Item 3

16th April 2024

Glasgow City Council

Net Zero and Climate Progress Monitoring City Policy Committee

Report by George Gillespie, Executive Director of Neighbourhoods, Regeneration and Sustainability

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UPDATE ON GCC SOLAR PV INSTALLATION PROGRAMME

Purpose of Report:

To provide Committee with an update on the plans to install additional photovoltaic solar generation on the Glasgow City Council estate.

Recommendations:

The Committee is asked to:

1) Note the contents of this report;
2) Note the capital funding available and match funding secured;
3) Note the phased approach to installation, including the progress towards delivering phase 1 and preparations for future phases.
4) Note that further updates will be provided to Committee on an annual basis

Ward No(s):	Citywide: ✓
Local member(s) advised: Yes ☐ No ☐	consulted: Yes ☐ No ☐

1. Introduction

1.1 The Glasgow Climate Plan sets out the plans to achieve the ambitious target of the city being net zero carbon by 2030. The third iteration of the Glasgow City Council Carbon Management Plan (CMP3) supports the Council's journey towards net zero carbon from our own estate and activities, in line with the wider city target. CMP3 sets a target to reduce direct emissions by at least 80% by 2030. How the Council heats and powers its buildings (with electricity, gas and oil) accounts for the majority of measurable emissions (74%). Therefore, reducing the amount of energy consumed by the Council across its estate is a key focus for the CMP3 alongside decarbonising the energy it does consume.

1.2 Solar photovoltaic (PV) power generation is a proven renewable energy technology that, when retrofitted on the Council estate, delivers annual reductions in emissions associated with the Council's electricity usage, whilst reducing the cost of energy and protecting against energy price fluctuations. Whilst the national grid is progressing towards decarbonisation, use of zero emission local generation at the point of consumption accelerates carbon reduction and contributes directly to the Council and city's emission targets.

1.3 GCC currently operates 33 roof-mounted PV arrays of varying size and generation capacity, measured in kilowatt peak (kWp)[1] and kilowatt hours (kWh)[2] respectively. The number of installations, and therefore generation capacity, has risen in recent years. In 2016 around 285,000 kilowatt hours (kWh) of PV generation was recorded, rising to approximately 616,000 kWh in 2022.

1.4 A phased program to install PV generation is underway across the Council estate. This program will build upon the previous solar PV installations and will contribute to reducing the carbon emissions associated with GCC electricity use as well as providing cost savings. The project was presented to the meeting of the Climate and Sustainability Board on the 28th March 2023, where the Board noted its approval.

1.5 The Phase 1 installation programme will introduce eight additional arrays with a collective size of 992 kWp and generation capacity of 700,000 kWh when complete. The program includes the installation of the largest roof mounted solar array in the City.

2 Funding

2.1 The PV installation programme will maximise: energy generation, emission reduction, and financial savings to the council via the use of the £2 million capital funding previously approved for solar PV as part of the 22/23 capital Investment Options (22GF47) and presented to the Net Zero and Climate Progress Monitoring City Policy Committee, 23rd May 2023.

[1] The maximum amount of power produced under standard laboratory test conditions, which broadly equate to bright sunshine.

[2] A measure of electrical energy equivalent to a power consumption of one thousand watts for one hour.

https://www.glasgow.gov.uk/councillorsandcommittees/viewDoc.asp?c=P62AFQDNZ3ZLDN0GDN

2.2 Funding will be enhanced by use of match funding from Salix. Salix is a non-departmental public body, owned wholly by Government. Salix administers funds on behalf of the Department for Energy Security and Net Zero, the Welsh and Scottish Governments, and the Scottish Funding Council. https://www.salixfinance.co.uk/loans/scotland-loans

2.3 GCC successfully secured a Salix loan of £522,302 which will make up 50% of the funding for phase 1 of the programme. Both GCC and Salix funding will be repaid using the savings generated via the reduction in electricity purchased from the national grid.

2.4 The electricity output of the phase 1 locations has been modelled using sunlight irradiation data for the Glasgow area and has been adjusted for orientation of the buildings. This approach indicates a payback period of approximately 6 years[3] based on estimated savings (section 3.3). Increased electricity costs, improved PV efficiency, and a reduction in PV costs have reduced the effective payback period for PV installations. As the technology is designed to operate in excess of 25 years, this provides a significant period of zero cost and net zero generation post return of investment.

