Meeting:	Executive Member Decision Session
Meeting date:	5 May 2026
Report of:	Chief Strategy Officer
Portfolio of:	Councillor Jenny Kent, Executive Member for Environment and Climate Emergency

Decision Report: Energy Independence for York

Subject of Report

1. This report considers the potential for York to achieve energy independence through a combination of energy efficiency and new renewable generation. It considers the associated benefits, challenges, progress to date and required future activity.

2. Energy Independence would mean that York is able to meet its energy needs entirely through local generation, without relying on external sources. Energy independence offers significant economic, social and environmental benefits, but will also require significant and co-ordinated investment.

3. As of 2023, total energy demand for York was 703.29 Gigawatt hours (GWh). In the same year, York generated 15.72 GWh from renewable energy sources, constituting 2.24% of total energy demand. There is a known pipeline of an additional 109.288 GWh of annual energy generation.

4. Work is underway to go beyond the current known pipeline, exploring opportunities for mass roll-out of rooftop solar, large-scale renewable developments and utilisation of renewable heat. Funding has been awarded through the Mayoral Energy Generation Accelerator Programme (EGAP) to:

    i. Complete a Full Business Case for a Green Energy Park at Harewood Whin (£200k)

ii. Undertake a techno-economic feasibility study for a city centre heat network (£100k)

iii. Landscape assessment for new renewable opportunities (£130k)

Benefits and Challenges

5. Energy Independence has the potential to provide financial savings for households by installing self-generation which can significantly reduce utility bills and insulate consumers from price spikes. Localised energy also allows homes to maintain power during grid outages, providing protection against extreme weather.

6. Producing our own energy reduces vulnerability to global supply chain disruptions and geopolitical instability.

7. Transitioning to local, renewable sources reduces carbon emissions and reliance on polluting fossil fuels. Clean, local power is an integral component of decarbonising York's energy system, which is currently responsible for 120,000tCO_2e, or 16% of York's direct carbon emissions.

8. Economic growth: Investments in domestic renewable infrastructure stimulate the local economy, create jobs, and keep financial resources within the area.

9. It is challenging to find consistent forward and backward-looking data when it comes to energy at a local authority level, which means this report is limited in its ability to establish a consistent way of measuring York's progress towards energy independence. There are two options for ongoing monitoring:

    - The percentage of total final energy consumption York meets with its renewable energy capacity, reported 2 years in arrears.
    - The percentage of projected future energy demand York can meet with its renewable energy capacity.

This report looks at the percentage of projected future energy demand York can meet with its renewable energy capacity. However, since there are no retrospective total final number for actual annual energy demand in York, using this as a measure of progress going forward would rest on the assumption that the NPG DFERS is an accurate reflection of real energy demand.

10. When looking at the pipeline of renewable energy projects across York, this report does not present a complete and confident view; when looking at projects that are planned but not yet delivered this report only captures non-council delivered projects where they are recorded in the DESNZ planning database.

11. The NPG DFERS sees York reach net zero by 2050; this falls short of York's ambition to be net zero by 2030. Hence, this report is limited by a lack of projections that match York's ambition.

Policy Basis for Decision

12. The York Prospectus, approved by Executive in November 2025, sets the goal for York to generate more renewable energy than it consumes, becoming the UK's first net exporter of renewable energy. This goal supports the council priorities of Equality, Affordability, Climate and Health.

13. The York and North Yorkshire Draft Strategy for a Sustainable Future includes an ambition for York and North Yorkshire to achieve energy independence. While possible, it will require a bold transformation through targeted investment, co-ordinated delivery and planned infrastructure deployment.

Financial Strategy Implications

14. Achieving energy independence will require investment by external bodies such as DESNZ, YNYCA and private sector partners. As such, the 3 schemes referred to in this report have funding allocated by the YNYCA. Further investment will need to be identified and secured in order to reach the energy independence ambition.

