WPD INNOVATION
Transforming the electricity network

VENICE

NIA Major Project Progress Report

October 2021 – March 2022

WESTERN POWER DISTRIBUTION
Serving the Midlands, South West and Wales

Version Control

Issue	Date
D0.1	15/02/2022
D0.2	14/03/2022
V1.0	23/06/2022

Publication Control

Name	Role
Stuart Fowler	Author
Ryan Huxtable/ Marnie Ellis	Reviewer
Yiango Mavrocostanti	Approver

Contact Details

Email

wpdinnovation@westernpower.co.uk

Postal

Innovation Team
Western Power Distribution
Pegasus Business Park
Herald Way
Castle Donington
Derbyshire DE74 2TU

Disclaimer

Neither WPD, nor any person acting on its behalf, makes any warranty, express or implied, with respect to the use of any information, method or process disclosed in this document or that such use may not infringe the rights of any third party or assumes any liabilities with respect to the use of, or for damage resulting in any way from the use of, any information, apparatus, method or process disclosed in the document.

Contents

1. Executive Summary

The Vulnerability and Energy Networks, Identification and Consumption Evaluation (VENICE) project is funded through Ofgem's Network Innovation Allowance (NIA) mechanism and has a budget of £1,475,984. Project VENICE was registered in July 2021 and will be complete by December 2022

The project seeks to delve into the consumer aspects of the energy transition and is therefore complex and requires significant effort and thought in respect of learning how best to engage customers in the achievement of Net Zero. Moreover, it is challenging our business to think about its relationship with our customers. The key challenges for this project have been access to data and more recently the emerging issues in the supply market. This has challenged the project team in its thinking and approach throughout but especially over this last six months. We have had to undertake work for two change requests and these have taken significant amounts of time to resolve and the impact of the continued challenge of COVID has not helped progress.

The project remains committed to trying to unravel some of the more social aspects of the energy transition and our role as a Network Operator affords us a unique role in trying to help our communities where we are able to do so. We take this role very seriously. However, it is difficult for Distribution Network Operators (DNO's), like Western Power Distribution (WPD), to gain valuable data and insights into this aspect of the transition.

Project VENICE is looking at three different aspects of the energy challenge and the low carbon transition. Firstly, it is looking at the pandemic and how this has impacted energy consumption, as well as identifying whether these changing behaviors may "stick", in order to inform our future planning approaches. The second is looking at how it could be possible to predict if a customer has become vulnerable by analysing their energy usage patterns using existing known patterns for customers with vulnerabilities; it will do this by using real anonymized vulnerable consumer profiles. The third is taking a local community where there are high levels of poverty and developing new business models for those customers in order to keep them engaged in Net Zero and provide benefits to the distribution network. It will use insights from the other two work packages in order to achieve this.

This report details progress of the project, focusing on the last six months, October 2021 – March 2022.

1.1. Business Case

For the purposes of registration, we detailed our thinking around the potential for VENICE to create social value. This could take a number of forms but for this project we feel that a good measure is the potential to sign up new customers to the Priority Services Register (PSR). It has been calculated by each of the networks in the past and for WPD, this value is £2.35 per customer (based on the paper: "WPD, Consumer Vulnerability Outcomes, 2018/19, Table 3.3").

Other networks calculate a benefit of similar magnitude, ranging from £1.09 per customer to £3.70 per customer.

We estimate that the total number of vulnerable customers on all DNO networks to be around 5.7m, and the number of PSR records is approximately 3.6m. We therefore suggest the total number outstanding vulnerable customers on the register is therefore around 2.1m (based on WPD social indicator mapping).

To illustrate the potential benefits, if this intervention identifies an additional 25% of missing vulnerable customers, this could create additional social value worth £1.25m to network customers. Being able to identify all of these missing vulnerable customers proactively would therefore create social value of c. £4.935m. If this was extrapolated to all DNO's and assuming 1m missing PSR records per DNO, this could equate to £11.75m of social value.

The benefits that come from understanding more about the impact of the recent pandemic are threefold: firstly we will have a view on the demand impact of the pandemic and the results will assist within our network planning. The results of this research will be made available to all DNO's and therefore there will be a direct benefit we believe in being able to apply the results to our policies and assumptions associated with network planning to WPD and all DNO's. We would expect to see benefits for customers through better planning and decision making around local networks.

The second benefit will be in the design assumptions we make for future developments if we know the likely impact on demand of more localised home working. Again, whilst intangible today, this is something that could be incredibly valuable to us and all other DNO's to have in their planning toolkits.

