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Item No. Info Item 2
Environment and Sustainability Standing Committee
March 7, 2024

TO: Chair and Members of Environment and Sustainability Standing Committee

SUBMITTED BY: Original Signed

Cathie O'Toole, Chief Administrative Officer

DATE: February 23, 2024

SUBJECT: **Halifax Solar City Program Update - 2023**

INFORMATION REPORT

ORIGIN

December 4, 2018 Halifax Regional Council motion (Item No. 14.2.1):

MOVED by Deputy Mayor Mancini, seconded by Councillor Whitman

THAT Halifax Regional Council:

1. Approve the continuation of the Solar City Program as a clean energy, community-based program; and
2. Direct staff to provide annual reports on the Solar City Program to the Environment and Sustainability Standing Committee.

MOTION PUT AND PASSED

LEGISLATIVE AUTHORITY

Clause79A(1)(a) "...the Municipality may only expend money for municipal reasons if . . . (a) the expenditure is included in the Municipality's operating budget or capital budget or it otherized by the Municipality;

Clause104A(1)(b)&(c) "...Council may make by-laws imposing, fixing and providing methods of enforcing payment of charges for the for the financing and installation of any of the following on private property with the consent of the property owner...(b) energy-efficient equipment; (b) renewable energy equipment;

By-law Number S-500 Respecting Charges for Energy Equipment

BACKGROUND

The Solar City Program offers financing to property owners who wish to install a solar energy system at their property. Eligible property owners include residential, not for profits and places of worship. Eligible technologies include solar electric (photovoltaic), solar hot air and solar hot water. With guidance from the Solar City administrator, property owners select their preferred solar energy system and solar contractor. The administrator provides a level of review and due diligence to help ensure that a proposed solar energy system meets industry standards and will provide energy and cost savings over the lifetime of the system.

Financing for systems is applied to the property and not the individual, similar to a Local Improvement Charge (LIC). There are no credit checks required to confirm eligibility; however, property owners must be in good financial standing with respect to property taxes, LICs, and any other relevant municipal charges. Financing is repaid separately from the annual property tax bill at a fixed interest rate of 4.75% over ten years. Property owners have the option to pay in full at any time without penalty. If a participant sells their property before full repayment, they have the option to pay in full at the point of sale or pass the charge to the next property owner.

DISCUSSION

As summarized in Table 1, 859 Solar City Participant Agreements have been executed, totaling \$23.50 million in financing committed to the installation of solar energy technologies as of December 31, 2023. These systems are expected to save property owners a total of \$1.65 million annually in utility costs and reduce annual greenhouse gas (GHG) emissions in the community by approximately 7,100 tonnes of carbon dioxide equivalent (tCO_{2e}). To date, the Solar City Program has enabled the installation of 8.50 megawatts (MW) of renewable energy in the municipality.

Table 1: Summary of Solar City Program Key Performance Indicators up to December 31, 2023¹

Key Performance Indicators	2016-2018	2019	2020	2021	2022	2023	Total
Capacity (MW)	1.69	2.07	1.16	1.47	0.91	1.23	8.53
Energy generated per year (eMWh)	2,000	2,500	1,300	1,700	1,100	1,400	9,900
GHG emissions offset per year (tonnes CO _{2e})	1,400	1,760	970	1,230	770	980	7,100
First year utility savings (K)	\$ 315	\$ 406	\$ 223	\$ 290	\$ 183	\$ 235	\$ 1,653
System costs, HST included (M)	\$ 4.90	\$ 5.83	\$ 3.14	\$ 3.75	\$ 2.39	\$ 3.51	\$ 23.50
Executed Solar City Participant Agreements	224	217	109	128	77	104	859

As noted in the table above, the relationship between Key Performance Indicators each year has remained stable throughout the program. Varying totals from year to year are due largely to differing levels of participation in the Solar City program.

¹ Totals may not reflect the exact sum of years 2016 to 2023 as shown in table due to rounding.

