

**OPENING UP  
THE SMART GRID**

**SDRC 2.1  
COMMUNITY ENGAGEMENT  
PLAN & TESTING THE MARKET**



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## Glossary

Term	Definition
CI	Customer Interruption
CML	Customer Minutes Lost
CSE	Centre for Sustainable Energy
DNO	Distribution Network Operator
EOI	Expression Of Interest
LV	Low Voltage
LV-CAP™	Low Voltage Common Application Platform
NIC	Network Innovation Competition
SDRC	Successful Delivery Reward Criterion
WPD	Western Power Distribution

## Executive Summary

### Background

The technology to be trialled as part of the OpenLV Project provides a new, open and flexible solution that will not only provide the Distribution Network Operator (DNO), community groups and the wider industry with data from the LV network, but will also enable these groups to develop and deploy apps within LV substations. The OpenLV Project is seeking to prove the technology and assess how the provision of LV network data and the ability to develop and deploy apps can provide benefits to the DNO, community groups and the wider industry.

In order to prove the technology the Project team are seeking to sign up community groups and organisations from the wider industry to participate in Project trials. Further information on the overall project can be found in the Full Bid Submission, which is available on the OpenLV project website: <https://openlv.net/>.

### Purpose

In this report we present the community engagement plan along with the results from testing the market to assess the level of interest from communities and third parties in participating in trials as part of the OpenLV project.

The key findings from the work completed to date are broken down under the following headings:

- **Community Engagement – Testing the Market:** Provides an overview of the community engagement that has been completed to date and the market potential for community groups to utilise LV network data and/or develop apps to be trialled as part of the Project;
- **Community Engagement – Market Assessment Review:** Outlines the key findings from assessing the ideas that have been put forward by community groups to date;
- **Community Engagement Plan:** Provides an overview of the approach that will be taken to engage with community groups; and
- **OpenLV Extensibility – Testing the Market:** Provides an overview of the engagement work that has been completed to date to assess the market potential for the wider industry to utilise LV network data and/or develop apps to be trialled as part of the Project.

### Key Findings

#### Community Engagement – Testing the Market

In total 51 community groups responded to a survey that was open for 28 days. This resulted in 45 app ideas ranging from public energy consumption displays to developing an evidence base to feed into local planning documents.

Respondents were asked to indicate their interest in six app concepts. Respondents could select 'very interested', neutral' or 'not interested' for each of these app suggestions. The results are summarised in Table 1.

	<b>Very interested</b>	<b>Neutral</b>	<b>Not interested</b>	<b>Total</b>
Understanding community electricity demand	92% (44)	6% (3)	2% (1)	48
Connecting low carbon technologies to the LV grid	91% (43)	9% (4)	0% (0)	47
Community alerts to request reduction or increase in electricity usage	72% (34)	19% (9)	9% (4)	47
Community information alerts	66% (29)	34% (15)	0% (0)	44
Demand side response for managed electric vehicle charging	63% (30)	31% (15)	6% (3)	48
Automated electricity storage control	56% (27)	38% (18)	6% (3)	48

**Table 1: Summary of interest in app concepts**

Overall the market research has established that there is a good enough level of interest from community organisations across the WPD network area to begin the full recruitment process.

Community Engagement – Market Assessment Review

The number of responses to the community engagement survey suggests that there is considerable interest in LV substation data. There was strong support for the app ideas suggested in the survey and an additional 45 ideas were suggested by the community groups that responded to the survey.

The ideas for using LV substation data presented by the groups shows a good breadth and range of objectives, from connecting new renewable projects to informing local plans and policies. Therefore, suggesting that LV substation data has the potential to provide multiple benefits for communities.

Overall, our assessment shows that almost half (22) of the ideas have a high degree of potential relevance for further development in the trial.

A range of seven different sources of value were identified at this early stage, which provides some confidence that it will be possible to identify viable and replicable business models for community apps for LV substation data.

Community Engagement Plan

The Project is seeking to show that there is a demand from community groups to be able to access LV network data and use it in ways that benefit both the community and the network operator.

However, to demonstrate the widest possible replication potential, the project team is aiming to recruit some communities that aren't currently involved in energy projects, rather than recruiting all participating groups from the rather narrow demographic of current 'community energy groups'.

The proposal for community recruitment is therefore to carry out two phases: 1) An open recruitment process, where mailings and publicity will be strongly geared to the community energy movement and 2) A closed recruitment process that will work through the membership of two major community regeneration membership bodies and selected housing associations.

OpenLV Extensibility – Testing the Market

The key factor, in terms of OpenLV project trials is whether organisations are interested in developing apps. Table 2 shows that, to date, 51 organisations are potentially interested in developing apps and trialling them as part of the OpenLV project.

	Yes	Maybe	No	Sub-Total
<b>Direct email</b>	15	18	2	35
<b>Telephone Market Research</b>	9	9	26	44
<b>Total(s)</b>	24	27	28	79

**Table 2: Did respondents want to develop an app?**

In total there were 59 use cases that respondents ideas captured, most responses gathered more than one use case. The apps proposed by potential trial candidates are wide ranging, for example:

- **Forecasting (demand or Generation):** Apps within this proposition group sought to use the LV-CAP™ platform to enable better load or new types of load or generation forecasting. This was quoted in 8 of the use cases discussed;
- **Network Capacity/Resilience/Quality:** This proposition group used the technology to help improve Customer Minutes Lost (CML) or Customer Interruptions (CI) availability network capacity or quality indices. This was quoted in 7 of the use cases discussed;
- **Easier Connection development:** Apps within this proposition sought to provide users hoping to make connection with better information prior to connection or faster connection by helping to mitigate or postpone reinforcement. This was quoted in 7 of the use cases discussed;
- **Active Generation Dispatch:** This proposition group included value propositions which controlled the set point of generation to meet a criteria set by the app. This was quoted in 6 of the use cases discussed;
- **Headroom measurement:** This proposition group included value propositions which utilised the technology as a means to obtain insight into network capacity headroom at a location. This was quoted in 6 of the use cases discussed;

- **Smart Buildings:** This proposition group included value propositions which controlled energy consumption within buildings to meet a goal set by the app. This was quoted in 6 of the use cases discussed;
- **Network USE Tariff:** This group of propositions sought to use the technology to enable some form of use of system tariff. This was quoted in 6 of the use cases discussed; and
- **Energy Market/Flexibility Market:** Use of the technology to enable a flexibility or energy trading platform. This was quoted in 5 of the use cases discussed.

### **Overall**

Further results of the market engagement exercise utilised to recruit trial participants for Methods 2 and 3 will be provided in an update to this report, “SDRC 2.2: Sharing the technique(s) used to identify target LV networks, Assessment of the Market Potential (Methods 2 & 3) and Detailed Trial Design for all Methods” in May 2018.

The approach taken to engaging with community groups and third parties to promote the Project and attract participants to take part in trials to test the overall OpenLV solution, is robust and is currently on track to enable trials to commence by September 2018.

# 1 Introduction

## 1.1 Document Purpose

In this Successful Delivery Reward Criteria (SDRC) report we present the community engagement plan along with the results from testing the market to assess the level of interest from communities and third parties in participating in trials as part of the OpenLV project.

