Corporation of the City of
NEW WESTMINSTER

Attachment 2

Energy Save New West Program

Report 2022




ENERGY SAVE NEW WEST:

2022 Program Report

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INTRODUCTION

Energy Save New West (ESNW) is one of the longest running and most comprehensive community energy efficiency and greenhouse gas emission (GHG) reduction programs in Canada. Led by the City of New Westminster, ESNW provides an on-the-ground and personal dimension to the emission reduction and energy efficiency objectives reflected in New Westminster's Official Community Plan, Community Energy & Emissions Plan and Climate Emergency Declaration.

Since launching in July 2013, the City of New Westminster's ESNW has grown into a trusted local engagement platform and service provider. The program is designed and mobilized by City of New Westminster staff, and a collaborative network of program partners and supporters including BC Hydro, FortisBC, Metro Vancouver, and the Province of BC.

At its core, the focus of the program is to deliver a better experience that makes it easier for participants to access and engage in energy efficient, low-carbon solutions, whether they are homeowners, strata councils and landlords, business owners, or builders and developers. ESNW has been actively promoting program services and incentives via various platforms including ESNW website, the City's social media channels, monthly e-newsletters, and external media advertisements which raise program awareness and engagement. To date, ESNW has recruited over a thousand participants into five (5) program streams, which include programs for Existing Homes, New Homes, Multi-Unit Residential Buildings, Small Business and our Urban Solar Garden. In particular, ESNW celebrated the 1000th registration in Existing Homes program and 100th e-newsletter issue in 2022.

Key program elements include:

1. High-impact, visible and locally-focused outreach, incentives, and industry training initiatives targeting energy conservation, energy efficiency improvements and GHG reductions in new and existing homes, multi-unit residential buildings and local businesses.

2. A comprehensive multi-year approach that provides a recognizable program brand for the community, bridging the inevitable shifts and changes in provincial and national energy efficiency incentives and rebates.

3. A full continuum of program supports and guidance to local homeowners and businesses for a straightforward and enjoyable customer journey from initial energy assessment through to energy upgrade implementation.

EXISTING HOMES

The Existing Homes program was the first initiative launched by ESNW and designed to help residents achieve their home improvement goals, whether they include improving home comfort, reducing energy costs, or increasing the resale value of their home.

The Existing Homes program provides a subsidy for homeowners to complete an EnerGuide Rating System (ERS) energy evaluation of their homes and access to government and utility rebates for home energy upgrades. The ERS evaluation provides homeowners with a detailed analysis of the current energy performance and the potential energy savings that can be achieved when the recommended upgrades have been implemented. A key strength of ESNW is its comprehensiveness, making it much easier and less daunting for local homeowners to participate in an energy evaluation, understand post-evaluation results, select a contractor for energy upgrades and apply for qualifying energy-efficiency incentives and rebates.

Program Components:

Energy Assessment and Modeling Incentives – Integrated incentives and technical support for local residents upgrading the energy performance of their existing homes:

- EnerGuide Rating System – Energy modeling, energy evaluation report with upgrade options and home energy labelling.
- Blower Door Testing – Diagnostic testing to improve airtightness.
- Energy Coaching – Technical guidance on building envelope and mechanical upgrade options.

Market Awareness and Demand – ESNW has developed a strong local identity and creative messaging delivered through a variety of mediums. A strategic marketing toolkit is used to provide consistency in community outreach and marketing, including:

- Media Channels – Utilization of a diverse set of communication tools including website, display banners, electric utility bill brochures, monthly e-newsletter and media releases / social media.
- E-Newsletter – A monthly e-newsletter for local residents (almost 1000 recipients) with updates on energy efficiency programs including rebates/incentives, knowledge sharing, and energy saving tips.
- Website – Dedicated page on EnergySaveNewWest.ca that summarizes the Existing Homes program. Includes links to digital videos and case profiles of local completed projects. (see http://www.energysavenewwest.ca/existing-homes/)

Program Management

- Marketing and communication including fall/spring campaigns, website and monthly e-newsletter.
- Partnership and coordination with CleanBC's Better Homes BC program, federal government's Greener Homes Grant, and utility programs from FortisBCand BC Hydro.
- Program management services including participant coordination, scheduling and technical support.

