session (proposed)			
User requested final SOC	%	needed to assess user behavior, and V2G management strategy that satisfies it (OPTIONAL: depends on availability of the test vehicle to enable such settings)	Charging availability and V2G feasibility
User requested departure time	hh:mm dd/mm/yyyy workplace/home/highway/ depot/etc	needed to assess user behavior, and V2G management strategy that satisfies it (OPTIONAL: depends on availability of the test vehicle to enable such settings)	Charging availability and V2G feasibility
Charging session location	(ChaDeMo, CCS, Type 2, etc)	where the charge takes place (might be generic category: workplace, home, etc)	Charging availability and V2G feasibility
Type of charging plug		useful to map charging infrastructure compatibility	Charging availability and V2G feasibility
Time at which the vehicle is plugged in	hh:mm dd/mm/yyyy	time at which the car is plugged (not necessarily coincides with start of charge)	Charging availability and V2G feasibility
Start time	hh:mm dd/mm/yyyy	time at which the charge is started (NOT when plugged, at the user can program charge delays)	Charging availability and V2G feasibility
End time	hh:mm dd/mm/yyyy	time at which the charge is ended (NOT when unplugged, at the charge management can end well before unplugging)	Charging availability and V2G feasibility
Duration of Charging session	hh:mm:ss	A charge session is delimited by a plugging and unplugging event, with successful energy exchange in between.	Charging availability and V2G feasibility
Duration of V2G events	hh:mm:ss	Length of each V2G event	V2G Operations
Ambient Temperature (start of Session)	degC	Temperature has an impact on battery charge acceptance (power reachable for charging/discharging). Knowing the Ambient temperature can be used to shape geo-referred management strategies, and more effective batteries.	V2G impact on battery
Ambient Temperature (end of Session)	degC	Temperature has an impact on battery charge acceptance (power reachable for charging/discharging). Knowing the Ambient temperature can be used to shape geo-referred management strategies, and more effective batteries.	V2G impact on battery
Pack Temperature (start of Session)	degC	Pack Temperature can be different from ambient one. Might be related to ambient temperature for more effective management strategies.	V2G impact on battery
Pack Temperature (end of Session)	degC	Pack Temperature can be different from ambient one. Might be related to ambient temperature for more effective management strategies.	V2G impact on battery
Battery SOH (Start Of Session)	%	Required to clarify definition of SOH (may differ among OEMs)	V2G impact on battery
Battery SOH (End Of Session)	%	Required to clarify definition of SOH (may differ among OEMs)	V2G impact on battery
Battery SOC (Start Of Session)	%	Useful to profile the user, and to validate feasibility of V2G	Charging availability and V2G feasibility
Battery SOC (End Of Session)	%	Useful to verify the V2G algorithm is satisfying user demands/requests	Charging availability and V2G feasibility
Min SOC reached during V2G event	%	Useful to show V2G does not cycle battery completely (together with Initial/Final SOC)	V2G Operations
Max SOC reached during V2G event	%	Useful to show V2G does not cycle battery completely (together with Initial/Final SOC)	V2G Operations
Energy extracted	kWh	Needed to evaluate impact and value of V2G	V2G Operations
Energy stored	kWh	Useful to profile the user, and to validate feasibility of V2G	Charging availability and V2G feasibility
Energy Throughput	kWh	Difference between energy stored and extracted	V2G Operations
Min Charging Power	kW	Useful to evaluate stability of supply	V2G impact on battery

