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**Item No. Info 2**  
**Environment and Sustainability Standing Committee**  
**July 06, 2023**

**TO:** Chair and Members of Environment and Sustainability Standing Committee

**SUBMITTED BY:** [REDACTED]

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Cathie O'Toole, Chief Administrative Officer

**DATE:** June 10, 2023

**SUBJECT:** Halifax Solar City Program Update - 2022

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**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**

Clause 79A(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;

Clause 104A(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**

As summarized in Table 1, 757 Solar City Participant Agreements have been executed, totalling \$20 million in financing committed to the installation of solar energy technologies as of December 31<sup>st</sup> 2022. These systems are expected to save property owners a total of \$1.43 million annually in utility costs and reduce annual greenhouse gas (GHG) emissions in the community by approximately 6,080 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e). To date, the Solar City Program has enabled the installation of 7.30 megawatts (MW) of renewable energy in the municipality.

*Table 1: Summary of Solar City Program Key Performance Indicators up to December 31, 2022*

Key Performance Indicators	2016	2017	2018	2019	2020	2021	2022	Total
Capacity (MW)	0.08	0.23	1.37	2.07	1.16	1.47	0.92	7.30
Energy generated per year (eMWh)	100	200	1,600	2,500	1,300	1,700	1,100	8,500
GHG emissions offset per year (tonnes CO <sub>2</sub> e)	70	170	1,150	1,750	960	1,200	780	6,080
First year utility savings (K)	\$20	\$40	\$260	\$410	\$220	\$290	\$190	\$1,430
System costs, HST included (M)	\$0.30	\$0.60	\$3.90	\$5.80	\$3.10	\$3.80	\$2.50	\$20.00
Executed Solar City Participant Agreements	18	47	159	217	109	128	79	757

Table 2 and Table 3 summarize individual technology metrics as tracked through the Program. To date there has been only one solar hot air system installed that does not provide enough information to accurately gauge average system expectations. As shown in Table 2, 43 solar hot water system agreements have been executed. 42 of these systems use flat plate technology while the other 1 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 \$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.

Table 2: Summary of solar hot water statistics through the Solar City Program up to December 31, 2022

Key Performance Indicators	Average	Total
Executed Solar City Participant Agreements	-	43
Energy generated per year (eMWh)	2.87	123
GHG emissions avoided per year (tonnes CO2e)	1.74	75
System costs (HST included)	\$9,500	\$420,000

As shown in Table 3, there have been 713 solar electric system agreements executed through the Program. All but one system is connected to Nova Scotia Power Inc.'s transmission and distribution grid. Solar electric systems installed under the Program are expected to save property owners an average of \$1,960 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 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 151% and 6.0% respectively. The average levelized cost of energy<sup>1</sup> (LCOE) for these solar electric systems is 16.12 cents per kilowatt hour (¢/kWh), slightly less than the current residential rate. Under current legislation, 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 up to December 31, 2022<sup>2</sup>

Key Performance Indicators	Average	Total
Executed Solar City Participant Agreements	-	713
Energy generated per year (eMWh)	11.88	8,500
GHG emissions avoided per year (tonnes CO2e)	8.50	6,050
System costs (HST included)	\$27,500	\$19,600,000

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, supportive provincial legislation, 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, and today there are 42. 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 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 trended downward, as shown in Figure 1.

<sup>1</sup> Levelized cost is the average expected unit cost over the 25-year system lifespan

<sup>2</sup> Statistics do not include the SolarHomes Rebate.