3 PV Installation – Phase 1

3.1 NRS Sustainability has prioritised previously identified GCC owned, or long term leased buildings for which PV feasibility studies have been completed. To progress the programme, eight of these sites were selected[4] for inclusion in the phase 1 Invitation To Tender (ITT) published for of the project. The submissions received as part of the competitive tender process have now been assessed, and the contract for final design and installation of the PV arrays awarded to Vital Energi. https://www.vitalenergi.co.uk/

3.2 The eight buildings identified as part of phase 1 are shown in the table below. This includes the proposed PV array at each with the array size and modelled annual yield[5]:

Location	Array Size (kWp)	Modelled Annual Yield (kWh)
Kelvinhall	600	381,000
Dalmarnock Primary School	130	108,550

[3] Across all eight locations

[4] Full criteria previously presented in update to Net Zero and Climate Progress Monitoring City Policy Committee 23/05/23 section 3.1. https://www.glasgow.gov.uk/councillorsandcommittees/viewSelectedDocument.asp?c=P62AFQDNZ3ZLDN0GDN

[5] Modelled Annual Yield is the amount of electricity that can be generated adjusted for geographical and seasonal changes to the Sun's position.

Haghill Primary School	50	41,750
St Bernards Primary School	50	38,100
Camstradden Primary School	50	40,600
Castleton Primary School [6]	48	39,312
Muirhead Rd Day Care Centre	32	25,984
Mallaig Rd Day Care Centre	32	25,984

3.3 The project will utilise a combination of Regenerative Capital funds and Salix Loan funding and, based on the modelled annual yield and at current prices, should achieve estimated electricity cost savings of £182,000 per year.

3.4 Phase 1 of the programme is expected to be completed by October 2024.

4 PV Installation – Future Phases

4.1 A study will be undertaken to progress a further thirty-seven (37) of the identified locations to full feasibility assessment. This will provide clear advice on viable array options, installation considerations and provision of a work package containing design and installation information.

4.2 It is estimated that these locations could contribute approximately a further 4 MWp of solar generation and represent a considerable increase in PV generation capacity across the Glasgow Council building estate. Upon completion these have the potential to deliver almost 3.2 GWh of electricity per annum saving over 715 tCO_2e[7].

4.3 The outcomes of the feasibility studies for these locations (detailed in Appendix A) , will determine the composition and scale of future installation phases. These will be subject to competitive tender as work packages similar in scale to phase 1. To progress the appointment process, an existing Crown Commercial Framework will be utilised for the procurement of the feasibility studies.

4.4 An Initial Procurement Assessment (IPA) has been completed and a Statement of Requirements (SoR) finalised to advance the appointment of a consultant to complete the feasibility studies. This is currently with the Corporate Procurement Unit and is expected to be published by April 2024.

4.5 Feasibility studies are currently scheduled to be completed by August 2024.

[6] Array size at this location to be confirmed.
[7] Based on 0.225 $kgCO_2e/kWh$ including transmission loses.
https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

5 Next Steps

5.1 NRS Sustainability will progress phase 1 of the project, to complete the full installation of the project within schedule.

5.2 NRS Sustainability will progress the procurement of updated feasibility studies to be undertaken for the additional candidate properties to inform future phases.

5.3 NRS Sustainability will continue to work with Salix to maximise the match funding available for future phases.

5.4 NRS Sustainability will review all GCC locations with the intent to maximise financial and carbon emission benefits from the Council estate and use the information obtained to help inform the development of the Community Renewable Energy Framework.

5.5 NRS Sustainability will work with internal and external stakeholders to ensure proper management and oversight of the project through to delivery and implementation. This will include ensuring issues such as local grid capacity, building ownership status and condition, warrants and permissions are fully considered.

6. Policy and Resource Implications

Resource Implications:

Financial:	There are no direct financial implications arising from the report.
Legal:	The report raises no direct legal issues.
Personnel:	GCC Sustainability, ALEOs, Corporate Asset Management will all have involvement in project initiation, development and operational aspects.
Procurement:	Procurement resources will be required for the tender process.
Council Strategic Plan:	Contributes to Grand Challenge 3 - *Fight the Climate Emergency in a Just Transition to a Net Zero Glasgow* and Mission 2 - *Become a net zero carbon city by 2030*

Equality and Socio-Economic Impacts:

Does the proposal support the Council's Equality Outcomes	Not directly. However reducing the Council's utility costs and liability may free up financial resources that could be focused on the Council's equality objectives.

2021-25? Please specify.	
What are the potential equality impacts as a result of this report?	No significant impact.
Please highlight if the policy/proposal will help address socio-economic disadvantage.	Financial benefits to the Council and increased employment opportunities represent positives in this respect.