This report has been structured to meet the SDRC evidence criterion outlined in the OpenLV Project Direction [Ref. 1]. The requirements for key project deliverables, as part of Network Innovation Competition (NIC) Governance, are defined as SDRC and each SDRC has associated evidence criteria as defined in the Project Direction. It is confirmed that the SDRC and associated evidence requirements have been met and this is supported by the compliance matrix provided below:

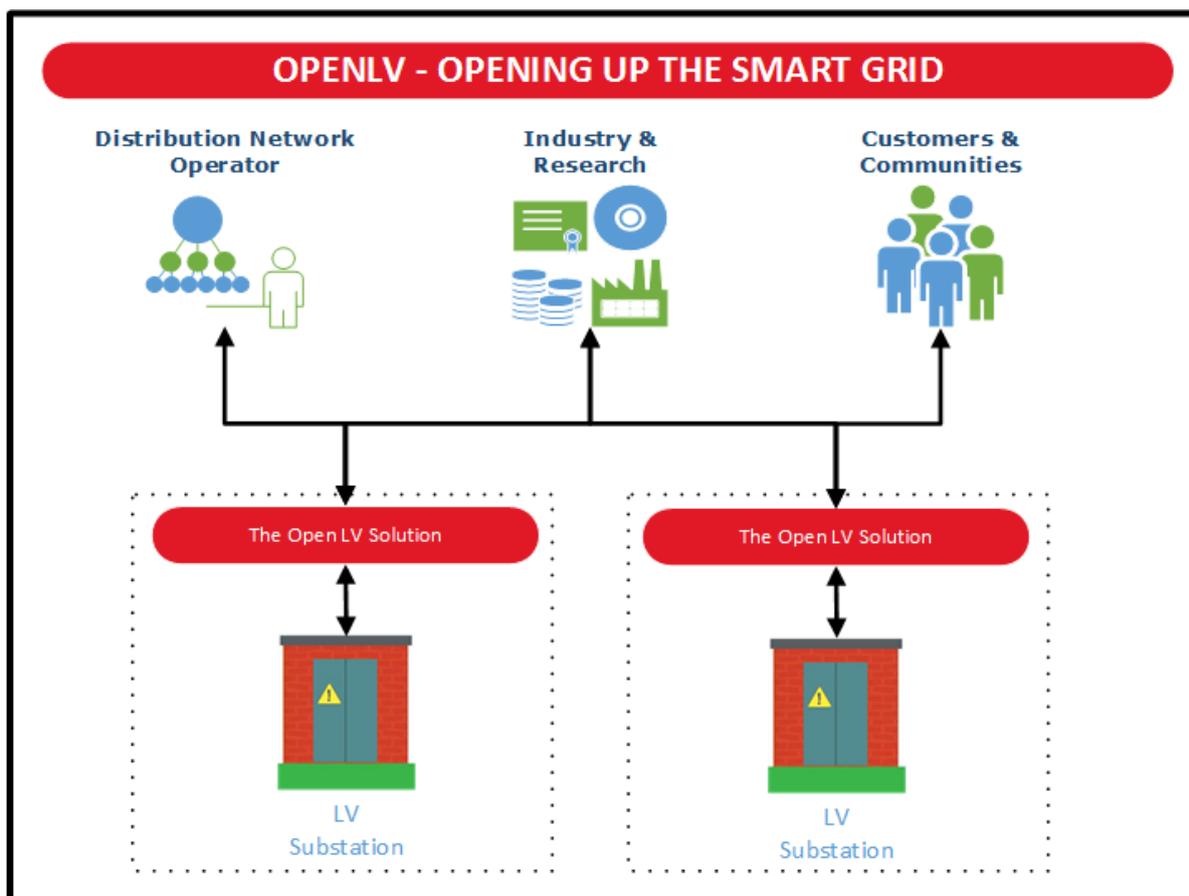
Category	Successful Delivery Reward Criterion	Evidence	Criterion Met	Section(s)
Successful Delivery Reward Criterion	Plan – To detail approach to achieve planned outcomes under Method 2. The plan will include the approach to preplanning, trial structuring and early consultation work.	Published community engagement plan that explores, among others, the following hypotheses: 1) Who engages? 2) Under what conditions? 3) What are the barriers? and 4) How do all participants see the benefits?	✓	Section 6 & Annex 3
Successful Delivery Reward Criterion	An assessment of the market potential for Community Engagement (Method 2).	Interim Report: Sharing the results from assessing the market potential for sharing LV network data with and providing an open platform to communities that want to be part of a smarter grid	✓	Section 4, Annex 1 & Annex 2
Successful Delivery Reward Criterion	An assessment of the market potential for OpenLV Extensibility (Method 3).	Interim Report: Sharing the results from assessing the market potential for sharing LV network data with and providing an open platform to academics and companies (including non-energy companies).	✓	Section 7 & Annex 4

**Table 3: SDRC Criterion & Evidence Compliance Matrix**

## 1.2 Background

Great Britain has about 1,000,000 Low Voltage (LV) feeders; these have largely been designed and operated on a fit-and-forget basis for the last 100 years, but things are set to change. LV networks are expected to see radical change as we, as customers, alter our behaviour and requirements, stemming from the vehicles we drive, to the generation and storage devices we put onto and into our homes.

The technology to be trialled as part of the OpenLV Project provides a new, open and flexible solution that will not only provide the Distribution Network Operator (DNO), community groups and the wider industry with data from the LV network, but will also enable these groups to develop and deploy apps within LV substations. The OpenLV Project is seeking to prove the technology and assess how the provision of LV network data and the ability to develop and deploy apps can provide benefits to the DNO, community groups and the wider industry (see Figure 1).



**Figure 1: Overall OpenLV Solution**

### 1.3 Report Structure

The structure of this report is as follows:

- **Section Two:** Provides an overview of the overall OpenLV Solution and the Project Methods;
- **Section Three:** Provides an overview of the community engagement that has been completed to date and the market potential for community groups to utilise LV network data and/or develop apps to be trialled as part of the Project. This is supported by the full market potential report completed by CSE, provided in Annex 1 and the full assessment of the market report completed by Regen, provided in Annex 2;
- **Section Four:** Outlines the key findings of the market assessment of the ideas that have been put forward by community groups to date;
- **Section Five:** Provides an overview of the approach that will be taken to engage with community groups. This is supported by the full community engagement plan in Annex 3;
- **Section Six:** Provides an overview of the engagement work that has been completed to date to assess the market potential for the wider industry to utilise LV network data and/or develop apps to be trialled as part of the Project. The full market assessment report completed by EA Technology is provided in Annex 4;