Max Charging Power	kW	Useful to evaluate stability of supply	V2G impact on battery
Mean Charging Power	kW	Required to map charging infrastructure capability	Charging availability and V2G feasibility
Min Discharging Power	kW	Useful to evaluate stability of supply	V2G impact on battery
Max Discharging Power	kW	Useful to evaluate stability of supply	V2G impact on battery
Mean Discharging Power	kW	Required to map V2G infrastructure capability	Charging availability and V2G feasibility
V2G earnings	£	Required to evaluate financial attractiveness of V2G	V2G Operations
Is charging location equipped with local storage/generation?	yes/no	Useful to understand interaction of V2G and local storage/generation	V2G & renewables
Energy provided by mains while charging	kWh	Useful to understand interaction of V2G and local storage/generation	V2G & renewables
Energy provided by local generation/storage while charging	kWh	Useful to understand interaction of V2G and local storage/generation	V2G & renewables
Charging Events (proposed)			
Number of Charging events	[#]	How often the car is charged during the trial period. Combined with trips information, helps in profiling the user	Charging availability and V2G feasibility
Number of Charging events with V2G occurrences	[#]	Details the EV usage, and its applicability to V2G. Also, can provide insights on the local grid strengths and limitations.	Charging availability and V2G feasibility
Trip data - FOR EACH TRIP			
Time of the day	hh:mm	When does the trip occur: useful to profile vehicle usage	Trip Operations
Trip length	miles	Useful to show how the EV is used	Trip Operations
Trip time	hh:mm:ss	Useful to show how the EV is used	Trip Operations
Energy used during trip	kWh	Useful to show how the EV is used	Trip Operations
Cumulative miles (trip miles added to initial odometer measurement)	miles	Sum of the miles at the onset of the trial, and all the ones travelled during the trial up to current time	Trip Operations
Battery SOH (Start Of Trip)	%	Required to clarify definition of SOH (may differ among OEMs)	Trip Impact on battery
Battery SOH (End Of Trip)	%	Required to clarify definition of SOH (may differ among OEMs)	Trip Impact on battery
Battery SOC (Start Of Trip)	%	Useful to show how trips cycles the battery	Trip Operations
Battery SOC (End Of Trip)	%	Useful to show how trips cycles the battery	Trip Operations
Customer (proposed)			
Average miles driven per day	miles	Useful to profile the user	User profiling
Age		Useful to profile the user	User profiling
Location (base)	[postcode]	Useful to profile the user	User profiling
Vehicle ownership model	[PCP/HCP/etc]	Useful to profile the user (PCP, lease, etc)	User profiling
Total Number of Trips	[#]	total number of trips undertaken by the customer	Basic vehicle data
[Qualitative] Expertise on EVs	[Qualitative]	Useful to profile the user	User profiling
[Qualitative] Expertise on Energy	[Qualitative]	Useful to profile the user	User profiling
[Qualitative] feedback on V2G experience	[Qualitative]	Useful to profile the user	User profiling

COMMERCIAL (FLEET) VEHICLES

DATA REQUIRED	Unit	Comments	Reason
Vehicle data (proposed)			
Maker		Vehicle Manufacturer Info	Basic vehicle data
Type		Vehicle Model	Basic vehicle data
Age		Age since first registered	Basic vehicle data
Miles (odometer) - beginning of trial	miles		Basic vehicle data
Miles (odometer) - end of trial	miles		Basic vehicle data
Battery Technology			Basic vehicle data
Battery Size	kWh		Basic vehicle data
Charging Session (proposed)			
User requested final SOC	%	needed to assess user behavior, and V2G management strategy that satisfies it (OPTIONAL: depends on availability of the test vehicle to enable such settings)	Charging availability and V2G feasibility
User requested departure time	hh:mm dd/mm/yyyy	needed to assess user behavior, and V2G management strategy that satisfies it (OPTIONAL: depends on availability of the test vehicle to enable such settings)	Charging availability and V2G feasibility
Charging session location	workplace/home/highway/depot/etc (ChaDeMo, CCS, Type 2, etc)	where the charge takes place (might be generic category: workplace, home, etc)	Charging availability and V2G feasibility
Type of charging plug		useful to map charging infrastructure compatibility	Charging availability and V2G feasibility
Time at which the vehicle is plugged in	hh:mm dd/mm/yyyy	time at which the car is plugged (not necessarily coincides with start of charge)	Charging availability and V2G feasibility
Start time	hh:mm dd/mm/yyyy	time at which the charge is started (NOT when plugged, at the user can program charge delays)	Charging availability and V2G feasibility
End time	hh:mm dd/mm/yyyy	time at which the charge is ended (NOT when unplugged, at the charge management can end well before unplugging)	Charging availability and V2G feasibility
Duration of Charging session	hh:mm:ss	A charge session is delimited by a plugging and unplugging event, with successful energy exchange in between.	Charging availability and V2G feasibility
Duration of V2G events	hh:mm:ss	Length of each V2G event	V2G Operations
Ambient Temperature (start of Session)	degC	Temperature has an impact on battery charge acceptance (power reachable for charging/discharging). Knowing the Ambient temperature can be used to shape geo-referred management strategies, and more effective batteries.	V2G impact on battery
Ambient Temperature (end of Session)	degC	Temperature has an impact on battery charge acceptance (power reachable for charging/discharging). Knowing the Ambient temperature can be used to shape geo-referred management strategies, and more effective batteries.	V2G impact on battery
Pack Temperature (start of Session)	degC	Pack Temperature can be different from ambient one. Might be related to ambient temperature for more effective management strategies.	V2G impact on battery
Pack Temperature (end of Session)	degC	Pack Temperature can be different from ambient one. Might be related to ambient temperature for more effective management strategies.	V2G impact on battery
Battery SOH (Start Of Session)	%	Required to clarify definition of SOH (may differ among OEMs)	V2G impact on battery
Battery SOH (End Of Session)	%	Required to clarify definition of SOH (may differ among OEMs)	V2G impact on battery