The final benefit will come from the persistence assessment – if reinforcement work were to be undertaken without some view of the likelihood of persistence of demand changes then there is a chance that works might be done unnecessarily. Having a reasoned analysis of the likelihood of the changes continuing could provide substantial benefit to customers in the longer term.

The benefits of the local community engagement workstream (WS) come from firstly ensuring that no one is left behind but also, the achievement of Net Zero is Government policy and if by testing new business models we can ensure that we have learning to provide to all communities (through tools and techniques), this could be a substantial benefit to the UK and it's goals. Having the tools in place to measure and plan a local energy transition could play a substantial role for the more deprived communities in the UK. Equally, these local energy schemes could provide significant benefits to networks through the use of Low Carbon Technologies (LCTs) and engagement in flexibility markets. Flexibility markets alone are expected to benefit customers substantially in the future.

1.2. Project Progress

This is the projects second progress report. It covers progress from October 2021 to the end of March 2022.Progress in each workstream has been as follows:

WS1- Frontier Economics

Work on Persistence Assessment is completed and the data analysis stage is paused whilst we obtain the data, particularly smart meter data. This has been resolved now and contacts for a third party are being negotiated. Whilst this will delay delivery, it will still fit within the project timescales. Some of the delay was also due to the continuing effects of the pandemic, there continues to be some significant learning about the provision of smart meter data. Feedback from consumers continues to conflict consistently with policy concerns and this has made the lack of progress all the more frustrating for the team.

WS2- Frazer Nash

Validation Dataset sourcing

Frazer-Nash agreed a contract with a third party and produced information packs, briefing documentation, questionnaires, and answer sheets for them to use when collecting information for their clients. In mid-February, they communicated with Frazer Nash stating that they had misunderstood their GDPR requirements and could not undertake the work. Subsequent to this WPD and Frazer-Nash spoke about the technical implications and agreed to halt all work related to obtaining validation data until after the model development was completed.

Vulnerability Outreach

The findings form the workshops with different vulnerable consumer groups has been written into a report detailing the key findings. This report is currently being verified and will be with WPD once this is complete.

Model Development: Appliance Disaggregation & Prediction

The model development is completed. The results and finding were presented on 3rd March.

Model Development: Overall changes in Usage

The model development and testing has been completed. The results and finding were presented on 3rd March.

Model Development: Cohort Analysis

The Cohort Analysis is complete and the results and finding were presented on 3rd March.

Frazer Nash will write the Model Methods and Findings Report and verify the analysis and report for delivery at the end of April. Frazer-Nash have also offered assistance to WREN when sourcing a web developer to implement the carbon accounting model into the WPD website.

WS3- Wadebridge Renewable Energy Network

Work has continued on the Carbon Accounting Tool which is now completed. The main focus this period has been the challenges in the supply market and the supplier willing to the support the Sandbox Trial. This has now been resolved and is subject to a change request.

1.3. Project Delivery Structure

1.3.1. Project Review Group

The VENICE Project Review Group (PRG) meets on a bi-annual basis. The role of the PRG is to:

- Ensure the project is aligned with organisational strategy;
- Ensure the project makes good use of assets;
- Assist with resolving strategic level issues and risks;
- Approve or reject changes to the project with a high impact on timelines and budget;
- Assess project progress and report on project to senior management and higher authorities;
- Provide advice and guidance on business issues facing the project;
- Use influence and authority to assist the project in achieving its outcomes;
- Review and approve final project deliverables; and
- Perform reviews at agreed stage boundaries.

The PRG for VENICE met during Q4 2021 and is meeting in April 2022. Due to the challenges of data acquisition and the changes in scope over this period it was decided to postpone it until such time as there was resolution to these matters.

1.3.2. Project Resource

Resourcing is delivered via three project partners:

Partner	Resourcing
Frontier Economics	Frontier Economics are the lead project partner for this workstream and will manage the delivery of the project, their role has changed slightly over this period and the smart meter analysis will now be undertaken by a third party that has access to a sizable database of meter readings. . Maxine Frerk will be subcontracted by Frontier Economics in her capacity as an associate of Sustainability First. She is providing expert advice and quality assurance for this project.

Frazer Nash Consultancy	Frazer-Nash Consultancy are leading this workstream. Frazer-Nash is a leading systems, engineering and technology company. They will be using their skills and talents to delve into the use of Smart Meter data for the purposes of identifying vulnerability. They have a wide breath of experience undertaking research projects, and their diverse set of expertise uniquely place them to undertake the laboratory and technical research required for this project.
Wadebridge Renewable Energy Network (WREN)	WREN is a registered society engaged in increasing the take up and sharing the benefits of renewable energy in the Wadebridge and Padstow Network Area. It is led by volunteers on the Board of Directors and has over 1,100 members. WREN was founded in 2011 to advance education and raise awareness of energy resource scarcity and low carbon living. Promoting individual, community and organisational commitment to reduce carbon emissions, whilst providing a sustainable means of achieving economic development and regeneration. WREN are responsible for delivering workstream 3 and Each Work Package is being delivered by a series of sub-contractors/partners which include: University of Exeter, Planet A Energy (Planet A), Community Energy Plus (CEP) and Your Coop Energy (YCP).