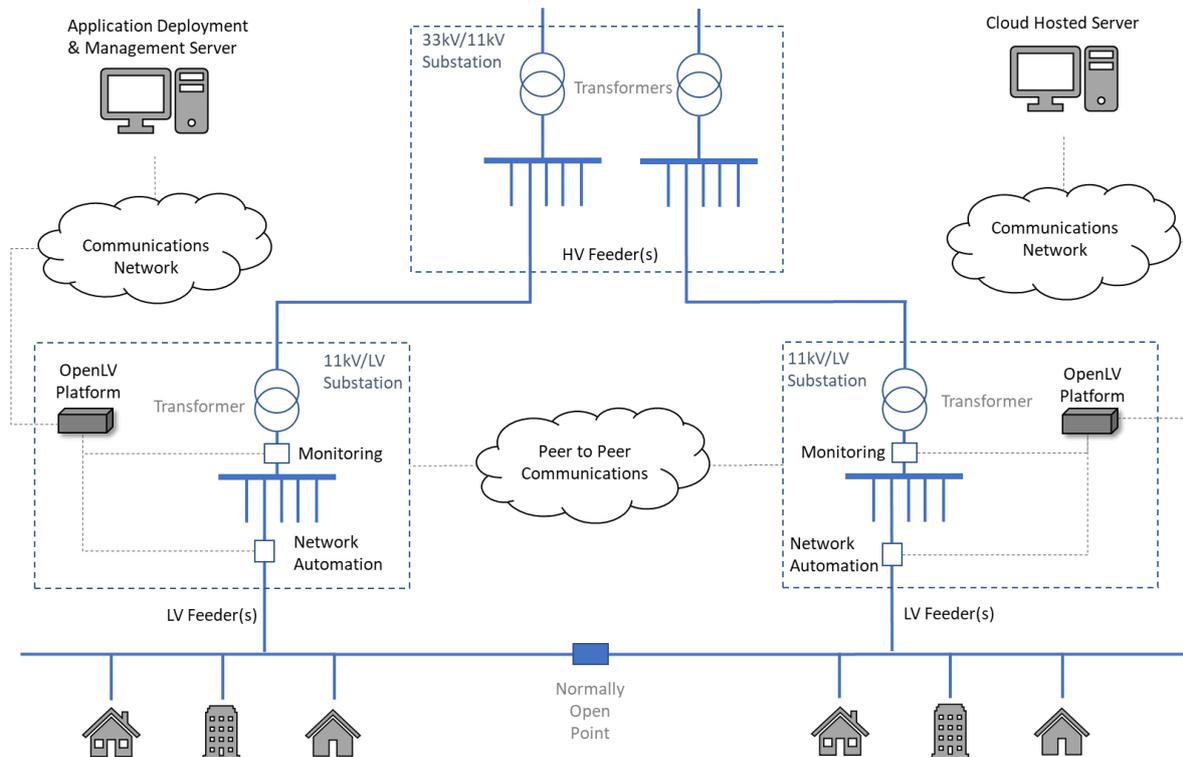


- **Section Seven:** Outlines the key learning points recorded at this stage of the Project in relation to the specification, design, build and testing of the overall OpenLV solution; and
- **Section Eight:** Summarises the key findings of this report.

## 2 OpenLV Project Overview

### 2.1 High Level Overview

The high-level architecture of the OpenLV solution is shown in Figure 2.



**Figure 2: High Level Architecture**

The key components of the solution are as follows:

- **LV Network Automation:** These devices enable automated meshing of the LV network via an app or app(s) installed on the platform.
- **LV Monitoring Equipment:** This monitoring equipment utilises sensors to take electrical measurements from the LV busbar, the transformer and the outgoing feeder(s). In addition, temperature measurements are also taken from the transformer, and inside and outside substation(s). The monitoring equipment provides this LV monitoring data to the OpenLV Platform.
- **OpenLV Platform:** Consists of a ruggedised PC with a Linux based operating system running the Low Voltage-Common Application Platform (LV-CAP™). This platform receives, stores and processes data from external LV monitoring equipment. These devices have sufficient computational power to store and run multiple apps and can provide relevant information out via a communications link to centralised server(s).
- **Application Deployment & Management Server:** Enables management of the OpenLV Platform(s) that will be installed as part of the project. This includes the deployment of app(s) to devices in the field. It will also be utilised to store relevant data to enable the OpenLV trials to be assessed.

- **Cloud Hosted Server:** Enables LV monitoring data to be collected, stored, shared and visualised to provide benefits to communities and the wider industry.

## 2.2 The Project Methods

The core aim of the project is to prove the open nature of the platform through three core Methods:

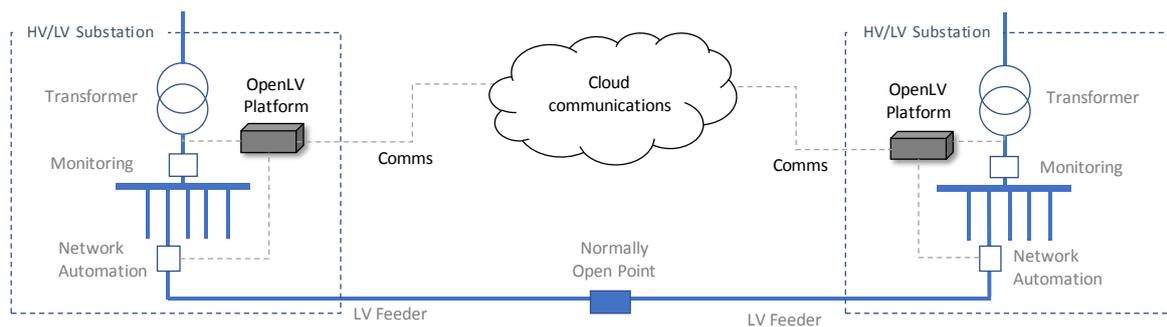
1. Network Capacity Uplift;
2. Community Engagement; and
3. OpenLV Extensibility.

These Methods are outlined in the following sub-sections of this report.

### 2.2.1 Method 1: Network Capacity Uplift

Figure 3 provides an overview of the systems architecture that will be deployed to complete Project trials for Method 1 – Network Capacity Uplift.

As part of the Project trials for Method 1, apps will be used to increase the capacity of existing LV assets through the application and implementation of dynamic thermal rating of the LV Transformer and through meshing LV Feeder(s) on the LV network.



#### What

- Check network capacity against thermal rating of transformer; when breached, close two radial circuits to mesh the LV network
- Deploy two proven techniques
  - ‘Dynamic Thermal Ratings App’ and
  - ‘Network Meshing App’.
- Together with a ‘Network Control App’ to operate/configure the network

#### How

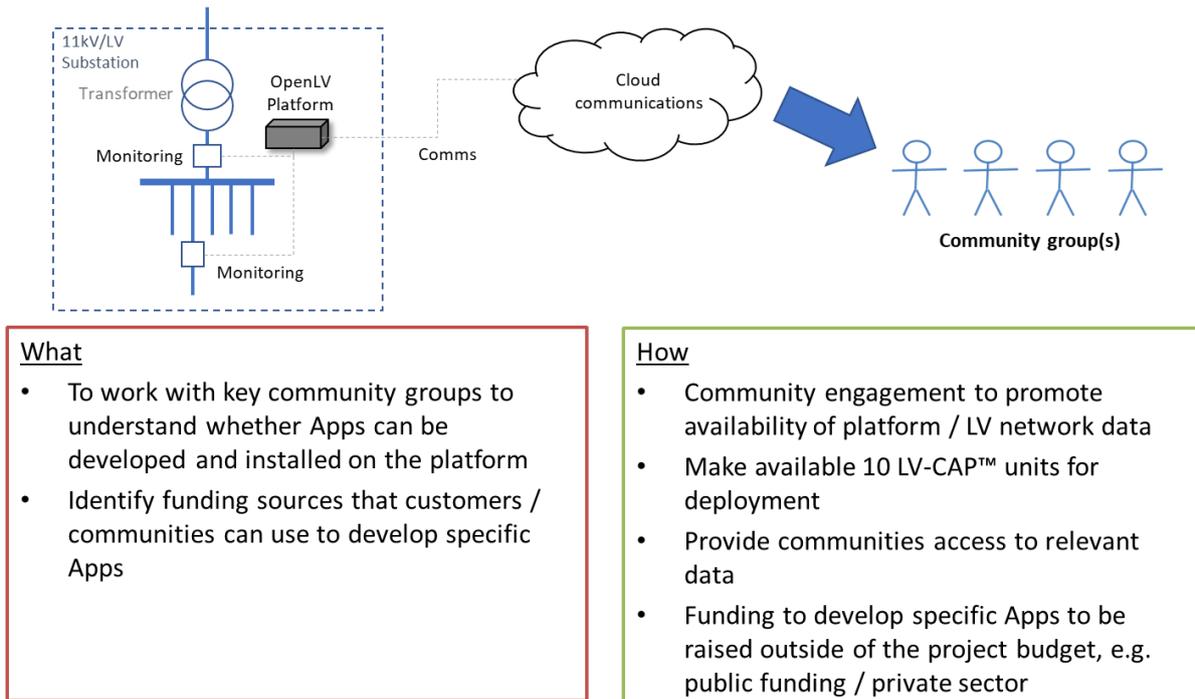
- Assess WPD’s network to identify candidate circuits
- Deploy LV-CAP™ to 60 substations
- Monitor how the solution would operate over several months
- Install actuators on 5 circuits (2 ends each) to prove end-to-end control
- Assess and report on performance

**Figure 3: Method 1 – Network Capacity Uplift**

**2.2.2 Method 2: Community Engagement**

Figure 4 provides an overview of the systems architecture that will be deployed to complete Project trials for Method 2 – Community Engagement.

