

REPORT TITLE: Solar PV Installations using Salix Finance Loan

Cabinet Date	12 June 2024
Cabinet Member	Cllr David Gray, Cabinet Member for Environment and Planning
Key Decision	Yes
Purpose of Report	To seek approval for a £1,000,000 two phase programme for the delivery of photovoltaic solar panels across the GCC estate.
Recommendations	<p>That Cabinet:</p> <ol style="list-style-type: none"> 1. Approves the use of £550k for the purpose of part funding the contract(s) described in Recommendation 3(b) relating to the design, supply and installation of photovoltaic solar panels at the following eleven GCC- owned properties during the initial phase of the programme described in paragraph 2 of this report (the "PV Panel Programme"): <ol style="list-style-type: none"> a. Quedgeley Library, Gloucester b. Lydney Library c. Newent Library d. Whaddon Youth Centre, Cheltenham e. Cheltenham Library f. Hesters Way Library, Cheltenham g. Oakwood Children's Centre, Cheltenham h. Gloucestershire Heritage Hub, Gloucester i. Coroners Court, Gloucester j. Tewkesbury Youth Support Centre k. The Vibe, Coney Hill, Gloucester 2. Approves the use of £450k for the purpose of funding a further phase of the PV Panel Programme under the contract(s) described in Recommendation 3(b). 3. Delegates authority to the Executive Director of Corporate Resources, in consultation with the Cabinet Member for

	<p>Environment and Planning and the Deputy Leader/Cabinet Member for Finance and Change to:</p> <ul style="list-style-type: none"> a. Approve business cases for the design, supply, and installation of Solar PV panels (with or without battery storage), as part of the second phase of the PV Panel Programme, provided the total value of such works does not exceed £450k and that the works are in line with the council's and Salix's (i.e., the loan provider's) approved Return on Investment and best value obligations. b. Conduct a competitive procurement process in respect of contract(s) for the design, supply and installation of solar PV panels (with or without battery storage) under both phases of the PV Panel Programme c. Awards such contract(s) to the preferred tenderer.
<p>Reasons for Recommendations</p>	<ol style="list-style-type: none"> 1. Gloucestershire County Council has committed to working towards delivering a carbon neutral County by 2045, as well as reducing emissions by 80% from the 2005 baseline by 2030. Investment in low carbon technology such as Solar PV will also highlight the benefits to the wider County and aligns with the principal of leading by example. This programme of work has the potential to reduce over 100 tonnes of CO2e each year. 2. UK energy price fluctuation has created additional budget pressure across all services. Installation of solar PV generation will help to reduce future exposure to price changes (cost avoidance) and will result in utilities cost reduction (savings) going forward – with the panels expected to last over 20 years. 3. In the short term, installation of onsite PV will provide 453mWh of energy across the currently planned core estate sites in year 1. Energy not used on the council's estate will raise an annual income of approximately £11,000 from Smart Export Guarantee (SEG) payments. 4. Long-term installation of solar PV will help to reduce the Council's carbon footprint, in line with its goals to be carbon neutral by 2045. It will also support the future installation of low carbon heating. 5. The Salix Recycling fund scheme (operated by Salix, a non-departmental public body who administers funds on behalf of the Department for Energy Security and Net Zero) is due to close at the end of the 2024/25 financial year. As such, the Council has a short window of opportunity to scope, plan, procure and deliver a low carbon project. This solar PV programme of works provides the best opportunity to

