



Solar Feasibility Study

To: **Technical Advisory Group**

Date: **TBC**

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Reference: **TBC**

1 Reason for the report - *Te Take mō tēnei rīpoata*

The Technical Advisory Group is advising Council in the development of its next climate change response. This includes reviewing the Council's current strategy and action plans. The draft strategic framework has been developed, and the focus now has moved to the development of Action Plans. This report seeks guidance from the TAG with regards to potential solar actions to be included in a 'long-list' of actions. These actions will then be prioritised and costed for inclusion in the draft Action Plans for formal consultation and then inclusion in the final Action Plan and budgeted through Council's Long-Term Plan 2024-34

Questions for the Technical Advisory Group

- How much of a priority should a solar project be in comparison to other emissions reduction alternatives?
- Which options from the Solar Feasibility Study should be brought through the multi-criteria analysis?
- Are you aware of any funding opportunities we could seek to co-fund this work?

2 Background - *He tirohanga whakamuri*

In this report the Technical Advisory Group is presented with a Solar Feasibility Scoping Study developed by Energy Management Solutions (Emsol) for Whakatane District Council (the Council). The study was commissioned to identify opportunities to better understand solar energy generation opportunities on Council assets. The study was taken to the Council's Energy, Environment and Resilience Committee in May 2023 with recommendations that the study be received and discussed, and that the study inform further investigations and business cases prepared as part of the Climate Change Strategy review process.

2.1 Solar Feasibility Study

In October 2022, the Council commissioned Emsol to undertake a scoping study to assess the appropriateness of Council assets for solar installation. The Solar Feasibility Scoping Study is attached as Appendix 1.

The scope of the study was to understand how Council could achieve the following objectives:



- Reduce carbon emissions from energy consumption
- Reduce energy costs
- Generate revenue by 'selling back' unused energy
- Use existing Council structures/assets
- Raise awareness in the community about solar

The study looked at various factors that would be considered in a decision-making process such as payback periods, conversions to Net Present Value, visibility and community leadership, investment costs, maintenance etc. Initially twenty-nine sites were identified by staff (page 11 of Appendix 1). Through the feasibility process, eight sites were considered not viable for solar through the initial scoping phase of the study. The twenty-one remaining sites were assessed across multiple criteria and summarised in Table 0.2 page 5 of Appendix 1.

Emsol provided a short-list of eight sites that they recommended, considering financial outcomes, potential carbon savings, benefits to the community, strategic importance, and the ability to raise awareness of solar by demonstrating a diverse range of systems and technology.

If the Council invested in the 8 projects recommended it would cost approximately \$15.8 million in capital expenditure. The projects have simple payback periods of 10.6-19.4 years. For these projects once the payback period was covered, WDC's energy bill could decrease from \$1.5m, to a net income of \$100,000 p.a. Carbon emission reductions of the eight shortlisted sites would equate to 1,250 tonnes of carbon dioxide equivalent (CO₂e) per year.

2.1.1 **What the study told us:**

Within Council, energy efficiency and renewable energy opportunities are being actively progressed, including investigating the efficiency of solar panels (photovoltaics) for Council facilities. In the Energy Action Plan¹ of our current climate change strategy, investigating viable options to generate localised renewable energy for Council use (e.g., photovoltaics) was outlined as a short-term milestone under Goal three.

- *Goal three: Encourage the development of resilient low carbon energy options.*
- *Action 3.1: reduce organisational reliance on the national grid.*
- *Short term action: investigate viable options to generate localised renewable energy for council use (e.g. photovoltaics).*

The Solar Feasibility Scoping Study provides Council with a good foundation of prioritisation criteria to support decision making. The report offers a wide array of criteria that can be used to assess solar projects and could be used to assess other climate related projects.

- Pay-back periods and net present value were the key variables assessed under the economic criterion. Pay-back periods take into consideration the time it takes to "pay back" the capex cost. This was calculated by assessing how much of the electricity cost would be avoided by switching to solar, as well as the income generated from selling excess back to the grid.
- Net present value is the financial value of a project over its lifetime discounted to its value at the current point in time. For long-term projects it is usually reported as projected costs and benefits for each year. Put another way, it is a valuation methodology that adjusts the value of money over time.

