

# **SHETLAND STANDBY SOLUTION**

## **Pre-Qualification Information Pack**

**13832**

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## 1. Introduction

- 1.1. Scottish Hydro Electric Power Distribution plc (“SHEPD”) is undertaking a competitive process with the aim of identifying a new standby energy solution for the Shetland Islands.
- 1.2. This Pre-Qualification Questionnaire (“PQQ”) and associated documentation has been issued by SHEPD, an SSE Group company, in connection with a competitive procurement event conducted in accordance with the Negotiated Procedure under Utilities Contracts (Scotland) Regulations 2016.
- 1.3. The purpose of this Pre-Qualification stage is to:
  - Invite Expressions of Interest from potential Applicants.
  - Assess the capabilities of Applicants and their proposed solutions.
  - Provide potential Applicants with project information relevant to the upcoming Invitation to Tender (“ITT”) stage.

## 2. Project Overview

### Shetland Standby Project

#### Background:

Scottish Hydro Electric Power Distribution (SHEPD) owns and operates the electricity network in the north of Scotland. This includes a discrete network for the Shetland Islands, which is currently not connected to the mainland electricity network, and as a result SHEPD acts as System Operator for the Shetland Islands.

Of the two main electricity generators, Lerwick Power Station (LPS), in its current state, is nearing the end of its operational life as a full duty power station and supply from another main island source is not certain beyond 2024. From November 2024, the Shetlands will be connected to the mainland GB electricity system via SSEN Transmission’s 600MW HVDC link and associated transmission network.

Following extensive technical and commercial analysis of options available, SHEPD submitted its proposal on back-up arrangements to Ofgem in December 2020. Following subsequent engagement with the regulator, SHEPD will progress standby proposals which incorporate:

- The use of Lerwick Power Station (LPS) in standby operation mode from November 2024 until 2035 following successful commissioning of the transmission link and the new Grid Supply Point (GSP) connecting the transmission and distribution systems at Gremista, Shetland.
- The provision of innovative fault ride through / island mode stability / fast response (hereafter referred to as ‘Standby’) services or equipment by November 2024 to provide continued security of supply to homes and businesses on the islands in the event of planned or unplanned outages on the transmission link.

SHEPD now wishes to pre-qualify suitable suppliers to provide Standby equipment or services for a period of 10 years from November 2024.

When the Transmission Link is unavailable incorporating both the subsea link and wider transmission network, due to outages or faults, it will be necessary for SHEPD to provide a reliable standby supply for Shetland. SHEPD intends to convert the existing LPS to operate in standby mode, capable of being started and generating power to Shetland within 30-60 minutes. There will be a requirement for additional standby equipment and/or services to provide the

energy, stability and voltage support to SHEPD's Shetland network until LPS generators can be started and supplying customers.

For the avoidance of doubt this PQQ is for the provision of Standby services or equipment only.

Requirements for Standby Services and Equipment:

**Fast Response** – Energy Storage technology that will avoid supply interruptions to the distribution network after HVDC/132kV network disconnection by instantaneously injecting sufficient power into the distribution network until conventional standby generating plant can meet island demand. It is envisaged to require approximately 55MW/48MWh capacity. The speed of response will be defined at the ITT stage but is currently envisaged to be below 150ms.

**Fault Ride Through / Island Mode Stability** – Inertia Device or equivalent technology that will mitigate transient frequency/voltage increases on the distribution network during the period of HVDC fault event and before the 132kV network can achieve disconnection (120ms). Disconnection from the HVDC should consider 600MW of generation from onshore windfarms (41% Type 3 and 59% Type 4) and a minimum Shetland demand of 10MW and support the distribution network in island mode by providing inertia and short circuit infeed. It is envisaged to require approximately 20MVA H=5.25s synchronous compensator and flywheel, or equivalent. All technology capable of meeting the functional requirements will be considered, including synthetic inertia devices.

Services and/or equipment will need to be installed and providing the services no later than November 2024.

Demand varies throughout the day and throughout the year, the existing minimum demand is 11MW and the maximum demand is 45MW. Demand is forecast to grow to over 60MW in order to meet Net Zero targets by 2050, it is therefore important the selected solution is modular/scalable to be incorporated as the demand grows.

The competitive procurement process is also open to smart, flexible, innovative and hybrid solutions to the extent they do not compromise security of supply and are able to help meet Shetland's evolving energy needs.

This will include integration with existing generation assets and must also allow for the integration with the Shetland Active Network Management (ANM) scheme (see Appendix A). It is for the market to determine which technologies could be offered to meet the requirements for Shetland, and the competitive process will not be technology specific. All technologies and services will be able to participate in the competitive process, providing they are able to meet the requirements. We propose that all options for Standby solutions for Shetland which are paid for by SHEPD require to be submitted via this procurement process or future competitive processes.

To facilitate both the forced and planned transition from the Transmission Link to the Shetland demand running islanded from the GB mainland, it is envisaged this will involve SHEPD entering into contracts with service providers and/or equipment suppliers for the provision of a combination of: (i) energy storage; (ii) inertia and system stability and (iii) voltage and frequency support. However, service providers will be free to provide other services (if possible/allowed) when the link is available to the extent that this does not negatively affect the provision of the Standby service. (Parties should engage with NGENSO to determine the feasibility of provision of other services from Shetland to GB.)

Funding for SHEPD's standby proposals will be subject to determination by Ofgem as part of the RII0-ED2 price control process (by December 2022), assessed on the basis of whether they are economic and efficient.



### 3. Pre-Qualification Stage: Documentation

- 3.1. The table below provides an overview of the Pre-Qualification documentation and where these have been made available to potential Applicants. A response to the Pre-Qualification Questionnaire is a mandatory requirement of this stage.

Document Name	Document Location	Applicant Required Action
Shetland Standby Pre-Qualification Information (13832) (This document) (plus, Appendices)	<a href="http://www.sse.com/potential-suppliers">www.sse.com/potential-suppliers</a>	Review content and use as guidance for completion of PQQ response.
Shetland Standby PQQ Questionnaire  https://www.find-tender.service.gov.uk/ Publication reference: 2021/S 000-022833	<a href="http://www.sse.com/potential-suppliers">www.sse.com/potential-suppliers</a>	Complete responses to all relevant questions and submit to james.1.flanagan@sse.com by <b>1200 hours on Friday 18<sup>th</sup> October 2021.</b>

### 4. Pre-Qualification Stage: Questionnaire Guidance for Applicants

- 4.1. A description of the Lots is provided in Section 6.1. The following provides specific guidance for Applicants in relation to the Questionnaire and how the Lots are addressed within the Questionnaire:

- Applicants must complete a response to all questions in the Shetland Standby PQQ
- **Applicants should note that there are Pre-requisites for qualification, therefore as a minimum Applicants must achieve a pass in all of the Sections marked as pass/fail. Failure to do so will result in exclusion from this procurement process.**
- SHEPD will assess each Lot independently from each other so as to provide comparable scores during our PQQ evaluation exercise.
- Where multiple lots are bid for, each Lot will be assessed independently and added to the pre-requisite scoring to determine a score for that Lot and their rank against other bidders within that Lot.