	benefit from the Salix scheme, within the required timeframes, whilst also providing a return on the investment.							
<p>Resource Implications</p>	<p>The total value of the project funding required for the purposes of the PV Panel Programme is £1,000,000. The programme will be funded by a means of a 50/50 match funded interest free loan arrangement with Salix. £500k of Salix match funding must be repaid by means of agreed fixed payments over a 10-year period. The £500k from GCC Invest to Save fund will be repaid in parallel from the remaining annual savings to the Invest to Save reserve thereafter.</p> <p>The overall programme of works will use all of the available funding across two implementation phases. Phase 1 is outlined in paragraph 2 of this report.</p> <p>Based on currently secured and forecasted energy prices the predicted 10-year saving from Phase 1 is £840,610. Electricity savings will be used to repay the Salix loan by means of agreed fixed payments, with the GCC Invest to Save fund paid in parallel from the remaining annual savings.</p> <p>The following table sets out estimated values of Phase 1 and Phase 2 delivery:</p> <table border="1" data-bbox="561 1128 1511 2000"> <tr> <td data-bbox="561 1128 871 1639">Phase 1: Delivery of PV panels on 11 identified properties</td> <td data-bbox="871 1128 1168 1639">Estimated value of the design, supply and installation services described in Recommendation 1 based on soft market test end of 2023 To be implemented as a design and build contract.</td> <td data-bbox="1168 1128 1511 1639">£550,000</td> </tr> <tr> <td data-bbox="561 1639 871 2000">Phase 2: Design & Delivery of PV panels on further sites subject to business case demonstrating ROI</td> <td data-bbox="871 1639 1168 2000">Estimated value of the design, supply and installation service described in Recommendation 2 To be implemented as a</td> <td data-bbox="1168 1639 1511 2000">£450,000</td> </tr> </table>		Phase 1: Delivery of PV panels on 11 identified properties	Estimated value of the design, supply and installation services described in Recommendation 1 based on soft market test end of 2023 To be implemented as a design and build contract.	£550,000	Phase 2: Design & Delivery of PV panels on further sites subject to business case demonstrating ROI	Estimated value of the design, supply and installation service described in Recommendation 2 To be implemented as a	£450,000
Phase 1: Delivery of PV panels on 11 identified properties	Estimated value of the design, supply and installation services described in Recommendation 1 based on soft market test end of 2023 To be implemented as a design and build contract.	£550,000						
Phase 2: Design & Delivery of PV panels on further sites subject to business case demonstrating ROI	Estimated value of the design, supply and installation service described in Recommendation 2 To be implemented as a	£450,000						

		design and build contract.	
	<p>The project management resource will be met by AMPs and the sustainability team within Environment and Waste</p> <p>Ongoing monitoring of solar generation, optimisation of solar PV panel performance and cost avoidance will be completed by the sustainability team. The monitoring of consumption patterns will indicate maintenance requirements such as the cleaning of panels or resetting of inverters.</p> <p>Procurement will use existing systems and resources, supported by commissioning team members of the sustainability team and AMPs.</p> <p>Procurement will be carried out through the Crown Commercial Services Demand Management and Renewables Dynamic Purchasing System, selected to enable GCC to maximise social value and encourage Gloucestershire based suppliers.</p>		
<p>Background Documents</p>	<p>Cabinet Decision (31.01.24): Fourth annual update to the climate change action plan</p> <p>Gloucestershire County Council Strategy 2022 – 2026 – “Building Back Better”</p> <p>The Finance Performance and Risk Report from November Cabinet – added the £1m Salix Recycling Fund to the Environmental & Waste Capital Programme.</p>		
<p>Statutory Authority</p>	<p>Overarching statutory powers in relation to Education, Environment, Highways, Lead Local Flood, Public Health, Strategic Planning, Transport, Waste Disposal and section 1(1) of the Localism Act 2011.</p>		
<p>Divisional Councillor(s)</p>	<p>Countywide</p>		
<p>Officer</p>	<p>Name: Will Spendlove Tel. no: 01452 324223 Email: Will.Spendlove@gloucestershire.gov.uk</p>		
<p>Timeline</p>	<p>Phase 1 will be completed summer 2024, with Phase 2 following over winter 2024/25. The whole project will be completed by end of FY 2024/25 as per conditions of the Salix recycling funding.</p>		

Background

1. GCC has successfully replenished the “Recycling Fund” from Salix, initially used to invest in LED streetlighting upgrades. It was expected to generate over £17m of cost avoidance between 2016 and 2030. GCC can now utilise the £1m fund for this programme before the fund closes at the end of 2024/2025.