1.4. Procurement

No procurement activity has been undertaken during this period.

1.5. Project Risks

A proactive role in ensuring effective risk management for VENICE is taken. This ensures that processes have been put in place to review whether risks still exist, whether new risks have arisen, whether the likelihood and impact of risks have changed, reporting of significant changes that will affect risk priorities and deliver assurance of the effectiveness of control.

Contained within Section 7 of this report are the current top risks associated with successfully delivering VENICE as captured in our Project Risk Register.

1.6. Project Learning and Dissemination

Project lessons learned and what worked well are captured throughout the project lifecycle. These are captured through a series of on-going reviews with stakeholders and project team members, and will be shared in lessons learned workshops at the end of the project. Learning is captured in two distinct categories: the learning that we want to achieve as part of the project and that which is captured along the way. These are though reported in Section 5 of this report.

2. Project Manager's Report

2.1. Project Background

VENICE has been running now for around 7 months. The high level plan is below but this period has required some changes to the schedule. This has included pausing the Frontier Economics work over the Dec to March period whilst we resolved some issues over access to smart meter data. This does not affect the overall schedule- it has generated some additional valuable learning though.

In addition, in February the Energy Supplier supporting the WREN workstream withdrew due to the ongoing issues in the supply market. This is of course understandable on one hand, but frustrating as well. The learning and outputs to date have been extremely valuable in understanding the challenge of Net Zero but we now have an alternative approach that we feel will still deliver a viable alternative- trying to engage another supplier would of course be extremely unlikely to illicit the right support at this late stage.

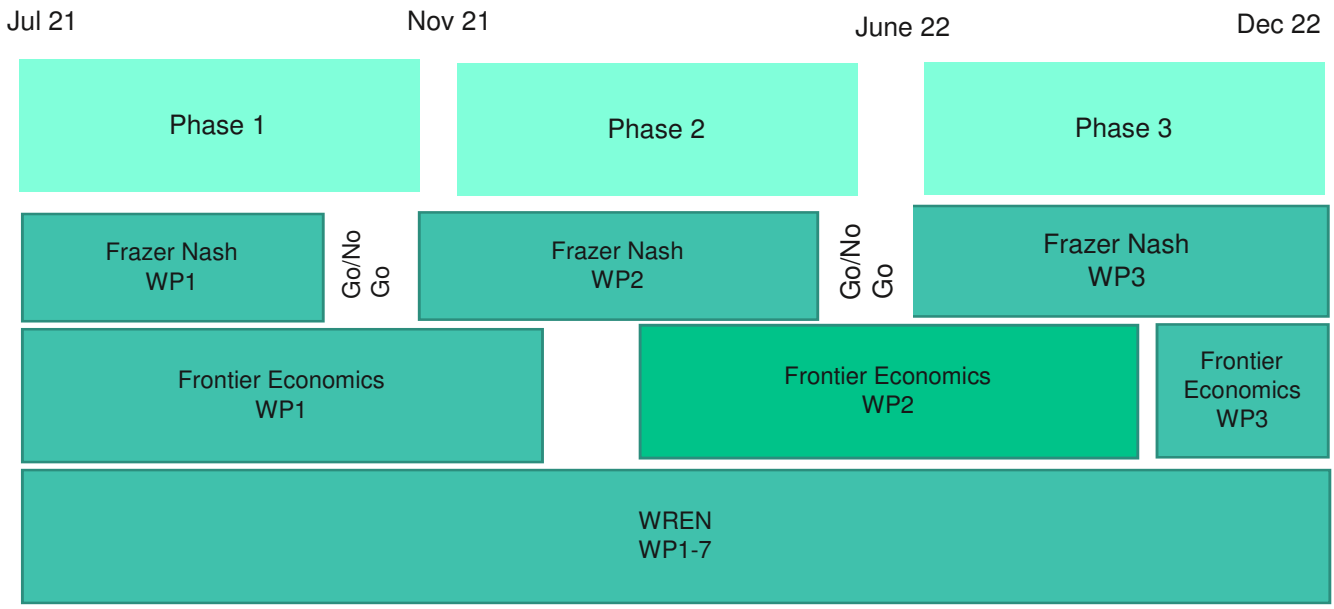

Fig 2-1: High level plan

As detailed in the first six monthly report the VENICE project is divided into three workstreams with a number of work packages in each one. The bulk of the work started in August 2021 and all work will be completed by the end of December 2022.