- 4.2. During the Pre-Qualification stage, the intention is to arrive at a short-list of qualified potential Applicants who will then be invited to submit formal bids by way of completion of a Tender document. SHEPD currently proposes that a pass-mark of 50% will be required to be achieved by Applicants in order to qualify for ITT stage. Based on the number of successful PQQ responses, we reserve the right to amend the minimum required score. **Only Applicants who have qualified through the Pre-Qualification stage will be invited to tender. A successful response to the PQQ is a mandatory requirement for the ITT stage.**

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- 4.3. No information contained in this Pre-Qualification, or in any communication made between SHEPD and any potential Applicant in connection with this Pre-Qualification, shall be relied upon as constituting a contract, agreement or representation that any contract shall be offered in accordance with this Pre-Qualification. SHEPD reserves the right, subject to the appropriate procurement regulations, to change without notice the basis of, or the procedures for, the competitive tendering process or to terminate at any time. Under no circumstances shall SHEPD incur any liability in respect of this Pre-Qualification or any supporting documentation.
  - 4.4. All information provided in response to the PQQ will be treated as strictly confidential.
  - 4.5. As a vertically integrated company, SSE adheres to strict observance of business separation between the regulated Networks businesses (of which SHEPD is part) and other SSE companies responsible for generation, supply and other commercially competitive activities. Observance of business separation is required by and regulated by Ofgem. Any information submitted by Applicants in PQQ documentation will be subject to business separation and will not be accessible to any other non-Networks or commercially competitive SSE company.
  - 4.6. Applicants are required to submit the completed PQQ document by email to james.1.flanagan@sse.com, **no later than 1200 hours on 18 October 2021**
  - 4.7. Please note that completed PQQs received after the closing date may be rejected.
  - 4.8. Applicants who are proposing to submit responses as part of a joint venture or collaboration should do so under the entity that represents that joint venture or collaboration. If no joint venture or collaboration has been formed yet, please submit responses on behalf of the lead company on behalf of that joint venture or collaboration, unless specific questions indicate otherwise.
  - 4.9. Any queries and/or requests for clarification in respect of the PQQ should be submitted in writing to SHEPD's named contact, James Flanagan by email to james.1.flanagan@sse.com , and **must be received at least 5 working days prior to the closing date for responses to the PQQ.** After such time, SHEPD cannot guarantee a response to the query/clarification. SHEPD will ensure that all relevant, non-confidential queries and responses or clarifications made during the pre-qualification process are made available to all Applicants during the process although the querying/clarifying party will not be disclosed.
  - 4.10. Potential Applicants should answer all questions as accurately and concisely as possible. Where a question is not relevant to the potential Applicant's organisation, this should be indicated with an explanation.
  - 4.11. If supporting information is required then please respond in an Appendix to the PQQ document, including reference to the relevant question number within the Appendix file name, and advise in the space provided against each question of the relevant appendix. Applicants are respectfully asked not to include company literature i.e. brochures with their response. This is due to the fact that an assessment model based on specific criteria will be used to evaluate responses which cannot be applied to any such company literature.
  - 4.12. Failure to provide the required information, make a satisfactory response to any question, supply documentation referred to in responses or comply with the requirements may mean that a potential provider is not invited to participate further. In the event that none of the responses are deemed satisfactory, SHEPD reserves the right to terminate the procurement event.
  - 4.13. Potential Applicants must be explicit and comprehensive in their responses to the PQQ as this will be the single source of information on which responses will be scored and are requested to include a single point of contact in their organisation for all correspondence in relation to the PQQ.
  - 4.14. Questions should be answered in English.



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- 4.15. No approach of any kind in connection with this PQQ should be made to any other person within or associated with SHEPD.
  - 4.16. This PQQ is being provided on the same basis to all potential Applicants.
  - 4.17. Should SHEPD so require, all, some or none of the Applicants may be asked to attend an interview to provide further clarification in support of their application. This is at the sole discretion of SHEPD.
  - 4.18. To assist with completion of the PQQ, SHEPD has included this information pack and other supporting information (detailed in Section 3) providing more details on the project.

## 5. **Pre-Qualification Stage: Existing Shetland System and Outline of Requirements**

### 5.1. Current Shetland Energy System

At present the majority of Shetland's energy is primarily generated by Lerwick Power Station (72.8MW) and by Sullom Voe Terminal Power Station (15MW). Additional energy is also provided by distributed generation (DG).

Please refer to Appendix A for details of the existing generation assets on Shetland.

### 5.2. Demand Forecast

To assist potential bidders to identify their preferred solutions SHEPD will utilise the Distribution Future Energy Scenarios (DFES) demand forecast for the Shetland Islands. This primarily is a prediction of demand for power (MW) and energy (GWh) until 2040. The following information has been included in the calculation:

- the existing network load
- additional future loads
- historical economic data – population and GDP
- forecast of economic data – population and GDP
- historical energy data – sales, generation provided and system peaks etc.

There are approximately 14,200 electricity consumers currently connected to the island network, of which around 80% are domestic. Shetland has a strong economy and low unemployment rates, often outperforming the UK and Scotland over the last two decades.

Average day time temperatures rarely exceed 14°C in the summer and fall to an average of 1°C in the winter and at least 2mm of rain falls on more than 250 days a year. Shetland is the windiest area in the UK with the highest number of 'degree' days where heating is required due to the wind chill. This is combined with poor energy efficient housing, usually traditionally built in rural areas.

There is no mains gas supply on the islands, meaning a large proportion of consumers rely on electricity for heating, hot water and cooking. The use of storage heating in Shetland is much greater than elsewhere in GB.

Shetland has a number of larger industrial and commercial consumers, which account for 20% of electricity demand. Fish processors are the largest consumers of energy on the isles, followed by the local authorities, which include the Council and Health Board.

The observed peak annual electricity demand on Shetland is currently 43.5MW in the winter, but night-time minimum demand can be as low as 11MW in the summer. As well as extreme variability in seasonal demand there is also extreme variability in demand within the day, mainly

as a result of the reliance on electricity (rather than other sources of energy, such as gas) and also as a result of climatic conditions. This can introduce significant challenges in order to balance the system.

At this stage, the analysis of all the available data, currently demonstrates that maximum demand is expected to grow from the 2021/22 level of 43.5MW. Demand levels vary between the two scenarios, increasing up to either 58.2 MW or 65.3 MW in RIIO-ED2 (2027/28) and up to either 72.2 MW or 83.5 MW in 2032/33, depending on the DFES scenario. Most of the forecast increase in demand is associated with non-domestic developments on Shetland. Present new connections activity and stakeholder engagement support this forecast increase in demand.

Existing load factors are quite high for the Shetland total demand as a result of the domestic demand being better diversified by the Radio Tele-Switching (RTS) system and the type of commercial/industrial customers supplied having a reasonably constant peak demand throughout the year. This results in the peak spring/autumn and summer demand not reducing as much as usual when compared to the winter peak, only dropping to 75% in summer. This is likely to change in the future as RTS and the associated diversity is replaced with modern alternatives.

Graphs showing historical generation and demand are included in Appendix B for information. SHEPD will share updated demand profile and forecast data at the ITT stage.