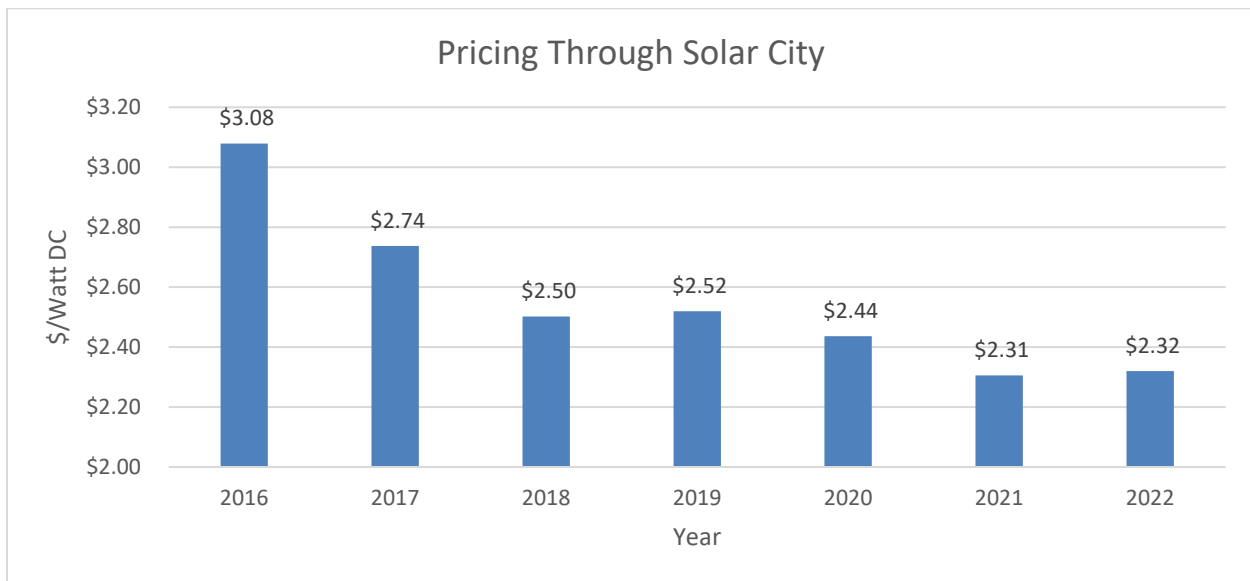


Figure 1: Installed unit cost (before HST) for solar electric systems approved through the program. Average pricing has declined from roughly \$3.08/Watt (DC) in 2016 to \$2.32/Watt (DC) in 2022

As extrapolated from Nova Scotia Powers 2022 Net Metering Report, approximately 26% of solar electric installs within HRM were financed 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 provided 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, the Municipality's climate action plan.

### SolarHomes Rebate

In August 2018, the SolarHomes rebate program was launched to assist residential property owners installing solar electric systems. The rebate was funded federally through the Low Carbon Economy Fund and is 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.

### Canada Greener Homes Initiative

The Federal government is offering support to property owners through the Greener Homes Grant and Greener Homes Loan.

The Canada Greener Homes Grant, launched on May 27, 2021, covers eligible retrofits like envelope upgrades, heat pumps, solar panels, and a variety of resiliency measures. Participants must undertake both a pre- and post-retrofit EnerGuide evaluation of their home to be eligible for the grant. Unfortunately, property owners cannot receive both a SolarHomes and Greener Homes grant for solar electric. To take advantage of both offers, the Solar City Program administrators recommend that property owners use the \$5,000 Greener Homes Grant for home efficiency measures and the SolarHomes rebate for solar. To date, it is estimated that participants of the Solar City Program will receive an estimated \$4.19 million in combined rebates from other levels of government, an average of 21% of the overall system costs (HST included).

The Greener Homes Loan launched June 17, 2022 and offers property owners financing to complete efficiency upgrades and solar. To be eligible, property owners must undergo a credit check. This interest-

free loan of up to \$40,000 is repayable over 10 years, with equal monthly principal payments. Some property owners have opted to use the Solar City Program as a form of bridge financing which allows the industry to continue installing solar within the Municipality instead of waiting several months for federal reimbursement.

### **Deep Energy Retrofit Pilot**

To achieve the 50% reduction in energy demand for all residential and non-residential buildings in HRM by 2040, as outlined in HalifACT, a Deep Energy Retrofit pilot program was approved by Halifax Regional Council in July 2021.<sup>3</sup> The pilot uses the same financing mechanism as the Solar City Program, but participants are offered a navigator. The navigator acts as a project manager and the key point of contact for advice and education. The navigator will be responsible for coordinating all subtrades, financing and rebate approvals. Two separate organizations are administering this pilot in parallel, each with its own administration method so that staff can gather the data and insights needed to inform a full program.

