Sark Community Power

Island Hall meeting to present conclusions of design stage works and next steps for Sark Community Power

An Island Hall meeting on the future of Sark's community owned power system was held on 25th March at 5pm to discuss:

1. The proposal to take the existing electricity infrastructure into public ownership by Sark to carry out necessary safety and remedial work. This would be funded by a loan facility to be repaid out of the cost-per-unit. The proposed loan facility of up to £1.5m from the States of Guernsey is subject to both Chief Pleas and States of Guernsey approval. The loan repayments can be covered out of electricity sales at a unit rate of 49 – 54p.
2. Outcomes of the design stage work which has been completed within budget and will form the basis of a staged or full upgrade of Sark's power system.
3. Next steps for Sark Community Power and how the power system would be operated once brought into Island ownership.

Speakers included: John Guille (Chair Policy and Finance Committee), Mike Locke (Chair, Future Energy (Special) Committee, Jake Burnyeat (CfR – who have managed the design stage works), Gill Jones (Infinite Renewables - who have led the generation system design work), and James Lancaster (Alderney Electricity - who have been through a process of upgrading Alderney's electricity system and carried out an independent technical review of the design work).

Photomontages of the proposed wind turbines from various viewpoints around the island were on display.

For more information please see the update sent out ahead of the meeting and the speaker presentations . A summary of the meeting and transcripts of Conseiller speeches are provided below.

For other questions, do please contact Policy & Finance or Future Energy by email to policy.finance@sarkgov.co.uk or special.future.energy@sarkgov.co.uk, or by letter via Committee Office, La Chasse Marette, Sark, GY10 1SE

Introduction by Conseiller John Guille

Electricity supply on Sark has been a major issue for our Community for a very long time now. This is not a new issue and a lot of people in Sark, Guernsey and elsewhere have spent a lot of time trying to move things forward to create an affordable, reliable and safe future for Sark. We're coming to a point in time where we have the opportunity to take a big step forward.

The steps that have been taken so far include:

- Price control legislation
- Securing a commitment by the Bailiwick Civil Contingencies authority to step in if there is a deliberate switch off or an emergency breakdown
- 9 months of negotiation by a professional mediator
- Compulsory purchase law
- A design exercise that shows us exactly what is possible for the immediate and the long-term future

There have been 3 independent reports in recent years highlighting the condition and the dangers of the current system and the urgent need for remedial work and upgrades. This isn't a problem that materialised overnight, it is borne out of decades of under investment.

Right here in the island hall on the 10th January last year the Price Control Commissioner Shane Lynch explained extremely well to everyone that there is a clear and simple route to the much needed investment in the system that the Price Regulation mechanism offers a perfectly fair and reasonable return.

Mr. Lynch is not only a hugely experience regulator but also a former utility company Chief Executive.

Despite years of commitments this much needed investment still hasn't happened. It's time to move things forward and provide that investment that is so desperately needed. This situation is not going to get better by itself.

The local SEL employees are doing everything they can to keep the current system going but we need to give PJ and his team the tools to do the work that desperately needs doing in the short term.

- The 19 homes up North need to be reconnected
- The cable across the Coupee needs replacing
- The generators in the power station need overhauling
- The protection systems need checking and resetting and switch gear needs replacing
- The existing transformers need servicing and fencing off for safety
- Better earthing systems need installing right across the island

In the longer term (which will form the 2nd part of this evening's talks) we need to build a system that is fit for the rest of our lives and the generations to come.

We can no longer rely on anyone else to do this for us. It's time for our Community to take charge of its energy future. We need finance to do this and we have an affordable and sensible proposal which Mike will talk to in a minute.

Like our ancestors did with the Maseline Harbour 80/90 years ago we need to take a brave step into the future. I say a brave step, but also a sensible one. On that will benefit all of us and all Sarkees still to come. This is about a community securing it's energy supply but it's also about Sark taking charge of its future.

A plan to take ownership of our power system by Conseiller Mike Locke

Thanks to everyone here for giving up their time to hear about how Sark is working to secure its Energy Future. I've been interested in this for years both in general and specifically here on Sark. That's why I stood for the Future Energy Special Committee. If we don't control our own destiny, we're at the mercy of others.