2. **The PV Panel Programme:** The Salix fund was designed to assist local authorities in reducing their energy consumption and associated emissions. It is proposed to use the fund to invest in the installation of solar panels across the GCC estate in two phases. The initial phase of the PV Panel Programme will see installation of panels on eleven properties in order to generate 453 mWh of electricity annually, which equates to 8% of GCCs core buildings energy consumption and will save nearly 100 tonnes of CO₂ annually. In addition, the initial phase will generate annual average energy savings of approximately £73,000 and annual income of approximately £11,000 from Smart Export Guarantee (SEG) payments. The second phase of the PV Panel Programme will focus on the installation of PV solar panels at sites that have not yet been selected and will, once implemented, increase the above-mentioned benefits further. The selection process for identifying suitable sites for such second phase shall be subject to the completion of a business case that demonstrates a return on investment.

3. Following consultation with AMPS, the initial phase of the PV Panel Programme and the programme of works has been designed to enable GCC to reduce its energy consumption at the 11 sites set out in the table below.

Site	Annual PV Generation Potential	Current Annual Energy Usage	Install Cost	Average Annual saving	Income from SEG @4p
Quedgeley Library, Gloucester	12,738	10,083	£27,119	£1,849	£286
Lydney Library	14,455	10,431	£28,121	£1,947	£353
Newent Library	9,235	9,199	£20,131	£1,596	£190
Whaddon Youth Centre, Cheltenham	19,878	18,026	£29,990	£3,213	£480
Cheltenham Library	9,182	32,181	£24,630	£4,939	£69
Hesters Way Library, Cheltenham	14,720	12,317	£27,087	£3,214	£480
Oakwood Children's Centre, Cheltenham	54,191	66,660	£58,278	£10,014	£1,125
Gloucestershire Heritage Hub, Gloucester	165,039	157,411	£160,305	£17,101	£4,420

Coroners' Court, Gloucester	102,794	152,819	£106,775	£25,334	£1,440
Tewkesbury Youth Support Centre	24,862	11,416	£29,060	£1,371	£816
The Vibe, Coney Hill, Gloucester	39,783	19,072	£37,680	£2,566	£1,258
TOTALS	466,876	499,615	£549,176	£73,144	£10,917

Further designs in respect of solar PV Installations will take place on additional sites which will form phase 2 of the PV Panel Programme – to take the total spend in respect of Recommendations 1 and 2 up to the available £1million PV Panel Programme fund.

Under a separate solar project GCC is investing an additional £2 million to install solar panels on maintained schools across the county. GCC AMPS team will be installing circa 20kWp solar arrays per site on all maintained schools that have suitable buildings and infrastructure to support the installations. This includes structurally sound roofs, adequate electrical systems and connections and links to the wider network.

4. The capital investment of an estimated £550k during the initial phase of the PV Panel Programme will create a return of £84k per annum through cashable savings and SEG income. The said initial phase is therefore predicted to generate £1,681,220 of savings and income over its 20-year lifetime resulting in a surplus of £1,132,044, subject to annual electricity usage and actual contractual costs of installation and maintenance of the PVs. Breakeven will be circa 6.5 years for Phase 1.
5. Investment in low carbon technology such as solar PV aligns to the Council's Net Zero ambition and the Government's target to be Net Zero by 2050.
6. A further £450k will be invested in a second phase of the PV Panel Programme in respect of installations on sites yet to be selected and subject to the completion of a business case that demonstrates a return on investment.

Options

7. Option 1 – Do nothing and close the Salix Recycling Fund.
8. Option 2 - Approve the funding proposals set out in Recommendations 1 and 2 and then conduct a competitive procurement process in respect of one or more contracts for the design, supply and installation of solar PV panels (with or without battery storage) under both phases of the PV Panel Programme. To also design a programme of works for the second phase of the PV Panel Programme that will further support decarbonisation and self-sufficiency of the GCC estate.