Climate Impacts:

Does the proposal support any Climate Plan actions? Please specify:	This project provides a specific response to action 17 of the Climate Plan. Also contributes to many of the actions within the Climate Plan, including actions 3, 6 and 49.
What are the potential climate impacts as a result of this proposal?	A reduction in carbon emissions relating to the electricity usage in buildings through use of zero emission generation.
Will the proposal contribute to Glasgow's net zero carbon target?	By reducing emissions relating to the electricity usage of buildings, this project will have a direct positive impact on Glasgow's net zero carbon target.
Privacy and Data Protection Impacts:	Not directly applicable to this report.

7. Recommendations

7.1 The Committee is asked to:

(1) Note the contents of this report;
(2) Note the capital funding available and plans to maximise the benefits of match funding for the installation of PV generation on the Council estate;
(3) Note the proposed phased approach to installation, including the progress towards delivering phase 1 and preparations for future phases.
(4) Note that further updates will be provided to Committee on an annual basis.

Appendix A:
Solar PV Locations being progressed to Feasibility Study.

Sites	Address	Potential Array Size (kWp)[8]	Potential Annual Yield (kWh)[9]
Avenue End Primary School	290 Mossvale Road, Glasgow G33 5NY	50	40,600
Bankhead Primary school	66 Caldwell Avenue, Glasgow G13 3AS	50	40,600
Bellahouston Leisure Centre	31 Bellahouston Drive, Glasgow G52 1HH	100	81,200
Castlemilk Pool	137 Castlemilk Drive, Glasgow G45 9UG	50	40,600
Castlemilk Sports Centre	28 Dougrie Road, Glasgow G45 9NH	100	81,200
Corpus Christie Primary School	179 Pikeman Road, Glasgow G13 3BH	50	40,600
Eastbank Primary School	80 Gartocher Road, Glasgow G32 0HA	50	40,600
Scotstoun Stadium arena	112 Danes Drive, Glasgow G14 9HD	100	81,200
Gorbals Leisure Centre	275 Ballater Street, Glasgow G5 0YP	400	324,800
Hazelwood School	50 Dumbreck Ct, Glasgow G41 5DQ	50	40,600
Holyrood Sports Centre	110 Dixon Rd, Glasgow G42 8BA	50	40,600
Langside Primary School	233 Tantallon Rd, Glasgow G41 3JW	50	40,600
Maryhill Leisure Centre	Gairbraid Ave, Glasgow G20 8YE	32	26,000
Palace of Art Sports Centre	1121 Paisley Rd West, Glasgow G52 1EQ	200	162,400
Pollok Civil Realm	Cowglen Rd, Glasgow G53 6EW	50	40,600
Scotston Primary School	21 Duncan Ave, Glasgow G14 9HN	50	40,600
Shawlands Primary school	1284 Pollokshaws Rd, Glasgow G41 3QP	50	40,600
Springburn Leisure Centre	10 Kay St, Glasgow G21 1JY	50	40,600
St Joseph's Primary School	39 Raglan St, Glasgow G4 9QX	50	40,600
Riverside Primary school	635 Govan Rd, Govan, Glasgow G51 2AQ	50	40,600
Sunnyside Primary School	1 Powrie Street, Glasgow G33 5LA	50	40,600
Thornwood Primary School	11 Thornwood Ave, Glasgow G11 7QZ	50	40,600
Gartcraig Depot	271 Gartcraig Road, Glasgow G33 2SS	200	162,400
City Building Glasgow LLB HQ	350 Darnick Street, Glasgow G21 4BA	300	243,600
Polmadie Recycling Centre	425 Polmadie Road Glasgow G42 0PJ	300	243,600
Blochairn Recycling Facility	Blochairn Road, Glasgow G21 2RL	150	121,800

[8] Based on buildings of similar typologies already being progressed to final design
[9] Based on standard solar irradiation values for similarly scaled projects

Daldowie Training Centre	2 Daldowie Garden Centre, Glasgow G71 7SN	150	121,800
Fruit Market	130 Blochairn Rd, Glasgow G21 2DU	300	243,600
Cardonald Primary School	1 Angus Oval, Glasgow G52 3HD	50	40,600
Barmulloch Primary School	305 Forge Street, Glasgow G21 2AH	50	40,600
Battlefield Primary school	44 Carmichael Place, Glasgow G42 9SY	50	40,600
Sandaig Primary school	31 Burnmouth Road, Glasgow G33 4SA	50	40,600
St Philomena's Primary School	35 Robroyston Road, Glasgow G33 1EA	50	40,600
St Rose of Lima Primary School	295 Mossvale Road, Glasgow G33 5QS	32	26,000
Eastmuir School	211 Hallhill Road, Glasgow G33 4QL	50	40,600
Kings Park Primary School	44 Kingsbridge Drive, Glasgow. G44 4JS	50	40,600
Glasgow Meat Market Sheds	23 Bellgrove Steet, Glasgow	400	324,800