This is all about the community taking control of our Energy Future.

We know what's happened in the past and, as they say, if you don't learn from history, you're condemned to repeat it.

Where to start? It's probably worth reminding ourselves of the Propositions passed at Chief Pleas in 2015 which established a PDT on Sustainable and Reasonably priced Electricity 150210_agenda.pdf and then approved the idea of a new electricity system funded by a loan from Guernsey and supported by Guernsey Electricity 150415_agenda.pdf

What we're working on now, as approved by Michaelmas 2022[1][2]and Christmas 2023 Chief Pleas[3], is a properly planned and designed community-owned system with the right balance of generation technology. As I've been watching this as an individual and now serving as a Conseiller, I know there have been many proposals on the table. Since 2015 we have had proposals for a cable connector, tidal power, wind, solar and so on from companies small to global. So what makes what we're doing now any different?

Firstly, this has been robustly designed and costed on behalf of Sark, not some third party. Secondly, it puts Sark in control of our energy future – for us, for younger generations and for generations to come. And you're going to see more detail about that in the second part of this meeting – how we get energy security, and longer term affordable – and stable – cost per unit.

Where are we starting from? The EIS report from 2021[4] and the Energypeople report[5] from 2022 are both pretty clear. The EIS report says the present network is "past the design life, with little evidence of a replacement or upgrade program", it's "currently not fit for purpose", needs "many immediate upgrades" and "contains serious safety concerns". The Energypeople report says it's "largely time expired assets" and operates "at a level of risk that would be unacceptable elsewhere." The Guernsey Electricity report[6] into the Creux Harbour incident of 2023 says that was caused "by the network fault." "The cable fault had an earth fault characteristic and was not cleared by the upstream protection system."

Clearly doing nothing is not an option – for safety, energy security and affordability.

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[1] Extraordinary Meeting, 14th September 2022.pdf
[2] Resolutions of Chief Pleas 2022 10 05.pdf
[3] Christmas Chief Pleas 17th January 2024.pdf
[4] Background | Sark Community Power
[5] Background | Sark Community Power
[6] Background | Sark Community Power

But the good news is that we can fix this. We know because Alderney Electricity carried out an upgrade to their network over time and without impacting the cost-per-unit. I'd like to introduce James Lancaster, the MD of Alderney Electricity, to take us through that.

James Lancaster gave an explanation of how Alderney Electricity has upgraded its power system over recent years to ensure a secure and safe supply. See meeting presentation for further details.

So we know it can be done. How are we going to do it? Firstly, we need to be able to inspect the distribution system in detail, every transformer, switchgear, equipment and cable. That means it needs to be brought into community ownership. Sark needs to buy it and get the work done. How much is it going to cost? There's asset purchase at £400k - £500k (at the current regulated asset value) subject to due diligence. Allow for legal fees of £100k. Then the essential remedial works estimated by a firm with 20 years' experience of Sark's network at around £300k - £500k. And last, just to be sure £400k headroom for other remedial works which may be found to be needed when the assets can be evaluated.

That gives a wide range of £800k - £1.5m and it will probably come in somewhere between the 2 figure. But it's wise to plan for worst case just to be safe. That loan is only used – or drawn-down as it's called – as and when necessary so it's not a case of borrowing the whole lot up front.

Acquiring those assets will allow us to make them safe and carry out remediation as quickly as possible. Sark will then be in control of its own Energy future and security.

Where is Sark going to get a loan facility like this? When Maseline Harbour needed funding, Sark took out a long-term government loan. The proposal is for us to do the same for electricity.

Policy & Finance have been talking with Guernsey's Policy & Resources Committee and that's resulted in the loan request now going forward to the next States of Guernsey. If approved there, it has to be presented to and approved by Chief Pleas before anything happens. And that includes the loan conditions and proper scrutiny. As we all know, every loan from a mortgage to an overdraft has conditions. The question is are they acceptable and is the interest rate acceptable.

In this case, the conditions are not difficult or costly. There's the idea of a Bailiwick Commission which would be advisory only and any participation would also have to be approved by Chief Pleas. It may even come up with some good ideas in, say Medical and Education. If there is a Bailiwick Commission looking at Alderney and Guernsey only and excluding Sark, I think we'd be failing in our duty to Sark. Sark is, after all an equal and independent jurisdiction within the Bailiwick and we need to take every chance to underline our independence.

