

NINES– Removal of DSM Capability



Scottish & Southern
Electricity Networks






Introductions

- Casey Bauchope – NINES DSM Project Manager
- Stevie Adams – NINES Senior Project Manager

Agenda

- Outline of the NINES Project
- The Impact of NINES on DNOs
- NINES Connected Assets
- DSM Background and Achievements
- Customer Impact on NINES
- Overall NINES Achievements
- Thank You and Questions

Future Networks

Reliability & Availability						
Connections & Capacity				 <small>Solent Achieving Value from Efficiency</small>		Customer & Social Obligations
	Network Damage Reporter	Field Team Support Tool	Pole mounted Auto-Re closer Automated Distribution Evaluation(Parade)	Automated Loop Restoration	ACCESS – Local Constraint Management (Mull)	
	Alternative Cable Installation Methods (ACIM) – Phase 1	Assessment of Remotely Operated Mulching Methods	Thermal imaging Observation techniques for Underground Cable Networks	Network Optimisation Project (NOP)	Management of plug-in vehicle uptake on distribution networks	
Safety, Health & Environment						

NINES – Overall background and aims

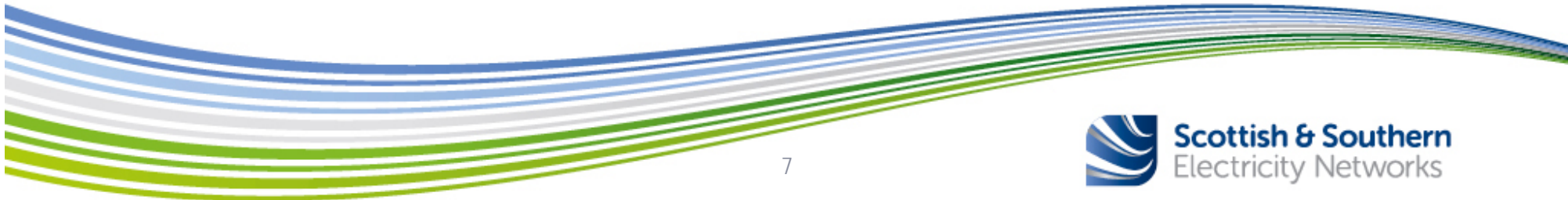
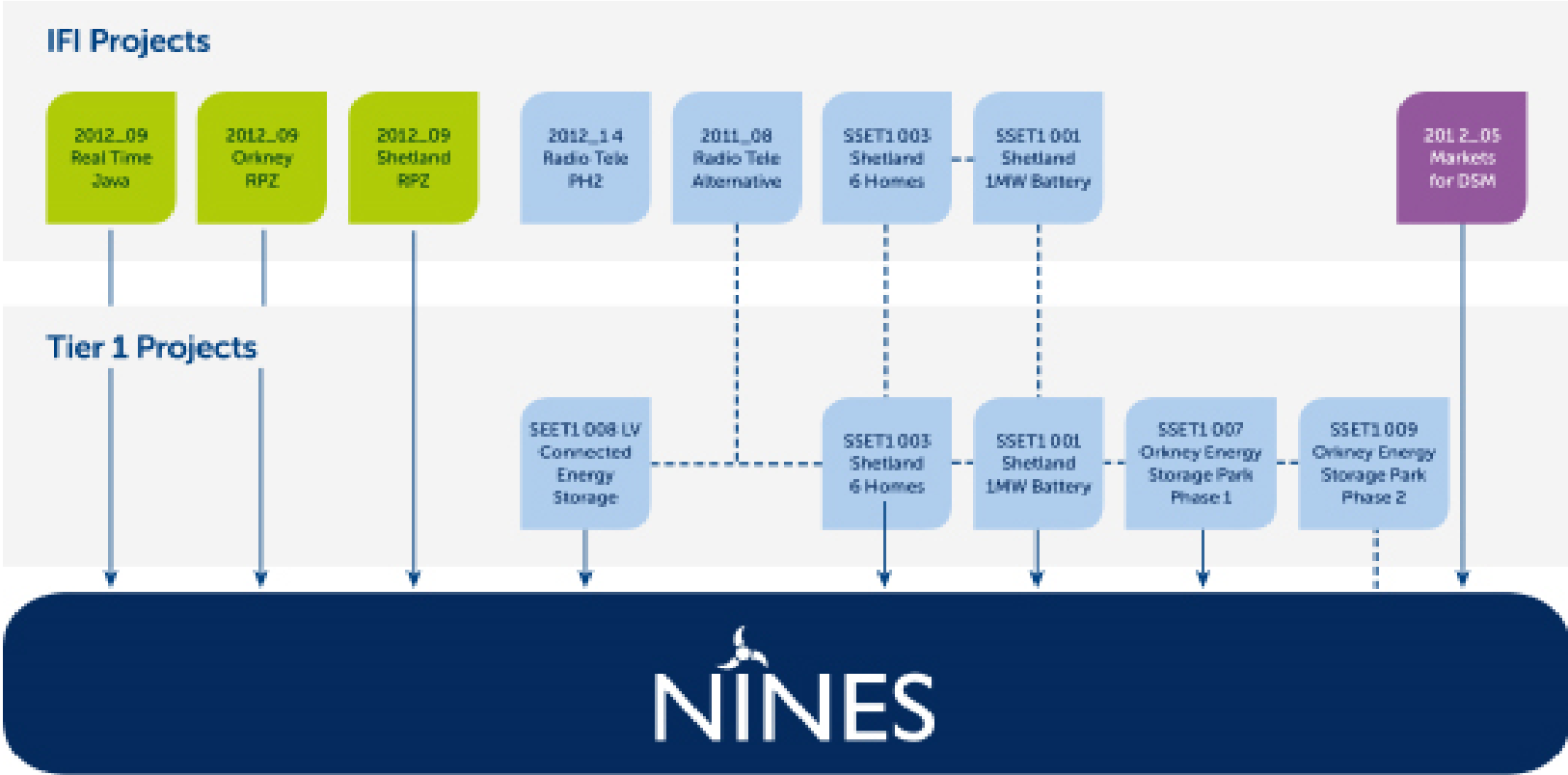
- Ofgem funding was agreed in Sept. 2011
- Value of the project is £15.33m
- Timescale – five year project ended Dec. 2016
- Key objectives:
 - a reduction in maximum demand – by using the connected assets to help manage peaks and troughs on the demand profile
 - a reduction in the electricity units generated by fossil fuels - by the introduction of managed renewable connections.



