
Submitted to the HCl3 Fund
May 2023

Preston Township Solar Social Feasibility Study



Contents

- Clean Foundation 3
- One North End 3
- Executive Summary..... 4
- Acknowledgements..... 4
- Introduction 5
- Solar in Nova Scotia 5
- Scope..... 6
- Project and Community Context..... 7
 - Community Profile 7
 - History of Preston Township..... 9
- Community Solar Gardens 11
 - Models for Ownership 12
 - Ownership by Electrical Utility..... 12
 - Ownership by Community Organization..... 12
 - Ownership by Third Party. 12
 - Models for Operation 14
 - Subscription: Solar Panel Lease. 14
 - Subscription: Power Purchase Agreement. 14
 - Panel Ownership..... 14
- Distribution of Benefits..... 14
- Beneficiaries of Community Solar Gardens 14
- Equity-Focused Community Solar Gardens: Cases 16
 - NYCHA ACCESSolar..... 16
 - T’sou-ke First Nation. 18
 - Tucson Solar Commons..... 19
- Policy Considerations..... 20
 - The Electricity Act and Developing Community Based Solar 20
 - Nova Scotia Community Solar Program..... 21
- Planning for Solar in the Preston Township..... 23
- Community Engagement – Shared Solar in the Preston Township 23
 - Engagement Methodology 23
 - Engagement Results..... 25

Land of Opportunities.....	25
Investing in Our Future.....	25
Building Our Legacy.....	26
Comments on Engagement Results.....	26
Challenges and Opportunities.....	28
Engagements.....	28
Expectations and Clarity on Solar.....	28
Pressing Community Issues.....	29
References.....	30
Appendix A.....	33

Clean Foundation

Clean Foundation helps the communities in which it works to make real progress toward a cleaner future by taking on climate change challenges. We bring specialized teams together to work on complex problems, delivering clean projects and programming for communities. We're here to make the biggest impact for a cleaner world.

Learn more about us and the work we do: cleanfoundation.ca



One North End

The ONE North End (ONE) Community Economic Development Society collaborates with communities, businesses, corporations, non-profits, government, and academia to identify high-demand sectors.

As a result, we build capacity within those sectors to support vulnerable populations to actively develop career paths and entrepreneurs through collective impact strategies that lead to co-created initiatives.

Learn more about us and the work we do: onenorthend.com



Executive Summary

In August of 2022, Clean Foundation, in partnership with ONE North End, was granted funding from Halifax Climate Investment, Innovation, and Impact (HCi3) to conduct a solar social feasibility study in the Preston Township. In light of changing legislation making solar a more accessible avenue for electricity generation, it is vital to understand how underserved and underrepresented communities can benefit from clean energy and provide resources to communities that may be interested in developing shared solar.

To do this, the project reviewed case studies of three shared solar projects in underserved and underrepresented communities across North America, examined the Nova Scotia policy context and held engagement sessions with the Preston Township Communities (Lake Loon, Cherry Brook, North Preston, and East Preston). These activities collectively give a preliminary understanding of what might be possible for developing shared solar in the Preston Township area.

The case studies provide essential tools for African Nova Scotian communities interested in developing shared solar projects by outlining successful strategies for planning, executing, and operating shared solar projects with equity-focused elements. In addition, the policy review provides a variety of routes to community solar that are viable under current Nova Scotia laws and regulations.

Engagement outcomes indicated that although some community members are passionate about and interested in shared solar for the Preston Township, the community is not in a place to independently develop shared solar resources at this time. Engagements made it clear that at this time, a collective impact strategy led by the community would be necessary to implement shared solar in the Preston Township. Participants did identify shared solar as a potential route to economic and social empowerment. However, at present, shared solar would require significant support and partnership from the government and third-party technical resources to assist with building a collective impact strategy and co-creation that would benefit all the communities in the Preston Township and beyond.

Acknowledgements

Over the course of this project, Clean and ONE North End engaged in direct consultation with residents of North Preston, East Preston, Cherry Brook, and Loon Lake. Clean and ONE North End have aggregated perspectives through this document to maintain privacy.

Finally, we would like to extend our appreciation of the opportunity offered by, and support from, the Halifax Climate Investment, Innovation, and Impact (HCi3) Fund for this project.

Introduction

The Preston Township Solar social feasibility study aims to understand the landscape and potential for the development of shared solar projects in the Preston Township. With increased support for community-scale energy generation projects at the provincial and municipal level, it is vital to understand how underserved and underrepresented communities might benefit from emerging opportunities in the clean energy sector. To understand the social feasibility of shared solar, this research project investigates other successful shared solar projects in underserved and underrepresented communities, current policy research on the Nova Scotia context, and community engagement with residents of the Preston Township. Together, this gives an understanding of the social feasibility of developing shared solar in the Preston Township.

Solar in Nova Scotia

Over the past decade, the solar industry in Nova Scotia has grown rapidly. Growth has been supported by expanding support from provincial and federal governments, utilities, private sector companies, and individual consumers. In addition, greater public awareness of solar as an increasingly affordable source of renewable energy has led to a significant increase in solar generation installs in the province. Public interest in both the environmental and financial benefits of developing solar energy as a power generation resource is driven by several factors:

- provincial initiatives such as the Solar Energy for Community Buildings initiative,
- increased accessibility of incentives offered to Nova Scotian homeowners (most notably the SolarHomes rebates and the Canada Greener Homes Program),
- innovative financing schemes such as Halifax’s SolarCity, CMHC’s 0% interest financing up to \$40k, and other Property Assessed Clean Energy (“PACE”) programs across the province,
- public awareness resources, including SolarAssist.ca,
- and a rapidly growing number of local businesses specializing in solar installation.

