



TVV
The Thames Valley Vision

Driving the UK's Low Carbon Economy

At SSE Power Distribution we are committed to ensuring that the electricity the UK needs is provided in a reliable and sustainable way.

We are constantly looking at ways in which we can improve how our networks operate. As part of that programme of continual improvement, we have launched the TVV project, supported by Ofgem's Low Carbon Networks Fund, which aims to solve a number of the challenges the islands' networks are currently facing.

The Thames Valley Vision (TVV) is a £30 million project which will apply state of the art 'smart grid' technology to allow the network to do the job it needs to do in the 21st century.

It will:

- accommodate low carbon investment & connections
- create a communication network in Bracknell and the Thames Valley to discuss low carbon solutions and demand management capabilities
- devise new commercial arrangements so no one is left behind as we move to a low carbon economy
- develop the modelling and planning tools necessary to facilitate, active network planning and management
- create a world leading learning centre to disseminate knowledge gained

Our project, which begins in early 2011, will last for five years and will have a lasting effect on the infrastructure in the Thames Valley. We are looking forward to making the Thames Valley's electricity network the most advanced in the world, and to working with the communities in the area to make sure that every opportunity is taken to make the most of this huge investment.



Mark Mathieson

Director of Distribution, SSE Power Distribution

“The advent of energy efficient smart homes, advances in the development of electrically powered vehicles, and the continued development of renewable energy sources such as geo-thermal and wind power generation to shift the supply from carbon based sources are major factors that will ultimately shape the future of energy supply and consumption.”

The TVV and the Challenges it is seeking to address

To date, our low voltage (LV) networks have been designed similar to a motorway to cater (properly!) for a sunny Bank Holiday Monday - accommodating peak periods but resulting in poor overall utilisation of around 20%. Low carbon technologies will increase peak demand and make utilisation factors deteriorate. Existing procedures will result in overspending on, and delays to, load related reinforcement restricting low carbon connections and a consequential deterioration in Quality of Supply. However, the alternative solutions – which without careful evaluation may promise much, but deliver little - must similarly not be allowed to result in similar unnecessary overspecification, delay and cost.

Our project will develop and rigorously validate new least cost solutions, including making extended use of existing business systems, where practicable. The project will determine the optimum amount of monitoring required, and develop the modelling and planning tools necessary to facilitate, active network planning and management intended to optimise load-related capex and improve asset utilisation factors. We will engage with a wide range of customer groups in Bracknell to identify benefits for both customers and DNOs.

“A genuine opportunity to evaluate the ‘human touch’
on our distribution networks”

This aims to avoid potential issues like the famous ‘wobbly millennium bridge’ in London where the impact of humans did not featured in it's initial deigns”



The Solutions to these Challenges

Vital to the solution is a location that reflects a representative customer base and network topography, so that the outputs present a scaleable solution to the rest of GB.

Since Bracknell is not involved in other industry low carbon initiatives, the impact and results of our own activities will not have the “white noise” of other initiatives in the area. This, combined with the diversity in demographics, housing type and network topology will present the local challenges to be addressed by our alternate technology and commercial solutions, and ensure that our Project will be representative of the required approach, learning, and scaling benefits for the vast majority of GB.

Cllr Ian Leake, Mayor of the Borough of Bracknell Forest said at the project's launch event on 12th August 2010:

“The Low Carbon Network Fund signals a very different approach to the supply and consumption of electricity in the future and I hope that the Borough of Bracknell Forest, in the guise of businesses and the Community, can be at the forefront of this very positive opportunity”



The Mayor of the
Borough of Bracknell
Forest, Ian Leake

How will the TVV be achieved

Our Project will develop a **Monitor, Model and Manage methodology** to provide a corporate and electricity industry alternative to traditional network reinforcement, to determine the most efficient and effective ways to reliably meet the needs our customers over the coming years, and longer time horizon to 2050. We therefore propose to:

- **Monitor** real time data on our networks, and establish a level of 'observability' not previously envisaged, to anticipate low-carbon related network constraints before they impact the system and affect quality of supply;
- **Model** and forecast how energy will flow in a low carbon distribution network, and design and develop the tools, systems and processes required for network forecasting, operational planning and investment methodologies in the future. These will provide key learning and real applications to allow the UK power sector to determine alternative network and customer based solutions to traditional re-enforcement required to;
- **Manage** the network by introducing new short term operational procedures; utilising new network technologies; and engaging industrial, commercial, small/medium enterprise (SME) and domestic customers in solutions that will deliver real benefits to them. Such alternative solutions will comprise:
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 - Active Network Management; embedded generation control; self-configuring switchgear; real-time cable rating; and network storage applications;
 - I&C, SME and Domestic customer demand side response through the promotion of technology and commercial incentives;
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Our Project will also **Promote** low carbon solutions to determine the most effective solutions and **Engage** with the local community and other industry parties, to contribute to our Project and provide valuable learning channels and facilities

Communication

The progress and successes of the Thames Valley vision will be disseminated not only through our consumer consortium meeting but also our website along with various executive speaker events supported by the Thames Valley Chamber of Commerce.