Next, Guernsey would like to see the results of Sark's taxation review. This is ongoing right now under the Special Committee and, when laid before Chief Pleas, will be a public document so sharing with Guernsey is completely in order.

Lastly, Guernsey doesn't want to take a charge or security over any Sark assets, electricity or otherwise. It's effectively an unsecured loan. So to give them a backstop, they've asked to use the impôt they collect for Sark in case of any future default. Now that's not going to happen because why would Sark default on a loan payment? Particularly one that's at a government-to-government interest rate that's lower than commercial loans at market rate.

We know that the cost-per-unit will still be under the Electricity Price Control Commissioner so the consumer – that's us – will still be protected from excessive and unfair pricing. So how can we ensure that the loan affordable given the controls on the unit price?

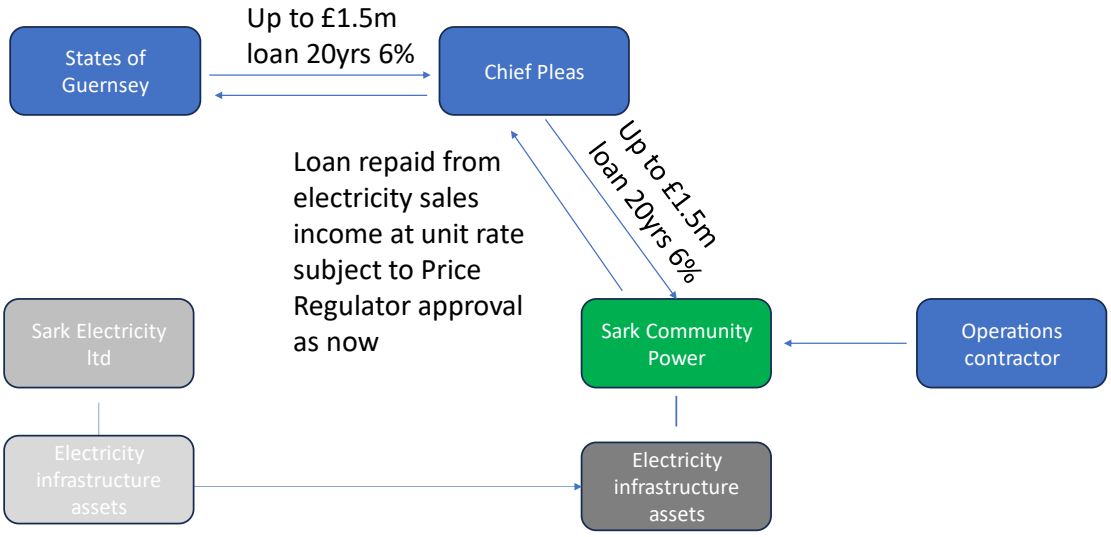
I'd like to introduce Jake Burnyeat of Communities for Renewables – who many of you will recognise from previous meetings – to explain how Sark Community Power is going to afford this without impacting the unit price we pay.

Jake Burnyeat gave an explanation of the forecast profit and loss (P&L) for Sark Community Power once the electricity system is taken into island ownership. The forecast showed a loan of up to £1.5million would be affordable at:

- **Revenues based on current island consumption of c.1,500,000kWh per year**
- **A unit rate of 49p – 54p/kWh**
- **Operating costs based on both SEL and Alderney Electricity benchmarks**

The main driver of electricity price variation is diesel prices, so revenue reductions at lower unit rates are in part compensated for by reductions in diesel costs.