15. In recent years, the cost of energy usage has seen significant volatility from global events such as the invasion of Ukraine. Being more independent from such events will reduce the pressures on the Council's budget and help to support a sustainable long term financial strategy.

Recommendation and Reasons

16. The Executive Member is asked to:

i. Note the goal for York to become the UK's first net exporter of renewable energy, associated challenges, progress to date and planned activity

ii. Accept grant funding from the Mayoral Combined Authority to:

- Complete a full business case for a Green Energy Park at Harewood Whin (£200k)
- Complete a techno-economic feasibility study for a city centre heat network (£100k)
- Provide staff capacity to support delivery of the Energy Generation Accelerator Programme (£130k)

Background

17. This report considers the ambition of Energy Independence in York. It considers current energy demand and renewable generation from within the local authority boundary, the planed pipeline for new generation and the proposed approach to identify new generation opportunities. Energy independence is a stated objective of the Draft York and North Yorkshire Strategy for a Sustainable Future[1] and the York Prospectus[2].

18. Energy Independence would mean that York is able to meet its energy needs entirely through local generation, without relying on external sources. In the context of this report, energy is limited to electricity, as comparing across multiple fuel types is not possible for this analysis. Opportunities to generate renewable heat are considered in the future pipeline, but do not contribute to the headline data.

19. Energy independence offers significant benefits:

[1] https://yorknorthyorks-ca.gov.uk/wp-content/uploads/2026/04/YNY-Strategy-for-a-Sustainable-Future-Consultation-Draft.pdf
[2] https://democracy.york.gov.uk/documents/s186082/Item%2015%20-%20Yorks%20Prospectus%20Going%20for%20Good%20Growth%20with%20Innovation%20Culture%20and%20Heritage%20at%20our%20hea.pdf

- Economic – The cost of imported energy to meet forecast demand in 2030 is expected to be £43m[3] and in 2050, it would exceed £100m[3]. Locally owned renewable generation ensures these revenues stay within region. Local generation can reduce the cost of energy to consumers and through community ownership models, it can contribute to community wealth building.
- Social – affordable, locally produced energy can support residents in fuel poverty and insulate consumers from sudden price shocks and inflation. It improves security of supply and reduces the likelihood of power outages as a result of extreme weather events.
- Environmental – clean local power reduces reliance on fossil fuels. In 2023, electricity consumption in York accounted for 120,000tCO_2e, or 16% of total direct emissions.

20. The following analysis utilises energy demand data from Northern Power Grid (NPG), measuring York's renewable energy capacity and future planned renewable developments against NPG's projections for expected energy demand in York from 2023 up to 2050. It focuses on energy demand as opposed to total final energy consumption, as energy demand captures transmission and distribution losses making it a more accurate representation of the total renewable energy York would need to supply to achieve energy independence.

21. NPG's Distribution Future Energy Reference Scenario (DFERS) demonstrate how energy demand is likely to change in the coming decades. We are using the most optimistic DFERS scenario for the analysis, in which:

"*Net zero is met by 2050 with ambitious early momentum and support in line with existing commitments. Relies on extensive investment in low carbon tech, early action from government and high levels of engagement from consumers.*"

Total energy demand in 2023 (GWh)	Total energy demand in 2030 (GWh)	Total energy demand in 2050 (GWh)
703	869	1,427

[3] Based on 2024 prices

Under this scenario, energy demand in York will increase by 103% by 2050. Demand is expected to rise from 703.29 GWh in 2023 to 869.13 GWh in 2030, reaching 1,427.59 GWh by 2050, as shown below:

22. This report uses these projections to quantify the gap between current and future energy demand and the requirements for achieving energy independence.

Energy demand and renewable generation in 2023

23. In 2023, York generated 15.72 GWh from renewable energy sources, constituting 2.24% of total energy demand for York that year.

