

TO: CHAIR AND MEMBERS
SUSTAINABLE CITY ADVISORY
COMMITTEE

DATE: 2017 June 1

FROM: DIRECTOR PLANNING AND BUILDING

FILE: 76500 20
Reference: Environmental Planning

SUBJECT: RESPONSE TO FORCE OF NATURE DELEGATION ON SOLAR ENERGY

PURPOSE: To respond to the Committee's request for a response to the delegation advocating for a number of City actions in support of solar energy technology.

RECOMMENDATIONS:

1. **THAT** the Committee receive this report for information.
2. **THAT** a copy of this report be sent to the delegation representing Force of Nature.

REPORT

1.0 INTRODUCTION

1.1 Background

On 2017 January 17, the Environment Committee of Council received a delegation, representing the organization Force of Nature, who requested that the City support the installation of solar panels on home rooftops, through an expedited permitting process, adopting solar-ready guidelines, and declaring Burnaby as a Solar City. Arising from discussion, the Committee requested that staff report on this matter. This report responds to that request, and outlines the City's approach to solar energy, within the context of broader sustainability policy.

2.0 DISCUSSION - SOLAR ENERGY OPPORTUNITIES AND BURNABY POLICY

2.1 Solar Energy Benefits and Limitations

Solar energy systems may entail either solar hot water (solar thermal) systems, used for heating or pre-heating of hot water for domestic uses or other (e.g. swimming pool), or photovoltaic (PV) systems, used to generate electricity for use within a building. Both types of systems involve the installation of panels in a location and manner to receive maximum solar exposure, usually on rooftops.

The cost of solar energy systems has fallen quite significantly in recent years. Nevertheless, it is still more expensive, in areas such as Burnaby that are well serviced by utilities, to install solar instead of standard electricity and natural gas systems on a single family home. Since there is no cost for the energy once the system is installed, the upfront costs may be paid back over time, nevertheless the payback time for solar PV is typically still very long¹. Solar hot water systems may present a better business case but this depends on the type of system installed.

The use of solar energy can also reduce carbon emissions, depending on the source of energy being displaced. Since electricity in BC is already low-carbon, the biggest emissions reduction opportunity is to displace the use of natural gas. However, for home and building owners there may be bigger energy and emissions reduction gains to be had, often with lower costs, with other approaches, such as making the building more energy efficient, for example, with improved building envelope standards or retrofits.

Other types of solar technologies are also emerging, such as lower profile panels, window films, roofing tiles, and even solar roadways. In this context it would be important to examine an array of opportunities for solar energy which could be much broader than rooftop panels. Rapid evolution of technology and development of new markets may require different approaches.

2.2 Burnaby Policy Context

The City of Burnaby does not have any specific policy or regulation that precludes or encourages the use of solar energy. In larger developments, proponents are encouraged, through the development review process, to investigate approaches to reduce energy use and emissions. However, the specific approach or technology is not prescribed. Solar energy is among the options that may be considered or advanced, if shown to be appropriate for the site.

The Environmental Sustainability Strategy is a city-wide policy that sets a long term vision for the City to become a global leader in protecting and regenerating healthy ecosystems, supporting a healthy and prosperous community. The ESS is intended to set directions for environmental protection, stewardship, enhancement, and resilience in the city. It includes ten theme areas, each with a goal and supporting strategies and suggested actions. The theme of “Build” (buildings and energy) focuses on improving energy efficiency in new and existing buildings, reducing building waste, sharing energy, and encouraging renewable energy.

The CEEP, developed as a complementary and supporting plan to the ESS, is a plan for reducing community greenhouse gas (GHG) emissions and energy use, in order to address climate change, improve local air quality, save money, and improve livability and health. It shares five of the ESS goals, including the Build goal mentioned above. The CEEP also includes targets for emissions reduction.

¹ BC Hydro states that the payback time for a homeowner in an area serviced by the electrical grid can be 20 years or more: <https://www.bchydro.com/powersmart/residential/building-and-renovating/switch-to-solar-energy.html>

The ESS and CEEP's goal of Build: "Buildings and infrastructure that have a positive impact on the environment" supports renewable energy. Renewable (including solar) energy is placed within the following hierarchy in the CEEP (*Figure 1*). The reason for this hierarchy is to ensure that policies focus on the areas with the greatest ability to achieve the Plan's objectives.



Figure 1: Hierarchy for energy and emissions reduction in buildings, as shown in the CEEP

The use of renewable energy is therefore supported in concept, however it is likely that new specific policy developed in support of the ESS and CEEP will focus preferentially on reducing the demand for and use of energy, as a priority, such as with improved building envelopes.