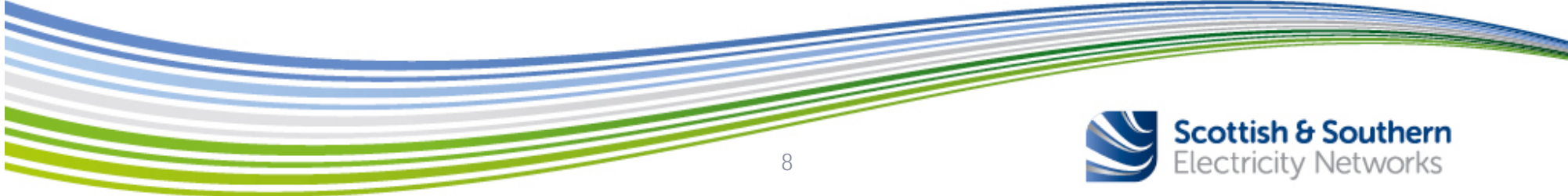
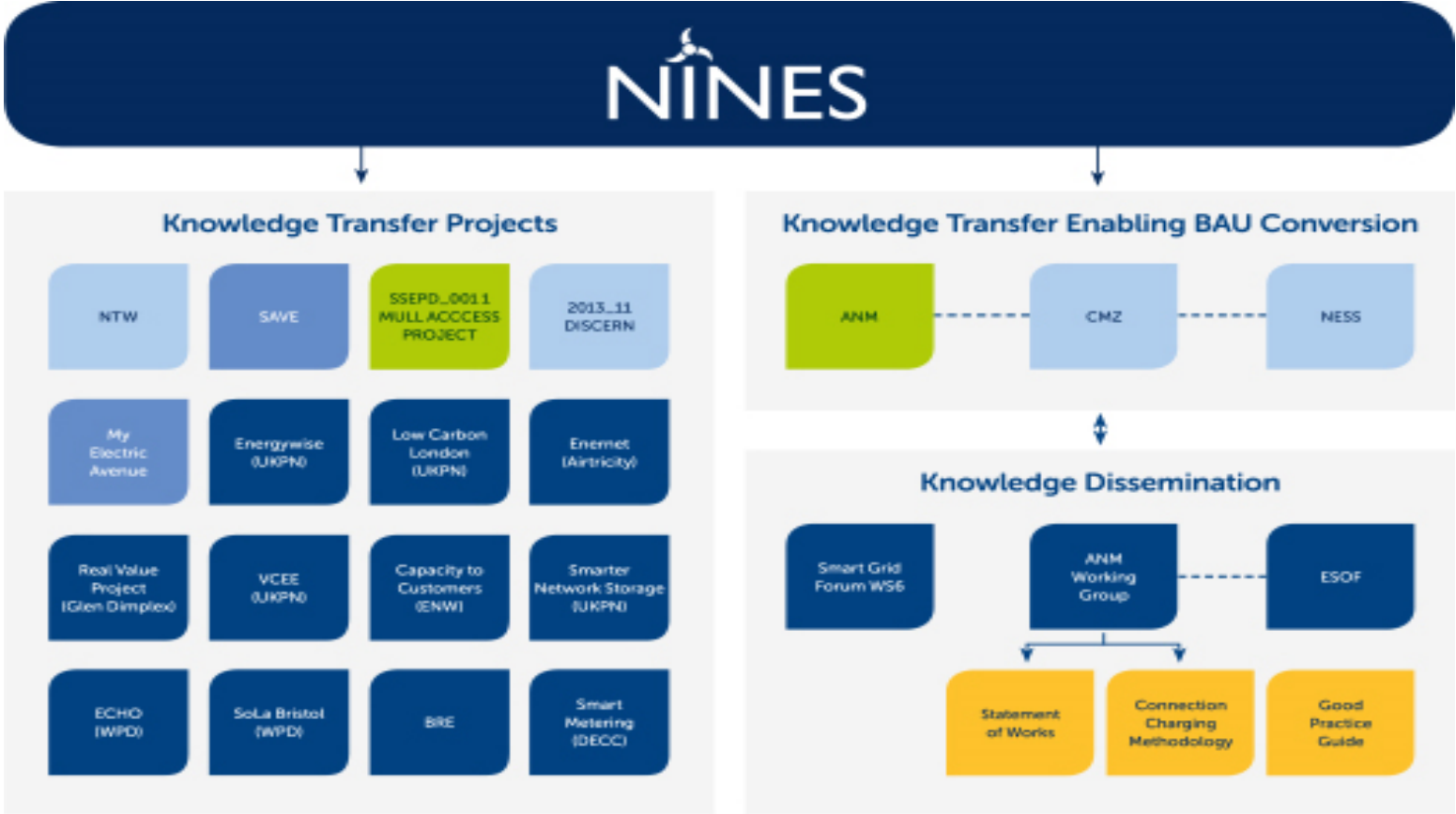
NINES Headlines