Source	Number of sites	Generation capacity (MW)	Annual generation (GWh)
Photovoltaics	4,772	18.7	15.62
Onshore wind	6	73	0.07
Offshore wind	0	0	0
Hydro	0	0	0
Anaerobic digestion	0	0	0
Offshore wind	0	0	0
Wave/tidal	0	0	0
Sewage gas	2	0.7	*0.003*[4]
Landfill gas	2	7.1	*0.021*[4]
Municipal solid waste	0	0	0
Animal biomass	0	0	0
Plant biomass	0	0	0
Cofiring	0	0	0
Total	4,782	26.6	15.72

Data source: DESNZ Regional Renewable Statistics

Future energy generation in York

24. The NPG DFERS provides projections for the development of renewable capacity in York; however, these projections would not see York achieve energy independence.

[4] *The annual generation for sewage and landfill gas was not provided by DESNZ to prevent the output of individual plants being revealed. Annual generation was therefore estimated from the generation capacity using DUKES load factor data.*

Year	Total demand (GWh)	Expected total renewable generation in York as projected by DFERS (GWh)	% of demand covered by local generation under DFERS projections for York	Total energy generation imported to cover projected demand (GWh)	Wholesale electricity (volume weighted) p/kWh (2024 prices)	Cost of importing energy to meet energy demand (2024 prices)
2030	869.13	144.90	17%	724.23	6	£43,453,792
2050	1427.59	439.22	31%	988.37	11	£108,720,467

25. To achieve energy independence, York needs to go beyond NPG's expectations for installed renewables across the local authority. It would need installed renewable capacity to generate:
    - 869.13 GWh annually by 2030
    - 1,427.59 GWh annually by 2050.

26. With only 2.24% of energy demand met by York's renewable supply in 2023, significant renewable infrastructure development over the coming decades is needed to achieve energy independence.

City of York Council progress since 2023

27. *Renewable Installation on City of York Council Owned Sites* – Since 2023, City of York Council has completed or supported several renewable projects, increasing total annual energy generation from renewables by 0.88 GWh.

Project Name	Completed	Annual generation (GWh)
Clifton with Rawcliffe Primary	May 2024	0.105
Applefields School	November 2024	0.142
Dringhouse Primary School	May 2024	0.031
Muddy Boots Nursery Acomb	October 2024	0.021
Westfield Primary Community School	October 2024	0.048
Energise Leisure Centre	April 2025	0.073
Yearsley Swimming Pool	March 2026	0.139
Elvington CE Primary School	March 2026	0.019
Pine Trees Care Centre	March 2026	0.018
St Mary's Primary School	March 2026	0.015
Joseph Rowntree School	October 2025	0.243
Knavesmire Pavillion	February 2026	0.026

28. *Small scale renewable developments (domestic and commercial)* – The Microgeneration Certification Scheme (MCS) database records all MCS certified small scale renewable energy installations (up to 50kW) and provides a picture of renewable generation growth across domestic and commercial settings since 2023. In total, small scale solar PV installation in York across domestic and commercial sites have contributed an estimated 14.13GWh annual energy generation. 91% of this generation comes from domestic solar PV.

Type	Sites	Installed Capacity (MW)	Expected Annual Generation (GWh)
Domestic Solar PV Installation	1,797	10.27	12.83
Commercial Solar PV Installation	164	1.62	1.30
Total	1,961	11.89	14.13

Planning permission approved projects

29. According to the Department for Net Zero and Energy Security Renewable Energy Planning database[5] (January 2026 report), renewable energy projects delivering a total of 103.90 GWh of annual energy generation have been approved. Of the 103.90 GWh expected from approved sites, 91% of this generation is expected to come from three solar farms, two private developments (72%) and one City of York Council site, Harewood Whin Energy Park (25%).