2.3 Examples of solar energy use in Burnaby

There have been a number of solar installations in Burnaby, including:

- Harmony House, a single family home developed under the CMHC Equilibrium program to demonstrate leading green approaches; the home generates as much energy as it consumes and includes a solar PV system: <http://harmony-house.ca/>.
- The City's Bonsor Recreation Centre was retrofitted with a solar hot water system to heat water for the public pool.
- The UniverCity Child Care Centre includes a solar hot water system that is connected with the district energy system, offsetting energy use by the building.
- BCIT has installed the Energy OASIS project at its Burnaby campus, consisting of a solar PV array over top of parking stalls that supplies electricity for buildings and electric vehicle charging.

These examples illustrate that solar energy, in specific circumstances, can be a viable technology suited to the specific objectives and needs of a building or site, and that the City supports its investigation and installation where appropriate.

3.0 RESPONSE TO DELEGATION

The delegation presented the following recommendations:

1. Create an expedited permitting process for standard residential solar installations.
2. Require all new homes to meet the NRCan solar ready construction guidelines.
3. Complete the requirements and apply to become an Official Canadian Solar City.

3.1 Permitting Process

The delegation asserted that homeowners who wish to install solar panels are required to obtain multiple and costly permits and that the process is often unclear to applicants. The information and permit costs cited by the delegation did not relate to Burnaby specifically.

In Burnaby, home owners/builders who want to install solar panels on a new home need to attach documentation to their building permit about the system, including specifications and schematics for electrical and plumbing (if applicable). If an owner of an existing home wants to install solar panels, they must apply for a Building Permit and submit this same information. Building owners other than single and two-family homes must apply for a Preliminary Plan Approval (PPA). The City provides a brochure outlining the process and information required². Although solar installations are not specifically tracked, Building Department staff estimate the number of installations to be around or less than five in the past year.

The Force of Nature delegation's assertions that the process of obtaining permits for installing solar panels is arduous and expensive, therefore, do not seem to bear out for Burnaby. Should particular concerns be raised in future, staff would undertake to investigate and respond to the issue as appropriate.

3.2 Solar-Ready Construction Guidelines

Natural Resources Canada (NRCan) has produced guidelines to enable new homes to have solar panels more easily installed at a later date. They include: design considerations, such as pitch of roof, structural loading provisions, and space for panels; pre-installation of conduits, plumbing connections and electrical outlet; and provision of space in mechanical/electrical rooms. The delegation requested that Burnaby require that all new single family homes be constructed to meet these guidelines.

In 2013, the Province of BC introduced an opt-in Solar Ready Regulation that local governments could choose to enact. The City of Burnaby chose not to adopt this regulation at the time, since it would add to costs of construction and many homes would not be suitable for solar panels (e.g. due to shading), and the economics of such a broad application could not be demonstrated for each property affected. Furthermore, it was determined that there were no regulatory barriers to those homeowners who did wish to install solar panels. The rationale for not adopting the opt-in regulation or other solar requirements continues to apply. Furthermore, given the considerations discussed above regarding current costs and benefits of solar energy for single family homes, there does not appear to be a strong rationale for requiring provisions for its use.

² [https://www.burnaby.ca/Assets/city+services/building/Brochures+\\$!26+Bulletins/Heating/Solar+Hot+Water+Systems.pdf](https://www.burnaby.ca/Assets/city+services/building/Brochures+$!26+Bulletins/Heating/Solar+Hot+Water+Systems.pdf)

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3.3 Canadian Solar City

The delegation recommended that Burnaby apply for designation by the Canadian Solar Cities Project, a non-profit organization promoting solar energy, as a “Solar City”. Among the program’s eligibility criteria are requirements for the City to have renewable energy targets, and established policies and incentives for solar energy. Burnaby has adopted targets for reducing greenhouse gas emissions, contained in the Community Energy and Emissions Plan. These targets, however, do not specify a proportion of community energy to be supplied by renewable energy. As Burnaby does not meet these criteria, for reasons discussed above, the City would not qualify for designation as a Solar City at this time.

4.0 CONCLUSION

The delegation from Force of Nature requested that Burnaby develop an expedited permitting process, adopt solar-ready guidelines, and declare Burnaby as a Solar City, in order to encourage the deployment and use of solar energy in the City. For the reasons stated above in Section 2, the City’s approach will be to first develop policy that reduces energy demand, before developing policy targeted to specific energy types. Burnaby’s existing permitting process is clear, and provides advice to assist applicants who wish to install solar systems, therefore changes to this process are not necessary at this time. In 2013, Burnaby considered whether to obtain solar ready regulations and deemed it not feasible in the Burnaby context. It is not recommended that Burnaby pursue designation as a “Canadian Solar City” as the City does not meet the criteria set out by the project at this time.

As the ESS and CEEP are implemented and new policies and programs are developed in future to support reducing energy use and emissions in Burnaby, opportunities to encourage renewable energy will be further explored. Staff will also continue to monitor the efficacy of solar energy options.


Lou Pelletier, Director
PLANNING AND BUILDING

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cc: City Manager
Director Engineering
City Clerk