The Frontier Economics workstream is, in part, a desktop research exercise exploring the effects of the global pandemic on the WPD network as well as exploring how persistent changes in behaviour may impact the network longer term (e.g. home working and our planning assumptions).

The Frazer Nash workstream is exploring through the use of Artificial Intelligence and Machine Learning if it is feasible to predict vulnerability types via smart metering data and create a model to then ingest data and predict changes in

consumption patterns that might be an indication of a change in circumstances. It has a couple of decision points and this is because it is wholly predicated on smart meter data and this presents a current regulatory risk but the team have been working through a series of options to deliver what is needed with the whole team. The second hold point is shortly and we will update on progress in the next six monthly report. However, given that the regulatory risks and environment has not changed since the start of the project, we suspect that we may descope some of the outputs from the third work package.

The WREN workstream is about how a community could engage its fuel poor and vulnerable consumers through a community energy scheme in achieving Net Zero. It will explore business models and "nudges" to see what can work in the context of Net Zero and make these models/ insights available to all communities. The work is largely being outsourced to a series of local experts and agencies to deliver and in particular the community engagement piece with a number of local charities supporting WREN.

2.2. Project Progress

2.2.1. Frontier Economics – Workstream 1

This workstream is divided into two work packages and dissemination:

- **Work Package 1a** involves the analysis of data to determine:
  - how have patterns of consumption changed as a result of COVID-19;
  - which factors may have
- **Work Package 1b** will use behavioural economic tools to consider:
  - the consumer behaviour that may underlie these changes; and
  - to what extent these changes may persist.
- **Work Package 1c**- Dissemination

The final dissemination event will not occur until early 2023, approximately a year after WP2 finishes. Work package 1c will cover reporting and dissemination required at this point.

Progress summary:

Workstream 1, data analysis

In the last report we detail our plan to use a third party who has a "walled garden" to smart meter data for the delivery of the analysis that will be required.

Negotiations on this have been severely delayed due to COVID and negotiations started in mid-February, this is expected to now to commence work in April. The plan for this work included a period of inactivity and then Frontier would revisit the analysis at the end of the project. Because of this delay it is now planned that there will be no such period and the work will continue through the year. The schedule is unaffected but it remains disappointing that the issues of data have and remain so difficult to resolve.

Workstream 2, persistence assessment

- The persistence assessment work has been completed and moreover have been used on an additional piece of analysis around the impact of the pandemic, working from home and the likely change that might occur to electric vehicle charging. We intend to share more on this in due course but the results of this work provide a real insight into how valuable this persistence assessment is and how it can be reused for additional purposes and benefits.

2.2.2. Frazer Nash Consultancy – Workstream 2

2.2.2.1 Overview

Frazer-Nash Consultancy (Frazer-Nash) have three work packages in VENICE: 2a, 2b and 2c. There is a hold point between each of these work packages to confirm that there is sufficient knowledge and suitable results to continue to the next. In the last six months, Frazer-Nash have been working through their delivered work packages as part of WP2b.

2.2.2.2 WP2a: Dataset Preparation

The aim of WP2a was to confirm access to appropriate training and validation datasets required to build the predictive model, and to finalise the architecture of the deployed platform. The hold point, to determine continuation of the project, considered the following questions:

- Is the proposed training dataset generation appropriate?
- Is a validation dataset obtainable?
- Is the process to obtain customer data once the platform is deployed agreed?

2.2.2.3 WP2a Task 1: Training Dataset

The aim of this task was to develop a proof-of-concept model training dataset, to determine whether the proposed method for generating the training data is suitable.

To generate the training dataset, Frazer-Nash intend to create synthetic smart meter usages which represent real usage. With these, Frazer-Nash will train their model to behavioural characteristics in smart meter data that may be related to vulnerability. To build the proof-of-concept training dataset for this task, Frazer-Nash focused on building synthetic datasets using the highest power appliances: washing machine, kettle, toaster, and microwave.

For each appliance, Frazer-Nash used open-source appliance data from the UK Energy Data Centre, to determine how much power is drawn by the appliance, how long the appliance is used for, when, during the day, it is used and how many times a day it is used. These distributions of usage statistics were sampled, aggregated and averaged over 30 minutes to build up a synthetic profile. These synthetic profiles were compared to the real household data, and it was concluded that the random nature of real usage was accurately captured.