Despite increased public interest, solar generation makes up less than 1% of Nova Scotia’s electricity production¹. Continued dependence on coal for electricity production in the province means that electricity generation is responsible for 42% of the province’s greenhouse gas (GHG) emissions². All levels of government have made commitments aimed at decreasing reliance on fossil fuels and increasing the amount of renewable energy resources across Canada. Initiatives released over the last few years, such as the Green Choice Program, continue to support the political and economic policy framework required for renewable energy projects in Nova Scotia.

Many renewable energy projects in Nova Scotia have focused on large-scale commercial production through wind facilities. However, meeting the energy demands of the province will require a flexible approach that includes other sources of renewable generation. In addition, many consumers demand scalable renewable energy production tailored to the needs of their home, facility, or community. As such, solar is expected to play an increasing role in Nova Scotia’s transition to a cleaner grid³.

¹ Government of Canada, 2022

² Government of Canada, 2023

³ Province of Nova Scotia, 2015

Most solar generation systems in Nova Scotia are currently small-scale point-of-use systems such as residential, commercial, and institutional rooftop systems. However, increased interest in and demand for renewable energy in Nova Scotia will create more opportunities for community-based solar generation facilities. This process has already begun, with Nova Scotia's Community Solar Garden Pilot program, which was launched in 2021⁴, as well as the upcoming provincial community solar program expected to launch in the summer/fall of 2023⁵. Various permutations of community-wide renewable energy solutions are likely to reduce the cost of infrastructure for solar gardens, increase access to the benefits of solar electricity generation, and accelerate the shift away from traditional fossil fuel sources.

Interest in solar is showing no signs of slowing down. Provincial and municipal programs supporting solar projects are being complimented by amendments to the Energy Act, introduced in 2021⁶. These amendments create a friendlier environment for developing shared solar. Paired with increasing acceptance and excitement for clean energy, community solar is more accessible to implement than ever.

In this context, community-owned solar projects may be developed not only as a means of achieving financial and environmental benefits but also of working toward goals of energy independence and economic self-determination for African Nova Scotian communities.

Scope

This project is a social feasibility study. It endeavors to understand the level of 'buy-in,' openness, and interest in community shared solar among residents of the Preston Townships, a grouping of African Nova Scotian communities. It begins to explore the question of what models are possible in the present legislative environment but does not commit to determining an 'ideal' model. This project is not designed as a technical or financial feasibility study.

⁴ Nova Scotia Power, 2021.

⁵ Shannon Harding, personal communication 16 December 2022

⁶ Province of Nova Scotia, 2022

Project and Community Context

Community Profile

Preston Township colloquially refers to North Preston, East Preston, Loon Lake, and Cherry Brook (see Figure 1). North Preston is the largest historically Black settlement in Canada⁷, and is unique in the history of Black settlement in Canada. The boundaries of the Preston Township, as outlined by the Halifax Regional Municipality North Preston-Lake Major Community Plan Area⁸ do not align with census geography boundaries. DWPilkey Consulting⁹ uses census dissemination areas (DAs) 12090795, 12090798, 12090816, and 12090817 to conduct socio-demographic analysis. Refer to Figure 2 to see these DAs compared with the boundaries of the community plan area.