TVV Partners

A key benefit to the project and a positive for the Thames Valley as a whole is the involvement of organisations that are proven in the industry for delivery quality solutions to energy related issues. We also have the full support of a genuinely forward thinking council with Bracknell Forest Council. Partners to the TVV can be seen below;



Producer and service provider for power generation and energy delivery/ technology/ solutions



Local Government Authority responsible for the delivery of public services for the borough of Bracknell Forest



The University of Reading is ranked as one of the UK's 20 most research-intensive universities providing world leading research for a range of industries



Honeywell is a company that invents & manufactures technologies & delivers services to address tough challenges linked to global trends such as safety, security, and energy across the globe



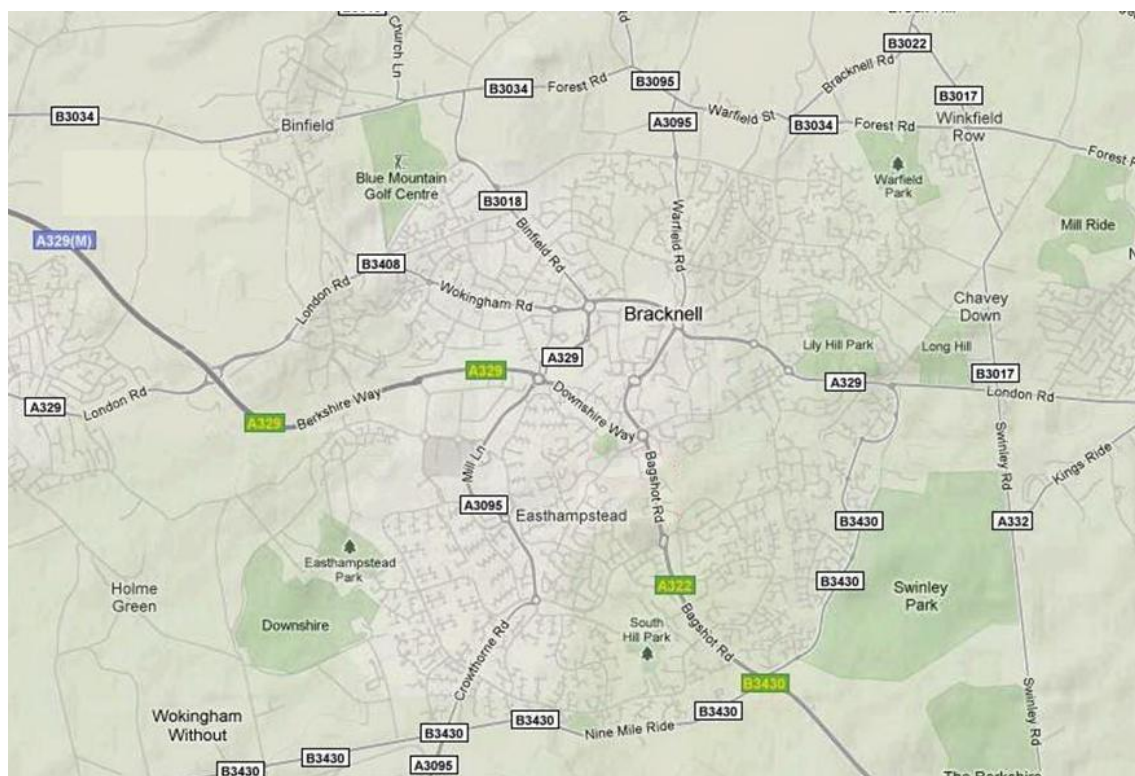
KEMA is a global company specializing in strategic & technical energy consulting, operational support, measurements & inspection, and testing & certification

Benefits to Bracknell and the Thames Valley

For Domestic and SME customers, this will provide the ability to connect and manage new low carbon devices, more cheaply and quickly than would otherwise be the case (lowest cost DUoS); and to have the choice of new pricing/tariff structures at lower cost, at appropriate levels of customer service and quality of supply.

For I&C customers, our Project will promote **net community low carbon solutions** - in addition to advancing self-interest Carbon Reduction Commitment energy efficiencies- to a range of local, regional, national and international companies. Since these customers are large consumers of energy, we expect a more substantial and immediate impact on volumes – particularly targeted at peak avoidance measures on the High Voltage (HV) network. We believe that the Consumer Consortia and Low Carbon Club will provide the basis for deployment across GB based on the initiative of the customers themselves. We believe that this approach will be significant and is justification for the claimed peak avoidance benefits

Through project preparation discussions, we have already promoted the opportunity for **£30million** of renewable energy projects, which would not have materialised on the timeframe of the next DPCR (distribution price control review).