- The first SMART GRID in the UK.
- Led the way in utilising Domestic Demand Side Management in the U.K.
- The highest customer sign up rates across all innovation projects to date.
- Treble the amount of renewable generation capacity on Shetland.
- A 5.4% increase in renewable generation in 2015/16 (measured against 2013/14)
- An estimated reduction in CO₂ emissions from fossil fuels of 11.8% in 2017/18

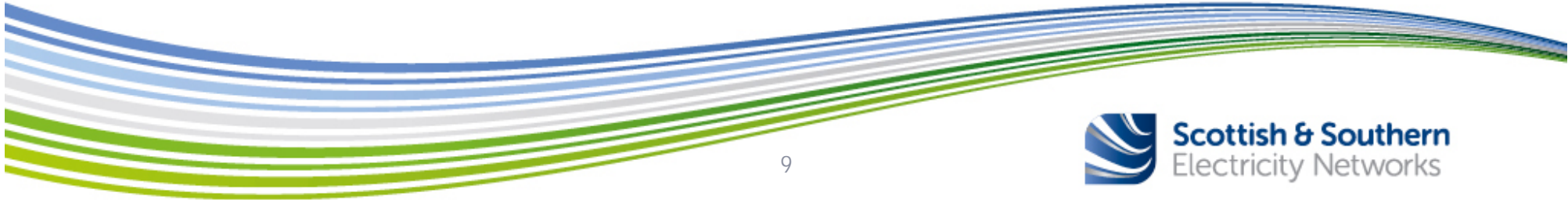
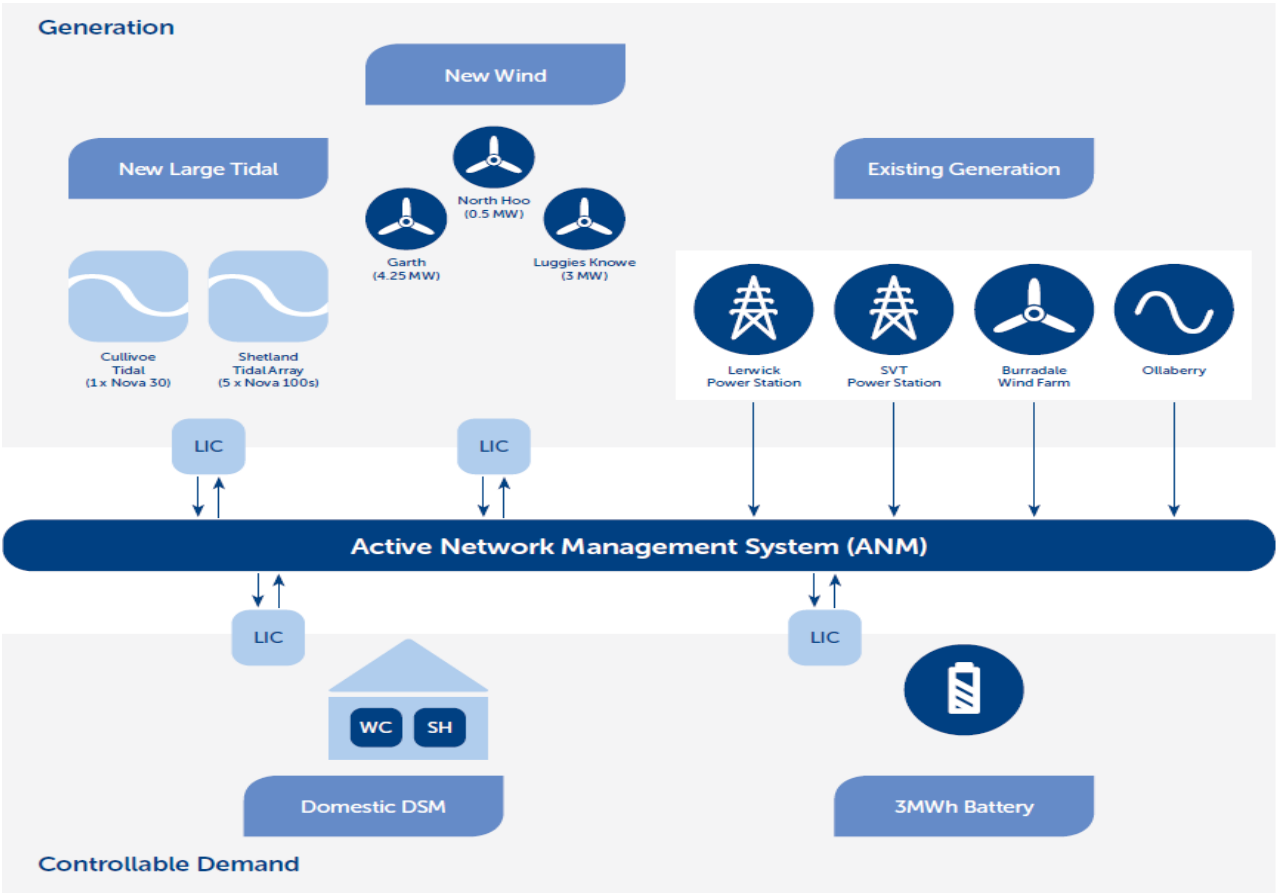
Projects that informed NINES