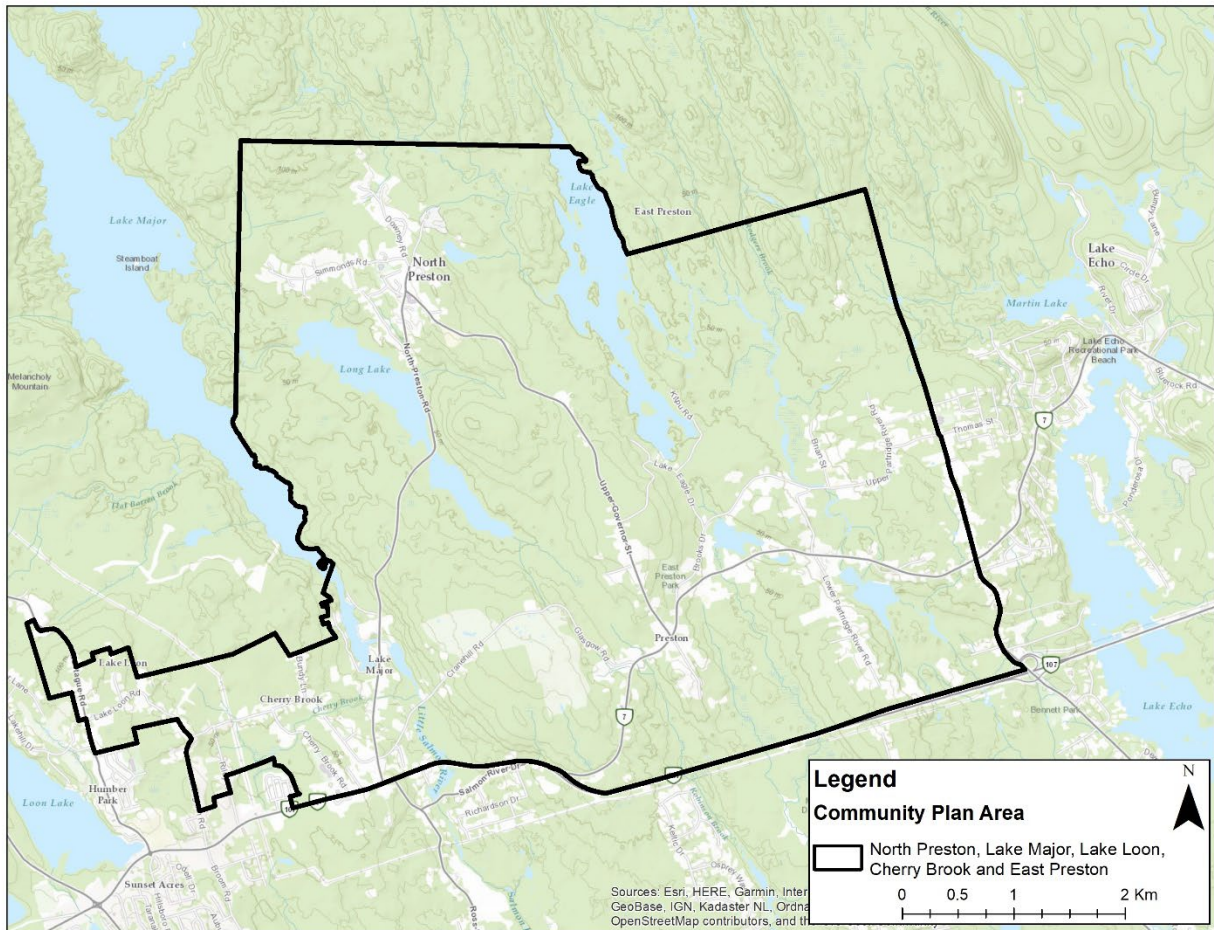


Figure 1: Preston Township

⁷ North Preston is specifically an African Nova Scotian community – this term refers to Black people who have deep historical roots in Nova Scotia; primarily, those who can trace lineage back to the Black Loyalists, Jamaican Maroons, or Black refugees of the War of 1812.