Key Metrics:

EXISTING HOMES		
COMPONENT	DESCRIPTION	METRIC
Existing Homes Program Participation	• # of participants in 2022	127
	• Total # of participants (2013 - 2022)	1055
Evaluations	• # of energy evaluations completed in 2022 (Pre-retrofit)	88
	• Total # of energy evaluations completed (Pre-retrofit)	622
Heat Pump Top-up Participation	• # of participants in 2022 (160% increase from 2021)	36
	• Total # of participants (2020 – 2022)	52

EXISTING HOMES - PRE- & POST-RETROFIT EVALUATIONS (19 HOMES)				
COMPONENT	DESCRIPTION	METRIC		
		PRE	POST	% IMPROVEMENT
Energy Performance	• Average energy consumption measured by gigajoule rating (GJ) per year.	133 GJs	74 GJs	44 %
GHG Emissions	• Environmental impact (pre-upgrade) measured by tonnes of CO_2 on an annual basis.	5.4 tonnes/yr	1.9 tonnes/yr	65 %
Air Tightness (Pre-Upgrade)	• Air tightness performance (pre-upgrade) measured as air changes per hour (ACH) @ 50 Pascals (Pa) via blower door testing.	9 ACH @ 50 Pa	8.5 ACH @ 50Pa	5.5 %
Gas Consumption	• Average gas consumption measured by gigajoule rating (GJ) per year.	101	36	64%
Electricity Consumption	• Average electricity consumption measured by gigajoule rating (GJ) per year.	33	41	-20%
Relative Energy Consumption	• Average relative energy consumption compared to code-built home of similar size.	103% More	1% More	102%
COMPONENT	DESCRIPTION	# OF HOMES		% IMPLEMENTED
Heat Pump	• New heat pump installation	15		79%
Fuel Switching	• Switching from gas space heating equipment to electric heat pump	11		58%
Multiple Measures	• Homes implemented more than one upgrade	16		84%

Summary of Pre- & Post-Retrofit Energy Evaluation Comparison

- Homeowners typically only complete pre- and post- evaluations to maximize incentive from Canada Greener Homes program. No post-retrofit evaluation is required by CleanBC Better Homes program.
- Energy performance improved by 44% on average and the GHG emissions reduced by 65%.
- Almost 80% of the participants installed a heat pump of which 58% switched fuel from gas to electricity. 16% installed a heat pump but also retained the gas space heating equipment.
- Due to fuel switching, gas consumption/GHG emissions decreased significantly (64% & 65%) but electricity consumption increased by 20%.
- Only 5.5% implemented airtightness upgrade while the average airtightness is around 9 ACH at 50Pa (pre-retrofit) which indicates there still is a significant envelope efficiency improvement opportunity around airtightness.
- 84% implemented multiple energy upgrade measures.

Province and Utilities Data

BC Hydro:

EXISTING HOMES (BC HYDRO DATA)			
COMPONENT	DESCRIPTION		METRIC
ECAP Participation	• # of Energy Conservation Assistance Program participants in New Westminster in 2022.		39
ESK Participation	• # of free Energy Savings Kits distributed to New Westminster residents in 2022.		240
CleanBC / HRR	• # of CleanBC Better Homes and Home Renovation Rebate program participation for various measures	• Heat Pump (Municipal top-up issued on top of BC Hydro rebate)	36
		• Heat Pump Water Heater	4
		• Doors & Windows	5 (58 windows & doors)
		• Insulation	3

- Energy Conservation Assistance Program (ECAP) is BC Hydro/FortisBC affordable housing program that includes a Basic ECAP and Advanced ECAP program stream. Basic ECAP installs lighting, water conservation, and basic draft proofing. Advanced ECAP installs insulation, ventilation, and furnaces. There is no data received for the breakdown on Basic versus Advanced program.
- Energy Saving Kits (ESK) are the various energy conservation products issued to qualifying homeowners to complete an installation.

- Energy Save New West promotes ECAP and Energy Saving Kits with bill inserts, Existing Home e-news, and Empower Me.