States of Guernsey Loan Structure



Loan is affordable from current electricity revenues

Forecast Profit and Loss

Revenue	
Sark Electricity Consumption 2024 (kWh)	1,523,261
Unit price (£/kWh)	£0.54
Unit rate income (consumption x unit price)	£822,561
Standing charge income (538 customers x £10/month)	£64,560
Total revenue	**£887,121**
Operating costs	
Diesel @ 25p/kWh	-£380,815
Engineering team, admin and maintenace	-£337,791
Surplus	**£168,514**

Finance costs		
SOG loan (if full amount borrowed)	£1,500,000	
Annual interest (worst case)	6%	-£90,000
Annual capital		-£40,777
Total		**-£130,777**
Surplus after finance costs		**£37,738**
% of Revenue		4.3%

- **Diesel cost is main driver of electricity price variations so diesel cost reductions help compensate for revenue reduction at lower electricity unit price**
- **Up to £1.5million at 6% over 20 years affordable at current electricity prices of 49p – 54p/kWh**
- **Inflation and higher consumption will increase surplus available to pay loan costs**

Q&A on the proposed States of Guernsey loan

Comments from the audience included:

- The loan conditions could erode Sark's independence
- The Bailiwick Commission has been discussed previously and is a sensible thing to do with no binding commitment
- SEL will not sell at the regulated asset value
- Has the design work been completed within budget

Jake Burnyeat confirmed that the design phase work has been completed within the approved budget of £175,000 with some saving in the contingency budget.

Conseiller John Guille responded to the comments on the Bailiwick Commission:

This is a continuation of the Bailiwick wide discussions that took place in 2022 and early 2023 – then Chaired by Lord Wolfson and hosted at Government House where the Seigneur Christopher Beaumont and myself attended on behalf of Sark.

This was followed by an island hall presentation on the 3rd of August 2023 where the Lieutenant Governor, Deputy Mark Helyar and myself spoke.

The Bailiwick Commission discussed a wide range of topics including healthcare, education, transport links, international legislation, post Brexit pressures and more.

I remember a lovely letter I received the day after the island hall presentation from a very long-term Sark resident that read:

Dear John,

After yesterday's presentation I felt I wanted to say thank you for your efforts to keep Sark independent.

From your opening address I thought it was quite clear that we wouldn't be 'taken over'. The biggest problem for most residents, particularly the elderly, is the cost of health insurance. If you could persuade the hospital and the Specialist Group to charge Sark residents the same as a Guernsey resident you will have done a great service.

If I was younger I would be right behind you. Alas I can only thank you and support you verbally.

It is fair to say that there was hope at the time that more progress on various areas of Bailiwick cooperation would have been made but then Peter Ferbrache's Policy and Resources Committee in Guernsey was voted out that Autumn.

It has been mooted for a while that a new version of the Bailiwick Commission would be a wise thing to establish again. The ongoing issue of Alderney's runway has drawn particular focus to this again recently. With a fresh States due in Guernsey this Summer after the elections it might be a wise time to pick up the work that has fallen by the wayside. It is suggested that a new Bailiwick Commission includes open public meetings to hear what topics are important to all residents.

The Bailiwick Commission is nothing more than a forum to discuss matters of beneficial interest to the islands of the Bailiwick. It is completely non-binding and any proposals from it can simply be left on the shelf at the end if Sark does not like them. Jo Reeve, head of Guernsey's external relations department has offered to come to Sark for a public meeting to explain his proposed concept for a new Bailiwick Commission.

Forget about the electricity system for a just a few seconds. Aren't these the sort of discussions that we should be engaging in anyway? The world is a pretty troubled place right now and Sark can only be stronger if it engages with its nearest neighbours.

We're really sorry that the Bailiwick Commission proposals were mentioned in a press article before we got the information out to all Conseillers. William was preparing a brief from the P&F and Future Energy Committees about the proposed loan conditions to send out last Friday, well before yesterday, Monday, that was thought to be the media embargo deadline. The press managed to release a story about the Alderney runway discussions that mentioned the proposed Bailiwick Commission towards the end. This is a rapidly moving situation and until a few days ago we thought the loan proposal was only going to make the last Guernsey States meeting of this term on the 30th April but unbeknownst to us the Civil Service team in Guernsey were pulling out all the stops and have now managed to get it on the Billet for the penultimate meeting on the 9th April which gives it a much better chance of not slipping off their overloaded agenda before the end of this political term and the Guernsey general elections his Summer. Again, I'm sorry for the poor communication and this is something we are trying to improve in Chief Pleas but circumstances at the moment are very challenging.