⁸ Halifax Regional Municipality, 2022

⁹ DWPilkey Consulting, 2018

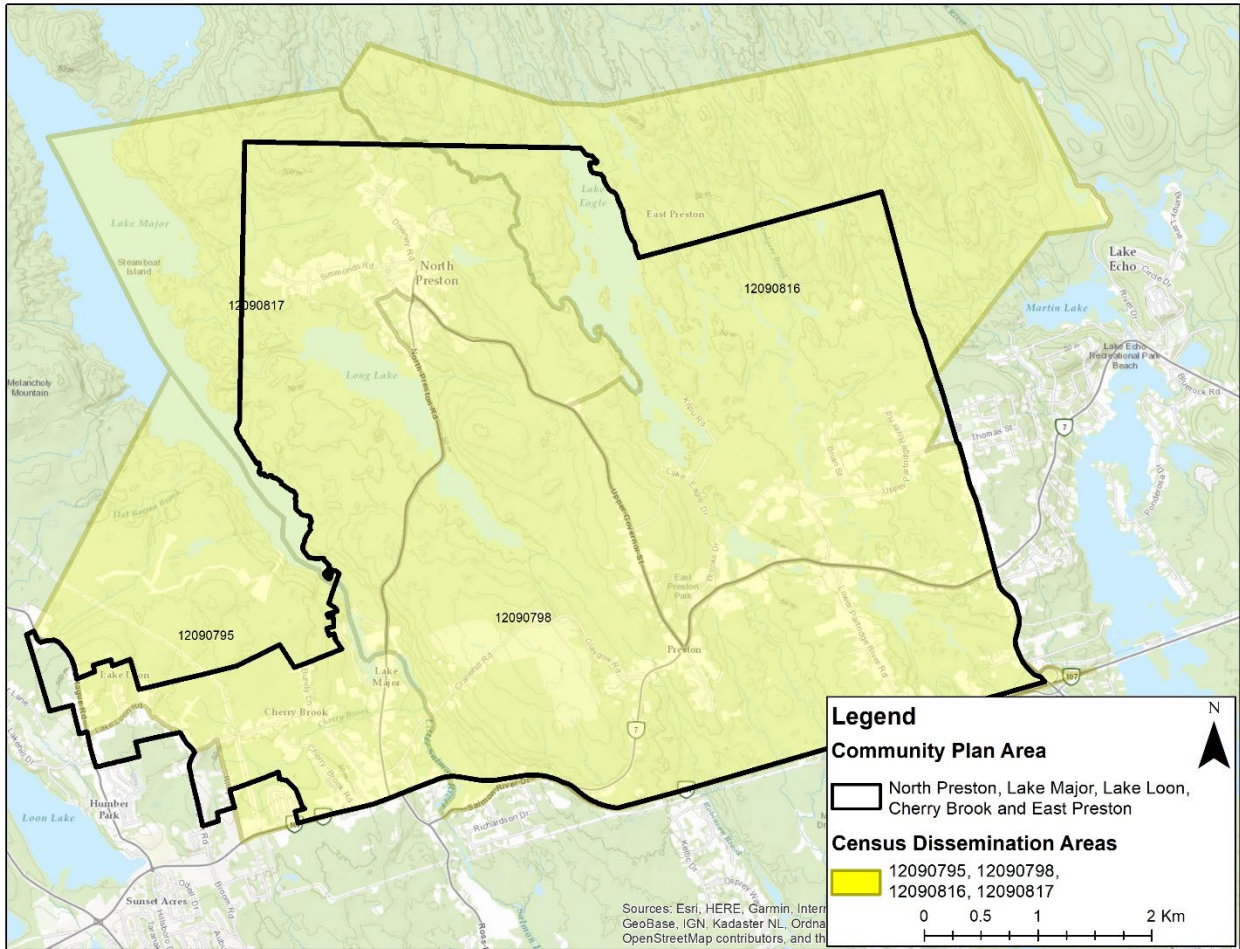


Figure 2: Preston Community Plan Area vs Census Dissemination Areas

The Preston Township area on average¹⁰ has higher rates of unemployment and a higher rate of low-income households. The housing stock skews heavily towards single family homes¹¹. Each of these variables is important in understanding the impacts of energy poverty¹² in the community.

The Preston Township experiences higher rates of energy poverty than average across Nova Scotia. Energy poverty refers to a situation where a household is spending more the 6% of their monthly income on energy costs (heating, cooling, electricity, etc.)¹³. Approximately 37% of Nova Scotians experience energy poverty. In the two census tracts that encompass the Preston Township – census tracts 2050150.01 and 2050122.03 – rates of energy poverty in the Preston Township are estimated at 44% and 38% of the population¹⁴, respectively. Energy poverty forces households to make financial

¹⁰ Based on a weighted average of the census DAs

¹¹ Statistics Canada, 2021

¹² Encinas et al., 2022

¹³ CUSP, 2019

¹⁴ Ibid.

compromises that affect their quality of life, potentially leading to unpleasant living conditions, spoiled food, and even health effects from extremely cold or hot inside temperatures¹⁵.

History of Preston Township

The land of the Preston Township is not well suited for agriculture and was not touched when Europeans initially colonized the area¹⁶. The area was first settled by the Jamaican Maroons in 1796¹⁷. In later waves of immigration, refugees from the War of 1812 were also settled in the Preston Township and given land grants by the British Crown for loyalty in the war¹⁸. These two waves of immigration formed the basis for the Preston Township, establishing what would become the oldest historically Black community in Canada. However, the land grants from the British Crown were of poorer quality and lesser size than initially promised¹⁹. This, combined with the compounding experiences of hardship and racist policies, rightfully led to a mistrust in government that has persisted over the centuries²⁰. Despite hardship and racism, the Preston Township emerged and remains a strong, vibrant community, largely centred around the Baptist Church²¹.

Project partner ONE North End raised that any conversation of community-based solar would spark conversation on environmental racism, and in North Preston, land ownership. Both issues have shaped life in the community and do bring up serious concerns and emotions in discussions of community development and environmentally oriented projects. It is important to understand this history to inform social feasibility studies and community engagement.

Between 1970 and 1974, the Preston Township was experiencing contamination of their water supply due to a lack of adequate waste disposal sites, and lack of education around appropriate waste disposal practices²². The Halifax County²³ offered little assistance until contaminated water supplies began affecting surrounding predominantly white communities, despite the Preston Township residents voicing worries about their water quality²⁴. This clear prioritization of white communities over African Nova Scotian communities has influenced how residents of the Preston Township interact with external and government representatives²⁵.

Beyond the experience of environmental racism, in North Preston, the question of land ownership has underpinned the community's entire history. The initial land grants issued by the British Crown have rarely been acknowledged as formal legal deeds or have routinely been called into question²⁶. Inheritance and severance of land have also rarely been tied with the formal transfer or change of

¹⁵ Ibid.

¹⁶ Simmonds, 2014

¹⁷ Ibid.

¹⁸ Whitfield, 2003

¹⁹ Ibid.

²⁰ Simmonds, 2014

²¹ Simmonds, 2014; Whitfield, 2003

²² Simmonds, 2014

²³ At this point, the Preston Township was part of Halifax County. Municipality of the County of Halifax, City of Dartmouth, Town of Bedford, and City of Halifax were amalgamated to form the Halifax Regional Municipality in 1996.

²⁴ Simmonds, 2014

²⁵ Ibid.

²⁶ Ibid.

deeds, meaning many intergenerational occupants of North Preston do not have formal legal title to their land. Legal battles to prove titles are often lengthy and complex. Compounding the issue of land ownership, the government went through cycles of expropriating or cheaply purchasing land in the Preston Township without informing residents. In recent years, issues regarding clear title to properties in the form of land deeds have created a barrier to residents of North Preston participating in environmental and social programs, such as HomeWarming. This has been an example of persistent inequity in residents' ability to access support through initiatives funded through the province and energy utility - and may contribute to ongoing challenges in developing relationships of trust that can support similar environmental initiatives moving forward. In North Preston, the ongoing land deeds issue complicates any discussion of community empowerment and continues to be an extremely important conversation in the community.

This unique history has resulted in a community that is strong and vibrant but is often cautious of outside organizations attempting projects for the 'social good.'