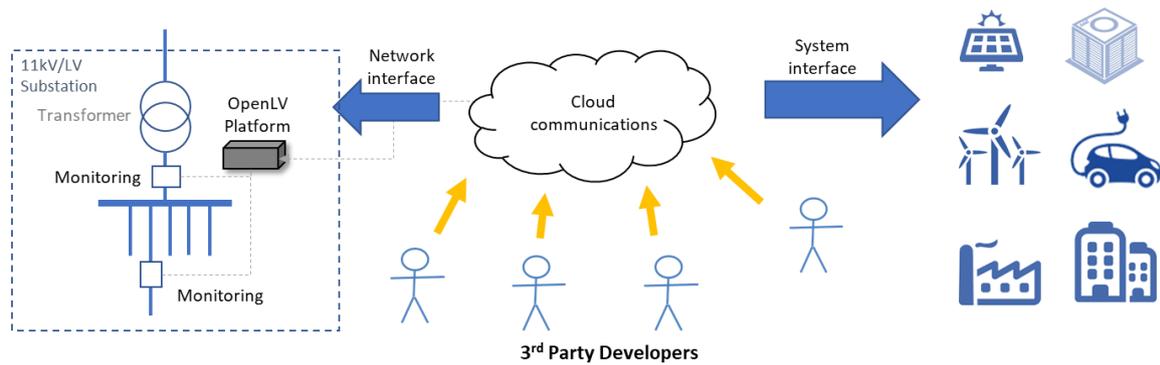
As part of the Project trials for Method 2, community groups will either make use of the LV network data provided by the OpenLV Platform, and/or develop and deploy apps to provide benefits to individual communities.



**Figure 4: Method 2 – Community Engagement**

**2.2.3 Method 3: OpenLV Extensibility**

Figure 5 provides an overview of the systems architecture that will be deployed to complete Project trials for Method 3 – OpenLV Extensibility. As part of the Project trials for Method 3, the Wider Industry will either, make use of the LV network data provided by the OpenLV Platform, and/or develop and deploy ‘apps’ to provide benefits to: DSOs, Platform Providers, 3<sup>rd</sup> Party Developers and Customers.



**What**

- To enable companies to develop innovative algorithms and applications for either the DNO, or it's customers

**How**

- Publicise the opportunity to 3<sup>rd</sup> parties
- Make available standard App 'container' for third parties to use for their development
- Make available 10 LV-CAP™ devices for substation deployment
- Funding to develop specific Apps to be raised outside of the project budget, e.g. private sector

**Figure 5: Method 3 – OpenLV Extensibility**

**2.3 Roles & Responsibilities**

EA Technology is responsible for the overall management and delivery of the OpenLV Project. In terms of this SDRC EA Technology's specific responsibilities are as follows:

- Establishing the market potential for Method 3: OpenLV Extensibility;
- Recruiting participants for Method 3: OpenLV Extensibility; and
- Running the trials for Method 3: OpenLV Extensibility.

The Centre for Sustainable Energy (CSE) have been appointed as the Community Engagement Specialist. In terms of this SDRC CSE's specific responsibilities are as follows:

- Delivery of the Community Engagement Plan;
- Establishing the market potential for Method 2: Community Engagement;
- Engaging with communities to recruit them into the trials for Method 2: Community Engagement; and
- Providing support to community groups to develop apps for the OpenLV platform.

Regen have been appointed as the Community Learning Specialist. In terms of this SDRC Regen's specific responsibilities are as follows:

- To review the outputs from testing the market for Method 2: Community Engagement;
- To provide an independent view on CSE's conclusions; and
- Longer term to ensure that the learning from the Method 2: Community Engagement trials is maximised.

## **3 Establishing the Market for Method 2: Community Engagement**

### **3.1 Establishing the market**

#### **3.1.1 Introduction**

Method 2 of the OpenLV project will work with community groups across the WPD network area. Ten LV-CAP™ platforms will be installed in substations in selected communities, and apps will be developed in partnership with participating community groups that bring benefits to the wider community and the network operator. The aim is to demonstrate that the LV-CAP™ platform can be used to drive network efficiencies through closer working with community groups.

As a starting point, the OpenLV project team need to investigate whether there is an interest from communities to participate, to understand whether this interest is spread across the network area or concentrated in certain localities, and to determine whether there is a broad or narrow range of app ideas that might emerge from such collaboration. This is referred to as 'Establishing the Market'. This element is led by CSE, in their capacity as the Community Engagement Specialist.

#### **3.1.2 Methodology**

The methodology is as follows:

- Information was collected via a survey, which was open for 28 days during June and July 2017;
- The survey was sent directly via email to 447 individuals, and was also circulated via a number of umbrella bodies representing community development organisations, parish councils, housing charities and environmental groups;
- The survey contained 6 'ready-made' app ideas, and also gave space for respondents to give details about their own app ideas; and
- The survey required respondents to rate their skills in app development, electrical engineering, data manipulation, business model development and fundraising.

#### **3.1.3 Findings**

60 responses were initially received. Once duplicates and incomplete submissions were removed, 51 substantially complete submissions were assessed.

34 of these respondents described themselves as 'community energy groups', of whom 22 already owned generating assets and 15 were involved in electric vehicle projects, and 33 of which give energy advice to householders, suggesting a good level of understanding of energy system issues. The skew towards self-defined community energy groups indicates that more effort will be required at full application stage to recruit community groups who do not currently have a sole focus on energy (such as parish councils and housing associations). Respondents were located across the WPD network area, but with a higher density in the south west licence area than elsewhere. This suggests a need for more proactive targeting of the full application process in the midlands and Wales.

A large proportion of respondents (20 out of 51 groups) had no paid staff, but the majority of respondents did have volunteers, with more than half of respondent groups having more than 5 volunteers apiece, suggesting a good level of capacity for ongoing involvement.

More than 90% of responding groups were interested in the ready-made app ideas of ‘understanding community energy demand’ and ‘connecting low-carbon technologies to the grid’, and a further 72% were very interested in apps that would deliver community alerts relating to pressure on the grid. This suggests that there is a general interest in simply understanding local energy use better, and a promising level of interest in working more proactively with the DNO on active demand management.

46 app ideas were also sketched out in the free text fields available, ranging from public energy consumption displays to developing an evidence base to feed into local planning documents. None of the app ideas were described in enough detail to determine the absolute feasibility of software engineering, but it is encouraging that a good proportion require only LV-CAP™ data, and should therefore be workable. Others require freely available datasets from other sources (e.g. weather sets or national grid carbon content models), again suggesting no absolute barriers to programming feasibility at this stage.

In terms of skills and abilities, only 5 responding groups rated themselves as having a good level of app development skills, whereas a large proportion (33) rated themselves as good at fundraising and more than half rated their business modelling skills as good. This suggests that support with software engineering will be vital, but that groups should be able to bring match funding and business skills to the project without too much support from the project team.

Respondents were asked to indicate their interest in six app concepts. Respondents could select ‘very interested’, neutral’ or ‘not interested’ for each of these app suggestions. The results are summarised in Table 4.