#### Efficiency Nova Scotia (ENS)

The first pilot administrator is Efficiency Nova Scotia (ENS) through an in-kind partnership. HRM is offering its financing mechanism mentioned above to interested property owners while also expediting the review and issuance of permits as necessary. ENS will use their database of existing Home Energy Assessments to solicit interested property owners and have one of their Delivery Agents (DA) perform the role of Navigator. The DA is a general contractor who currently delivers the Home Warming Program.

To date, just over 200 property owners were contacted about participating in the pilot. Property owners were solicited via email and referrals by the Delivery Agent. Of those contacted, seven have shown interest in the pilot and are being engaged regarding next steps. This pilot is targeting 10-20 deep energy retrofits.

#### Thinkwell Shift

The second pilot administrator is Thinkwell Shift, selected via a public procurement process. Thinkwell Shift is a behavioural change company focused on helping property owners to make more sustainable choices. They engage community members with tailored messaging and resources that motivate people and make it easier for them to act on clean energy decisions. Thinkwell Shift is acting as the navigator and is responsible for all aspects of the deep energy retrofit including soliciting interested property owners, scheduling the Home Energy Assessment, coordinating all subtrades and arranging for necessary rebates and financing.

To date, 33 property owners were contacted about participating with Thinkwell Shift. Property owners were solicited via engagement at the Spring Ideal Home Show, the HalifACT network and word of mouth. Of those contacted, 12 have either had a home energy assessment completed or scheduled. Four property owners have received a retrofit package summary that will achieve the target 50% energy reduction and are in the process of receiving detailed quotations. This pilot is targeting ten deep energy retrofits.

The key difference between the two administrators is the navigator and the form of outreach to potential participants. In the ENS project, the role of Navigator is being performed by a general contractor and outreach is primarily via email. In the Thinkwell Shift project, the role of navigator is being performed by a company that specializes in communications and outreach and is tailored to the specific needs of the property owner. Staff will use the lessons learned from each administrator to inform a full program.

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<sup>3</sup> 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>

### Third Party Financing Study

In addition to the Pilot programs, Dunskey Energy + Climate Advisors were hired via a public procurement process to conduct a municipal finance study that would consider the full range of financing options and support needed to expand deep energy retrofits. The intention of the study was to enable broad participation and outline high-level requirements for suitable financing mechanism(s) for the Municipality's Deep Energy Retrofit (DER) program.

Key priorities for the study included:

- Align the DER program with HRM's priorities to scale deep energy retrofits.
- Leverage public-private partnerships to administer and fund the DER program at scale.
- Pilot an approach that supports deep retrofits with intent to expand province wide.
- Innovate and take calculated risk.
- Consider social equity in all decisions.

After significant engagement with HRM staff and key stakeholders, three financing solutions were recommended that would be tailored to the varied financial needs and profiles of property owners. The first is **Solar City+** which builds on the success of HRM's Solar City financing model to pilot this highly secure and attractive long-term financial product for deep energy retrofits.

The second is **mortgage financing** via mortgage lenders that allows homeowners to integrate deep energy retrofit costs into their mortgage when purchasing or refinancing an existing home in HRM. Homeowners with mortgage loan insurance are eligible for incentives through Canada Mortgage and Housing Corporation.

The third is a **home energy retrofit line of credit** which offers financing over multiple years through lenders (e.g., big banks, credit unions and other retail lenders). This finance product could be supported by credit enhancements to enable better rates and terms, support larger loans, and/or increase access to less credit-worthy customers.

With the study now complete, an internal working group is meeting weekly to act on the recommendations to finalize the full program design.

### **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 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. The net zero revenue/costs flow through cost centre - M532. 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.

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A copy of this report can be obtained online at [halifax.ca](http://halifax.ca) or by contacting the Office of the Municipal Clerk at 902.490.4210.

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