Community Solar Gardens

Community solar broadly refers to solar-electricity systems that benefit and/or are owned by multiple community members²⁷. Shared solar provides communities the opportunity to adopt renewables on a collective basis. With increased interest in solar and other small-scale renewable energy solutions, community solar has emerged as a solution benefiting community members who may experience barriers to traditional solar adoption. Barriers may be:

- financial, with installation costs being too high;
- physical, with only some roofs being suitable for solar; or
- ownership-based, with renters or those who do not own the dwelling they reside in thus rendering them unable to install solar panels.

Community solar allows a group to experience the economic and environmental benefits of solar energy, while removing many of the barriers to adoption. It has been identified as an effective method to reduce the burden of electricity costs in low-income households and provide economic opportunities to communities²⁸. In addition to this, community solar has been highlighted as a potential tool for working towards energy independence and economic self determination²⁹.

Solar gardens are distinct from typical models of residential rooftop solar, where one home offsets its own power consumption. Rather, community solar in its many forms is designed to provide central solar energy generation resource that may be accessed by a number of energy consumers. Depending on the model, beneficiaries of a community solar garden can be the owners/operators, the subscribers or panel leasers, or both. People may choose to participate in the community solar garden for a variety of reasons – they may have an interest in offsetting carbon emissions, supporting community-scale power generation, or simply saving on energy costs. When talking about community solar, a community may be a group of consumers in a specific geographic location, but it also can be a group that has little direct geographic connection but is connected through other ways and benefits through net metering³⁰ agreements. Community solar gardens may be built with any of these dimensions in mind. It is important that each community solar project be planned with the needs, wants, and structures of the community in mind.

Three core aspects must be addressed in the planning of a community solar project:

- who owns the facility,
- who operates the facility and how do they operate it,
- and who benefits from the facility and how?

²⁷ Coughlin et al., 2011

²⁸ Clean Foundation, 2020; Heeter et al., 2018

²⁹ Clean Foundation, 2020

³⁰ Net metering refers to a situation where an individual generates electricity on site, and then functionally sells that electricity to the utility provider in exchange for credits on their power bill. This means that the individual can use these credits at any time, as opposed to using power they generate as it is generated.

Other questions will emerge based on the context of each unique project. Shared solar projects are heavily influenced by regulatory and policy structures regarding energy generation, as well as physical and social environments in a given community. There are, however, common models that emerge from reviews of community solar gardens across North America – these are outlined below.

Models for Ownership

Solar gardens, or solar arrays designated for shared solar, require ownership, the same as all power generation facilities. However, unlike traditional power generation, the owner of a shared solar facility is not necessarily responsible for the operation of it. There are several commonly adopted ownership models for community solar in North America. Each has advantages and disadvantages. Ownership models can broadly be categorized in the following three bins: ownership by electrical utility, ownership by community organization, and ownership by third party.

Ownership by Electrical Utility.

A jurisdictional review conducted in 2020 by Clean Foundation found electrical utilities generally prefer to own solar gardens that feed into their grids³¹. Full or partial ownership allows the utility more control over the project. This can be advantageous – utilities generally have the legal, financial, and project management experience to effectively implement community solar projects³². Utility ownership also allows for greater control over distribution and peak load management. Utility owned solar may also contribute to a utility's obligations to meet specific targets and regulations regarding the fuel mix for grid generation. In many jurisdictions, utility companies have accountability to the public. Utilities companies are often cooperatives (co-ops) or publicly owned entities. Nova Scotia Power Inc. (NSP) – the utility provider for residents of the Preston Township – is privately owned, but accountable to the public through the Nova Scotia Utility and Review Board (NSUARB), which is an independent body granted legal powers by various Nova Scotia statutes.

If a utility company does own the project, benefits are generally distributed through net metering.

Ownership by Community Organization.

Solar projects can be owned by a community organization – generally a not-for-profit or community co-op. If the project is owned by a registered charity, this can enable tax benefits. Not-for-profits may also be eligible for funding not available to for profit businesses. Community based ownership may also ensure that the environmental, economic, and social interests of the community are accurately represented throughout the project. This form of ownership may lend itself to the greatest potential for energy independence and self determination. Though net metering is an option in Nova Scotia, ownership of the solar array by a co-op can provide a useful avenue around using net metering. Instead, benefits can be shared as profits to co-op members.

Ownership by Third Party.

Solar gardens can be owned by a third party – be it a business, a government, a public-private partnership, or a special purpose entity. Third parties can be full owners, or simply contributors. The motivation for investment can vary broadly – reviews of other projects show that profits are consistently

³¹ Clean Foundation, 2020

³² Coughlin et al., 2011

a motivating factor for third party contributors³³. Though profit-driven projects may impact overall benefit or impact to communities in this model of community solar, third-party investment may also greatly alleviate the financial barriers associated with initial design and development of community solar projects.

³³ Clean Foundation, 2020

Models for Operation

Ownership models do have some influence on distribution and operation, but do not totally determine them. Operation refers to how benefits from the community solar garden are distributed to involved parties. These broadly follow three trends: solar panel lease, power purchase agreement (PPA), and panel ownership.

Subscription: Solar Panel Lease.

In this model, solar panels are leased by a subscriber, and the subscriber is entitled to the benefits of the panel(s) they subscribe to. A set benefit will be assigned to the subscriber for some period as per the lease agreement, and it is up to the system operator to ensure that this productivity is met. Lease fees generally include the costs associated with administration, operation, and maintenance of the array. This model offers reliability to the subscriber and can be designed to offer consistent benefits across all seasons. This arrangement can also increase risk for the system operator as they must deliver benefits regardless of system productivity.