It is just a proposal for the moment though and if the loan facility is approved by the States of Guernsey Chief Pleas will then in turn have to vote on it. Why would you vote against it though? Why is talking to the other islands of the Bailiwick in a non-binding forum of discussions such a

bad idea? Why would it be a bad thing to have some workshops over here for the public to share their opinions on how the islands can work better together?

Outcome of the design phase work

Introduction by Conseiller John Guille

At this time we are only asking the island and Chief Pleas to agree the principle of the States of Guernsey loan to bring the electricity infrastructure into Community ownership for the benefit of islanders and provide the funding, the support and the management to give the current team of local SEL engineers the investment and equipment needed to reconnect homes and bring the generators and the grid up to a safer and more reliable state for the immediate future.

This will be an enormous step forward but we recognise that there remain longer-term issues.

We can keep the current system going for a little while longer but how do we build an energy system for Sark that is fit for rest of our lives and the generations to come after that?

To answer this question Chief Pleas agreed last year to commission an independent expert design study to investigate the options available.

There are now a range of options open to how the Community might want to move forward but nothing will or can be agreed without the full engagement and support of residents.

The design was crucial before committing to more expensive next steps; we couldn't simply rely on guess work, sales brochures or false promises of ultra cheap unit prices.

We needed to develop a sensible and affordable plan to bring back to the Community to consider.

With the design, we can look at what needs to happen with the assets once under Community ownership and then enter serious funding discussions with the Crown, the UK government and the commercial market through Guernsey Green finance.

Other options are also still very much on the table such as raising the finance needed for whatever project Sark chooses to do through a local bond offering. The level and interest rate of the funding that we are able to secure is going to have a major effect on how quickly we can upgrade the system but we will hopefully soon be in a position to do this.

Jake Burnyeat (CfR) gave a summary of the design work that has been completed over the last 12 months:

- Distribution system design lead by Sancus working with power systems design specialists Aurora Power
- Generation system design lead by Infinite Renewables
- Design approach provides basis of staged, partial or complete replacement systems
- Both designs independently reviewed by TSL engineers who have experience working on Alderney's power system
- Work completed within £175,000 budget approved in Jan '24

- Main design reports published on website

James Lancaster gave a summary of the distribution system design work by Sancus and Aurora Power and the independent technical review carried out by TSL.

Distribution system specification

- Designed to meet demand range from current demand of 90 – 400kVA to max demand of 2,500kVA (with ability to scale above that if and when needed).
- Able to manage diesel and/or renewables-based generation.
- Will run at 6.6kV with cables able to run at 11kV if required in future.
- Designed as a complete replacement system or basis of staged upgrade.

Design phase work by Aurora and Sancus included

- Worked with CfR and Chief Pleas to develop model of current demand (based on the Cadastre database and assumptions for each type of property) and future load scenarios including Sark shifting to electricity for cooking, heating and transport. This confirmed 2,500kVA provides sufficient headroom for demand rebound, shift to electric cooking and some electric heating.
- Explored 4 design concepts for the HV system and outline design for the LV system (including 3-phase to all properties).
- Protection and earthing system design.
- Power system modelling and stress testing to validate the recommended design concept is viable.
- System spec and costing.

Existing and Replacement distribution system

- 6.6KV
- 3 legged ring + Little Sark
- 26 step down transformers

Figure 3-3: Existing Network

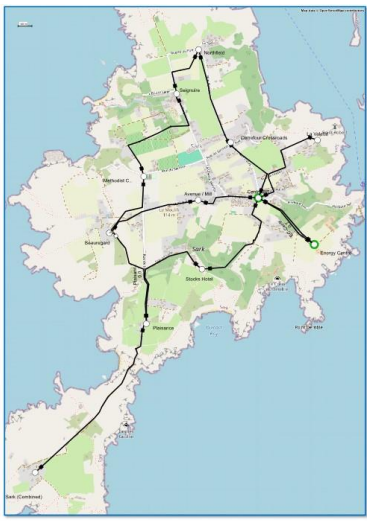


Figure 5-4: Hybrid Design with Central Substation

- 6.6KV
- 3 legged ring + Little Sark
- New main sub-stations at top Harbour Hill and Beauregard
- 12 step down transformers
- Cable route and sub-station locations similar to current