FortisBC & CleanBC:

- CleanBC data is expected to arrive in July 2023.
- FortisBC data is expected to arrive in July 2023. In the City of New Westminster, there is a higher percentage of gas heated homes, and these would be funded by FortisBC.

Key Highlights from 2022

- Celebrated 1000th program registration
- Celebrated 100th e-newsletter publication
- 160% increase in heat pump top-up participation
- Over 70 registrations and over 40 attendees at the Heat pump webinar for homeowners (May 26)

Local Participants:

Fuel switching example from gas boiler:

The homeowner installed a new ductless heat pump system with seven indoor units and two outdoor units to replace the existing gas boiler. They also installed a heat pump water heater to replace their gas storage tank water heater.

HIGH-PERFORMANCE NEW HOMES

Through ESNW's High Performance New Homes program, the City is engaging with local homebuilders, developers, architects/designers in the design and construction of buildings that achieve higher energy efficiency than current BC Building Code and transition our market to a 'performance path' approach to design and construction of residential buildings.

The High-Performance New Home program provides services, incentives and training as a comprehensive capacity-building strategy to support the design and construction community with local implementation of the BC Energy Step Code and help transition the Province toward ultra-low energy and zero emission buildings by 2032.

Program Components:

Energy Assessment and Modeling Incentives – Integrated incentives and technical support for new home projects taking a 'performance path' approach that includes:

- EnerGuide Rating System – Energy modeling, plan evaluation report with upgrade options and home energy labelling.
- Blower Door Testing – Diagnostic testing at mid-stage construction and project completion to improve airtightness.
- Energy Coaching – Technical guidance on building envelope and mechanical upgrade options.

Industry Training – Technical training programs for the local builder and designer/architect community to improve competency. Training includes:

1. Builder & Designer Breakfast Series – Local industry event (typically 2 or 3 per year) organized by the City of New Westminster that brings industry participants together to learn about program and policy initiatives for energy-efficient new construction, as well as presentations on technical or regulatory topics, and profiles of leading local projects.
2. Industry Subsidies – Training sponsorships for local builders, architects and designers attending technical training offered by educational institutions. Currently, the City is providing subsidies to cover 50% of the cost up to $550 per course for eligible BCIT Zero Energy Building courses.

Market Awareness and Demand – Communication initiatives on the benefits of high-performance homes with consumers and building industry to generate awareness and stimulate local demand for these projects that includes:

- E-Newsletter – A monthly e-newsletter (285 recipients) for local design and construction community with updates on City programs/policies, new home projects and industry training initiatives.
- Website – Dedicated page on EnergySaveNewWest.ca that summarizes the High-Performance New Home program. Includes links to digital videos and case profiles of local completed projects (see http://www.energysavenewwest.ca/new-home-case-studies/).
- Digital Videos – An educational video series for home buyers, home builders and designers to raise awareness about the benefits of designing and construction to a high-performance standard.

Program Management

- Implementation support of the BC Energy Step Code including plan application and development / building permit review with Development Services (Building and Planning departments) and assistance with green building certified projects (e.g. Passive House).
- Development of Energy Step Code compliance/verification tools including technical bulletins.
- Partnership and coordination with Province of BC's Better Homes BC program, FortisBC, BC Hydro and other municipalities.
- Program support services including participant coordination, scheduling and technical support.

Key Metrics:

HIGH-PERFORMANCE NEW HOMES		
COMPONENT	DESCRIPTION	METRIC
Participation	• # of new participants in the High-Performance Program in 2022.	2
	• Total # of participants in the High-Performance Program including projects in design and construction	76
Energy Performance (Code Built)	• Average energy consumption measured by gigajoule rating (GJ) per year (completed projects only).	84.4 GJs
Energy Performance (Actual)	• Average energy consumption measured by gigajoule rating (GJ) per year (completed projects only).	66.8 GJs
Energy Performance	• % of improved energy rating performance on average versus a "code built" reference house equivalent.	21% better
Air Tightness	• Air tightness performance measured as air changes per hour (ACH) @ 50 Pascals (Pa) via blower door testing	2.1 ACH @ 50Pa
GHG Emissions	• Environmental impact measured by tonnes of CO_2 on an annual basis.	1.6 tonnes / yr.
Training	• # of participants in green building training (Builder & Designer Breakfast events) provided by ESNW in 2022.	90+
	• # of BCIT subsidies issued in 2022.	14