Subscription: Power Purchase Agreement.

A power purchase agreement, or PPA, the subscriber pays a set amount for 'credits' from the system. This price stays the same regardless of the power production of the array. Electricity production will vary seasonally, and with weather, but subscription costs stay the same. Electricity benefits will generally be conveyed to the subscriber as a credit on their electricity bill. This results in significantly more risk for the subscriber, but the system operator is better protected.

Panel Ownership.

With panel ownership, participants can buy a panel in the array outright. They are then entitled to the power that panel generates. Ownership of the entire array is still retained by one party – similar to a condominium. Condominiums are one of the few examples where parts of the facility are individually owned, but the whole is owned by a separate party. The owner will benefit either from individually owned panel production where panel-level monitoring is implemented or from a relative proportion of the system's total benefits. The amount of benefit received depends on the system's productivity which increases risks for the panel owner. As it is with owning a condominium there are regular administration, operation, & maintenance fees associated with ownership; this may require a degree of cooperative management through an owner's association. However, the total cost of ownership may be somewhat lower when compared with lease, PPA, or the private installation of a solar generation system with equal productivity.

Distribution of Benefits

Benefits in each model are most typically shared through virtual net metering models. Power from the solar array is not routed directly to the subscriber. Instead, power is sold to the utility provider, and the subscriber receives a credit on their bill for solar power they have subscribed to. This is functionally a discount on the power bill of a subscriber.

Beneficiaries of Community Solar Gardens

Solar gardens can be designed to benefit a broad range of people or entities. A solar facility may be located at one address or spread over multiple addresses. Beneficiaries of the solar array do not have to be located within a certain distance of the array. Generally, if beneficiaries are all customers of the same

utility provider, virtual net metering agreements mean that there isn't a distance-based barrier to participation. If the solar array isn't physically close to the beneficiaries, there are some losses around the communities' capacity to use a solar facility as a site for education and awareness building. However, broader reaching projects cast a wider net and have the capacity to bring in more investors and subscribers. This includes reaching 'imagined communities' or a diaspora of community members connected through conditions other than geography. Net metering allows the community to define itself without the limitation of physical closeness.

Projects may also choose to incorporate equity-based metrics to determine who may be eligible to benefit from the community solar garden. Many shared solar projects across the United States specifically target low- and middle-income populations.

Ultimately, who benefits from the community solar garden is a decision that can be bounded in a multitude of ways, and the specifics of this relation must be decided on a project-by-project basis.

Equity-Focused Community Solar Gardens: Cases

NYCHA ACCESSolar.

The New York Metropolitan Housing Authority (NYCHA) provides public, subsidized housing for around 1 in 16 New Yorkers³⁴. NYCHA is the largest landlord in the city, and residents are disproportionately racialized people³⁵.

In 2017, NYCHA launched the ACCESSolar program. This program aims to install 30MW of solar on NYCHA owned buildings across the city by 2026³⁶. The project is employing community solar gardens with a third-party lease model³⁷. Small businesses or non-profits in NYCHA communities can apply to develop solar community gardens using the roofs of NYCHA properties, provided several criteria are filled³⁸.

The NYCHA requirements state that an ACCESSolar project must³⁹:

- Be proposed by a non-profit organization or a small business located in a NYCHA community (NYCHA communities are defined by NYCHA)
- Be Community Solar Garden, with electricity generated belong to NYCHA residents subscribed to the project.
- Employ NYCHA residents and develop career-path green jobs.
- Enrol low-income customers as subscribers.

In exchange, NYCHA and its partners provide:

- Access to rooftops for solar installations at low or no cost – ACCESSolar projects must pay rooftop lease payments only if the project economics support it.
- Access to start-up funding via the Fund for Public Housing's Ideas Marketplace crowdfunding platform
- Access to technical support from Sustainable CUNY

NYCHA projects employ a net-metering model, where subscribers get a credit on their electricity bill to offset the cost. NYCHA has also placed an emphasis on facilitating first opportunities for minority and female owned enterprises⁴⁰. This provides mutual benefits to local businesses and not for profits, NYCHA residents, low-income New Yorkers, and to NYCHA. Both the inclusion of hiring and training, and

³⁴ NYCHA, 2022a

³⁵ NYCHA, 2022b

³⁶ NYCHA, 2022c

³⁷ Ibid.

³⁸ City of New York, 2022

³⁹ NYCHA, 2023

⁴⁰ Shared Solar NYC, n.d.

sale of solar credits to low-income residents, incorporate an equity and empowerment dimension to the project. Training allows residents who are interested and may not have otherwise had the opportunity and entry point into skilled labour work in the green economy.

The first ACCESSolar project was recently completed – 1.8MW of solar was installed at the Queensbridge houses⁴¹. This project employs 13 full time solar technicians, all of whom were NYCHA residents trained through ACCESSolar⁴².

The move towards solar, as well as other CO₂ reduction initiatives is driven by several policy documents. Vitality, the New York City Climate Mobilization Act: Local Law 97 directed NYCHA to reduce GHG emissions by 40% by 2030 and 80% by 2050. Much of NYCHA's on site heating is fossil fuel based, meaning there are direct on-site emissions to be reduced. This exists within the larger policy environment set by New York State's Climate Leadership and Community Protection Act, which mandates 100% zero-emission electricity generation by 2040⁴³. Broadly speaking, the ACCESSolar initiative is supported by many other policy frameworks in the city and state.