	<b>Very interested</b>	<b>Neutral</b>	<b>Not interested</b>	<b>Total</b>
Understanding community electricity demand	92% (44)	6% (3)	2% (1)	48
Connecting low carbon technologies to the LV grid	91% (43)	9% (4)	0% (0)	47
Community alerts to request reduction or increase in electricity usage	72% (34)	19% (9)	9% (4)	47
Community information alerts	66% (29)	34% (15)	0% (0)	44
Demand side response for managed electric vehicle charging	63% (30)	31% (15)	6% (3)	48
Automated electricity storage control	56% (27)	38% (18)	6% (3)	48

**Table 4: Summary of interest in app concepts**

Pole-mounted transformers are almost exclusively located in rural areas, and installing LV-CAP™ platforms on pole-mounted transformers represents a significant technical challenge. An analysis of the app ideas put forward by respondents suggests app type is not correlated with rurality. Therefore, if the technical challenges presented by pole-mounted installation prove insurmountable, it should not affect the range of apps that is developed via Method 2 of the project.

Most community groups responding to the survey represent an area that is likely to contain more than five substations. There were very few responses to the survey that would require LV-CAP™ platforms to be fitted to a single substation only. In order to prove the concept, genuine community buy-in will be required, and therefore the fact that only 10 LV-CAP™ platforms are available represents a risk to genuinely impactful community projects which will need to be managed.

### **3.1.4 Conclusions & Recommendations**

Overall the market research report establishes that there is a good enough level of interest from community organisations across the WPD network area to proceed to the next step of the Method 2 workplan, and begin a full recruitment process.

The recruitment process should be designed to ensure that:

- Community groups who do not currently have a specific focus on energy are encouraged and supported to apply, to ensure a better representative outcome for the project;
- Community groups of all types are not unduly deterred from applying by a lack of in-house programming skills. The project team should provide robust hand-holding and guidance for this element of the project;
- Community groups are able to determine where transformers in their project area are located, and what design they are (i.e. ground or pole mounted), to ensure that they do not waste time applying where their project will not be technically feasible.
- Community groups are aware that their project must not cover an area that will require more than 3-4 substations to be fitted with LV-CAP units. Proposals that require 3 units or more should be able to demonstrate a range of uses for the application, for example combining local energy consumption displays with EV charging time alerts; and
- Community groups are aware that an element match-funding should be brought to the project as part of their application, in order to maximise their skills in this area and add value to the project overall.

## **4 Market Assessment Review**

### **4.1 Key Findings**

The key findings from the market assessment review completed by Regen are as follows:

- Overall, the level of interest from communities was good with over 50 responses to the survey in just a two-week period. This suggests that there is considerable interest in LV substation data;
- There was strong support for the app ideas suggested by CSE in the survey and an additional 45 ideas suggested by the groups;
- The ideas for using LV substation data presented by the groups shows a good breadth and range of objectives, from connecting new renewable projects to informing local plans and policies. Therefore, suggesting that LV substation data has the potential to provide multiple benefits for communities;
- Overall, our assessment is that almost half (22) of the ideas have a high degree of potential relevance for further development in the trial; and
- A range of seven different sources of value were identified at this early stage, which provides some confidence that it will be possible to identify viable and replicable business models for community apps for LV substation data. Each of the 22 ideas had at least one potential source of value associated with it, as shown in Table 5.

The report also provides a high-level assessment of the potential barriers, issues and risks to wider roll-out of the app ideas:

- There are technical barriers that limit where community apps can be trialled, including the exclusion of pole mounted transformers that tend to be located in rural areas, as well as areas with poor network coverage and app ideas that require a large number of substations;
- Consideration will also need to be given to commercial issues, such as the cost of new technologies and whether new markets will emerge within the required timescale; and
- Ideas will need to be assessed against criteria related to public acceptance and policy traction to test if they are likely to come up against political or community resistance.

Table 5 provides an initial assessment of the ideas against some of these key considerations. This does not rank the ideas or identify the ones with the most potential at this early stage, because the different considerations have not been weighted.

The full Market Assessment Report, completed by Regen, is provided in Annex 2. Regen will continue working with CSE to ensure the learning from the Method 2 Community Engagement trials is maximised.

Idea	Sources of value					
	Price time shifting	Reduced electricity consumption	Customer recruitment for supplier	Flexibility contract or payment for avoided reinforcement	Lower connection costs	Grant/public funding
Matching demand with local generation	X		X	X	X	X
Business case for local energy market e.g. private wire, peer-to-peer, virtual private wire	X		X		X	X
DSR to match demand with local generation for balancing	X		X	X		X
DSR for managed electric vehicle charging	X		X	X		X
Data to inform group on most effective energy reduction measures		X		X		X
Competition between communities to reduce consumption		X		X		X
Business case for investing in storage	X			X		X
Rewards for avoiding peak demand times	X		X	X		
Community alerts to request reduction or increase/decrease in electricity usage	X		X	X		
Automated electricity storage control to reduce local peak	X			X		X
Community information apps to understand community energy use		X				X
Displays in local community to raise awareness of energy issues		X				X
Business case for alternative connection to the network					X	X
Understanding local capacity to help specify low carbon technologies					X	X
Community alerts when electricity is cheaper	X		X			
Business case for bulk buying electricity, particularly for ToUT	X		X			
Automated appliances to switch on and off depending on generation on network	X			X		
Understanding the gross before/after impact of large-scale retrofit schemes		X				X
Data to determine how much local generation/storage is required to make the community self sufficient						X
Providing a baseline against which to set targets and measure progress						X
Predict future energy demand to inform policy and network management						X
Neighbourhood Plan development						X

**Table 5: Summary of 'high potential' ideas from initial market assessment**

## **5 Community Engagement Plan**

Method 2 aims to show that there is a demand from community groups to be able to access LV network data and use it in ways that benefit both the community and the network operator. However, to demonstrate the widest possible replication potential, the project team is aiming to recruit some communities that aren't currently involved in energy projects, rather than recruiting all participating groups from the rather narrow demographic of current 'community energy groups'.

The proposal for community recruitment is therefore to carry out two phases: 1) An open recruitment process, where mailings and publicity will be strongly geared to the community energy movement and 2) A closed recruitment process that will work through the membership of two major community regeneration membership bodies<sup>1</sup> and selected housing associations.

The two processes will be out of step with each other by about six weeks, which will also help to reduce risks in terms of clashing workloads caused by the need for simultaneous installation of LV-CAP™ platforms and app design workshops. We expect to recruit a maximum of four communities to participate in app development and trial, due to the limited number of LV-CAP™ platforms available.

The 51 respondents to the survey (See Annex 1 for further information) will be contacted and invited to apply directly, as will the handful of respondents who made enquiries after the survey closing date. However, the full application process will not be restricted to these groups.

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<sup>1</sup> The proposal is to contact [Locality](#) and [Action for Communities in Rural England](#). CSE has contacts at both organisations and we do not foresee major issues with securing their support.

		Stream 1	Stream 2
		Established community energy groups	Community groups with no energy focus
2017	October	Application process for community energy groups developed and approved.	Contacts with community regeneration umbrella groups (e.g. Locality and ACRE) and housing associations to arrange for information to go out in their newsletters and other communications channels.
	December	Application process opens to the public 04/12/17	Run a webinar (via Locality and ACRE) for interested groups, laying out what the project aims to achieve, and allowing them to explore the support they will need.  Application process adapted for non-energy groups
2018	January	Closing date Monday 22/01/18	Application deadline Monday 05/02/18 at 5pm
	February	Interviews	4 groups shortlisted by end of Feb
	March	2-3 finalists selected, plus 2 reserves.	Interviews
	April	Community consultation events	1-2 finalists selected. (If no suitable groups, appoint reserves from stream 1).
	May	App design workshops	Community consultation events
	June	Software development - base app elements	App design workshops
	July	Software development - project-specific elements	Software development - project-specific elements
	August	Software development - project-specific elements	Software development - project-specific elements
	September	Supported trials	Supported trials
	October	Supported trials	Supported trials
	November	Supported trials	Supported trials
	December	Supported trials	Supported trials
2019	January	Supported trials	Supported trials
	February	Supported trials	Supported trials
	March	Supported trials	Supported trials
	April	Supported trials	Supported trials
	May	Supported trials	Supported trials
	June	Supported trials	Supported trials

**Table 3: Proposed recruitment and support timetable**

## **5.1 Stage 1 – Recruiting community energy groups**

An application pack will be produced, which community energy groups will need to complete and submit to CSE. We expect to work with Regen to ensure that their needs for evidence gathering are covered in this process.