Projects informed by NINES



NINES Overall - Connected Assets



NINES Objectives

NORTHERN ISLES NEW ENERGY SOLUTIONS (NINES)

“In remote locations how can electricity and the grid be managed more effectively?”

- More efficient heating systems in a number of island homes
- Maintain supply and reduce impacts of peak demand via more efficient control
- Facilitate the increase in the % of electricity that comes from renewable sources

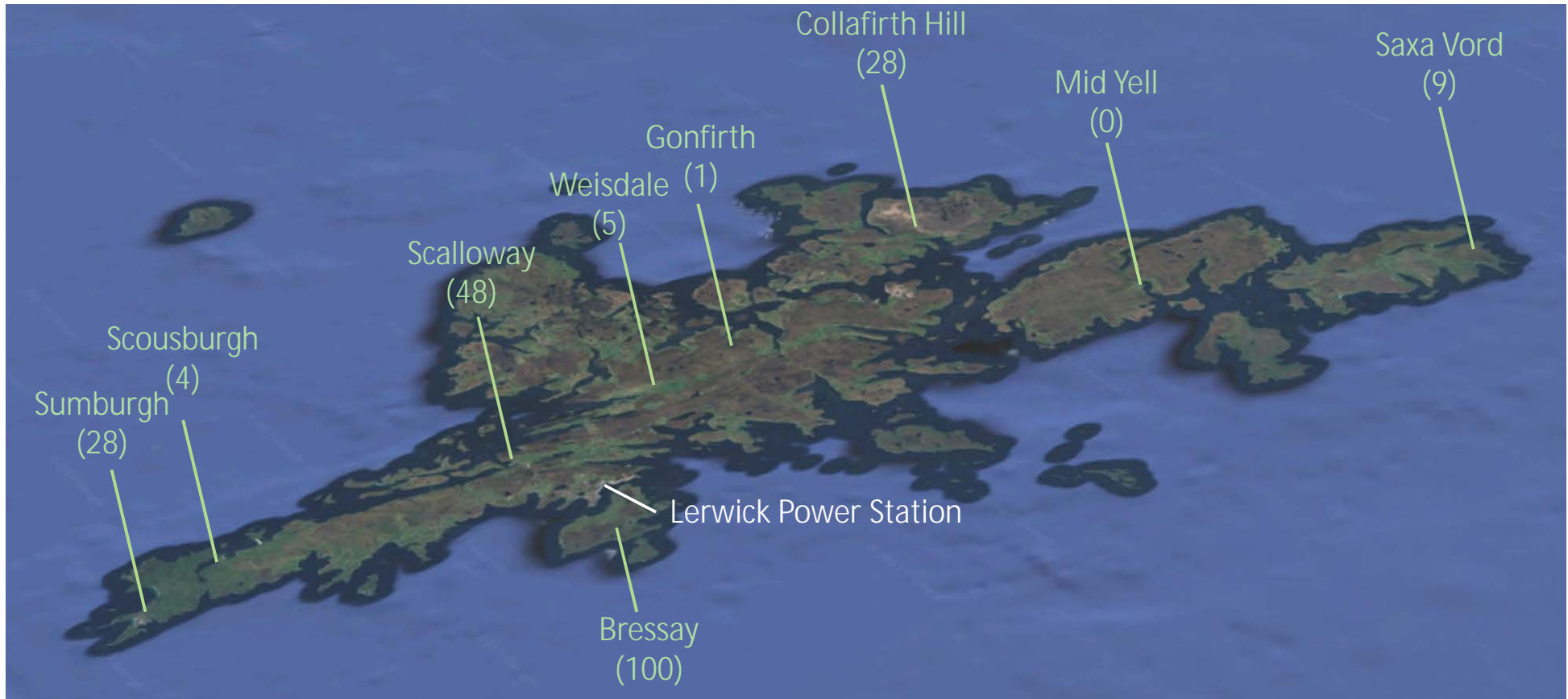
The infographic features a central illustration of a remote island with a house, solar panels, wind turbines, and a boat on the water, set against a backdrop of green hills and a blue sky with a grey cloud.