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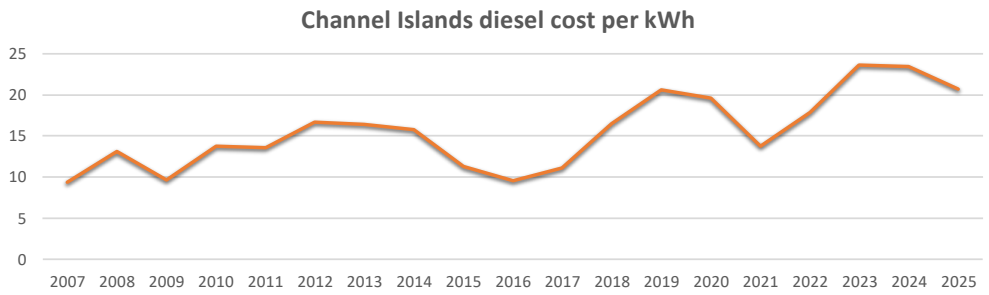
The independent technical review carried out by TSL concluded that the distribution design forms a good basis for a full or staged / partial upgrade of Sark's electricity infrastructure.

Jake Burnyeat (CfR) gave a summary of the design phase costings and the rational for shifting to a hybrid renewables system in the medium term.

- Investment of up to £1.5million to bring the electricity system into community ownership and carry out remedial work to secure a safe supply can be covered by electricity revenues at the current unit rate.
- A hybrid renewables + diesel generation system is more expensive to build than a diesel only system but will cost less over time, and the finance costs can be covered out of savings in diesel spend.
- The cost of upgrading the distribution network to ensure a safe and secure supply, and to enable future increased consumption remains uncertain. The design phase work provides a basis of a worst case if the whole system needs replacing. Sark needs to secure ownership of the system to carry out a full audit and enable a staged upgrade.

Diesel price exposure



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The benefit of shifting to renewables

Diesel price	22.4p/kWh	25p/kWh
Diesel cost for 100% diesel system at 22.4p – 25p/kWh	£340,000	£380,000
Diesel cost for hybrid system (wind+solar+battery+diesel)	£60,000	£66,000
Renewable system additional maintenance costs	£40,000	£40,000
Saving	£240,000	£274,000

Annual interest and capital payments for 20 year loan at 6% = £87,000 per £1million

Borrowing potential from savings vs diesel	£2.8 million	£3.2 million

Borrowing potential increased by:

- **Lower interest rate or longer term**
- **Inflation -** Actual borrowing potential is higher as loan repayments do not increase with inflation. Operating surpluses from a renewables-based system do increase with inflation as revenue is high relative to operating costs
- **Increase in consumption** – finance costs are fixed so more units sold means less cost per unit
- **Diesel cost increase** – increases saving of renewables vs diesel

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Costing

	Cost	Business case
Acquisition, make safe and secure supply (SOG loan)	£1,500,000	Finance costs covered by unit rate
Generation system CAPEX	£3,200,000 (£650k for diesel only)	Finance costs covered by diesel cost savings if renewables hybrid system
Distribution system CAPEX **IF FULL REPLACEMENT**	£6,800,000	Cost depend on how much of the existing infrastructure can be retained May need grant or low cost loan OR may be done in stages over time

30 **Investment will go ahead in stages and only if affordable**

Gillian Jones (Infinite Renewables) gave a summary of the design phase work for the new generation system.

Generation system

The generation system design proposes a new island hybrid power station at Les Laches with generation from 2 wind turbines, a field of solar panels, a battery and diesel gensets providing 100% of island needs when needed. The system is designed to be installed in stages and upsized if necessary to meet future increased demand.