¹ <https://www.whakatane.govt.nz/files/documents/climate-change-action-plans-energy-final.pdf>



Solar projects will likely sit under one of four broader climate outcomes, and it would be optimal to choose projects that cover multiple outcomes. Those outcomes are:

- Emissions Reduction – How much Carbon dioxide equivalent will be avoided by switching to a 100% renewable energy source.
- Leadership - Council can demonstrate leadership by adopting solar.
- Revenue Generation - There are some schemes where it may be possible to generate revenue by ‘selling back’ into the network.
- Resilience – Protecting energy supply against natural disasters.

The study provided financing options for the Council to consider. Funding options will need to be explored in more detail. Due to national direction promoting solar as a solution, it is possible more Crown funding could be made available. The study highlighted the option to lease panels from a third-party investor such as Meridian. This option would mean Council would pay for current electricity plus an approximate 4% of the solar capex for 15 years. After 15 years the Council would own the solar installation and receive full electricity cost savings. This option removes barriers to entry as Council is not required to invest capital upfront, however this model also reduces the financial returns that can be achieved.

2.2 Direction from the Energy, Environment and Resilience Committee

In May 2023, staff took a cover report with the Solar Feasibility Study to the Council’s Energy, Environment and Resilience Committee. The cover report is attached to this report as appendix 2. Staff gave the following recommendation which was approved by the Committee.

- **THAT** the Energy Environment and Resilience Committee direct staff to identify solar projects in the Climate Change Strategy review process using the Solar Feasibility Scoping Study for guidance.

During the process to identify solar projects, further investigation can be done on site analysis, funding options, and emissions accounting potential. Projects can be considered against the outcomes of the Climate Change Strategy and compared against other potential mitigation projects.

Considering the Solar Study through the Climate Change Strategy review process also allows for solar projects to be considered and phased in the context of the next long-term planning cycle and allows staff time to explore other potential funding streams to support project delivery.

However, should opportunities surface to accelerate solar projects (through new funding opportunities for example), then staff now have a report of potential projects it can bring to Council for consideration.

Councillors agreed that investigating solar further should be a priority for our Council. They noted that external funding opportunities should be explored as not to burden rate payers.



3 Considerations – *Whai Whakaaro*

3.1 Financial/budget considerations

The recommendations of this Report do not have any financial implications. However, if a solar project is outlined as a priority through the next climate change strategy and action plans, some funding will need to be allocated to start the work. The Solar Study outlines potential financial implications of each site being reviewed. Budget will be allocated for projects included in the draft Action Plans through the Long-Term Plan 2024-34.

3.2 Engagement and community views

Public engagement is proposed over the coming months on the Council's Climate Change Strategy. Solar options will be taken through a multi-criteria analysis and prioritised alongside other actions. Engagement may identify the community's views on relevant climate change actions.

3.3 Climate Change Assessment

Based on this climate change assessment, the decisions and matters of this report are assessed to have moderate climate change implications and considerations, in accordance with the Council's current climate change strategy.

If all the eight shortlisted projects are taken forward, approximately 1,250.6 tco2e would be saved every year. This would contribute a significant amount towards the Council's carbon reduction targets as part of the current climate change strategy and energy action plan.

3.4 Risks

This report outlines feasibility opportunities to install solar on council operated facilities. There is a low risk associated with the funding to deliver projects. There is uncertainty risks around financial assumptions applied to the options. Economic criteria such as net present value, payback years and marginal abatement cost of carbon are based off financial projections which can change over time. Therefore, the costs reflected in this report are likely to change over time. This will be alleviated by considering these projects against other options, undertaking further feasibility studies if necessary and applying for external funding opportunities.

The risk associated with the subject of this report is assessed to be low.

4 Next steps - *Ahu whakamua*

- Feedback from the TAG through this report will be used to inform the solar actions that are included in the long list of climate change actions for consideration. At the next TAG meeting, the group will be asked to provide input into prioritisation of actions against each other using a multi-criteria analysis. This will then inform the Steering Group as they recommend a draft Action Plan to the Environment, Energy and Resilience Committee.

Attached to this report:

- **Solar Feasibility Report**