The EOI forms will describe the aims of the OpenLV project and will be clear that projects involving large areas covering more than four substations are unlikely to be shortlisted. It will also make clear that there are technical constraints associated with fitting the LV-CAP™ platforms to pole-mounted transformers, and that therefore only exceptional proposals requiring pole-mounted installation will be considered. Applicants will be asked to define the geographic boundary of their project and indicate on a map the locations and types of substations they wish to include. They will also be asked to give a brief history of their group and provide evidence of how well known or trusted they are within the particular part of the community where they wish to work.

Applicants will be able to contact the CSE team to discuss their application, in particular to check the number and type of substations that would be included in their proposed project (if they are struggling to work this out due to inaccessible substation locations).

Applicants will need technical guidance on what sort of apps could be produced with the sort of data that the LV-CAP™ platforms will produce. CSE's in-house programmers will create a proforma that allows applicants to describe their app ideas in more detail so that comparisons can be made during shortlisting, and which gives some guidance on what may or may not be possible. The application pack will also contain links to the publicly-available API document and Measurement Points document, which will be of use to the more technically able groups.

The EOI process will require applicants to define to whom benefits will accrue if their app is developed, and whether they can allocate any firm costs or savings to their idea. It will also ask them to consider the scale of involvement required from the wider community – for example, what proportion of local people would need to participate, and to what extent, for the app to be successful? Would participants incur costs or other 'hassle factor' impacts that would prevent their participation?

Finally, applicants will be asked to give details of any skills and funding they can bring to the trials. In particular, if they have in-house programming skills or community engagement abilities. They will be asked to outline these in some detail, since there could be a possibility of increasing the number of participating groups if one or more of them has very advanced skills in one or both of these areas (subject to availability of LV-CAP™ platforms). A match-funding commitment will be required of applicant groups as part of the application process, as a contribution to the software development element of the support programme.

We expect to shortlist six communities for interview, and will travel to them for the interviews, to reduce the burden on them, since they are likely to be voluntary groups. Rachel Coxcoon and Tom Hinton will lead the interview process and again, it is hoped that Regen and EA Technology can be available to participate.

We intend to select two to three groups from interview to receive ongoing support. We will also select two further groups to be reserves, and make the final decision after the second round of community groups ('non-energy groups') has been interviewed, should the quality of those applicants be too low to take forward.

- ***Proposed date for selection of community energy groups: Late February 2018***

## **5.2 Stage 2 – Recruiting parish councils, development trusts and community regeneration charities**

Locality represent a network of many hundreds of community groups across England and Wales, and ACRE represents the 38 Rural Community Councils who between them have access to most of the parish and town councils in England. We will also make contact with the National Housing Federation (a national umbrella group for Housing Associations). We will make direct contact with them to promote the scheme to their membership and tenant groups. Groups will be particularly encouraged to apply if they can demonstrate that they haven't previously had much involvement with energy projects.

The same EOI forms will be used as a basis as for the first recruitment round, but with further information on the need for better network management and the benefits of engaging with your local DNO on innovation projects such as this (since these groups will likely need more context and background to understand the benefits of taking part).

Telephone support will again be available, and groups will be expected to define the boundaries and included substations in their project area, along with the proposed benefits and the level of involvement they think they will need from their wider community and any funding or skills they can bring to the project.

We aim to run a webinar or similar event for interested groups during late November or early December 2017. Applications will then be invited from members of Locality and ACRE and the National Housing Federation in mid-December, and will close at the end of January 2018. We will shortlist during February, with interviews to be carried out with four groups by the end of March, from whom one or two will be selected for the trials. The proposed interview panel is the same as for the first round of recruitment. If the standard of applicants in the second-stage process is not acceptable, we will bring forward the two reserve groups from the community energy application process.

All selected groups will be assigned a project mentor from within CSE, whose role will be to work closely with the community group to keep project momentum, identify and provide support on community consultation and ongoing engagement, communications and publicity, provision of software engineering support, and liaison with the wider OpenLV project partners.

- ***Proposed date for selection of non-energy groups: Late March 2018***

## **5.3 Support for Community Groups**

There are a number of avenues of support to community groups in order to achieve the most realistic and cost-effective means of app development. The support package will be communicated to the relevant community groups from the outset of the process upon application. This sub-section details that support being made available.

### **5.3.1 App design workshops**

A programmer from CSE, along with a member of the CSE communities team, will convene an app design workshop in each community. This will build on the details given in the application made by the community at EOI stage, and incorporate any feedback and insights gleaned from the community consultation process.

We expect only a handful of core community group members to attend these workshops as they will be very practical and designed to create a product document that details the proposed navigational flow and features of the app at a level of detail that allows a developer to clearly understand the expectations of the app when programming begins.

In line with the concerns expressed by some Method 3 applicants, there may be a need at this stage (or potentially even before) to enter into NDA contracts with the groups, so that they are comfortable that their ideas will remain their intellectual property, where appropriate. This should be aligned with the work done under Method 3 on Intellectual Property, and in line with LCNI Governance.

- ***Proposed date for app design workshops: Mid May to Mid June 2018***

### **5.3.2 App development**

The original proposal to Ofgem is based on the premise that groups will be selected and supported to the point at which they have an outline app design, before fundraising is carried out towards the costs of developer time so that programming can be carried out before trials start in September 2018.

As detailed in Annex 3, this proposed approach is not ideal, because fundraising timetables are likely to be longer than the 3-4 month window that will be available from group selection (in Feb/March 2018) to the point at which programming will need to begin in earnest (June) if the apps are to be developed in time for trials to begin in September.

In order to address this significant delivery risk, we propose to change the sequencing so that fundraising that was to have been started after the selection and app design workshops, but before full software development, will be replaced by groups bringing match funding at the point at which they make the application to participate. This removes this timetabling risk and allows app design to run straight into software development without a break.

Each group will be assigned a CSE software developer who will either oversee the full app development, in the case where the group does not have these skills 'in-house', or will work closely with the group's own software developer where they do.

CSE software developers will work closely with the team at EA Technology who developed the LV-CAP™ system to ensure that, as far as possible, programming requirements that are common to any type of app is developed at an early stage. This will ensure all community apps can draw on this 'base app', in order to minimise repeat code writing, and reduce programming costs, in a business-as-usual scenario, when LV-CAP™ platforms are deployed in large numbers of substations in the future.

### **5.3.3 Proposed trial structuring**

The apps are scheduled to be rolled out for trial from early September 2018, with trials concluding at the end of June 2019. During this 10-month period, CSE community and programming staff will be on hand to provide support to keep the trials on track, and each group will be assigned a CSE project mentor, whose role will be to ensure that progress does not fall behind schedule

At this stage (without detail on what the apps will be) it is not possible to define the exact support that will be offered. It is possible to define the types of support and feedback mechanisms that could be put in place to keep trials on track. We envisage:

1. A key point of contact with each group and a CSE team member.
2. Scheduled fortnightly telephone catch up calls between CSE and the community contact, to check progress and develop solutions for any problems that arise.
3. CSE staff availability to help with wider community awareness-raising (where this is proving slower or less effective than the groups hope), and with press and communications activity.
4. CSE programmer availability for technical issues, to help with troubleshooting and liaison between WPD/EA Technology and the community groups.
5. Supporting Regen by identifying key community members who would be good candidates for interview/focus group work for evaluation purposes.