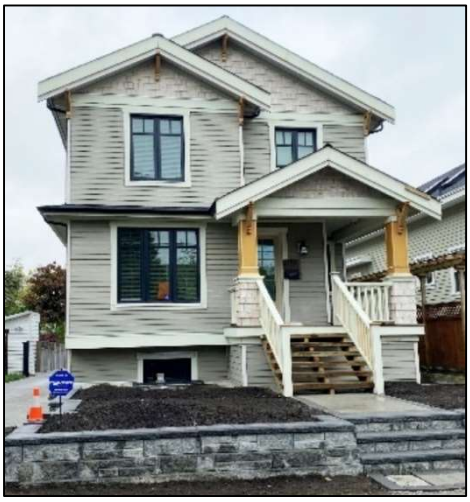
Key Highlights from 2022

- NRCan Collaboration - A new LEEP (Local Energy Efficiency Partnership) Video series features 706 First Street project (ESC 4) in New Westminster.
- Mechanical HVAC design support for High-Performance New Homes participants including 320 / 321 Blackman Street, and 1815 Edinburgh Street.
- Strong positive feedback received from participants for green building training at BCIT.

Local Participants:

- High-Performance New Construction Projects Completed in 2022 achieving Energy Step Code 4 and 5 performance.

[ESC L5, Single Detached Home, 1815 Edinburgh Street]



[ESC L5, Single Detached Home, 307 7th Avenue]

[ESC L4, Single Detached Home, 319 Blackman Street]

[ESC L4, Single Detached Home, 321 Blackman Street]

MULTI-UNIT RESIDENTIAL BUILDINGS (RENTAL)

Beginning in 2016, ESNW partnered with FortisBC, Landlord BC, Metro Vancouver and other local municipalities on developing a pilot multi-unit residential building (MURB) program targeting market rental properties with fifteen (15) or more suites.

The City of New Westminster won the Fortis BC 2017 Energy in Action Award in the "municipal government" category for its successful implementation of the program and continued to support the program with marketing and data analysis (a detailed spreadsheet of rental properties that would qualify for the program) in 2022. Participating properties received a free 'walk-through' energy audit by an energy advisor that is retained by FortisBC. A total of twelve (12) participants received an energy upgrade report with recommendations, as well as access to natural gas rebates and energy incentives for common areas and suites, which were set up specifically for this pilot (e.g., free supply and installation of water-saving fixtures).

Program Components:

Energy Assessments – Walk-through energy assessments to review mechanical HVAC systems and building envelope conditions at no cost to participants.

Energy Measures - Installation of water-efficient showerheads and faucet aerators at no cost.

Professional Support – Technical services with implementing additional efficiency upgrades (e.g. boilers) at no cost.

Key Metrics: No other metric information was provided by FortisBC. The table will be updated when the information becomes available.

MULTI-UNIT RESIDENTIAL BUILDINGS (RENTAL)		
COMPONENT	**DESCRIPTION**	**METRIC**
Participation	• # of building participants in the Rental MURB program	12 Buildings
	• # of units impacted by the Rental MURB program	TBC
Energy Performance (All Participants)	• Energy savings measured in modeled gigajoule (GJ) savings per year.	TBC
Energy Bill Savings (All Participants)	• Annual utility costs savings in $ / year.	TBC
GHG Emissions (All Participants)	• Environmental impact measured by tonnes of CO_2 saved on an annual basis.	TBC
Water Conservation	• Water savings measured in modeled litres saved.	TBC

OTHER PROGRAMS

Mysa Smart Thermostats

The City of New Westminster continued to support existing homes' energy efficiency by providing local residents access to smart thermostat technologies at lower costs. In 2022, the City also designed and launched a new pilot program with Mysa Thermostats to offer smart thermostats for ductless heat pumps and air conditioners. In Spring and Fall, the Mysa Pilot provided an instant rebate for local residents purchasing a smart thermostat through the manufacturer's website.