Operator (or Applicant)	Site Name	Technology Type	Installed Capacity (MWelec)	Annual generation GWh	Planning permission expires
Renewables First	Naburn Weir Hydro	Small Hydro	0.50	1.60	20/01/2023
Solar2 Limited	Hessay Solar Farm	Solar Photovoltaics	40.00	37.42	11/03/2027
Ampyr Solar Europe UK	Poppleton Solar Farm	Solar Photovoltaics	32.60	30.50	08/10/2027
Network Rail	Network Rail, Holgate Road - Solar Panels	Solar Photovoltaics	0.82	0.77	
T H Hobson Limited	Haggwood Farm, Broad Highway - Solar Panels	Solar Photovoltaics	0.23	0.21	28/04/2026
T H Hobson Limited	Westhouse Farm, Elvington - Solar Array	Solar Photovoltaics	0.22	0.21	28/04/2026

[5] https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract

Network Rail	Network Rail, Holgate Road - Solar Panels	Solar Photovoltaics	0.46	0.43	20/04/2026
Downing Renewable Developments	Walbutts Sewage Works, Brecks Lane - Solar Array	Solar Photovoltaics	0.27	0.25	
St Peters School	St Peters School, Clifton - Solar Panels	Solar Photovoltaics	0.15	0.14	07/07/2026
Solar Options for School Limited	Archbishop School, Hull Road - Solar Photovoltaic Panels	Solar Photovoltaics	0.46	0.43	
Yorwaste Limited	Harewood Whin, Tinker Lane - Solar Farm	Solar Photovoltaics	28.00	26.20	28/04/2028
Private Client	Newlands Farm, Wigginton - Solar Panels	Solar Photovoltaics	0.27	0.25	22/05/2029
University of York	University Of York, University Road - Solar Panels	Solar Photovoltaics	0.15	0.14	08/08/2029
University of York	, Innovation Way Solar Panels	Solar Photovoltaics	0.23	0.22	08/08/2029
Sainsburys Supermarkets Limited	Sainsburys supermarket - Solar Panels	Solar Photovoltaics	0.31	0.29	07/10/2027
Downing Renewable Development	Elvington Water Treatment Works - Solar Photovoltaic	Solar Photovoltaics	3.00	2.81	29/04/2028
York College	York College - Solar Panels	Solar Photovoltaics	0.28	0.26	
DED Company Limited	Yorkshire Water Naburn Lane - Ground Mounted Solar	Solar Photovoltaics	0.37	0.35	
University of York	Biology Department, Wentworth Way - Solar Panels	Solar Photovoltaics	0.22	0.21	01/08/2028
J Lister Electrical Limited	Donald Baron Court, Heslington - Solar Panels	Solar Photovoltaics	0.15	0.14	11/08/2030
York Community Energy	Better York Leisure Centre, Kathryn Avenue - Solar Panels	Solar Photovoltaics	0.21	0.19	
Bradshaw Farms Limited	Longfield Grange, York Road - Solar PV Arrays	Solar Photovoltaics	0.25	0.23	06/10/2028
David Lloyd Leisure Ltd	David Lloyd Clubs, Windmill Lane - Solar Panels	Solar Photovoltaics	No data provided	0.00	
R S Cockerill Limited	R S Cockerill York Limited, Stamford Bridge Road - Solar	Solar Photovoltaics	0.69	0.65	

City of York Council's pipeline

30. Beyond the pipeline of projects where planning permission has been granted, City of York Council has a pipeline of projects at various stages of development that will contribute a total of 4.534 GWh annually.

Project Name	Expected Annual Generation (GWh)
Union Terrace HyperHub	0.075
Askham Bar P&R Solar Carports	0.88
Monks Cross GM Solar & P&R Solar Carports	0.328
Grimston Bar GM Solar	1.35
Carr Infants Solar PV	0.054
Headlands Primary School	0.048
Huntington School (Main Building) (P)	0.105
St Oswald's Primary Solar	0.028
St Pauls CE VC Primary School	0.001
Wigginton Primary School Solar	0.021
Copmanthorpe Primary School	0.069
Ralph Butterfield Primary School (L)	0.077
York LNER Stadium Solar PV	0.382
Burnholme Sports Centre Solar PV	0.075
Moor Lane Youth Centre Solar PV	0.014
York Crematorium	0.004
Howe Hill Hostel Main Building	0.020
Central Library Solar PV	0.035
Poppleton Bar P&R Solar Carports	0.8
Acomb Explore Library	0.027
Burnholme Library	0.032