In relation to points 2 and 3 above, CSE proposes developing a support contract that the groups will have to sign up to at the point of being accepted onto the project. This will detail the circumstances under which support from CSE will be withdrawn and trials will be closed before the end of the trial period. Such a contract could include:

- Recruitment and participation targets for the community group to achieve before and during the trial period – number of households participating or signed up for alerts, for example;
- An agreed timetable of support and catch up phone meetings for the duration of the trial;
- Agreed service delivery standards and response times for all parties – for example, CSE committing to returning calls and emails within a certain time, and community groups understanding that a failure by them to report on progress against an agreed timetable will result in support being withdrawn; and
- A commitment from the participating group to provide Regen with data and participant contact details when required, and to respond to agreed requests for information relating to the evaluation and learning contract.

### **5.4 Risks**

Community engagement work represents an inherent risk to timely project delivery because it is largely a reactive process; community representatives are usually giving their time as volunteers and cannot be managed in the same way as paid employees, securing buy-in and commitment from across the wider community is time consuming, which can result in slipped timetables.

The key risk that is common to most of the ideas put forward in the initial survey is lack of available LV-CAP™ platforms. The main project risk associated with a large proportion of the ideas is that they would require far more LV-CAP™ platforms than the project has available.

For example, the proposal from the group based at the Gawcott Fields Community Solar Farm, proposed an idea for an app that would show what proportion of ‘the local community’s’ electricity demand is served by the solar farm at any time, to develop a local supply model. But a look at the map shows that, even if ‘the local community’ were restricted to the nearest obvious neighbourhood (the relatively small Mount Pleasant housing estate on the edge of town), it would still require the LV-CAP™ units to be fitted to six substations.

The full set of risks and associated mitigation plans are outlined in Annex 3.

### **5.5 Moving Forward**

The full Community Engagement Plan, that will be utilised by CSE to engage with community groups is provided in Annex 3.

## 6 Market Potential for Method 3: OpenLV Extensibility

### 6.1 Identification of market sectors

The market sectors that may be interested in participating in the trials to prove the OpenLV platform are shown in Figure 6. This shows that, many market sectors, some with direct links to the energy industry but others who have less established links, were identified as potentially being interested in LV network data or the services that could be provided by apps manipulating LV network data. This Figure suggests that the market for the OpenLV Platform is broad.

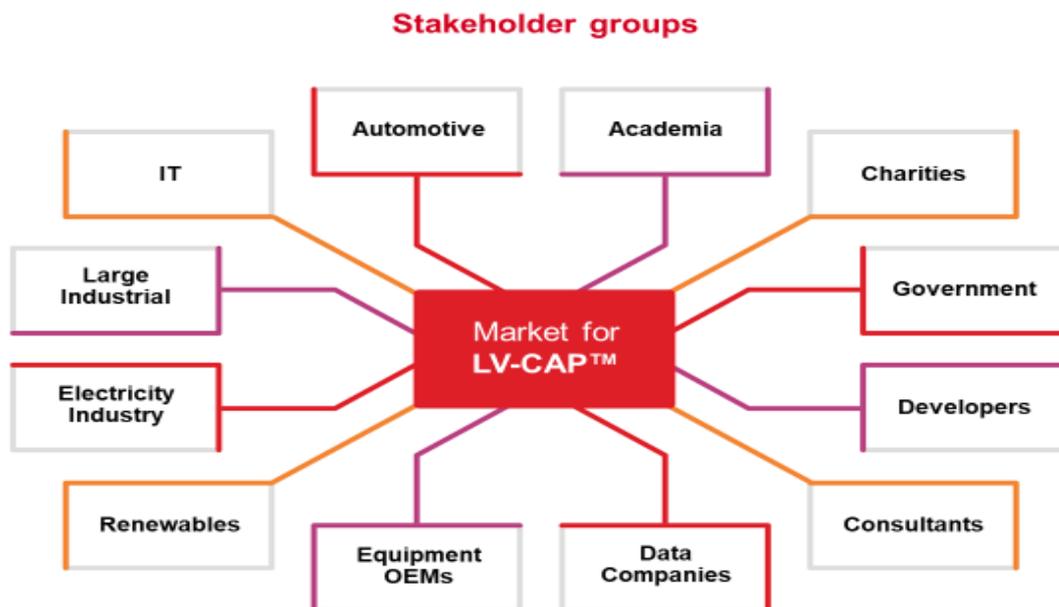


Figure 6: Method 3 Stakeholder Groups

### 6.2 Market engagement

In order to establish the level of interest from potential stakeholders an online survey was utilised. This survey was published on the OpenLV website: <https://openlv.net/> and is still open for potential trial participants to register their interest.

Three communication channels were utilised to target potential trial participants. These were:

- **Direct email:** The EA Technology marketing contact list was utilised to identify potential contacts and a link to the survey was sent to a subset of this contact list;
- **Telephone Market Research:** A telephone market research company was utilised to contact relevant companies within the stakeholder groups. This market research company targeted stakeholder groups that were not well represented on the EA Technology marketing list; and
- **Face to face meetings:** Face to face meetings were held with a number of organisations to provide further information on the project.

### 6.3 Did respondents want to develop an app?

The key factor, in terms of OpenLV project trials is whether organisations are interested in developing apps. Table 6 shows that, to date, 51 organisations are potentially interested in developing apps and trialling them as part of the OpenLV project.

	Yes	Maybe	No	Sub-Total
Direct email	15	18	2	35
Telephone Market Research	9	9	26	44
<b>Total(s)</b>	<b>24</b>	<b>27</b>	<b>28</b>	<b>79</b>

**Table 6: Did respondents want to develop an app?**

To understand whether the motivations behind a “maybe” response had a positive or negative attitude towards app development, where possible, the project team spoke to representatives in the organisations that responded to the surveys.

The reasons why respondents were not able to say “yes” to whether you would like to develop an app in the OpenLV project can be grouped into the following categories:

- **Internal resourcing:** This group reflected situations where respondents wished to indicate that staff, such as software developers, were currently being directed to focus upon tasks directed by the business plan. In many cases, respondents expressed the view that should an internal investment case be identified, then the resource issues may be resolved (35%);
- **Internal Investment Case:** This grouping reflected situations where respondents wished to indicate that they would like to examine the business case before committing company resource to the trial (30%);
- **Further information required:** This grouping recorded respondents who wished to gather more information on LV-CAP and the OpenLV trial before committing (10%);
- **Insufficient internal skill set:** This grouping recorded respondents who considered that their internal skill set would limit their ability to develop apps (10%); and
- **What are WPD's plans for roll out?** To understand the potential scale and security of their investment, a number of respondents sought further insight as to how and when OpenLV technology would be rolled out (10%).
- **Insufficient authority to commit:** This grouping recorded situations where respondents did not feel like they had the authority to express a view on behalf of the company (5%);

In general business terms, organisations have finite development budgets and manpower. It is therefore to be expected that before making any form of investment into a new product, service or capability, organisations will wish to understand the magnitude and risk of the development effort and also what effect the outputs from the project will have on the company performance.

Moving forward the project team will seek to overcome the above issues to maximise the number of potential candidates to trial new apps as part of the OpenLV project trials.