Key Metrics:

MYSA SMART THERMOSTAT PILOT		
COMPONENT	**DESCRIPTION**	**METRIC**
Participation	• # of participants in the Mysa Pilot	68
Thermostats	• # of thermostats purchased in the Mysa Pilot (AC/Ductless heat pump)	20
	• # of thermostats purchased in the Mysa Pilot (electric baseboard and in-floor)	126
Energy Savings	• Estimated annual energy savings based on total number of thermostats. (baseboards & in-floor thermostats only)	Up to 23,688 kWh

Empower Me

Empower Me is an inclusion and equity focused program that provides energy conservation and behaviour change solutions in underserved communities. The City messaging is delivered by recruited community members to engage and educate their community in their preferred language.
The basic outline is:

- Empower Me recruits "Community Champions" to deliver program messaging to local community.
- Empower Me organizes and executes ten (10) workshops with Community Champions and also participate in up to five (5) City of New Westminster events. These activities are designed to educate at least 100 people about energy efficiency and other City of New Westminster programs.
- The workshops are being delivered virtually and in-person.
- In 2022-2023, Empower Me aims to distribute 100 Energy Saving Kits to underserved communities.

Key Metrics (Phase 1 Results Only from July 1 – December 2022):

EMPOWER ME THERMOSTAT PILOT				
COMPONENT	**DESCRIPTION**	**METRIC**		
		Target	**Total to Date**	**% achieved**
Workshops	• 90 – 120 minutes online or in-person workshop	10	7	70%

Participation	• # of participants who received 90-minutes of ESNW education.	100	50	50%
Energy Saving Kits (ESKs)	• Distribution of ESKs.	100	5	5%

Note on Key Metrics

- The metrics information provided in the above table is for the first half year only as Empower Me contract year is from July 1, 2022 – June 30, 2023.

Questions from the Community

Between July and December 2022, the Empower Me team has supported participants in answering questions such as:

1. "How will I receive the $100 cost of living credit on my bill?"
2. "I am interested in purchasing an EV but there is not charging infrastructure in my building, what should I do?"
3. "What's the most efficient way to heat up the house comparing furnace, radiant heat
1. and electric baseboards?"
4. "How to check the flow rate on my shower head?"
5. "I live in a basement suit and the place is way colder than main house. What to do?"
6. "EV battery loses power so quickly in -20 degrees temperature. Is there any way to solve this?"
7. "How I can apply for ESK?"
8. "When power outage happened if my boiler fueled by gas can keep working?"
9. "Can I install a heat bump for my apparent?"
10. "How to apply for BC Hydro online account?"
11. "Are there any specific rebates or program to help low-income family saving energy?"
12. "Why one of my bathroom fan can't stop working?"

<u>General Inquiries</u>

As part of the concierge-like service, Energy Save New West also responds to general inquiries received from local residents, builders, architects/ designers, and others. The inquires include a range of questions related to administrative, technical, policy, program eligibility, other City topics (e.g. waste, climate action, utility bill, etc.). Some example types are:

- Processing registrations, and coordinating with participants and services providers (e.g. Energy Advisors, etc.)
- Clarifying eligibility, services and rebates across all programs including Energy Save New West, BC Hydro, FortisBC, Greener Homes, and Clean BC Better Homes
- City program and policy questions including utility billing, building code requirements, coordinating with other departments, etc.
- Technical inquiries from homeowners on energy upgrade products, materials, contractors, etc.
- Technical inquiries from builders, architect/designers on Energy Step Code requirements, building materials, HVAC, etc.

URBAN SOLAR GARDEN

The Urban Solar Garden is a City led, community-owned renewable energy project that provides an opportunity for interested local residents, businesses and non-profit organizations to voluntarily subscribe to a portion of the total electricity generated by the array. The solar power generated is credited back to each subscriber's electrical utility bill twice per year, in proportion to the number of panels they have reserved, for up to 25 years.

The City's first Urban Solar Garden array was fully installed and commissioned by the end of June 2018. Located on the rooftop of Queensborough Community Centre, this 50-kW array consists of 156 solar panels. Power generated by the array is metered directly onsite, and feeds directly into the New Westminster Electrical Utility grid. Estimated annual energy production for this installation is just over 56,000 kWh/year.