NYCHA also occupies an advantageous position in facilitating community solar gardens. First, the Authority owns an abundance of buildings suitable for solar. Second, the Authority has access to significant funding through the Fund for Public Housing's Ideas Marketplace, as well as technical support from the City University of New York (CUNY). This eliminates two of the largest barriers to beginning community solar gardens – sites and funding.

⁴¹ Bright Power, 2021

⁴² Ibid.

⁴³ NYCHA Sustainability Agenda

T'sou-ke First Nation.

The T'sou-ke First Nation on Vancouver Island are widely regarded as pioneers in establishing Indigenous community solar in Canada. There are approximately 231 residents of the community⁴⁴. The Nation completed a 75.6 kilowatt [kW] solar demonstration facility in July 2009. The T'sou-ke First Nation solar project consists of three elements:

1. Energy conservation program, focusing on reducing energy through behavioural changes, building envelope upgrades (such as air sealing and adding insulation) and small mechanical system upgrades including insulating hot water tanks, wrapping hot water pipes, and installing low flow shower heads.
2. Solar hot water systems, with 40 installed on member residence roofs which accounted for roughly 10-20% reduction in electricity use.
3. Solar PV systems, totalling to a capacity of 75.6 kW producing 87,902 kWh of annual electricity. 23% is consumed by the Band and the remaining 77% is surplus electricity exported to the grid⁴⁵.

The Nation also used the project as an opportunity to create a youth-led energy group, host a solar forum to showcase the development, and disseminate project-related knowledge to other First Nations, municipalities, schools, universities, the general public, and tourists through workshops, conferences, and guided tours⁴⁶. To maximize the benefits of the solar installation, the T'sou-ke First Nation created the T'Sou-ke Smart Energy Group and coordinated a conservation program aimed at reducing the community's energy demands through behavioural change and building retrofits.

The project relied heavily on collaboration, with the Nation receiving funding from 16 separate public and private sources to cover the cost of the solar project⁴⁷. Funders often had complex and conflicting requirements, requiring significant communication and collaboration to navigate. The overall cost of the project was \$1,250,000. 88% covered solar technology – the remaining 12% of funding supported the energy conservation program.

The project was developed in the context of a comprehensive community plan that supported sustainability goals, as well as broader federal programs that supported community energy.

T'Sou-ke First Nation has provided a roadmap for communities with similar interests. One of the factors that makes this project so useful in the wider context of community solar is that the Nation has formalized knowledge-sharing structures around the project and has provided a model for navigating complex regulatory and funding environments. Many projects have been developed over the past decade that have benefitted both from the changing political and economic frameworks in Canada and from lessons learned in T'Sou-ke First Nation. This is compounded by innovation in solar and storage technology which increase the viability of future development.

⁴⁴ T'Sou-ke First Nation, 2021

⁴⁵ Bhattacharya, 2018

⁴⁶ Ibid.

⁴⁷ Ibid

Tucson Solar Commons.

The Tucson Solar Commons are a living lab of the Solar Commons Project, a research project run out of the University of Minnesota⁴⁸. The research applies the Solar Commons Model to various communities across the United States. It operates on a community trust model to deliver benefits from solar to a given community.

The Solar Commons Model functions as follows: a donor will make a capital contribution to a host/co-trustee, which is used to install a solar array⁴⁹. The host/co-trustee then receives virtual net-metering credits from the utility company⁵⁰. The net savings from this process then go to a trust, which puts the money towards a decided cause or beneficiary⁵¹.

The Tucson Solar Commons Project is hosted on the Dunbar School - formerly a segregated school that has been converted to a community centre which hosts several local businesses⁵². Benefits from the Dunbar School solar commons covers the cost of insurance, technical repairs, and admin costs, and contributes the rest to an escrow account held in trust by Pyramid Federal Credit Union⁵³. The beneficiary of this project is the Tucson Urban League – an organization with the mission of, “empowering the Black Community by dismantling systemic racism to secure generational prosperity through advancing; social economic and educational equity”⁵⁴. The array generates around \$3000 per year for the trust⁵⁵.

The Solar Commons Model is built to be transferrable, and researchers are building a toolkit to make this realistic. Upon completion, it will include legal templates⁵⁶, a digital dashboard for tracking things like solar savings, supports for public art, an educational tile game, and standards for governance⁵⁷.

The Tucson Solar Commons Living Lab takes an equity minded approach to developing community solar at every stage of the project. Holding savings in a trust allows more diversity in what the benefits to the community can be – instead of being constrained to benefits being solely a reduction in energy costs, benefits can take the shape of a number of diverse benefits depending on the need and desire of the community.

⁴⁸ Solar Commons Project, n.d.(a)

⁴⁹ Brehm & Lillis, 2018

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Solar Commons, n.d.(b)

⁵³ Ibid.

⁵⁴ Tucson Urban League, n.d.

⁵⁵ Solar Commons, n.d.(b)

⁵⁶ Note that this is an American project, and legal forms will likely not be applicable in the Canadian context.