### 5.3. Daily load curves

The consumption of energy in Shetland varies significantly during the summer and winter months and therefore SHEPD recognise that the daily load curves are essential for potential bidders to allow them to formulate their bids. A number of daily and annual load curves for summer, winter and shoulder months, in addition to other relevant graphical data, are included in Appendix B. SHEPD will share updated demand profile and forecast data at the ITT stage.

### 5.4. Security of Supply

At present there is no interruption of supply to the Shetland Islands as a result of a First Circuit Outage (FCO) as defined under EREC P2/7, either as a result of planned or unplanned outages. SHEPD is looking to procure a solution which meets the demand forecast plus an appropriate margin which allows SHEPD to meet the security of supply standard, EREC P2/7. The solution should be modular/flexible such that it can be augmented with further capacity or services/technology to meet the future needs of the Shetland Islands.

The SHEPD load estimates and DFES indicate that the Group Demand (GD) for Shetland is likely to increase to either 60.4 MW or 68.6 MW depending on the scenario (DFES System Transformation and Consumer Transformation respectively) by 2028/29 and Shetland will become Class of Supply D for ER P2/7. This will require that for FCOs a minimum of 40.4 MW of demand to be met immediately and the entire GD to be met within 3 hours.

SHEPD intends to maintain the existing security of supply by providing Standby equipment/services to supply the entire group demand immediately for a FCO.

### 5.5. Active Network Management (ANM)

There is an existing Active Network Management (ANM) system on Shetland, this was developed as part of the NINES innovation project by SHEPD and part-funded by Ofgem. More information on the NINES project can be found at [www.ninessmartgrid.co.uk](http://www.ninessmartgrid.co.uk).

The NINES project is now closed and remaining NINES generation assets are included in Appendix A.

Applicants should take the learning and progress of NINES into account when developing their ITT submissions as relevant, to ensure that proposed solutions are informed by NINES.

SHEPD will continue to maintain and develop the Shetland ANM system to facilitate customer connections, where it is economical to do so.

## 5.6 Proposed Contracting Strategy

### Services Contracts

The competitive procurement process will be open to a range of participants and technologies. The preferred solution, if it can be shown to be economically viable, will be to engage a service contract with a preferred bidder, this will align with requirements of the SHEPD business that precludes ownership or operation of Generating Assets (except under specified circumstances). The bid process is therefore open to, and participation is encouraged from, suppliers who can bid in for a service only. The lotting structure under section 6.0 elaborates on this requirement.

The Service Provider shall be responsible for design, build, ownership and operation of their proposed solution and the contract(s) shall be awarded on a design, procure, install, operate & maintain basis.

SHEPD reserves the right to let one or more Contracts based on the best overall energy solution for Shetland being identified through the Tender process.

It is currently envisaged that the Shetland System Operator will be responsible for undertaking the system balancing role on Shetland and will be the contracting party with Service Providers and as such responsible for despatch and balancing arrangements on Shetland during Transmission Link outages.

### Procurement Timetable

Set out below is the anticipated Procurement timetable for this event. This is intended as a guide only and SHEPD reserves the right to amend at any time.

<b>Target Date</b>	<b>Activity</b>
14 September 2021	PQQ Issue date
18 October 2021	PQQ Return date
15 November 2021	Evaluation of PQQs completed
1 December 2021	ITT issued to Qualified Applicants
9 February 2022	Tender Return Date
Late March 2022	Evaluation of Tenders completed
April 2022	Preferred Bidder Status
December 2022	Contracts Awarded
November 2024	Solution delivered (before HVDC connection date)

## **6.0 Pre-Qualification Stage: Standby Solution for Shetland**

The Standby solution for Shetland will be defined from the bids received from the three lots of services:

### **6.1 Description of Contracting Options and Lots**

Bidders are invited to pre-qualify for all relevant Lots.

Bidders are encouraged to provide an overall solution (i.e. the requirements of Lot 1 and Lot 2 (a or b)) as a single solution and/or contract (including forming joint ventures if necessary) if beneficial to the offering.

Consideration will be given to the Lotting structure based on the PQQ responses and may be amended for the ITT.

#### **Lot1) Service for Fast Response/Standby (Energy Storage)**

Functional requirements of Energy Storage will be provided as part of ITT.

#### **Lot 2a) Service for Fault Ride Through/Island Mode Stability (Inertia device or equivalent technology).**

Functional requirements of Island Mode Stability will be provided as part of ITT.

#### **Lot 2b) Purchase of Fault Ride Through/Island Mode Stability Equipment (Inertia device or equivalent technology).**

Detailed equipment specification will be provided as part of ITT.

Term of Service is to be based on a 10-year period to provide a benchmark for the tender.

## **7.0 Contract Terms (Service Contract)**

- 7 SHEPD are preparing draft contracts for inclusion at ITT stage. They are likely to be based on a bespoke contract and will depend on the final structure of the ITT, the identity of the Service Provider, the equipment technology and to reflect regulatory requirements. These contract terms will be drafted on the basis that the Service Provider will design, build, operate and maintain the equipment. SHEPD may consider alternative corporate structures on a case-by-case basis.

## **8 Invitation to Tender Stage: Guidance for Applicants**

8.1 After completion of the PQQ process, short-listed Companies will progress to the ITT stage. SHEPD will issue an ITT document to the short-listed Applicants to complete, price and return. The Applicant's submission must comply with the ITT submission requirements. Additionally, it is expected that a two-stage ITT evaluation exercise will be undertaken as follows:

- Firstly, a financial and technical robustness evaluation.
- Secondly, only those companies that achieve the necessary minimum score in the financial and technical robustness evaluation will progress to a cost / value evaluation, where the 'most economically advantageous' submission, per Lot, will be awarded contracts.

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Offers that do not comply with the ITT submission requirements or technical or financial robustness criteria will be rejected and discounted from any further participation in the Procurement Event.

- 8.2 It is envisaged that in order to ensure the optimum energy solution is found from the ITT process, then the Tender evaluation stage may demonstrate the need to invite revised bids from Tenderers.
- 8.3 To ensure that all viable energy solutions are considered as part of the Tender, SHEPD may also invite Alternative Offers.
- 8.4 It is envisaged that the assessment criteria against which Tenderers will be assessed during ITT stage, will include the following
- Health & Safety
  - Environmental
  - Security of Supply
  - Reliability of Solution
  - Availability of Solution
  - Technology Readiness
  - Compatibility with System
  - Operating Characteristics
  - Outage Rates
  - Earliest Delivery
  - Commercial

SHEPD reserve the right to add to or amend the above list following further development of the requirements prior to the ITT stage.