The City's second 50 kW, 156 panel, Urban Solar Garden array was fully installed and commissioned in June 2019. Located on the rooftop of the Civic Works Yard, Engineering Operations Building, this array will generate just over 57,000 kWh/year to subscribers.

In addition to local energy "made in New West for New West", the Urban Solar Garden supports longer-term distributed generation strategy development with New West Electric Utility including the opportunity/risk assessment of technology adoption, City electrification policies and identification of additional City sites for installing mid-size rooftop or parking lot renewable energy systems.

The City is currently planning on the third Solar Garden.

Program Components:

Easy Access – Residents generate their own renewable energy without having to install their own solar PV system.

Long Term Savings – As grid electricity rates rise over time, so will the value of the savings residents gain year after year.

Lower Capital Costs – Investment cost for solar PV with the Urban Solar Garden is less on a per panel basis, because of economies of scale and support from the City.

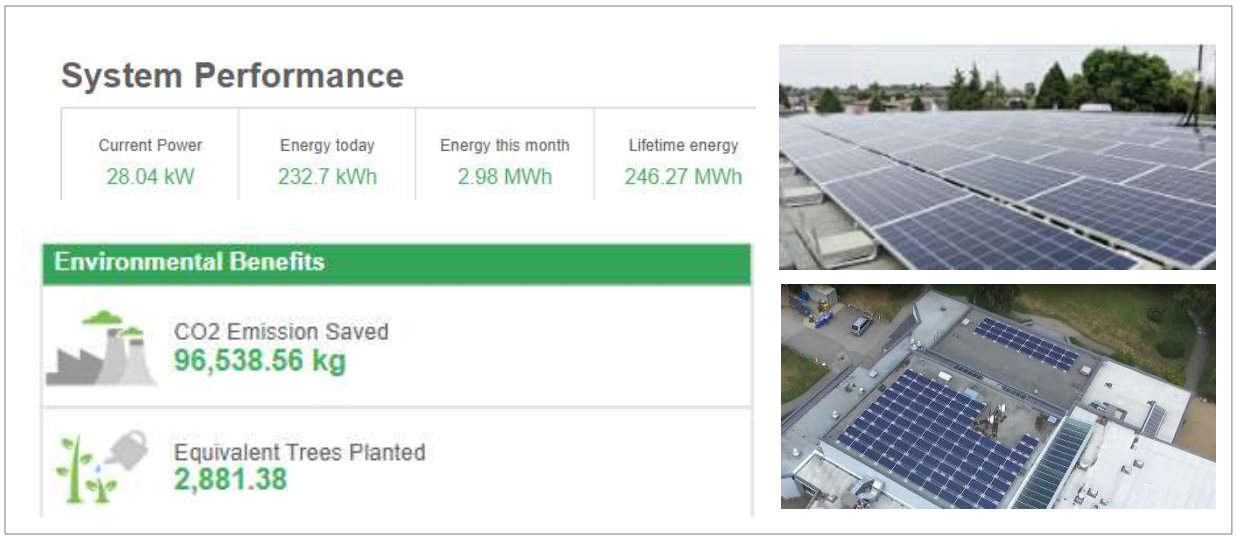
No Maintenance – There are no hassles with service and maintenance of the panel, since the ongoing operation of the solar array is handled by the City.

Local leadership – Residents have the satisfaction of participating in a signature project that demonstrates leadership in energy and environment.