9. Option 1 is not recommended on the basis that the Building Back Better Strategy pledges to reduce our carbon footprint. This programme of work will be leading by example and showing our commitment to reducing our carbon footprint.
10. The recommended option is Option 2 given that this will result in financial and environmental savings as detailed in this report.

Risks

The following risks have been identified:

11. Risk that energy prices will reduce to a level that makes the ROI (Return on Investment) longer than expected. As below (paragraphs 17 and 21) energy price volatility forms both a risk and a benefit to the scheme and investment in self-generation such as PV reduces our exposure to market price fluctuations.
12. The costs of installation increase due to unforeseen issues – i.e. roof condition, electrical connection or required upgrades. This additional cost will be met by reapportioning the Salix fund, choosing alternative sites, and reallocating funding. Each business case will be subject to approval by as set out in recommendation 3, following consultation with Asset Management and Property Services and Salix as the loan provider. This is to ensure that the same return on investment is achieved following any change in the programme.

Financial implications

13. The total value of the PV Panel Programme is £1,000,000.
14. The programme will be funded by means of a 50/50 match funded interest free loan arrangement with Salix. £500k of Salix match funding must be repaid by means of agreed fixed payments over a 10-year period. A further £500k will be provided by GCC from the Invest to Save fund this will be repaid in parallel from the remaining annual savings to the Invest to Save reserve thereafter. The programme of works described in paragraph 2 of this report will use the entirety of the available project fund across the 2 phases of work.
15. Based on currently secured and forecasted energy prices the predicted 10 year saving from Phase 1 is forecasted to be £840,610.
16. The 20-year project lifetime savings and Smart Export Guarantee (SEG) income for phase 1 are estimated to be £1,132,044 over and above the initial £550k investment.
17. The assumptions used in the forecast savings are based on conservative estimates for energy generation between 8am and 5pm and a SEG income assumed at 4p per

kWh. Therefore, the payback period for the £1m investment loan may be achieved earlier than anticipated.

18. The second phase of the PV Panel Programme will follow the same process as the initial phase, with ambition to install solar systems across additional GCC sites, subject to suitable premises being put forward. Site selection will be subject to future building use, electrical condition, roof structure, orientation, planning and other constraints.
19. Further savings will be achieved if and when these sites' heating systems are replaced with electric air source heat pump (ASHP) systems. This will occur when the current heating systems reach end of life and will result in less electricity exported and a larger reduction on the demand for grid supplied electricity.
20. Currently the Smart Export Guarantee (SEG) provides an income for excess energy generated on site that is then imported back to the grid. SEG rates vary from supplier to supplier and year on year with the Council's current supplier, EDF, offer 5.6p per kWh of exported energy. British Gas offer 6.4p, rising to 15p for their customers. The council does not have to use its current supplier for SEG.
21. Investment in solar will protect the Council from increasing non-commodity costs, which have seen significant increases in the last 15 years. Fixed non commodity costs are a sizable proportion of the cost to the supply of electricity, ranging from 49% to 63% of the overall cost of electricity. Using onsite generation, the "hidden" costs of non-commodity charges are reduced.

Climate change and ecological implications

Has the Climate Impact Assessment Tool (CIAT) been completed? Yes

22. A CIAT has been completed and positive impacts towards climate change have been identified from this project. This includes reduction in greenhouse gases, energy use and improvements in air quality and health & wellbeing. Sustainable material use has been flagged as an area for potential improvement, however it should be noted that technology to sustainably source all solar PV components is not available at this time.