Our Project will be conducted on such a scale, and in such a manner that individuals, communities and businesses across the UK will see the opportunity and derive the benefit. We intend to engage and communicate with all our stakeholders with the objective that “no-one is left behind”.

Thames Valley Vision - Key Messages

The Three M'S – Introducing the New Monitor, Model and Manage Network Process

Value Added Solutions will be Encouraged to Meet the Low Carbon Challenge

Variable Electricity Generation – The Way of the Future

Innovative Solutions to Increase Observability of the Electricity Networks

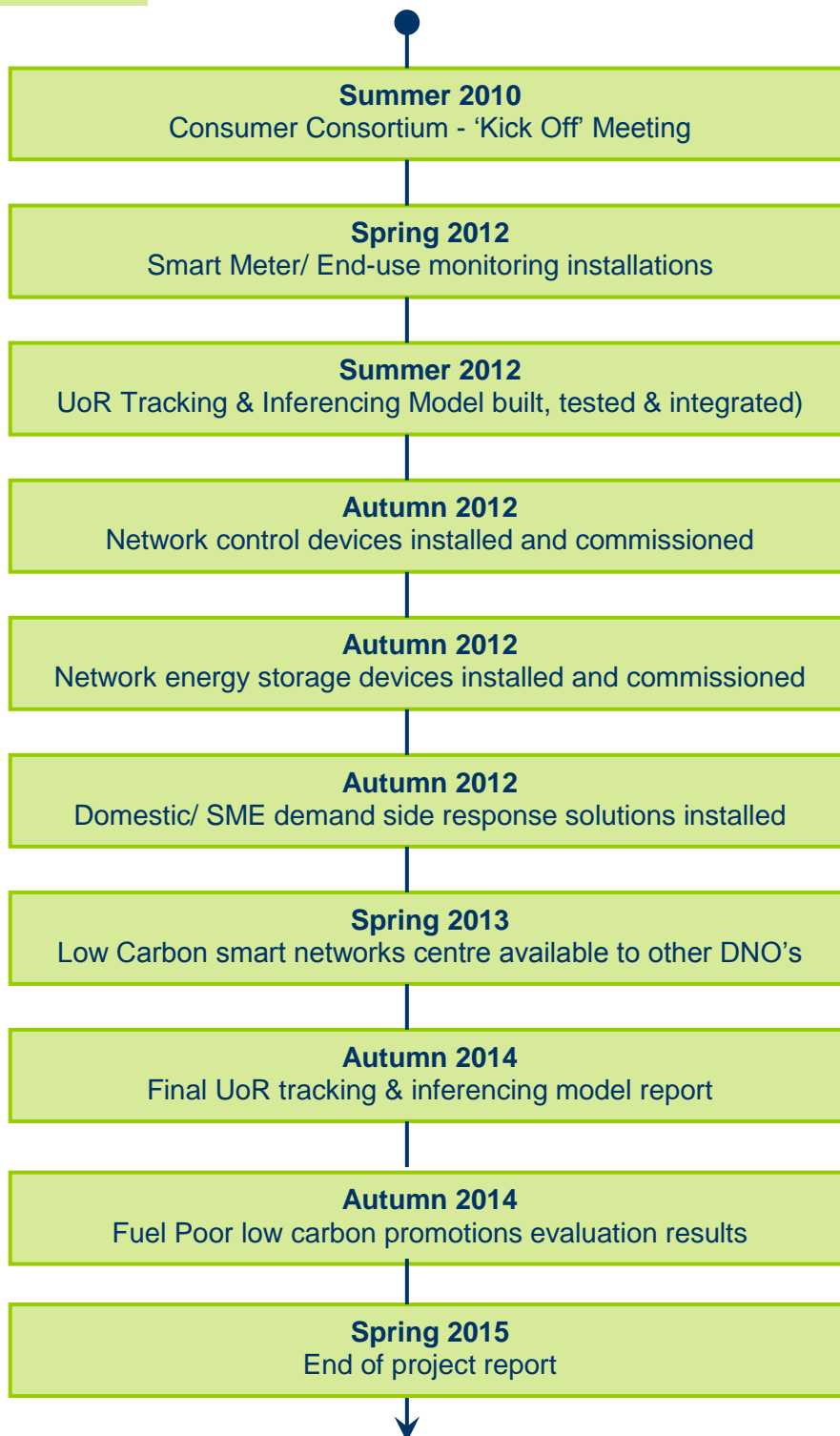
Sourcing Capital Funds to Accelerate the Low Carbon Agenda in Bracknell and the Thames Valley area

Incentivise Customers to Explore New Energy Opportunities

OFGEM Looking for Aspirational Low Carbon Network Projects to Help Solve the UK's Network Challenges of the Future

No one will be left behind!

TVV Timeline



We are working closely with many of the large industrial & commercial business in Bracknell and the Thames Valley area as well as the local council and housing associations.

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