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Item No. **Information item 2**
Environment and Sustainability Standing Committee
May 5, 2022

TO: Chair and Members of Environment and Sustainability Standing Committee

SUBMITTED BY: [redacted] **(Original Signed)**
Denise Schofield, Acting Chief Administrative Officer

DATE: March 16, 2022

SUBJECT: **Halifax Solar City Program Update - 2021**

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

Measuring Program Performance

Since the Program launched in May of 2016, nearly 3,200 property owners across the municipality have shown interest in solar energy by registering their property for consideration. At the point of registration, property owners are informed of the solar technologies eligible for financing, potential system costs and savings before being instructed to reach out to solar contractors for a formal quotation. If satisfied with a contractor's proposal, the property owner will inform the Solar City Administrator, who then performs a third party review before approving financing and issuing a Solar City Participant Agreement for review and signature. As summarized in Table 1, 683 Solar City Participant Agreements have been executed, totalling $17.80 million in financing committed to the installation of solar energy technologies. These systems are expected to save property owners a total of $1.24 million annually in utility costs and reduce annual greenhouse gas (GHG) emissions in the community by approximately 5,400 tonnes. To date, the Solar City Program has enabled the installation of 6.43 megawatts (MW) of renewable energy in the municipality.

Table 1: Summary of Solar City Program statistics.

Key Performance Indicators	2016/17	2018	2019	2020	2021	Total
Capacity (MW)	0.31	1.37	2.07	1.16	1.52	**6.43**
Energy generated per year (eMWh)	350	1,600	2,500	1,300	1,800	**7,550**
GHG emissions offset per year (tonnes eCO2)	240	1,150	1,750	960	1,270	**5,370**
First year utility savings (K)	$55	$260	$406	$223	$299	**$1,243**
System costs, HST included (M)	$1.00	$3.91	$5.83	$3.14	$3.92	**$17.80**
Executed Solar City Participant Agreements	65	159	217	109	133	**683**

Tables 2 and 3 summarize individual technology metrics as tracked through the Program. To date there has been only one solar hot air system installed which does not provide enough information to accurately gauge average system expectations. As shown in Table 2, 42 solar hot water system agreements have been executed. 41 of these systems use flat plate technology while the other uses evacuated tube technology. All flat plate systems were designed to pre-heat domestic hot water, while the single evacuated tube system was installed as a hybrid, preheating both domestic hot water and space heat. Both electricity and furnace oil consumption will be offset by these systems. Solar hot water systems installed under the Program are expected to save property owners an average of $410 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 16.5 years and will save approximately $20,000 over the 25-year analysis period.

Table 2: Summary of solar hot water statistics through the Solar City Program.

Key Performance Indicators	Average	Total
Executed Solar City Participant Agreements	-	**42**
Energy generated per year (eMWh)	2.65	**111**
GHG emissions avoided per year (tonnes eCO2)	1.70	**70**
System costs (HST included)	$8,900	**$375,000**

As shown in Table 3, there have been 640 solar electric system agreements executed through the Program. All but one system is connected to Nova Scotia Power Inc.'s transmission and distribution grid, making use of their Enhanced Net Metering Program[1]. Solar electric systems installed under the Program are expected to save property owners an average of $1,900 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 14.4 years (11.1 with the SolarHomes Rebate) and save a total of $69,500 over the 25-year analysis period. The 25-year ROI and IRR is estimated to be 153% and 6.08% respectively. The average levelized cost of energy[2] (LCOE) for these solar electric systems is 16.25 cents per kilowatt hour (¢/kWh), three quarters of a cent less than the current residential rate. Under the current Enhanced Net Metering program this LCOE is locked in for the lifetime of the system independent of increasing energy costs.

Table 3: Summary of solar electric statistics through the Solar City Program.[3]

Key Performance Indicators	Average	Total
Executed Solar City Participant Agreements	-	**640**
Energy generated per year (eMWh)	11.60	**7,400**
GHG emissions avoided per year (tonnes eCO2)	6.30	**5,300**
System costs (HST included)	$27,000	**$17,350,000**

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, 97% 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 and the SolarHomes Rebate Program.

[1] Nova Scotia Power, Enhanced Net Metering https://www.nspower.ca/your-home/save-money-energy/make-own-energy/enhanced-net-metering
[2] Levelized cost is the average expected unit cost over the 25-year system lifespan
[3]Statistics do not include the SolarHomes Rebate.

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 40. 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 steadily declined as shown in Figure 1.