**Appendix A - Existing Generation Assets on Shetland**

<b>Asset</b>	<b>General description incl. [fuel, output and capabilities to connect more generation]</b>	<b>Ownership</b>	<b>Proposed use after 2024</b>
Lerwick Power Station (LPS)	<p>LPS is a 72.8MW diesel-fuelled originally built in 1953 and is situated at Gremista on the northern outskirts of Lerwick.</p> <p>LPS consists of the 'A' and 'B' stations:</p> <ul style="list-style-type: none"> <li>• 'A' has 6 diesel engines which were installed between 1973 and 1978 and are all at least 35 years old, and two gas turbines; A new 5.8MW unit was installed during 2020/2021</li> <li>• 'B' has 3 diesel engines with waste heat recovery boilers installed between 1984 and 1996, a steam turbine, and small package boiler.</li> </ul> <p>LPS' engines are fired by Gas Oil, and Medium and Heavy Fuel Oil.</p> <p>LPS is dispatched by SHEPD to respond to changes in demand and changes in output from intermittent generation, and "ancillary services" such as frequency support, voltage control, reserve and black start capability.</p> <p>A new 8MW/6MWh Battery energy storage system is being installed at present to support the services required to secure the local grid</p> <p>LPS currently meets around 45% of Shetland demand over the course of a year. All fuels are shipped into Shetland, and a certain volume is stored at LPS' site.</p>	Owned by SSE Generation Ltd and operated by SHEPD.	Standby plant used during plant maintenance and fault outages of the HVDC link
Sullom Voe Terminal Power Station (SVT)	SVT is a 100MW gas-fired power station consisting of four dual-fuel gas turbines each rated at 23MW and fitted with a heat recovery steam generator, and a bypass stack. The primary fuel is natural gas	The power station is operated by Cofely, a GDF Suez company, on behalf of	Anticipated no supply into the local grid

Asset	General description incl. [fuel, output and capabilities to connect more generation]	Ownership	Proposed use after 2024
	<p>with distillate fuel-oil as a back-up. The power station was commissioned in 1978.</p> <p>SVT has provided services to the Shetland system since 1994. A commercial arrangement currently provides for 15MW of generation capacity from SVT. Voltage restrictions mean that for generation output from SVT cannot meet more than the equivalent of 50% of Shetland demand at a given time.</p> <p>SVT is dispatched by SHEPD to respond to changes in demand and changes in output from intermittent generation. SVT also helps to stabilise the system due to the size and reactivity of the power station's gas turbines.</p> <p>SVT currently provides generation output equivalent to around 41% of Shetland demand.</p>	a consortium of oil companies including BP.	
Burradale Wind Farm	<p>Burradale Wind Farm (3.68MW) was originally commissioned in 2000 and consists of five turbines located around 3.5km west of Lerwick.</p> <p>Reflecting Shetland's exceptional wind resource, Burradale is reported to be one of the most productive wind farms in the world with a reported load factor of 52%.</p>	Shetland Aerogenerators Ltd	Able to operate behind the GSP
Ollaberry Wind Farm	<p>Ollaberry Wind Farm (0.2MW) was commissioned in 2014 and consists of 1 turbine located in the north mainland.</p>	Hillhead Wind	Able to operate behind the GSP

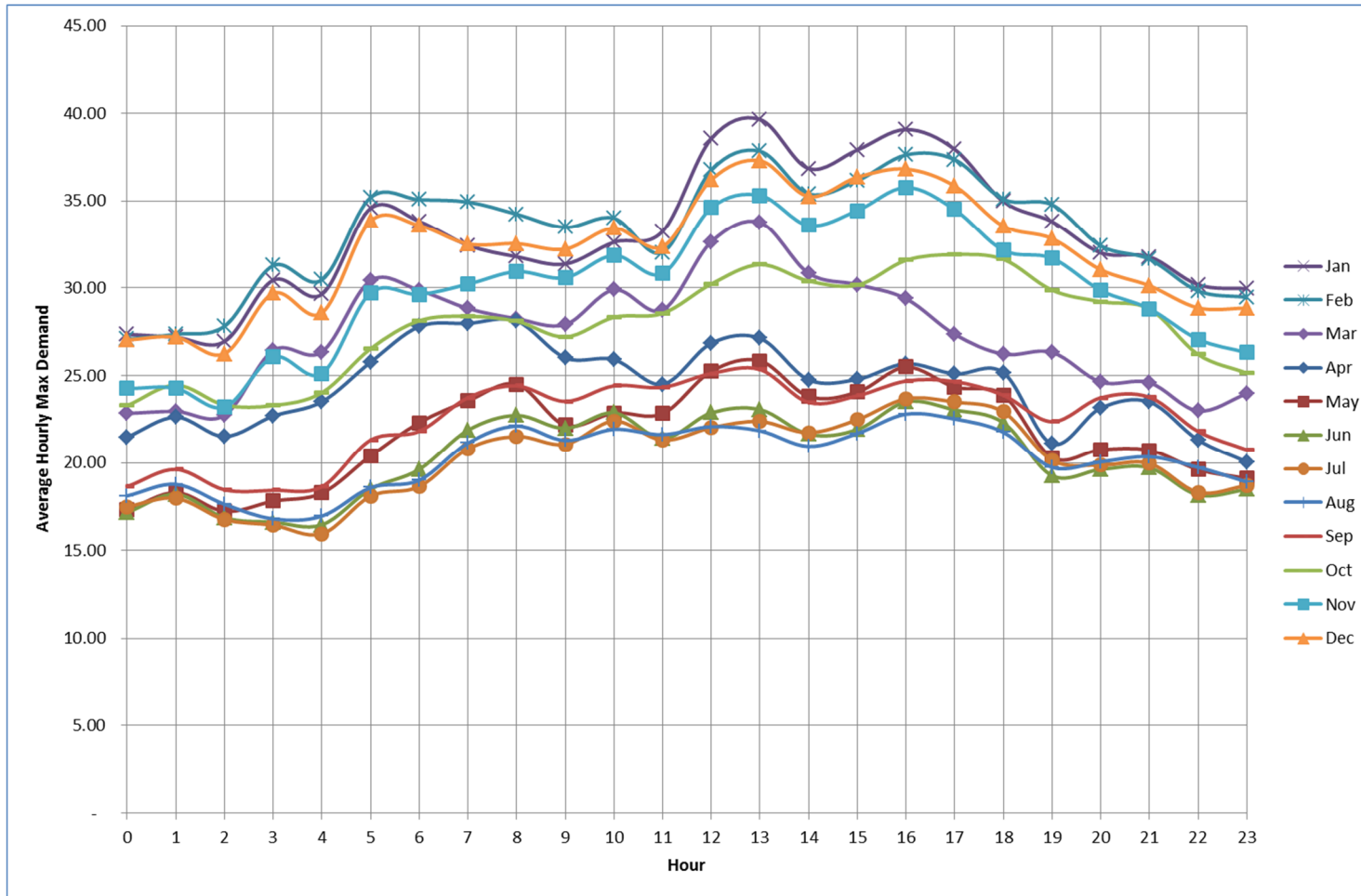
Battery (under commissioning)	Lithium-Ion battery (8MW / 6MWh) which is currently operated by SHEPD as an energy storage system, facilitating the connection of new renewables and assisting in optimising and stabilising the operation of the network by helping to reduce demand peaks. The battery is connected to the ANM system.	SHEPD	SHEPD is considering how the battery will be integrated into the new energy solution.
Gremista / Luggies Knowe Windfarm	3MW windfarm connected under ANM managed NINES queue	Shetland Aerogenerators Limited	These generators are all controlled by an active network management system and will operate behind the GSP in the same manner as they do under the current regime.
North Hoo Field Windfarm	0.5MW windfarm connected under ANM managed NINES queue	North Hoo Field Limited	