Summary of delivered and planned work

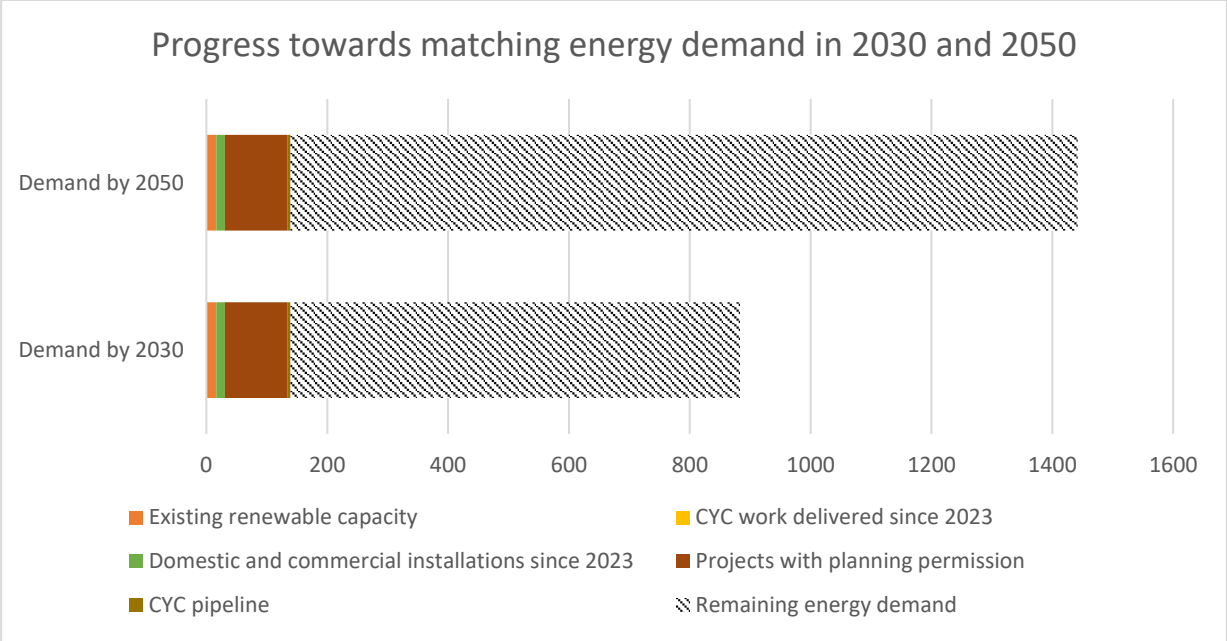
- The projects delivered since 2023 total 15.01GWh.
- Projects with planning permission approved total 103.9GWh
- Projects in the CYC pipeline not captured in the planning permission database total 4.53GWh

31. Once all planned work is complete York is expected to generate 139.16 GWh annually. This amounts to:

- 16.01% of total energy demand expected by 2030.
- 9.75% of total energy demand expected by 2050.

32. Based on the projected wholesale electricity prices from DESNZ[6], a scenario where no further work was planned beyond what is captured above would come at significant cost:

- £43,800,060.00 to purchase the remaining 729.97 GWh of energy as wholesale electricity.
- £141,730,710.00 to purchase the remaining 1,288.43 GWh of energy as wholesale electricity.



Beyond the planned pipeline

33. The graph above demonstrates that the current pipeline of work will not be sufficient in matching the scale of energy generation needed to achieve energy independence in York.

- A further 729 GWh of generation is needed annually to match expected energy demand in 2030.
- A further 1,288 GWh of generation is needed annually to match expected energy demand in 2050.