## 6.4 Categorisation of app ideas

In total there were 59 use cases that respondents ideas captured, most responses gathered more than one use case. The apps proposed by potential trial candidates are wide ranging and have been categorised in descending order of number of times the use case was referred to, as follows:

- **Forecasting (demand or Generation):** Apps within this proposition group sought to use the LV-CAP™ platform to enable better load or new types of load or generation forecasting. This was quoted in 8 of the use cases discussed;
- **Network Capacity/Resilience/Quality:** This proposition group used the LV-CAP™ platform to help improve Customer Minutes Lost (CML) or Customer Interruptions (CI) availability network capacity or quality indices. This was quoted in 7 of the use cases discussed;
- **Easier Connection development:** Apps within this proposition sought to provide users hoping to make connection with better information prior to connection or faster connection by helping to mitigate or postpone reinforcement. This was quoted in 7 of the use cases discussed;
- **Active Generation Dispatch:** This proposition group included value propositions which controlled the set point of generation to meet a criteria set by the app. This was quoted in 6 of the use cases discussed;
- **Headroom measurement:** This proposition group included value propositions which utilised the LV-CAP™ platform as a means to obtain insight into network capacity headroom at a location. This was quoted in 6 of the use cases discussed;
- **Smart Buildings:** This proposition group included value propositions which controlled energy consumption within buildings to meet a goal set by the app. This was quoted in 6 of the use cases discussed;
- **Network USE Tariff:** This group of propositions sought to use the LV-CAP™ platform to enable some form of use of system tariff. This was quoted in 6 of the use cases discussed;
- **Energy Market/Flexibility Market:** Use of the LV-CAP™ platform to enable a flexibility or energy trading platform. This was quoted in 5 of the use cases discussed;
- **EV charging:** Apps within this proposition sought to manage car charging within the constraints of the network. This was quoted in 4 of the use cases discussed;
- **Asset Health Management/Predictive Maintenance:** Apps within this proposition group sought to use the LV-CAP™ platform to improve products associated with maintenance planning or condition monitoring of electrical equipment. This was quoted in 3 of the use cases discussed;
- **Flooding Mitigation:** This group of propositions was focussed upon managing flood risk by controlling generation. This was quoted in 1 of the use cases discussed; and
- **Consumer Care:** This group of propositions was focussed upon using LV-CAP™ to disseminate power cut information and also to create alerts regarding socially vulnerable customers who are experiencing some form of supply difficulty. This was quoted in 1 of the use cases discussed.

## **6.5 Conclusions**

In total, to meet the requirements in the Full Bid submission [Ref. XX], the project team needs to sign up 10 organisations to take part on the OpenLV project trials. The results from the initial market assessment show that there is potential interest from a total of 51 different organisations. This has resulted in a total of 59 potential app ideas. This level of interest is sufficient to allow the project team to continue to promote the Method 3 project trials and seek interest from further potential trial participants in line with the following timescales:

- Ideas will continue to be sought for apps until the end of March 2018 with a view to selecting app ideas to take forward by the end of April 2018;
- Apps will need to be developed by the end of August 2018; and
- The Method 3 project trials are scheduled to run from September 2018 to July 2019.

The results from the full market selection for Method 3 trials will be provided in a project report at the end of May 2018. Annex 4 provides the full results from the work completed to date to establish the market for Method 3: OpenLV extensibility.

## **7 Key Learning Points**

The key learning points regarding assessing the market potential for the LV-CAP™ solution, to date, are outlined in the below sub-sections.

### **7.1 Method 2: Community Engagement**

Key learning points under Method 2 are as follows:

- **Community groups engagement:** Community groups have required a tailored engagement approach in terms of imagery and style of communications. This has been critical to engagement success in terms of understanding the appetite from community groups to take part in the project;
- **Marketing:** The scope of the marketing materials' requirement under Method 2 has been reviewed in light of the need that has emerged for more direct engagement via telephone and one-to-one contact in the next stage of engagement, post initial survey, rather than the originally perceived need for bespoke leaflets for the community groups;
- **App ideas:** Community groups proposing potential app ideas under the banner of "policy, planning and retrofit programmes" has been a surprise. This is not an area that was covered in the initial list of six potential app ideas when the survey was sent out. A total of five app ideas have been received under this title (11% of the total). An example includes, using the data to input to neighbourhood development planning. These ideas will be considered as part of the project going forward;
- **Wider stakeholder engagement:** There were a number of stakeholder groups that were not targeted in the first round of engagement, such as local authorities and Housing Associations. These 'additional' stakeholder groups will be contacted to encourage a wider range of responses as a result of this learning;
- **Assessment criteria:** Engagement with community groups going forward should follow development of clear assessment criteria for reviewing app ideas that take into account the barriers, issues and risks set out in the Regen market potential assessment report; and
- **Identification of beneficiaries and specific value streams:** Asking community groups to identify beneficiaries and specific value streams to form the basis of their business case in their response to the Expression of Interest will support extrapolation of learning going forward; the learning here is that this was too complex to be included in the initial survey going out to community groups. This may require some guidance and support from CSE.

### **7.2 Method 3: OpenLV Extensibility**

Key learning points under Method 3 are as follows:

- **Intellectual Property:** A number of organisation expressed concerns about giving up their ideas for potential apps. As a result, a Non-Disclosure Agreement (NDA) has been utilised where applicable;
- **Internal resourcing:** Seven organisations outlined that they may not be able to commit the resource to developing an app for the project due to internal resource

constraints. However, a number of organisations stated that should an internal investment case be identified, then the resource issues may be resolved;

- **Internal Investment Case:** Six organisations outlined that the business case for committing resource to developing an app to the project needed to be fully assessed before resources could be committed;
- **Further information required:** Two organisations outlined that they would like to gather more information on the project before making a commitment to develop an app;
- **Insufficient internal skill set:** Two organisations thought their internal skill set would limit their ability to develop apps; and
- **What are WPD's plans for roll out?** Two organisations wanted to gain further information on the potential scale of the roll out for the OpenLV Platform before making a commitment to developing an app.

The project team will continue to engage with organisations to overcome the potential barriers to organisations agreeing to participate in the OpenLV project trials.

## **8 Summary**

This SDRC report has presented the results from assessing the level of interest from community groups and the wider industry to participate in the Method 2 and 3 OpenLV Project trials. The Community Engagement Plan has also been provided.

The project team will continue to promote the project and continue to engage with potential trial participants to ensure organisations can be found for the 20 OpenLV platforms that will be installed as part of the project, 10 platforms for each for Methods 2 and 3.

In addition, the key learning points recorded at this stage of the project in relation to the recruitment of trial participants has also been recorded.

Further results of the market engagement exercise utilised to recruit trial participants for Methods 2 and 3 will be provided in an update to this SDRC report, “SDRC 2.2: Identification of Target Networks (Method 1), Community Engagement Plan, Assessment of the Market Potential (Methods 2 & 3) and Detailed Trial Design for all Methods” in May 2018.

## References

1. OpenLV Project Direction, 16<sup>th</sup> December 2016, <https://openlv.net/wp-content/uploads/2017/08/Open-LV-Formal-project-Direction.pdf>
2. OpenLV Full Submission Pro-forma, [https://openlv.net/wp-content/uploads/NON-CONFIDENTIAL-OpenLV-NIC-Bid-2016-WPD\\_EN\\_NIC\\_02-RESUBMISSION-v1-1-Wit.pdf](https://openlv.net/wp-content/uploads/NON-CONFIDENTIAL-OpenLV-NIC-Bid-2016-WPD_EN_NIC_02-RESUBMISSION-v1-1-Wit.pdf)



## **Annex 1: Evidence – Establishing the Market for Community Engagement**



## **Annex 2: Evidence – Community Engagement Market Assessment Report**



## **Annex 3: Evidence - Community Engagement Plan**



## **Annex 4: Evidence – Establishing the Market for OpenLV Extensibility**