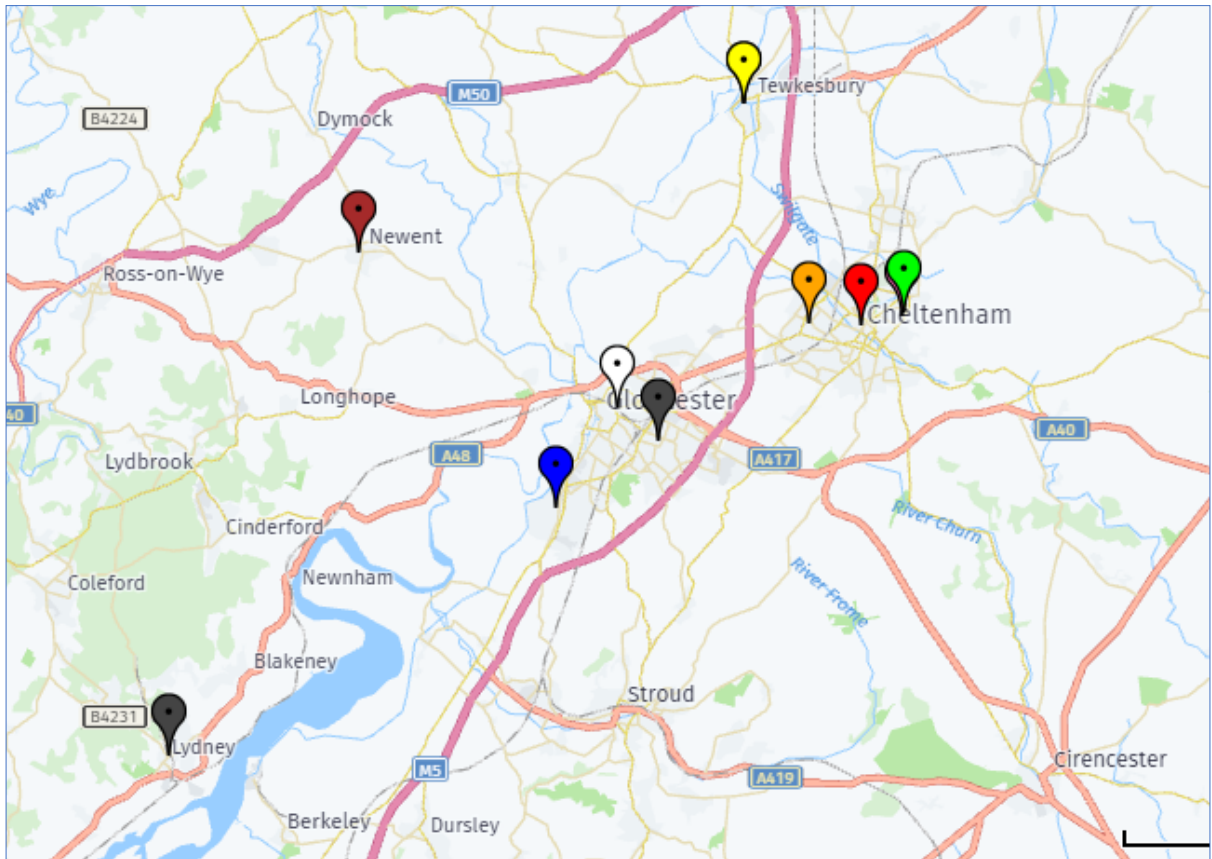
Has an Ecological Impact Assessment (EclA) been produced, or will one be undertaken at a later stage? No

Equality implications

Has an Equalities Impact Assessment (EqIA) been completed? Yes

23. An EqIA has been undertaken showing that this solar PV programme will help reduce the Council's impact on the environment by reducing carbon emissions from its buildings. Climate change negatively affects all residents in the UK, but it has been shown that it has a bigger impact on those with protected characteristics.

24. Geographically sites have been chosen to help showcase the benefit of solar PV in as many areas as possible. The map below highlights all the proposed locations in Phase 1. Additional sites planned for Phase 2, aim to ensure a good distribution of the programme across Gloucestershire. Site selection will be subject to future building use, electrical condition, roof structure, orientation, planning and other constraints. Priority will also need to consider the best business case balancing the cost of installation and the power generation potential.