To date there has been only one solar hot air system installed which does not provide enough information to accurately gauge average system expectations. In total, 43 solar hot water system agreements have been executed through the Solar City program. In recent years, there has been less interest in hot water systems and property owners have mainly chosen to finance solar electric that typically offers a higher return on investment. Solar hot water systems installed under the Program are expected to save property owners an average of \$450 on their utility bills in the first year of operation. With the expected escalation of fuel costs, the average property owner can expect to see a system payback of 22.6 years and will save approximately \$21,000 over the 25-year analysis period.

As shown in Table 2, there have been 815 solar electric system agreements executed through the Program. All but one system are connected to Nova Scotia Power Inc.'s transmission and distribution grid, making use of both the old Enhanced Net Metering Program and new Self-Generation Option. Solar electric systems installed under the Program are expected to save property owners an average of \$1,990 on their utility bills in the first year of operation. With the expected escalation of fuel costs, the average property owner can expect to see a system payback of 14.7 years (11.2 with available rebates) and save a total of \$70,000 over the 25-year analysis period. The 25-year Return on Investment (ROI) and Internal Rate of Return (IRR) is estimated to be 148% and 5.9% respectively. The average levelized cost of energy² (LCOE) for these solar electric systems is 16.18 cents per kilowatt hour ($\text{\$/kWh}$), 4 cents less than the current residential rate. As was the case with the Enhanced Net Metering program, the new Self-Generation Option locks in this LCOE for the lifetime of the system independent of increasing energy costs.

Table 2: Summary of solar electric statistics through the Solar City Program up to December 31, 2023³

Solar Electric Key Performance Indicators	Average	Total
Executed Solar City Participant Agreements	-	815
Energy generated per year (eMWh)	12.05	9,800
GHG emissions avoided per year (tonnes CO _{2e})	8.61	7,000
System costs (HST included)	\$28,300	\$23,000,000

While the Solar City Program offers complete financing to all feasible solar technologies, there has been a clear appetite for solar electric systems. Of the committed financing, 98% has been allocated to the installation of solar electric systems. This uptake can be attributed to innovative financing initiatives like the Solar City Program, increased market competition, the Enhanced Net Metering Program, the SolarHomes Rebate Program, and the Canada Greener Homes Initiative (Grant and Loan programs).

Industry Impacts

The Solar City Program has contributed to the growth of a competitive solar industry. In 2016, five solar contractors from across the province were participating in the Program while today, there are 80 listed under Efficiency Nova Scotia's Preferred Partner directory, 58 of which, are operating in the Halifax Region.⁴ The contractors who are actively participating have realized the value provided by the Program as it is a key point of contact for unbiased advice and education. This has greatly assisted solar contractors with the cost of acquisition as it allows them to streamline the quoting process and provide timely responses to interested property owners. By encouraging property owners to contact several solar contractors and evaluate each based on price, experience and quality, the value being offered has remained high while costs through the Program have generally trended downward, as shown in Figure 1.

² Levelized cost is the average expected unit cost over the 25-year system lifespan

³ Statistics do not include rebates.

⁴ Preferred Partners. Efficiency Nova Scotia, <https://www.energyns.ca/preferred-partners/>