NINES DSM – What is it?

- Working with HHA, domestic space and water heating appliances were installed in 234 HHA homes across The Shetland Isles.
- Where customers allowed us to, we controlled when the energy required for each appliance was delivered.
- Throughout the project we worked with a number of key partners. These include but are not limited to:
 - Smarter Grid Solutions (SGS)** – Providers of ANM technology
 - University of Strathclyde (UoS)** - Research and Academic Partner
 - Glen Dimplex** - Developed the heating systems and home communications.
 - Hjaltland Housing Association (HHA)** – responsible for the installation of the storage devices in 234 properties.
 - Airwave Solutions Ltd.** – provided the wider area communications network (WAN) across Shetland.

Location of the 9 base stations

Shetland



DSM Principles

- DSM should not adversely increase the customer's energy usage compared to a standard heating and hot water system.
- DSM should not impact/change the commercial relationship between customer and their nominated energy supplier.
- The overall customer experience must be the same or better than the current non DSM model.
- No changes will be made to the Regulatory and Industry Frameworks.
- Customers will not be asked or actively encouraged to change their behaviour

DSM Achievements

- DSM, NINES has proven that a distribution system can be operated securely with a high penetration of renewable generation.
- DSM can help to address network issues such as voltage stability and frequency fluctuations.
- NINES demonstrated that it was possible to schedule demand either at times where intermittent renewable generation would otherwise be constrained, or when demand was low with no adverse impact to customers.
- But more importantly.....

Customer Impact

- NINES did not require customers to change their behaviour.
- Working in partnership with HHA worked well when recruiting and communicating with the customers involved in DSM.
- Analysis and experience during NINES shows that DSM does not have a negative impact on customers, including our vulnerable customers.
- Following the installation of the new heating and hot water systems, some customers appear to be taking the benefits in terms of comfort and some cost.
- The customer sign up rate was higher than we expected and higher than any other DNO project involving DSR/DSM. This shows how you have helped us achieve the goals of the project.

Customer Sign-up Rates

High and Consistent Customer Sign Up Rates:

85% of Customers Actively Participating

3% of Customers Declined To Participate

5% of Customers Opted Out DSM (DSM Has Been Removed)