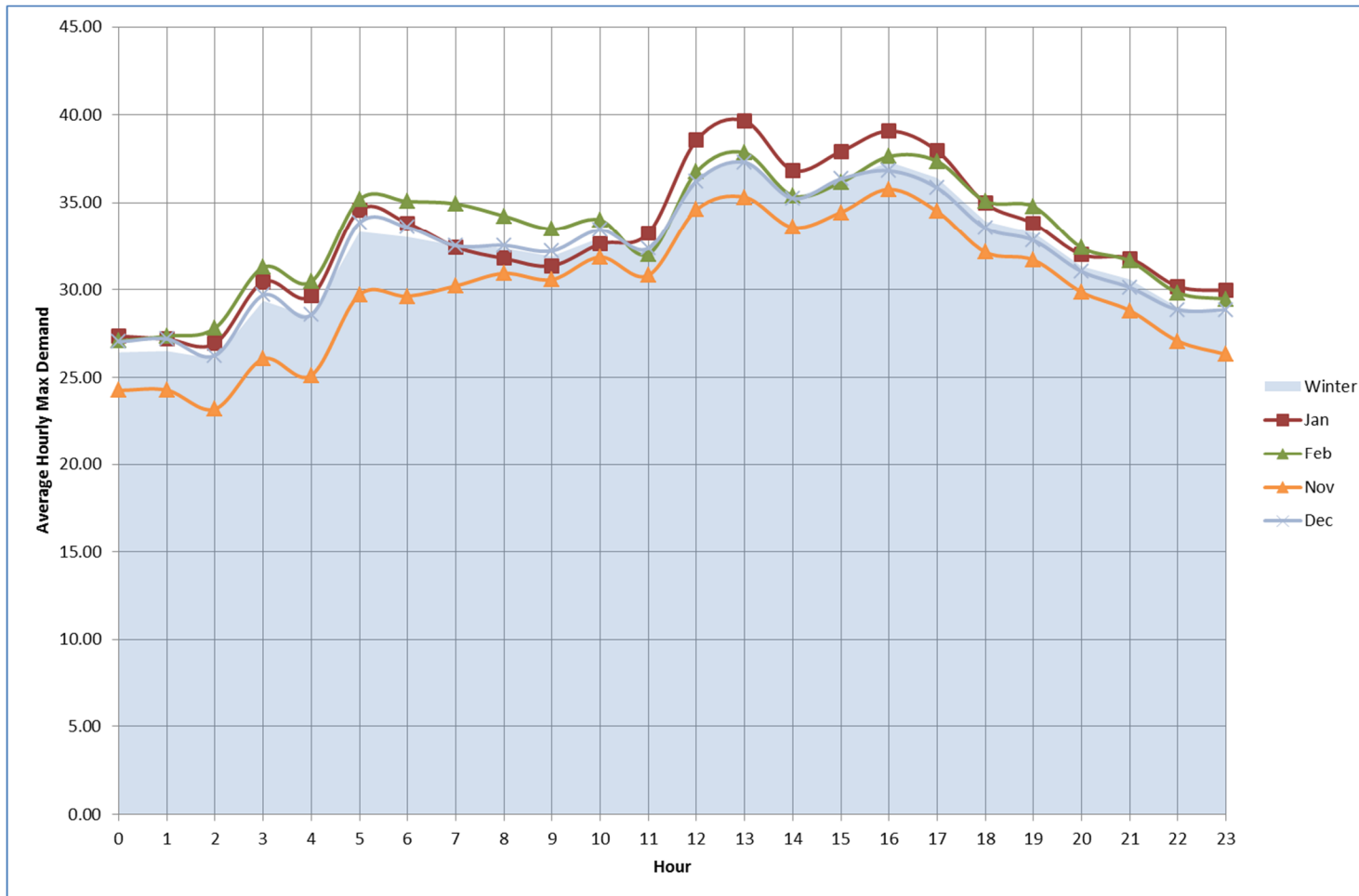
Shetland Tidal	0.5MW tidal stream project connected under ANM managed NINES queue	Nova Innovation Ltd	
Garth Windfarm	4.5MW windfarm connected under ANM managed NINES queue	Garth Wind Ltd	
Active Network Management system	The Active Network Management system used to manage the NINES project elements.	SHEPD	