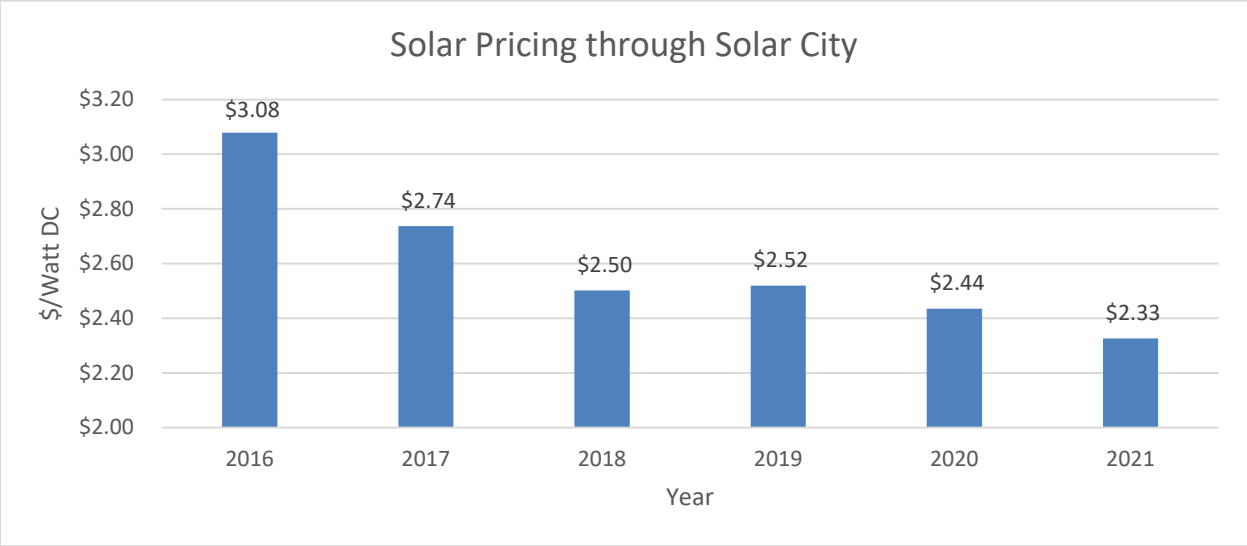

Figure 1: Installed unit cost (before HST) for solar electric systems approved through the program. Average pricing has declined from roughly $3.08/Watt (DC) in 2016 to $2.33/Watt (DC) in 2021.

In comparing the total number of systems installed through the Solar City Program to those installed overall, as summarized in Nova Scotia Powers 2021 Net Metering Report, approximately 30% of property owners opt to install through the Solar City Program. 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.

SolarHomes Rebate
In August of 2018, the SolarHomes rebate program was launched to assist residential property owners install solar electric systems. The rebate was funded federally through the Low Carbon Economy Fund and is being administered by Efficiency Nova Scotia. At the program launch, the rebate was valued at $1/Watt (DC) installed up to a maximum of $10,000 or 40% of the overall system cost before taxes. The rebate has since been reduced and now sits at $0.30/Watt (DC) installed up to a maximum of $3,000 or 25% of the overall system cost before taxes. To date it is estimated that participants of the Solar City Program will receive $4.1 million in total SolarHomes rebates, an average of 26% of the overall system costs (HST included). This rebate has alleviated much of the concerns for property owners regarding high system costs and payback periods. Combining the provincial rebate with the Municipality's financing has resulted in an average expected system payback period of 11.1 years.

Enhanced Net Metering and General Rate Application
On January 27th, 2022, Nova Scotia Power filed their General Rate Application with the Nova Scotia Utility and Review Board (UARB) for consideration. Contained within the application was a proposed change to the Enhanced Net Metering Program. Citing inequities amongst non-solar producers as the reason for the change, Nova Scotia Power proposed a System Access Charge (SAC) of $8/kW of solar installed per month. This would be applicable to property owners who apply to the Enhanced Net Metering Program after February 1st, 2022. When the application was filed, the Solar City Program was inundated with emails from concerned property owners and contractors. By adding the SAC, the average payback for a residential solar electric system would go from 11 years to 25 or more, making an investment in solar infeasible. Based on feedback received from property owners and contractors, a significant decline in Solar City participation would be expected if this charge were in place. In response to negative feedback from property owners, both with and without solar, a campaign led by Solar Nova Scotia, and a letter from Premier Tim Houston, Nova Scotia Power stated that it would withdraw the application for the SAC. On February 2, 2022, an updated Notice of Public Hearing was filed with the UARB stating:

> *Subject to anticipated legislation that would preclude this part of NS Power's application, revisions to Regulation 3.6 Net-Metering Service, including a System Access Charge of $8/kW of installed capacity (solar) per month;*

It should be noted that this proposal to modify the application is not a clear commitment to remove the SAC from NSPI's proposed Rate Stability Plan. Instead, reference is made to unspecified "revisions" to the SAC in answer to "anticipated legislation that would [but for the unspecified revisions] preclude this part of NS Power's application". The proposed modification is in response to the Premier's letter, which states that the Province will table the necessary legislative and regulatory framework to deny the net metering SAC. In the letter, the Premier also says that positive changes to the net metering program are needed and the proposed legislation will support it. Solar Nova Scotia is currently recommending what items should be included in the new legislation to support solar adoption across the province.

Deep Energy Retrofit Pilot
To achieve the 50% reduction in energy demand for both residential and non-residential community buildings by 2040, as outlined in HalifACT, a Deep Energy Retrofit pilot program was approved by Halifax Regional Council in July 2021.[4] The pilot will use the same financing mechanism as the Solar City Program, but participants will be offered a navigator. The navigator will act as a project manager and be the key point of contact for advice and education. The navigator will be responsible for coordinating all subtrades, financing and rebate approvals.

While not specific to the pilot, staff were successful in an application submitted to the Federation of Canadian Municipalities' Community Efficiency Financing program for a grant to a program evaluation study. The study will evaluate the Solar City Program through a lens of equitable access, loan product competitiveness and the ability to scale. The intended results of this study are to develop minimum requirements for third-party lenders to enable the investment needed to achieve the goals of HalifACT and to develop an evaluation framework for the new program.

While the pilot has not yet launched, it is intended to run in parallel with the evaluation study. Learnings from each will inform a full-scale program which will be presented to Regional Council for consideration.

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

[4] Halifax Solar City Program Update and Future Program Recommendation, Halifax Regional Council Recommendation Report https://www.halifax.ca/sites/default/files/documents/city-hall/regional-council/210720rc1121.pdf

program participation levels and interest rates change, the program will be regularly monitored to ensure interest revenue 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

No attachments.

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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