There are, however, additional opportunities for reaching energy independence.

Mass roll out of solar on council-owned buildings

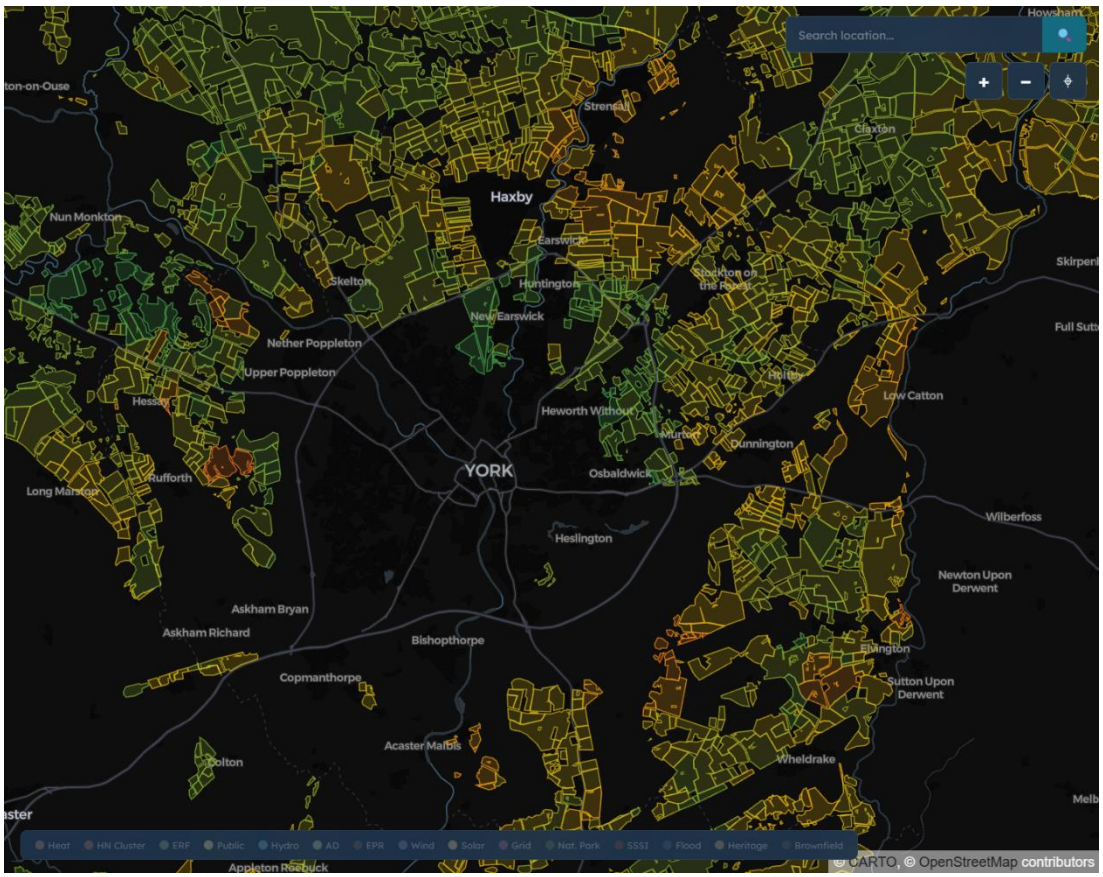
34. Work has been done to estimate the annual energy generation from the mass roll out of solar across council owned buildings, the

[6] https://www.gov.uk/government/publications/energy-and-emissions-projections-2023-to-2050