As part of this phase, Frazer-Nash also completed a literature review. From this, a new model development workstream was added to WP2b, which looks at overall trends in a household's data and quantifies changes to this. The approach for model development was also shifted slightly from the learnings of the literature review, but none of the outputs were affected.

2.2.2.4 WP2a Task 2: Validation Dataset

Obtaining data for the validation dataset led to ongoing discussions with many companies, charities and community groups. After a significant amount of work from Frazer-Nash and WPD, it was determined that we would obtain permission to use consumer data directly from the consumer by sending a questionnaire. This will be completed by Frazer-Nash.

2.2.2.5 WP2a Task 3: Deployed Platform Architecture

Due to the ongoing difficulties around obtaining long term smart meter data input to the model, the deployed platform architecture is still not confirmed but work continues to secure the data and then a final architecture can be determined.

2.2.2.6 WP2b: Determine Vulnerability Behavioural Characteristics & Develop Model

The aim of this work package is to determine the behavioural characteristics of vulnerable customers regarding their electricity consumption, and to build a model to recognise these characteristics in the synthetic usage profiles. This work package is separated into two tasks that have started in September and will be run in parallel.

2.2.2.7 WP2b Task 1: Determine Vulnerability Behavioural Characteristics

The aim of this task is to determine the set of behavioural characteristics, in relation to electricity usage, that a person might exhibit if they have a vulnerability. Frazer-Nash will complete a literature review and use the findings to hold a series of workshops with charities and community groups, to determine these behavioural characteristics.

Frazer-Nash have completed the literature review and will now work with our PSR and Social Obligations teams to determine the knowledge WPD already hold on the customer usage patterns. Following this, a workshop will be arranged with the social obligations team to down-select the charities and community groups to target, so that Frazer-Nash can hold the external workshops.

2.2.2.8 WP2b Task 2: Generate training data and develop model

The aim of this task is to create a set of synthetic household profiles and use them to train machine learning pattern recognition models to recognise behavioural characteristics in smart meter usage, that are related to vulnerabilities.

Following the literature review in WP2a Task 1, the detailed method for model development has been updated slightly. This was communicated in the kick-off meeting with WPD. Frazer-Nash highlighted the key technical risks for the model development, noting that this is a research project, and the approach may change further. Frazer-Nash have structured their approach to minimise the impact of these technical risks. Primarily, by initially undertaking key model development activities in parallel.

2.2.3 Wadebridge Renewable Energy Network – Workstream 3

The 18 month feasibility study carried out by WREN is spread across 7 work packages, allowing the project team to deliver this workstreams 6 main objectives:

- Develop future likely net zero carbon scenarios to 2050 based on Wadebridge to help Network Operators to frame the likelihood of impact to vulnerable customers.
- Develop a carbon accounting methodology to qualitatively compare impacts and interventions.
- Identify technologies, systems, and approaches to reach Net Zero Carbon in Wadebridge by 2050 that positively support vulnerable customers and inform approaches and policy levers that may be needed from a Networks perspective.
- Develop community-led business models that have the potential to deliver socioeconomic benefits and are supported by the local community and how this will intersect with Network Operators.
- Working with an Energy Supplier, develop a methodology to provide the carbon content of energy supplied in customer billing & settlement to drive better consumer choices in reducing carbon and measure how this will impact the distribution network and it's CO_2 reduction strategy. This will include learning from the Carbon Tracer NIA project previously undertaken by WPD
- Develop & share methodologies & learnings for other communities to define their own 2050 Net Zero Community (NZC) scenarios and models.

During this period the following activities have been completed in line with WREN's project plan:

- Completion of the High Level Future Energy Scenario's
- Socio-Economic Outcomes
- Carbon Accounting Methodology completed
- Workshop in March arranged for sharing of the future energy scenario's work

All of the activities were completed to time and as such this part of the project is well on track. An additional risk was highlighted in the last report and this has come to fruition. The continuing issues with the wholesale energy markets mean that the project will struggle to find a Supplier sponsor for the business model trials as part of an Ofgem Sandbox trial. However, rather than halt the work we have been working with WREN to find a solution that will still produce some insights .This is now going through the change control process.

3 Progress against Budget

The project budget is now getting back on track after some delays due to the smart metering issues. In addition a proportion of the underspend in Contractors is associated to the Supplier trial within the Ofgem Sandbox of Workstream 3, this has not been spent due to the withdrawal of the supplier, but this is subject to a change request at the moment. We anticipate a total overall reduction in WS3 spend due to the supply market issues. In addition some underspend overall is anticipated due to the lack of smart meter data and privacy issues.