Data Protection Impact Assessment (DPIA) implications

25. There are no Data Protection issues resulting from this project. This has been confirmed by the Information Management Service.

Social value implications

26. The council is committed to a performance and evidence-based approach to Social Value based on the National TOMs (Themes, Outcomes and Measures). Successful Tenderers across the project are required to propose credible targets against which performance will be monitored for the successful supplier. These may include, for example, local procurement, volunteering, apprenticeships, and reducing CO2 emissions in the delivery of the contract.
27. GCC's Social Value officer recommends that a 15% weighting is applied for Social Value within the tender evaluations, as per the Social Value Policy. Responsible officers will monitor social value commitments, with agreed reporting periods to track progress ensuring commitments are undertaken in their entirety and using the Council's leverage when suitable to support delivery.

Consultation feedback

28. This project has no direct impact on members of the public; therefore, no public consultation was necessary for this project.

Officer recommendations

29. It is recommended that Cabinet approves Option 2– enabling GCC to deliver a programme of solar PV across more of its estate.

Performance management/follow-up

30. Monitoring of the performance of the solar PV installations will be completed on at least a biannual basis. Tracking of the performance, and the associated savings will be necessary as this forms part of the Salix requirements and supports the repayment criteria. Evidencing the kWh saved from each solar installation will support the utility savings and help to provide support for future similar solar installations.

Appendix

Output and financial data

MONTHLY ENERGY PRODUCTION (kWh)

MONTHLY TOTAL GENERATION	Days	Annual Generation	January	February	March	April	May	June	July	August	September	October	November	December
	Quedgeley Library	12,738	372	616	1147	1470	1674	1710	1643	1426	1020	868	420	372
	Lydney Library	14,455	372	504	1178	1620	2015	2130	1953	1736	1260	837	540	310
	Newent Library	9,235	248	420	806	1080	1240	1260	1178	1085	750	620	288	260.4
	Whaddon Youth Centre	19,878	465	812	1612	2340	2821	2910	2759	2356	1590	1209	570	434
	Cheltenham Library	9,182	233	392	775	1080	1271	1290	1209	1085	750	589	273	235.6
	Hesters Way Library	14,720	403	700	1302	1710	1953	1950	1860	1705	1200	1023	480	434
	Oakwood Children's Centre	54,191	1364	2436	4681	6300	7440	7590	7223	6293	4410	3472	1680	1302
	Archives Office	165,039	4160	7451	13640	19146	22528	22887	21226	20079	13623	11207	4629	4464
	Coroners Court	102,794	2486	4379	8336	12048	14390	14802	13783	12434	8379	6470	2847	2440
	Tewkesbury YSC	24,862	6167	1075	2052	2913	3463	3564	3326	2957	2013	1562	714	605
	The Vibe	39,783	946	1680	3230	4674	5592	5766	5354	4796	3231	2489	1092	933

Annual Generation	466,876	Grid conversion	0.207074
CO2 KG	96,677,92	CO2 Tonnes saving/year	96.98