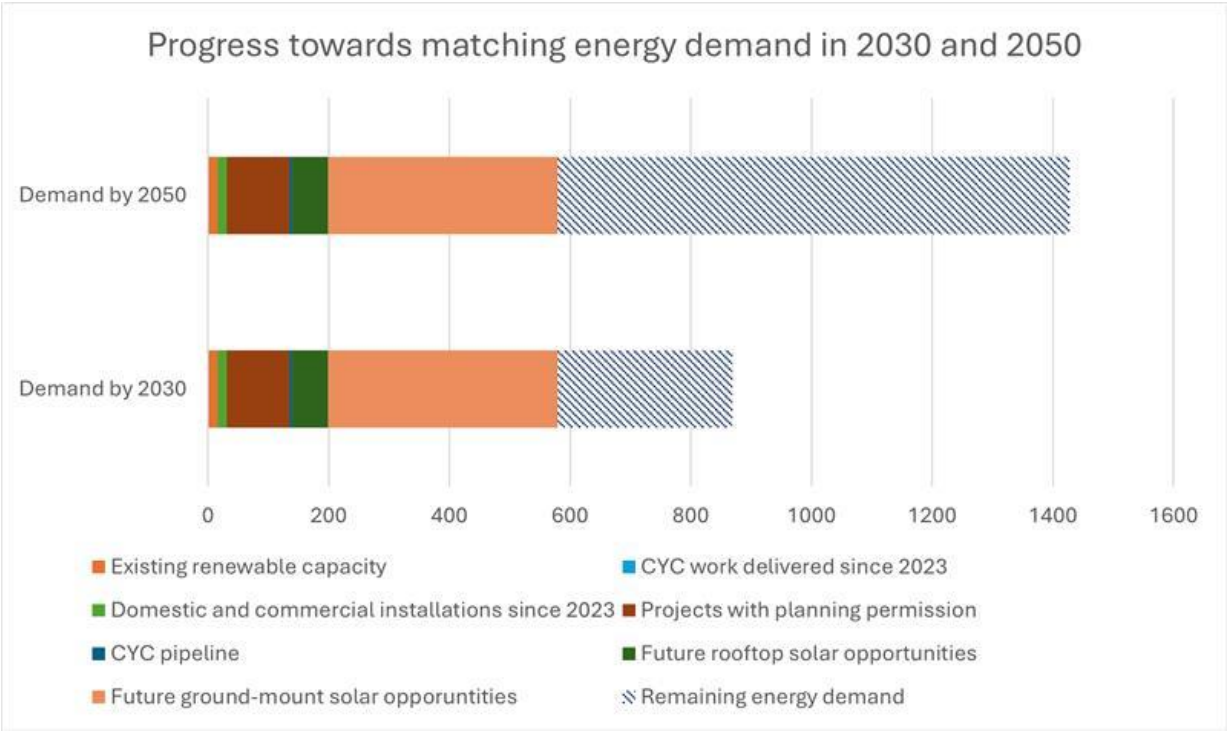
assessment found 175 additional rooftops where solar could be installed, on top of those covered above. The assessment did not rule out properties based on factors such as historical sensitivity. installing solar on the additional 175 council owned rooftops would result in a potential generation of 59.79 GWh annually. This would constitute 8.19% of the remaining generation needed to match demand in 2030 and 4.64% of the remaining generation needed to match demand in 2050.

Large scale renewable development

35. Large-scale renewable developments have the potential to contribute much greater capacity than numerous small-scale developments. Exploring options for further large-scale renewable projects could bring York significantly closer to energy independence than exclusively pursuing rooftop solar. Ongoing work under Energy Generation Accelerator Programme (EGAP) is identifying areas with potential for renewable energy development. This is beginning to provide insight into opportunities for larger-scale renewable projects that could deliver more substantial generation capacity and contribute to York's independent energy supply.



36. The green areas on the map above indicate locations where research has identified few anticipated constraints to the development of ground-mounted solar panels. Looking within the York local authority boundary, if all ground mount solar sites that had a constraint score of 3 or lower were installed this would generate 380.12 GWh annually. This would constitute 52.07% of the remaining generation needed to match demand in 2030 or 29.50% of the remaining generation needed to match demand in 2050, shown in the graph below.