Please see Table 3-1 for details:

Table 3-1: Progress against Budget

Spend Area	Budget(£k)	Expected Spend to Date	Actual Spend to Date	Variance to expected	Variance to expected %
WPD Project Management	£75,273	£19,943	£20,252	£309	1.5
Contractors	£1,196,530	£633,964	£215,641	-£418,323	-66
Dissemination	£20,000	-	-	-	-
AI/ML Consultancy Support	£100,000	-	-	-	-
Smart Meter Data	£50,000	-	-	-	-
WPDIR Costs	£50,000	-	-	-	-
Contingency	£134,180	-	-	-	-
	£1,475,984	**£653,907**	**£235,893**	**-£418,014**	**-64%**

4 Progress towards Success Criteria

The project has made the following progress towards its Success Criteria for each of the work packages:

4.2 Workstream 1- Frontier Economics

Success Criteria	Status
A model of counterfactual demand is built	This will commence once the relevant data sources have been sourced. **Status:** Not started
Calculate the impact of COVID on each Feeder	Work on this can now commence following the completion of the literature review **Status**: Not started
Able to describe and visualise the results	Will be started once the analysis has been completed. **Status**: Not started
Able to assess which factors are associated with different responses to COVID	Work on this can now commence following the completion of the literature review **Status**: Not started
Able to determine which behaviours will "stick" post pandemic	Work on this can now commence following the completion of the literature review, the framework of persistence has been completed along with the associated hypotheses. **Status**: Completed
Determine the impact on the network for those behaviours that are deemed to be likely to stick	Work on this can now commence following the completion of the literature review **Status**: Not started

4.3 Workstream 2 – Frazer Nash Consultancy

Success Criteria	Status
The proposed training dataset generation is appropriate	This will be commenced once data has been sourced. **Status:** Completed, awaiting outcome of demonstration meeting
A validation dataset will be obtainable	Work to gain access to a validation dataset will commence during the projects next phase now that we have a range of options. **Status:** Commenced but not completed

The deployed platform architecture and long-term customer data access is known.	Once work has been completed to determine data sources, work will commence to discuss long term solutions ahead of the third work package commencing. **Status:** Not started, subject to decision point at the end of March
The model can recognise short and long term patterns in the synthetic household profiles	Part of the initial work on this has started with selection of household appliances and the work to model what these appliances look like against standard profile **Status:** Completed
Frazer-Nash and WPD agree that a deployed platform is beneficial given the achieved model accuracy	To be started once project is completed and testing undertaken. **Status:** Not started

4.4 Workstream 3- Wadebridge Renewable Energy Network

Success Criteria	Status
Able to produce a methodology for community approaches to Net Zero	Top 6 Solutions have been agreed as part of the Planet A work, during this next phase the next level of detail will be determined. **Status** :Completed
Able to produce a methodology for carbon accounting	Literature review is complete, scope work is under way and will be completed during next period **Status:** Completed
Able to produce an approach for engaging communities in Net Zero	Community Engagement plan produced and agreed by partners, therefore plan is established. It will be progressed during the coming phases of the project **Status**: Started

5 Learning Outcomes

New learning points that have been captured are detailed below and where the learning pertains to a project learning this is noted as well:

ID and Workstream Lead	Learning Point	Learning Point Type	Commentary
LD- FE-005 FE (and FNC)	The issues over smart metering, access to data, GDPR, and progressing this work continue to frustrate the work.	Captured	The project has continued to struggle to access data but we do seem to have worked around most issues.
LD-FN-006 FNC	Number of ways to generate household “finger prints” from smart meter data, which can be conceptually linked to vulnerabilities	Captured	This is a good learning point as it has proven that the concepts work.
LD-FE-006 FE	Contractual issues raised by third party were significant and we had to move to FE subcontracting.	Captured	When trying to contract with a third party directly WPD found that there were so many issues with the contract that it proved simpler to subcontract with FE than with WPD. This feedback is being used in the review of the WPD terms and conditions under way.
LD-WREN-021 WREN	WP6-Use more creative engagement methods – use of stronger imagery; video, artwork, photograph competition.	Captured	Consumer engagement feedback is vital in projects like this.
LD-WREN-022 WREN	WP7-Delve deeper into how we can build trust with members.	Captured	Consumer engagement feedback is vital in projects like this.
LD-WREN-023 WREN	WP7- Test the assumption that co-op’s have more trust than an average organisation.	Captured	Consumer engagement feedback is vital in projects like this.