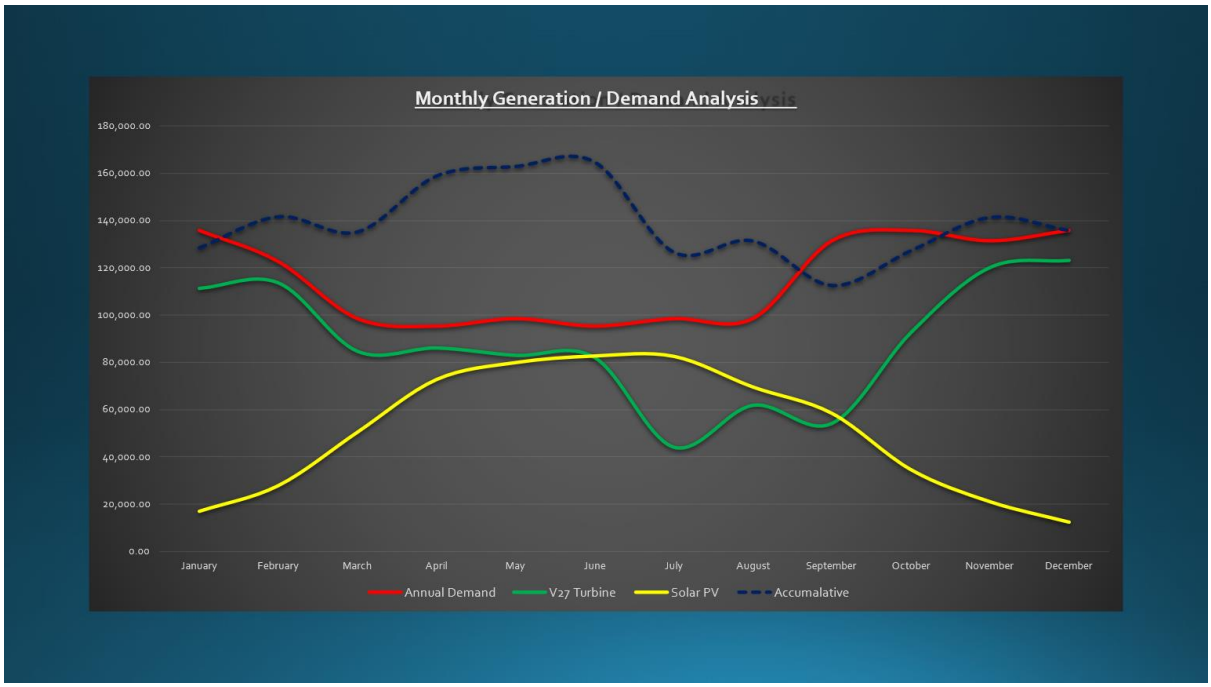
Generation system specification

- 2 x 225kW (30m tower and 29m diameter rotor) Vestas V29 refurbished wind turbines
- 510 kWp solar farm (1 field / half an acre – east/west layout)
- 750kWh storage capacity battery (8 hours of current nighttime loads) in fire safe 10ft shipping containers
- 3 x 350 kVA diesel generators (in noise reducing containers) providing 100% back-up
- 'Micro grid' control management system
- A new power station building next to the abattoir to house the generators, workshop and low voltage distribution boards

Design phase work included:

- Planning: Photomontages of the wind turbines from island viewpoints and consideration of noise and shadow flicker, ecology, radar and telecoms
- Technical: Access feasibility, ground investigations and turbine foundation design, wind and solar resource assessment
- Logistics plan and budget
- Specification of a smart grid control system including system to enable 'heat tariff' for hot water and storage heating when there is a surplus of wind or solar

A hybridsystem with diesel plus renewables is deemed viable, with wind and solar providing 80% of Sark's demand over the year.



A Cost Effective System to Build, Operate and Maintain

- Capital costs value engineered to minimise outlay

Staged approach		
New Energy Centre with Diesel	£	650,000
Solar and Battery	£	1,300,000
Wind turbines	£	1,250,000
Total	£	3,200,000

- Operational costs reduce the more renewables are integrated to the grid
- 25 year Maintenance contract for the Wind Turbines ensures the assets are looked after and continue to produce clean power

Final comments by Conseiller John Guille

- The only decision we will be asking the island to make in the near future is, should the States of Guernsey offer us a loan facility of up to £1.5 million, whether to agree that we should seek access to it. This will allow us to:Bring Sark electricity infrastructure into island ownership
- Make current system safe and secure
- Establish viability, cost and plan for staged upgrade based on the design

The business case and financing strategy for further system upgrade and new generation system will follow once we are able to acquire the assets and conduct a full condition survey.

Investment will progress in stages and only if affordable.

Something has to be done and this is a generational project for Sark.

sarkcommunitypower.com