Site	kWp	Annual Generation	Current Annual Energy Usage	Panel Install Cost	23/24 Predicted Energy Spend	Average Cost Saving for 1 year	Annual Income SEG	% of Total Bill Offset
Quedgeley Library	12.88	12,738	10,083	£ 27,119	£ 3,782	£ 1,849	£ 286	72%
Lydney Library	16.38	14,455	10,431	£ 28,121	£ 4,104	£ 1,947	£ 353	73%
Newent Library	10.66	9,235	9,199	£ 20,131	£ 3,583	£ 1,596	£ 190	60%
Whaddon Youth Centre	22.75	19,878	18,026	£ 29,990	£ 6,614	£ 3,213	£ 480	70%
Cheltenham Library	10.12	9,182	32,181	£ 24,630	£11,801	£ 4,939	£ 69	44%
Hesters Way Library	13.65	14,720	12,317	£ 27,087	£ 4,613	£ 3,214	£ 480	101%
Oakwood Children's Centre	57.785	54,191	66,660	£ 58,278	£25,300	£10,014	£ 1,125	53%
Archives Office	163.8	165,039	157,411	£160,305	£52,282	£17,101	£4,420	58%
Coroners Court	100.1	102,794	152,819	£ 106,775	£54,153	£25,334	£ 1,440	55%
Tewkesbury YSC	28.665	24,862	11,416	£ 29,060	£ 4,193	£ 1,371	£ 816	91%
The Vibe	38.22	39,783	19,072	£ 37,680	£ 6,372	£ 2,566	£1,258	99%
	<u>475</u>	<u>466,876</u>	<u>499,615</u>	<u>£549,176</u>	<u>£176,796</u>	<u>£73,144</u>	<u>£10,917</u>	

Energy Price Forecasting

The Department for Energy Security and Net Zero (Formally BEIS - Business, Energy & Industrial Strategy (DBEIS)) publishes [historical energy prices covering years 2004-2021](#).

From analysing this data, we can see:

- A **260%** increase in electricity prices, 2004-2021
- An **84%** increase in gas prices, 2004-2021

Solar PV installations have at least 20-year lifespan. Various models are needed to assess different outcomes. For the report a conservative 1% increase has been used from the end of our secured electricity purchase rates in March 2026.

Using the forecast from Cornwall Insight (Figure 1) it is estimated that energy prices will remain at the current “high” level until at least 2030.

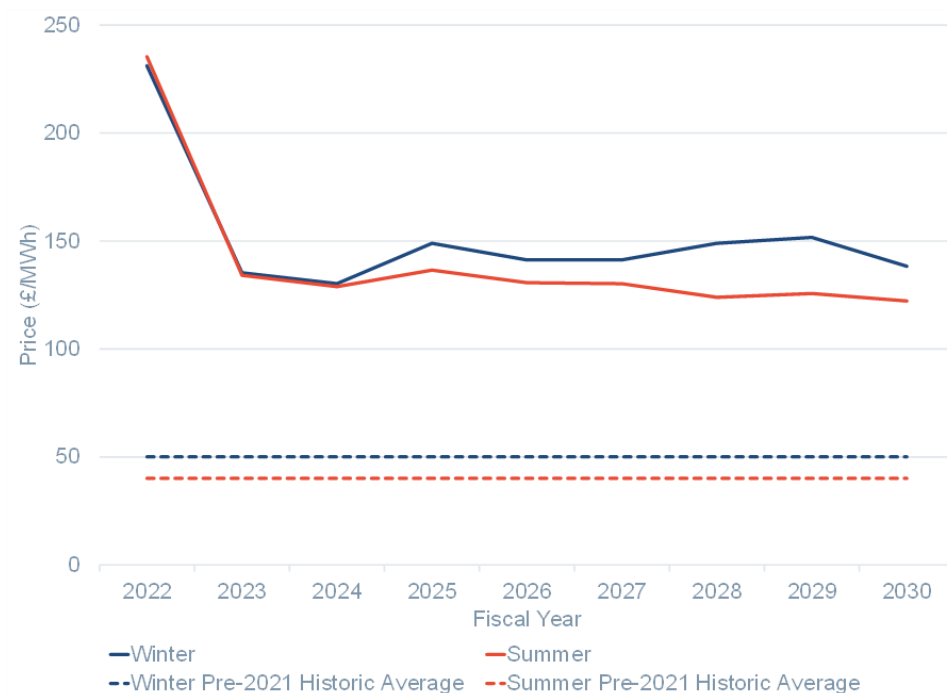


Figure 1 - Taken from [Cornwall Insight](#) – showing future energy predicted prices