LD-WREN-027 WREN	WP8 - Lack of knowledge and the difficulty in identifying sources of reliable information. What to do, which technologies are best going forward and the appropriate action to take now. More heating options can become confusing.	Captured	Consumer engagement feedback is vital in projects like this.
LD_WREN-028 WREN	WP8 - Lack of confidence in how technology works. No one solution fits all and what happens if it doesn't work? Potentially large expenditure on items, (eg heat pumps and E.V.) that may or may not work.	Captured	Consumer engagement feedback is vital in projects like this.
LD-WREN-029 WREN	WP8 - Future uncertainty, tariff increases, fuel supply availability and cost.	Captured	Consumer engagement feedback is vital in projects like this.

6 Intellectual Property Rights

A complete list of all background Intellectual Property Rights (IPR) from all project partners has been compiled. The IPR register is reviewed on a quarterly basis. No new foreground IPR has been generated by VENICE during this period.

7 Risk Management

Our risk management objectives are to:

- Ensure that risk management is clearly and consistently integrated into the project management activities and evidenced through the project documentation;
- Comply with WPDs risk management processes and any governance requirements as specified by Ofgem; and
- Anticipate and respond to changing project requirements.

These objectives are achieved by:

- Defining the roles, responsibilities and reporting lines within the Project Delivery Team for risk management;
- Including risk management issues when writing reports and considering decisions;
- Maintaining a risk register;
- Communicating risks and ensuring suitable training and supervision is provided;
- Preparing mitigation action plans;
- Preparing contingency action plans; and
- Monitoring and updating of risks and the risk controls.

7.2 Current Risks

The VENICE risk register is a live document and is updated regularly. There are currently 51 live project related risks and one documented issue. Mitigation action plans are identified when raising a risk and the appropriate steps then taken to ensure risks do not become issues wherever possible. In Table 7-1 below, we give details of our top five current risks by category. For each of these risks, a mitigation action plan has been identified and the progress of these are tracked and reported.

Table 7-1: Top five current risks (by rating)

Details of the Risk	Risk Rating	Mitigation Action Plan	Progress
The smart meter data needed to undertake the predictive analytics for the FE and FNC work is proven to be unusable, or of poorer quality than envisaged	Major	Extensive investigation into alternatives and socialisation of the requirements.	We continue to explore a number of viable alternatives to getting good quality smart meter data for FNC and FE. We expect this to be finalised during the next two months.
It is not possible to get the relevant permissions in place to provide the data needed in order to undertake large parts of the work in the WPs	Major	Investigate all sources of data and continue to plan accordingly.	The team have been working through a number of alternative sources of data and this is a key focus for the team. We believe as with Smart Meter data that this will be resolved over the coming two months.
Engagement during pandemic - significantly more challenging due to	Major	Variety of community engagement techniques used, using existing social	We will monitor this throughout the project and plan accordingly if

changing government guidelines, nervousness of face to face contact/ groups etc., people do not have the capacity, or are unable to prioritise engagement due to more pressing matters. Particular higher risk with engaging vulnerable customers, less so with wider stakeholder engagement.		networks and socio-support groups	evidence starts to emerge. It is important that the community part of this project is successful.
Publically available supporting data is of insufficient quality to deliver against milestones and outputs	Major	Explore as many alternatives initially and down select as appropriate	We continue to explore a number of options around all the data that will be needed and we expect to have a vision for how this will be addressed over the coming two months.
Vulnerability outreach is unsuccessful/ poor	Major	Recruitment of influential organisations on community advisory board to broker good relationships	Planning for the community outreach as early as possible is vital to that end the communications plan for the outreach has been started.

Table 7-2 provides a snapshot of the risk register, details graphically, to provide an on-going understanding of the projects' risks:

Likelihood = Probability x Proximity						
	Certain/Imminent (21-25)	0	0	0	0	1
	More likely to occur than not/Likely to be near future	0	0	0	0	0
	50/50 chance of occuring/ Mid to short term (11-15)	0	0	2	1	3
	Less likely to occur/Mid to long term (6-10)	0	0	6	4	3
	Very unlikely to occur/Far in the future (1-5)	0	2	4	8	17
		1. Insignificant changes, re-planning may be required	2. Small Delay, small increased cost but absorbable	3. Delay, increased cost in excess of tolerance	4. Substantial Delay, key deliverables not met, significant increase in time/cost	5. Inability to deliver, business case/objective not viable
		Impact				
	Minor	Moderate	Major	Severe		
Legend	6	31	10	4	No of instances	
Total	51				No of live risks	

Table 7-2: Graphical view of risk register

Table 7-3 provides an overview of the risks by category, minor, moderate, major and severe. This information is used to understand the complete risk level of the project:

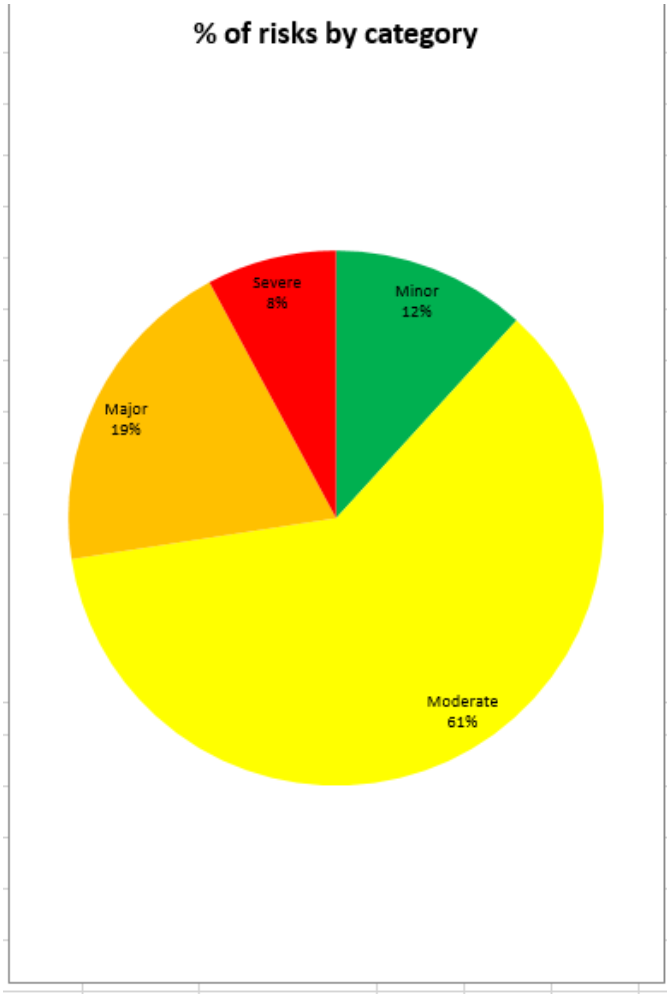

Table 7-3: Percentage of risk by category

7.3 Update for risks previously identified

Other significant risk previously identified are as follows:

Details of the Risk	Risk Rating	Mitigation Action Plan	Progress

7.4 Current Issues

One documented project issue is being proactively managed and is subject to an ongoing Change Request.

Details of the Issue	Mitigation Action Plan	Progress
Your Coop Energy (YCE)have pulled out of the WREN work package, this means that there have no route to market for the business model designs and proposed Ofgem Sandbox trial.	We have been discussing a number of options with WREN including trying to find another supplier, descoping the work, various alternative approaches to achieving similar outcomes.	We have a proposal from WREN and Planet A Energy which we agree should still give the project a similar outcome and are progressing a change request to this effect.

8 Consistency with Project Registration Document

The scale, cost and timeframe of the project has remained consistent with the registration document, a copy of which can be found here:

https://www.westernpower.co.uk/innovation/projects/vulnerability-and-energy-networks-identification-and-consumption-evaluation-venice

9 Accuracy Assurance Statement

This report has been prepared by the VENICE Project Managers, Stuart Fowler and Marnie Ellis and reviewed by Ryan Huxtable and approved by the Innovation Manager (Yiango Mavrocostanti).

All efforts have been made to ensure that the information contained within this report is accurate. WPD confirms that this report has been produced, reviewed and approved following our quality assurance process for external documents and reports.

Glossary

Abbreviation	Term
CEP	Community Energy Plus
DCC	Data Communications Company
IPR	Intellectual Property Rights
LCT	Low Carbon Technology
NIA	Network Innovation Allowance
NZC	Net Zero Community
PRG	Project Review Group
PSR	Priority Services Register
VENICE	Vulnerability and Energy Networks, Identification and Consumption Evaluation
WP	Work Package
WPD	Western Power Distribution
WREN	Wadebridge Renewable Energy Network
WS	Workstream
YCE	Your Coop Energy

Appendices

Western Power Distribution (East Midlands) plc, No2366923
Western Power Distribution (West Midlands) plc, No3600574
Western Power Distribution (South West) plc, No2366894
Western Power Distribution (South Wales) plc, No2366985

Registered in England and Wales
Registered Office: Avonbank, Feeder Road, Bristol BS2 0TB

wpdinnovation@westernpower.co.uk
www.westernpower.co.uk/innovation

WESTERN POWER DISTRIBUTION
Serving the Midlands, South West and Wales