Battery SOC (Start Of Session)	%	Useful to profile the user, and to validate feasibility of V2G	Charging availability and V2G feasibility
Battery SOC (End Of Session)	%	Useful to verify the V2G algorithm is satisfying user demands/requests	Charging availability and V2G feasibility
Min SOC reached during V2G event	%	Useful to show V2G does not cycle battery completely (together with Initial/Final SOC)	V2G Operations
Max SOC reached during V2G event	%	Useful to show V2G does not cycle battery completely (together with Initial/Final SOC)	V2G Operations
Energy extracted	kWh	Needed to evaluate impact and value of V2G	V2G Operations
Energy stored	kWh	Useful to profile the user, and to validate feasibility of V2G	V2G Operations
Energy Throughput	kWh	Difference between energy stored and extracted	V2G Operations
Min Charging Power	kW	Useful to evaluate stability of supply	V2G impact on battery
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V2G earnings	£	Required to evaluate financial attractiveness of V2G	V2G Operations
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Energy provided by local generation/storage while charging	kWh	Useful to understand interaction of V2G and local storage/generation	V2G & renewables
Charging Events (proposed)			
Number of Charging events	[#]	How often the car is charged during the trial period. Combined with trips information, helps in profiling the user	Charging availability and V2G feasibility
Number of Charging events with V2G occurrences	[#]	Details the EV usage, and its applicability to V2G. Also, can provide insights on the local grid strengths and limitations.	Charging availability and V2G feasibility
Trip data - FOR EACH TRIP			
Trip payload	kg	Needed for understanding how the vehicle is used, and how much energy is consumed during the trip	Trip Operations
Time of the day	hh:mm	When does the trip occur: useful to profile vehicle usage	Trip Operations
Trip length	miles	Useful to show how the EV is used	Trip Operations
Trip time	hh:mm:ss	Useful to show how the EV is used	Trip Operations
Energy used during trip	kWh	Useful to show how the EV is used	Trip Operations
Cumulative miles (trip miles added to initial odometer measurement)	miles	Sum of the miles at the onset of the trial, and all the ones travelled during the trial up to current time	Trip Operations
Battery SOH (Start Of Trip)	%	Required to clarify definition of SOH (may differ among OEMs)	Trip Impact on battery
Battery SOH (End Of Trip)	%	Required to clarify definition of SOH (may differ among OEMs)	Trip Impact on battery
Battery SOC (Start Of Trip)	%	Useful to show how trips cycles the battery	Trip Operations
Battery SOC (End Of Trip)	%	Useful to show how trips cycles the battery	Trip Operations
Customer (proposed)			
Average miles driven per day	miles	Useful to profile the user	User profiling
Number of Trips	[#]	total number of trips undertaken by the customer	Basic vehicle data
[Qualitative] feedback on V2G experience	[Qualitative]	Useful to profile the user	User profiling

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Funding competition

Innovation in vehicle-to-grid (V2G) systems: real-world demonstrators

UK businesses can apply for a share of £20 million across 3 competitions to research technologies and business models that develop future vehicle-to-grid (V2G) products and services.

Competition opens: Monday 10 July 2017

Competition closes: Wednesday 18 October 2017 12:00pm

 This competition is now closed.

[Start new application](#)

[Summary](#)

[Eligibility](#)

[Scope](#)

[Dates](#)

[How to apply](#)

[Supporting information](#)

Description

Working with [The Office for Low Emission Vehicles](#) (OLEV) and [Innovate UK](#), the [Department for Business, Energy and Industrial](#)

[Strategy](#) (BEIS) are providing funding of £20 million for innovative projects that develop future V2G products, services and knowledge. This amount will be shared between 3 competitions.

V2G is a system where plug-in electric vehicles, such as battery electric cars (BEV) and plug-in hybrids (PHEV), return electricity to the power grid (with consent from their users). This is usually in return for a financial reward or benefit.

This competition is for V2G demonstrator trials in real-world environments at scale.

Projects in this competition should last up to 3 years. They should range from total project costs of £1.5 million to £7 million.

Projects must be collaborative and business-led. For larger projects, we expect to see participants from across the value chain, such as energy companies, vehicle manufacturers, hardware manufacturers, service providers, local authorities and other infrastructure providers.

There are 2 other V2G competitions being run in conjunction with this one.

1. [Collaborative feasibility studies](#). We are seeking proposals that investigate future business models, consumer engagement approaches, on- and off-vehicle technologies and standards. Projects should last up to 12 months. They should range from total project costs of £125,000 to £225,000.
2. [Collaborative research and development \(R&D\)](#). We are seeking proposals for innovative V2G technologies (on- and off-vehicle technologies, and V2G hardware and software). Projects should last between 18 months and 3 years. They should range from total project costs of £375,000 to £1.5 million.

Funding type

Grant

Project size

We expect demonstrator projects to range in size from total costs of £1.5 million to £7 million.

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