### Appendix B – Load Curves

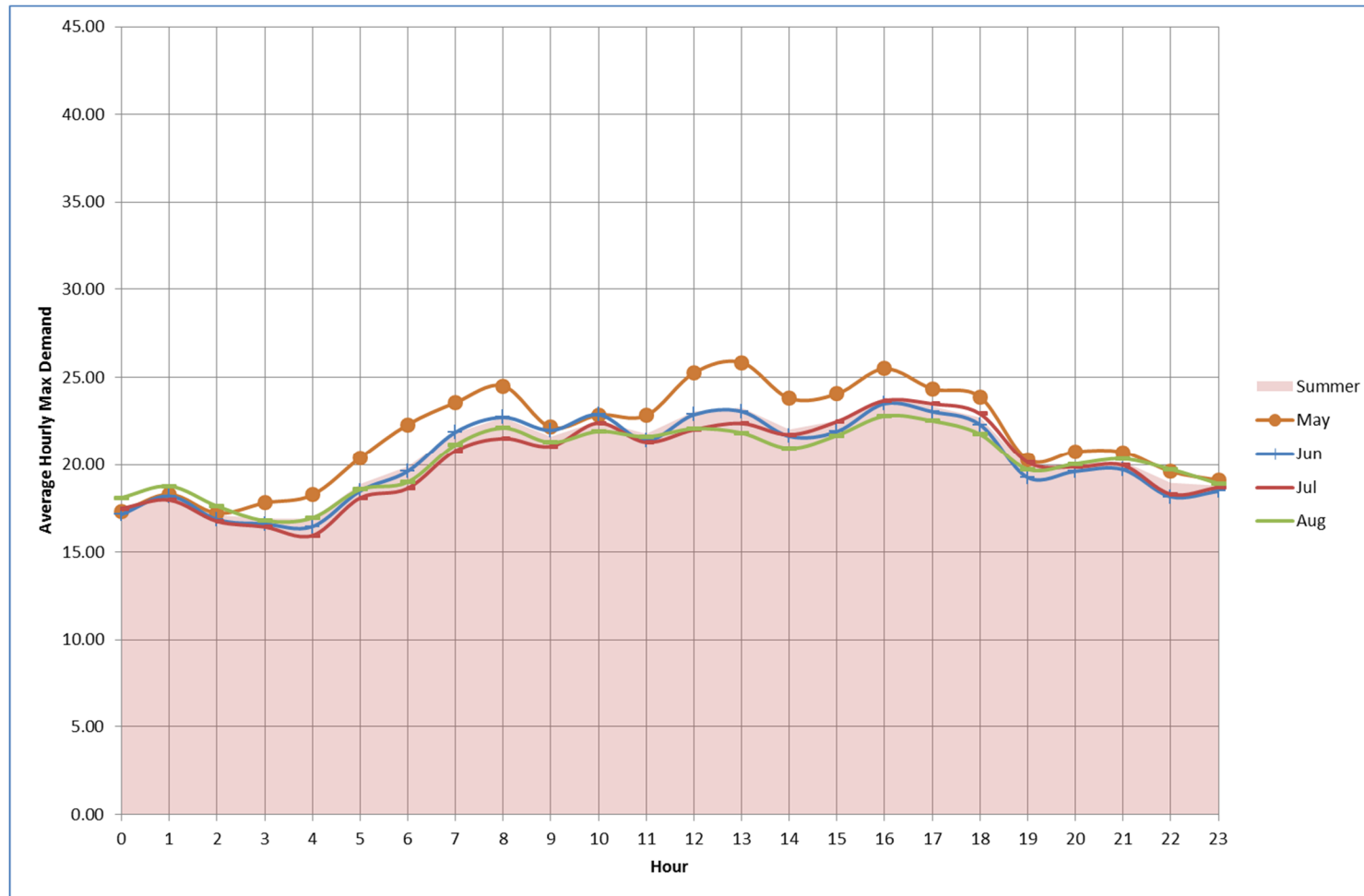
#### Daily Load Curves – by Month



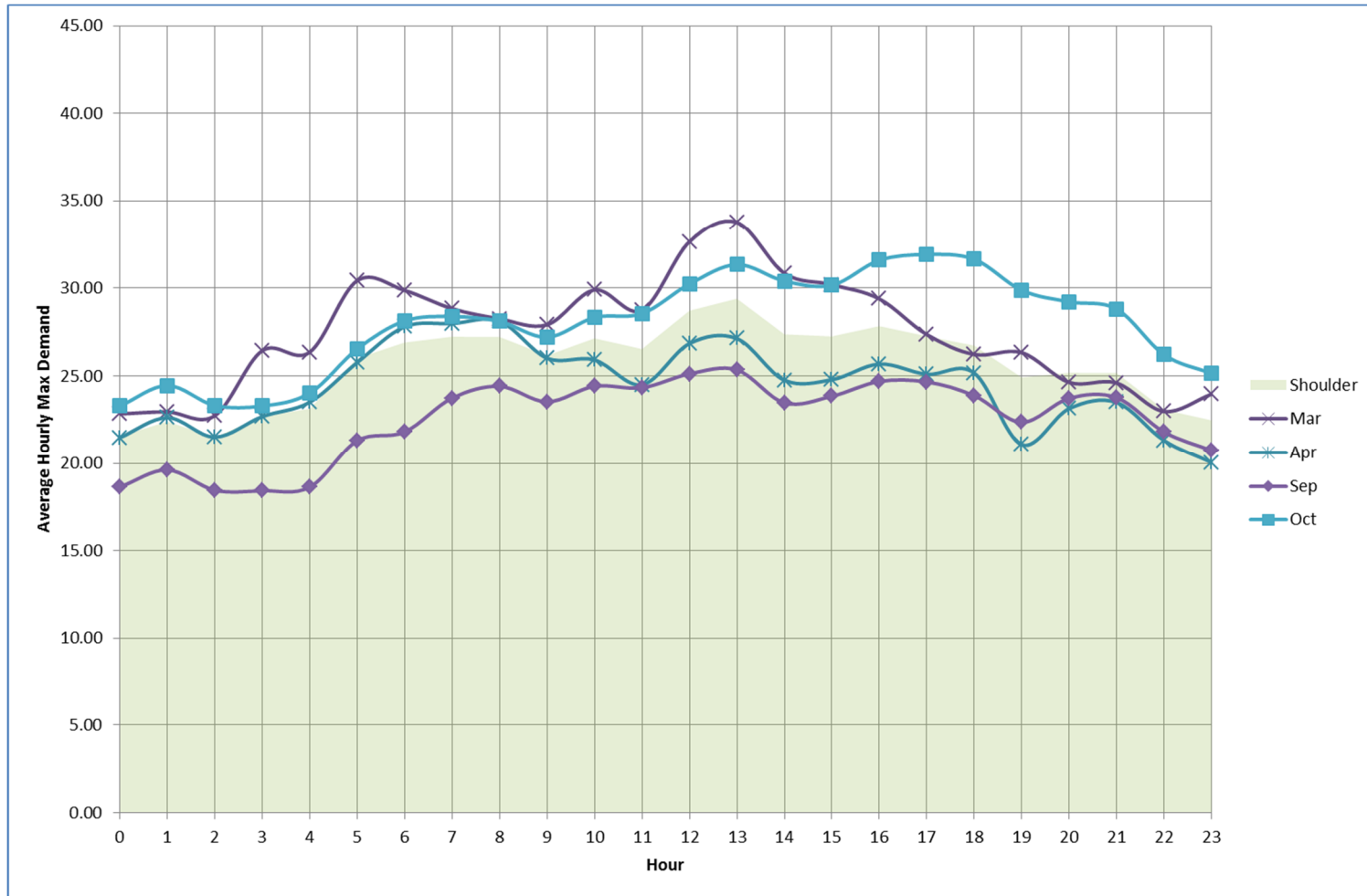
### Daily Load Curves – Winter Months



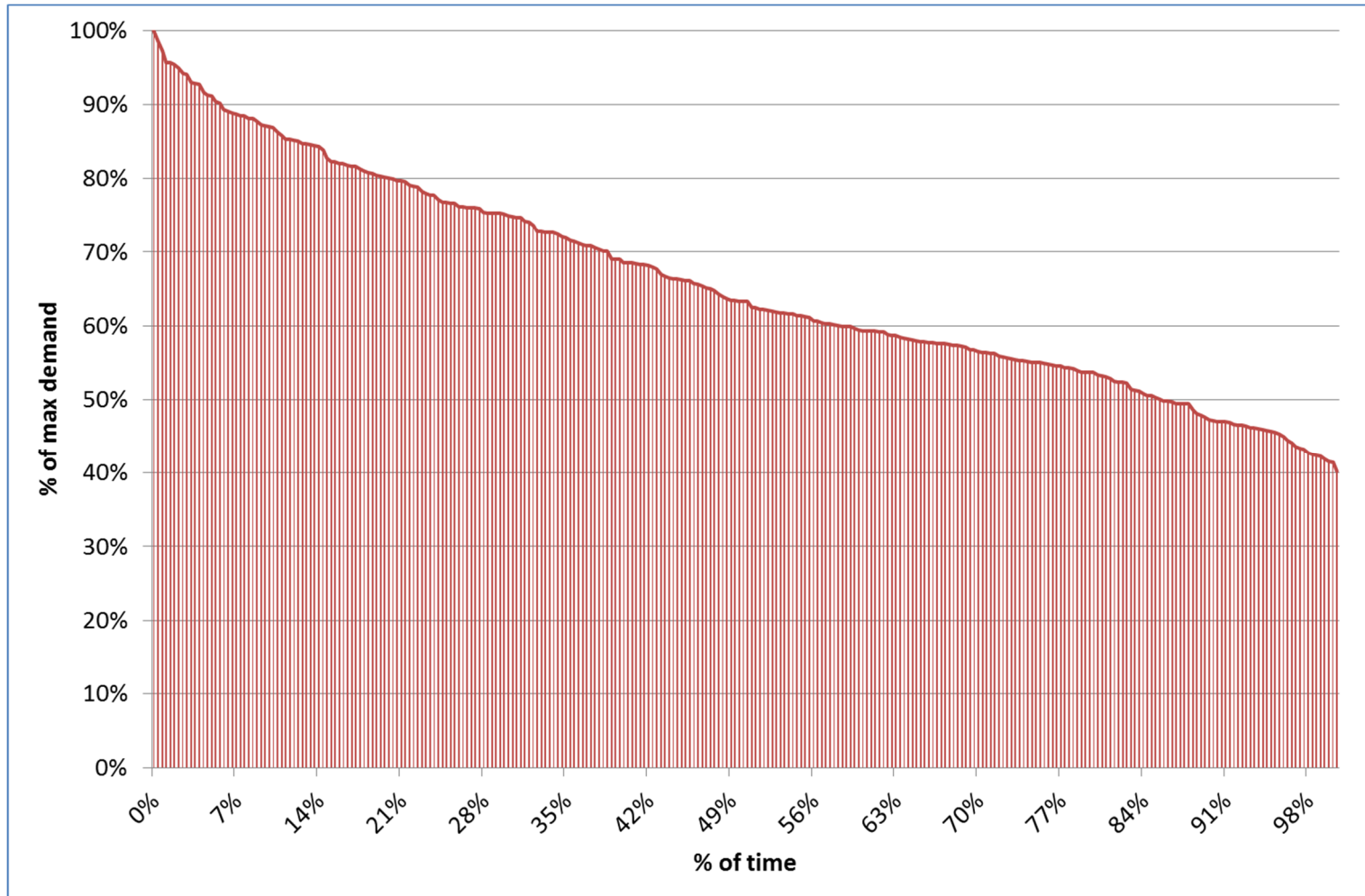
### Daily Load Curves – Summer Months



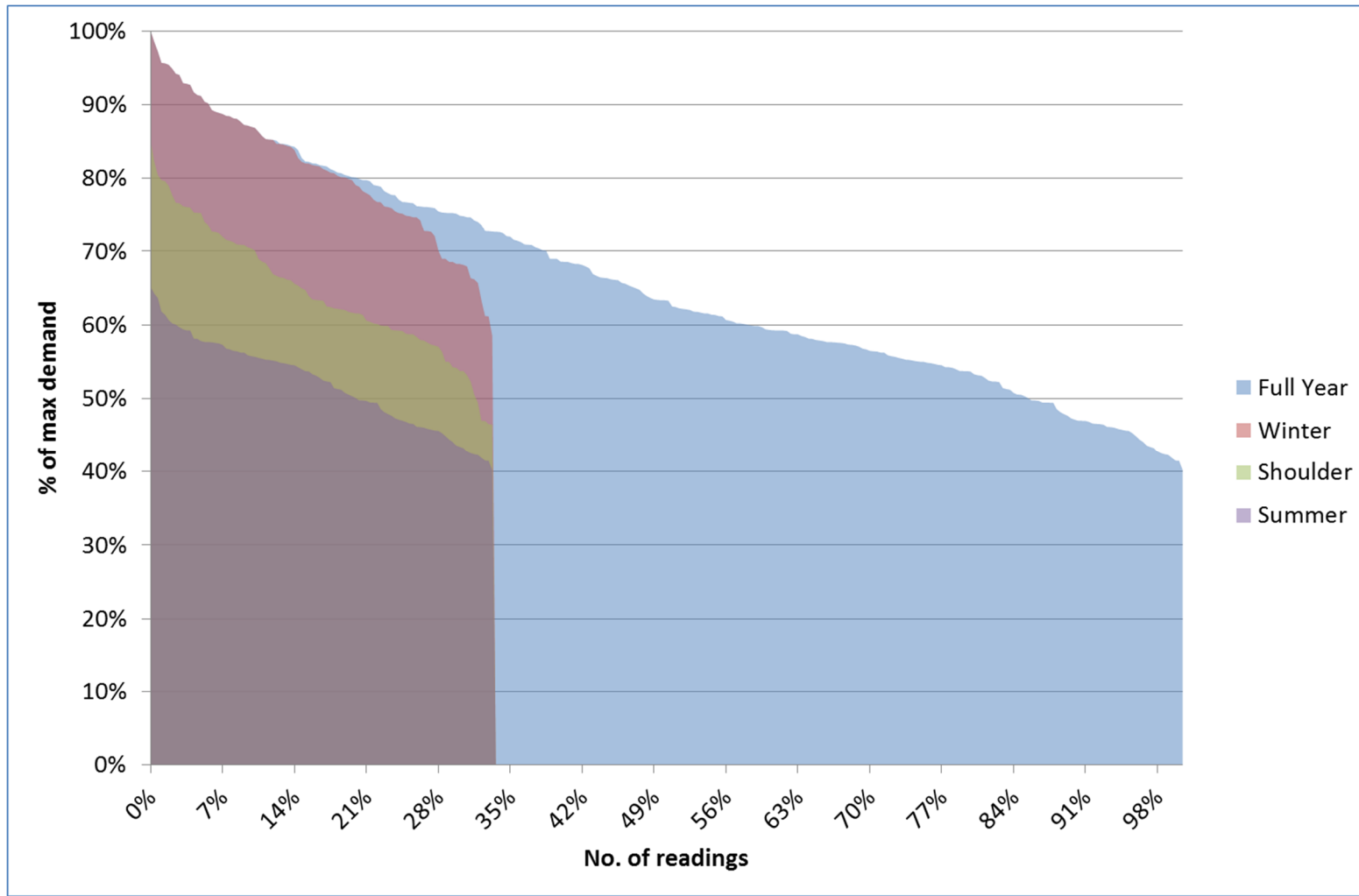