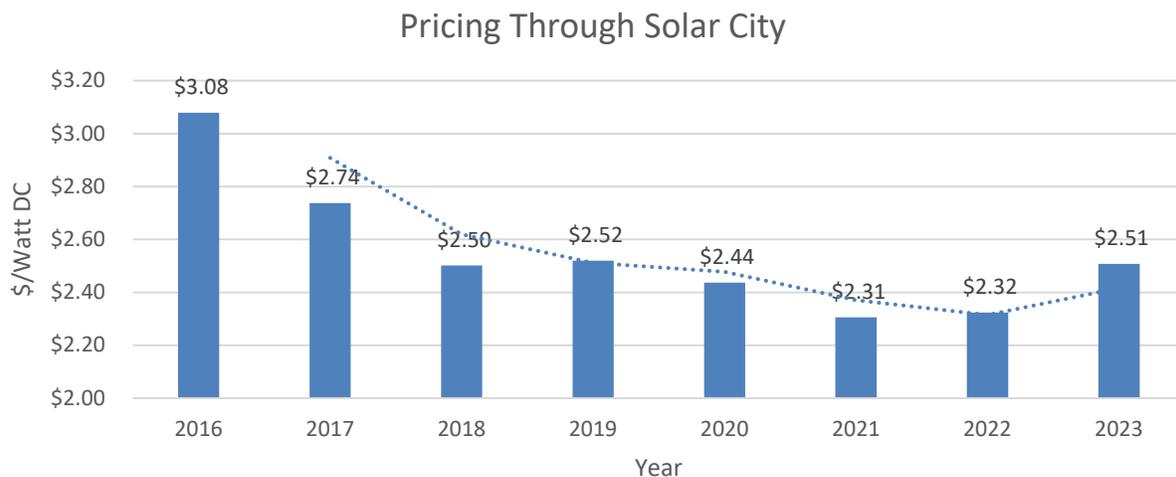


Figure 1: Installed unit cost (before HST) for solar electric systems approved through the program. Average pricing has declined from roughly \$3.08/Watt (DC) in 2016 to \$2.51/Watt (DC) in 2023

In 2023, Nova Scotia Power reported a total nameplate capacity of 34.6 megawatts (MW) of solar installed within the Halifax Region. Installs through the Solar City Program account for 29% this.⁵⁶ While some property owners opt to use alternative financing, the Program routinely supports those looking for unbiased advice and education on the various solar technologies, industry trends and average pricing. The program also offers a level of review of the feasibility assessment offered to the property owner by the contractor to ensure accurate savings estimates. Regardless of the financing method selected, supporting the uptake of solar in the municipality is furthering the successful implementation of HalifACT.

Rebates and Incentives

Property owners can access programs such as SolarHomes, administered by Efficiency Nova Scotia, and Natural Resources Canada's Greener Homes Grant and Loan. These programs act in complement to the Solar City Program by offering additional supports that help to reduce the up-front costs of system installation. Effective incentives are critical for stimulating demand within the sector and promote healthy competition among installers.

In February 2024, the Government of Canada announced that applications for the Canada Greener Homes Grant would close within 2 weeks. Applications submitted prior to this will still be processed and grants will be issued. In its place, a new phase of the Canada Greener Homes Initiative will be introduced as a part of the forthcoming Canada Green Buildings Strategy. This new initiative will focus on energy and housing affordability, offering supports that are accessible to households with low to median incomes.⁷

FINANCIAL IMPLICATIONS

The Solar City Program is designed to cover all costs associated with administration and marketing through the program's fixed interest rate of 4.75%. With current financial assumptions and forecasted program participation levels, all costs will be recovered once full repayment of all systems financed is complete. As program participation levels change, the program will be regularly monitored to ensure interest revenue

⁵ Nova Scotia Power, Net Metering Report, December 31, 2023

⁶ The reflected percentage assumes a ratio of 1.2 between Nova Scotia Power nameplate capacity, measured in AC units and Solar City installed capacity, measured in DC.

⁷ Natural Resources Canada, News Release, February 5, 2024

collected is adequate to cover direct administration and marketing costs. Due to the nature of the expenditures and recoveries for this program, budgeting for the Solar City Program was moved from a capital account to an operating account in fiscal year 2020/21. The budget will be set at the expected amount for solar installations for the upcoming year but the actual expenditures that occur will be fully recoverable. There is no impact to the non-participating taxpayer.

COMMUNITY ENGAGEMENT

Community engagement was not formally conducted as part of this report. Engagement with the community has been ongoing through the Solar City Program as inquiries have been received by email or phone and through marketing efforts and participant surveys.

ATTACHMENTS

None.

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

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