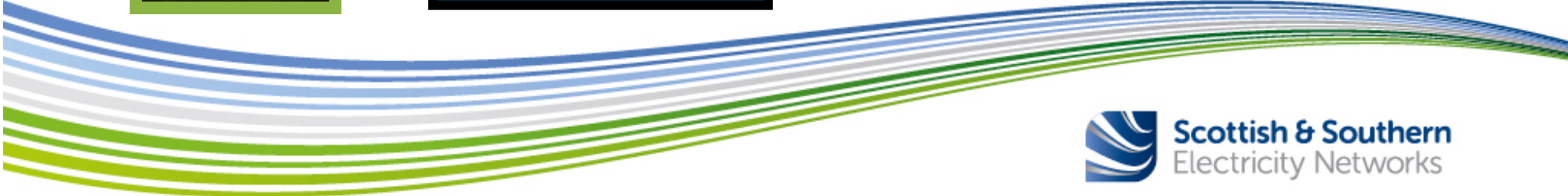
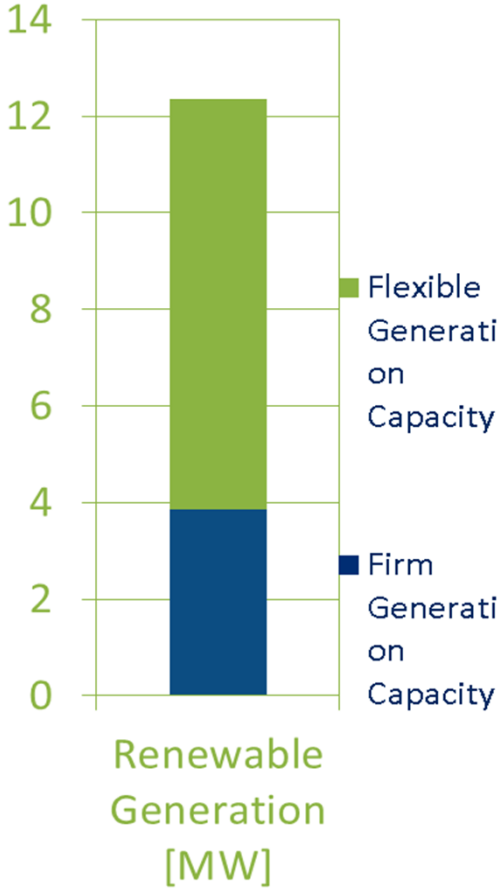
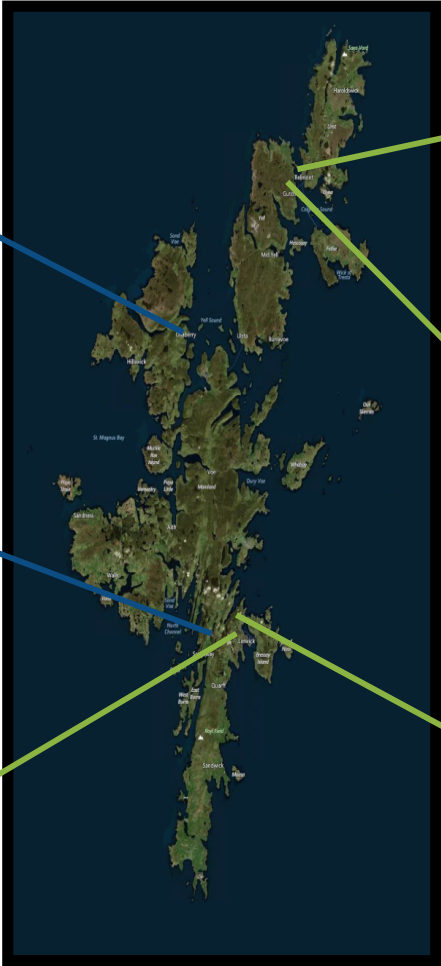
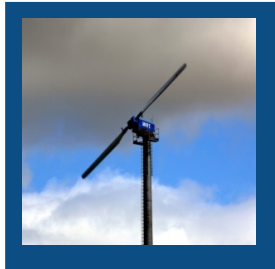
7% of Customers Who Do Not Respond To Communications

Significantly higher than in demand-response programmes with variable pricing



NINES DSM Achievements

With NINES



Thank you!!

www.ssen.co.uk/innovation
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Questions?