Consultation and Analysis

37. Extensive consultation and stakeholder engagement were undertaken as part of the development of the York Local Area Energy Plan and York's Growth Prospectus.

38. The Climate Change and Natural Capital Programme Board have been consulted on the content of this report.

Organisational Impact and Implications

Financial – The projects included in the recommendation are funded by grant from the YNYMCA and no Council funding is required. Any further projects associated with energy independence will be

assessed for financial viability and will need to allow for all Council support costs e.g. procurement and legal, if required.

Human Resources (HR) – No implications identified

Legal – No implications identified

Procurement – All works and/or services must be procured via a compliant, open, transparent, and fair process in accordance with the council's Contract Procedure Rules and where applicable, the Procurement Act 2023. Further advice regarding the procurement process and development of procurement strategies must be sought from the Commercial Procurement team.

Health and Wellbeing – Climate change has been declared by the Lancet Commission on Planetary Health as 'the greatest public health risk of the 21st Century'. The direction of travel this report sets out towards reduced levels of greenhouse gas emissions will have positive benefits for health and wellbeing in the city, including contributing to a reduction in air pollution, fewer extreme weather events, and protection from emerging zoonotic diseases.

Environment and Climate action – the energy system accounts for around 17% of our local emissions in York. Local renewable generation will support our ambition for net zero.

Affordability – energy prices are a key contributor to fuel poverty. Reducing household energy prices will have a direct benefit for residents.

Equalities and Human Rights – Please refer to the Human Rights and Equality impact Assessment (HREA) in Annex A

Data Protection and Privacy – No implications identified

Communications – No implications identified

Economy – Delivery of local renewable generation projects has the potential for green job creation and skills development. Local suppliers and contractors should be sought wherever possible.

Property – Opportunities for renewable generation across the council's estate will be sought in line with the Asset Management Strategy.

Risks and Mitigations

39. Grid connection costs and timescales could be prohibitive for some projects. In mitigation, projects will be prioritised where behind-the-meter connections are possible. Storage and flexibility will be appropriately used to reduce peak demand.

40. Competing land use pressures (food, housing etc…) reduce the viability for large-scale renewable generation. In mitigation, new developments will be developed strategically in line with the national Land Use Assessment and local priorities.

41. While new renewable generation has the potential to delivery significant benefits, it also has the potential to exacerbate existing inequalities. In mitigation, projects will be developed in direct consultation with communities, with opportunities for community ownership and wealth-building considered as standard.

Wards Impacted

42. All wards are impacted

Contact details

For further information please contact the author of this Decision Report.

Author

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Service Area:	Climate Change
Report approved:	Yes
Date:	23/04/2026

Background papers

York Local Area Energy Plan
https://democracy.york.gov.uk/documents/s164228/Annex%20B_LAEP%20York%20Chapter.pdf

York's Growth Prospectus

https://democracy.york.gov.uk/documents/s186081/Item%2015%20-%20Yorks%20Prospectus%20Going%20for%20Good%20Growth%20with%20Innovation%20Culture%20and%20Heritage%20at%20our%20hea.pdf

York and North Yorkshire's Strategy for a Sustainable Future – Consultation Draft
https://yorknorthyorks-ca.gov.uk/wp-content/uploads/2026/04/YNY-Strategy-for-a-Sustainable-Future-Consultation-Draft.pdf

Annex

Annex A - Human Rights and Equality Assessment Tool (HREA)

List of Abbreviations Used in this Report:

CO_2e	Carbon dioxide equivalent
CYC	City of York Council
DFERS	Distribution Future Energy Reference Scenario
DPIA	Data Protection Impact Assessment
EGAP	Energy Generation Accelerator Programme
GWh	Gigawatt hours
LAEP	Local Area Energy Plan
MCS	Microgeneration Certification Scheme
MWh	Megawatt hours
NPG	Northern Powergrid
YNYCA	York and North Yorkshire Combined Authority