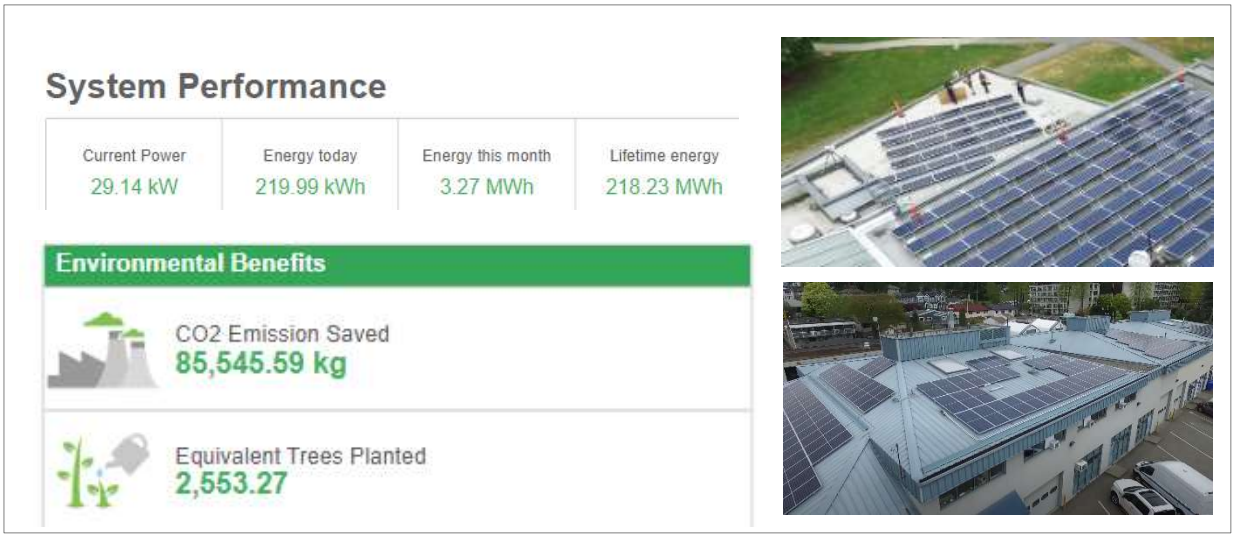
Key Metrics:

URBAN SOLAR GARDEN		
COMPONENT	DESCRIPTION	METRIC
Participation	• # of local participants in the Urban Solar Garden	90
Energy Production (Queensborough & City Public Works)	• Total energy production for solar PV array in kWh	Approx. 400 MWh

Solar Garden #1: Queensborough



Solar Garden #2: City Public Works



2023 INITIATIVES

Heading into 2023, Energy Save New West will be celebrating our 10th anniversary for the program. The program is well positioned to build off the existing infrastructure in place to bolster community engagement and further align with City of New Westminster's strategic priorities and initiatives.

In the coming year, there're a number of opportunities to further diversify ESNW programmatic efforts to increase participation, deliver deeper energy reductions and support City of New Westminster program/policy objectives. In particular, we have planned for the following:

Existing Homes Program

- Enhanced homeowner education including informative homeowner webinars, infosheets, e-newsletter knowledge sharing articles, etc.
- Continuity of Municipal Heat Pump Top-Up program

New Homes Program

- New technical bulletins on BCBC Energy Step Code requirements
- New technical bulletins on BCBC Zero Carbon Step Code
- Existing technical bulletin updates

Empower Me

- Continuity of educational workshops with an increased number of in-person workshops
- Introduction of new curriculum/workshops on electric vehicles
- Distribution of new energy efficiency and/or health & safety related devices (e.g. smart thermostat, CO detector)

MyHEAT

- In collaboration with FortisBC and other municipalities, MyHEAT thermal mapping exercise of the City is under discussion to collect building envelope performance by flying a thermal imaging camera over the City to build a community profile.

Urban Solar Garden

- A new 3rd solar array is proposed to be developed.

CLOSING

Since launching in July 2013, ESNW has demonstrated the benefits of building partnerships, and the foresight of taking a multi-year approach to program development, execution, and outreach to the local community and to staff and Council members at City Hall.

At the outset, Energy Save New West was designed to allow for piloting and experimentation; using a learn-by-doing approach to evolve or add new program components, as well as respond to shifts in the market, including utility incentives or regulatory environment. The DNA for the program rests on a high engagement approach, tailored to the local audience that we are aiming to engage with. Our program intent is to be recognizably active in the community, providing tailored incentives where needed, sponsoring training opportunities for the design and construction community, and creating new services with program partners that are currently missing in the regional market.

Over the past ten years, Energy Save New West has grown into a well-trusted municipal energy efficiency program that offers robust concierge-like services for local residents and businesses. From a local government benefit perspective, ESNW clearly demonstrates that even smaller or mid-size municipalities can create and scale up their own community-based energy efficiency and GHG reduction programs to help realize their OCP targets and energy -efficiency, and climate action policy objectives.