### Daily Load Curves – Shoulder Months

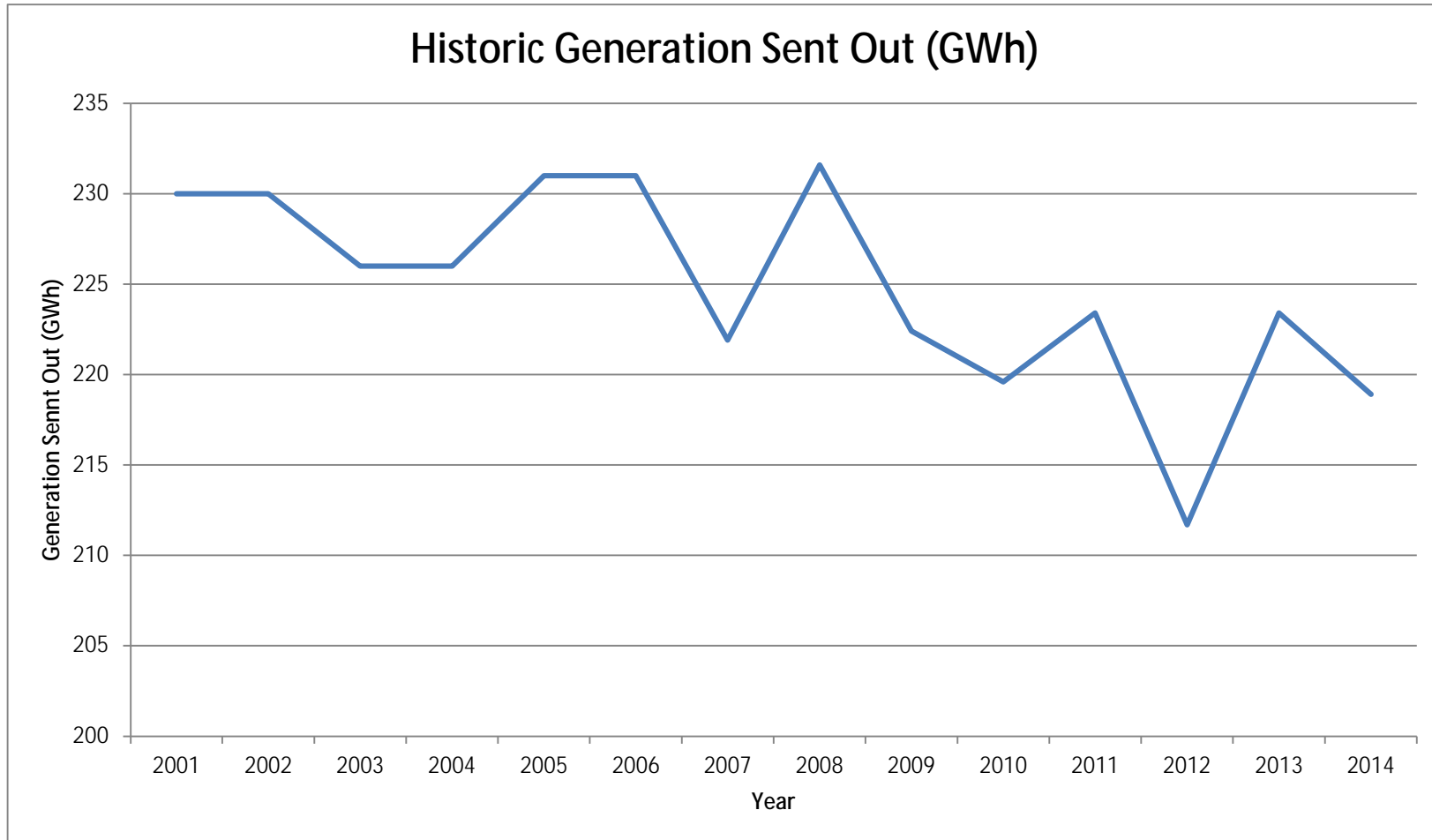


### Annual Load Duration Curve

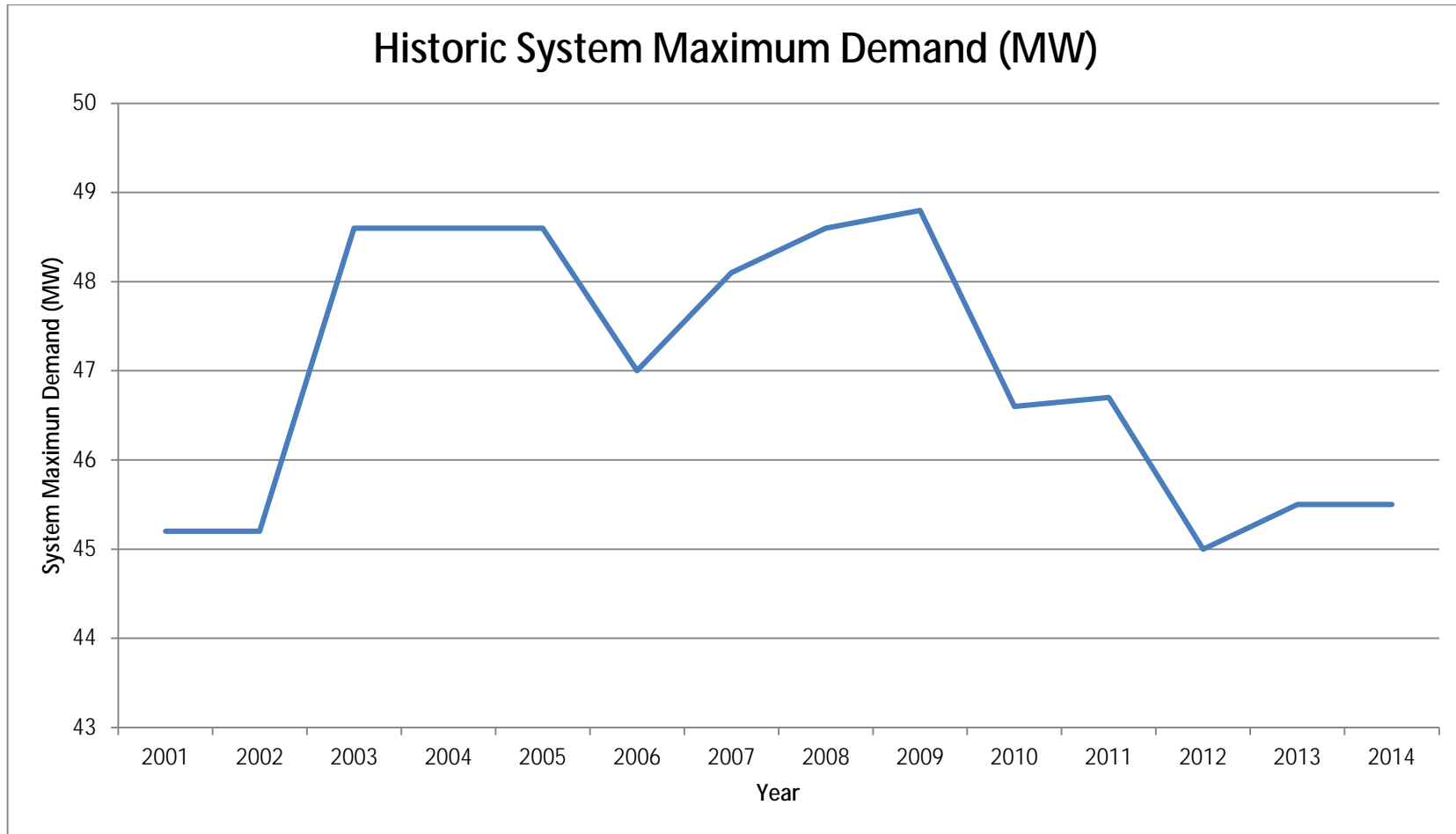


Annual & Seasonal LDCs











## **Appendix C – SSEN Transmission Shetland Projects**

Information regarding the SSEN Transmission Shetland HVDC Link can be found here - [Shetland \(ssen-transmission.co.uk\)](https://www.ssen-transmission.co.uk/shetland)

Information regarding the SSEN Transmission Shetland Renewable Connections can be found here - [Shetland Renewable Connections \(ssen-transmission.co.uk\)](https://www.ssen-transmission.co.uk/shetland-renewable-connections)