⁵⁷ Solar Commons, n.d.(c)

Policy Considerations

Though all the models for solar garden ownership and operation outlined in this report are possible under Nova Scotia law, some are easier to implement than others. There are two Acts which govern the production and distribution of energy at the community solar garden scale in the province – the Utilities Act and the Electricity Act. These acts, and particularly the Electricity Act, have historically limited the development of community solar gardens through strict rules on net metering and kilowatt (kW) limits.

Amendments to both acts were introduced in 2021 with the explicit aim of making community scale renewables a realistic and accessible part of Nova Scotia’s transition to 80% renewable energy by 2030⁵⁸. The amendments are designed to compliment other programming, like SolarHomes, Commercial Solar, and the Green Choice Program. Amendments to both Acts were passed and have improved the regulatory environment for developing shared solar projects.

The province has also launched the Nova Scotia Community Solar Program, which is expected to begin accepting applications in summer or fall of 2023. Specific details of the program have not been released at the time of writing.

The Electricity Act and Developing Community Based Solar

All amendments to the Electricity Act were passed and are enforceable as of October 2022⁵⁹. The amended Electricity Act features several sections that notably change the landscape for developing community solar.

Under the amended Electricity Act, barriers to net metering programs and selling back to the grid have been reduced. NSPI customers can install renewables (including solar) on their properties and generate electricity for their own use and for sale back to the grid. Sale back to the utility would be at a rate equivalent to the NSPI rate the customer would pay⁶⁰. Through the enhanced net metering program, a customer can install up to 1 megawatt (MW) of solar on a given property. Arrays are expected to be sized based on the expected consumption of an account – with Class 1 Net Metering Services encompassing generating facilities with nameplate capacities up to 100kW, and Class 2 Net Metering Services encompassing generating facilities with nameplate capacities between 101kW and 1000kW⁶¹. The customer/generator can provide electricity to multiple meters provided they are under one account within a single distribution zone⁶². The customer/generator is functionally credited for what they produce, with credits offsetting energy bills. At the end of a year (with anniversary on the date of entry into the net metering program), the customer/generator will be paid the retail value for their credits. Energy credits cannot be carried over.

There are two clear avenues to use the net metering program for community solar. The first is to have participants in the community solar garden as parts of a single NSPI account, with benefits from a solar array distributed to them. This could work well in a situation where the structure already exists, like

⁵⁸ Province of Nova Scotia, 2021

⁵⁹ Nova Scotia Legislature, 2022

⁶⁰ c.25 s.3A, 2

⁶¹ NSPI Net Metering Service Regulations

⁶² NSPI reserves the right to extend this to provide energy outside the distribution zone, provided the specific circumstance is in the spirit of net metering regulations. (from net metering regulations)

multi-unit housing where units are individually metered, but exist under one NSPI account. Community solar could also adopt a model similar to the Tucson Solar Commons where the array generates more than it consumes, and energy credits paid out are contributed to community initiatives or social good projects. The program is open to any NSPI customer, whether they are an individual, business, not for profit or community group. Net metering projects do have to be approved by NSPI – if a project proponent would like to do a net metering project, they apply to NSPI for approval. Given the restrictions around net metering, this may not be the easiest route to shared solar.

The Electricity Act also allows room for a community shared solar array to be treated as a ‘retail supplier’⁶³, with retail supplier being defined as a person who is authorized to sell renewable low impact energy in accordance with the Electricity Act and the regulations but is not NSPI or another utilities company. Creating community solar projects under the structure of a retail supplier would circumvent challenges around net metering restrictions. However, retail suppliers do need to be licensed by the Nova Scotia Utility and Review Board (NSUARB). This may present some barriers, as licensing has stringent requirements. These include, but are not limited to, that the applicant must be incorporated, licensing fees must be paid, and financial statements must be provided⁶⁴. Depending on the scale of community solar, and the organization taking on the ownership of the solar array, this may be a viable avenue.

A community solar garden may also choose to become an independent power producer. An independent power producer is a renewable low impact energy generator where no more than 49% of the securities entitling the holders to vote for the election of its directors are held by a public utility in combination with any affiliate of the public utility, and that sells its electricity to public utilities for sale to the utility’s customers or for export outside the province⁶⁵. This, like becoming a retail supplier, may include some challenges around licensing.

In all situations, NSPI is the middleman for the sale and purchase of electricity produced through a community solar garden. If members of the community solar garden purchase power from another utility, this may present barriers.

Nova Scotia Community Solar Program

The Nova Scotia government is in the process of developing a community solar program. Program applications are expected to open in the summer/fall of 2023⁶⁶. Beyond this, criteria are still in development. The program will be competitive, and applications will be taken on a rolling basis until the program cap is reached. This will likely be the easiest avenue to financially support the development of community solar.

The province has an opportunity as it develops this community solar initiative to implement evaluation criteria that favor underserved, underrepresented, and hard to reach community beneficiaries. When distributing subsidized support for community solar, the province may consider how best to align provincial support with other priorities around equity, diversity, inclusion, accessibility. Communities that traditionally face barriers to existing energy efficiency and social support programs (such as low-

⁶³ Electricity Act, 2022, c.25 s.1

⁶⁴ Nova Scotia Utility and Review Board, Order M06214, Schedule “A”

⁶⁵ Electricity Act, 2022, c.25

⁶⁶ Shannon Harding, personal communication 16 December 2022

income renters) may represent demographics of particular importance/focus in Provincial community solar initiatives.

Planning for Solar in the Preston Township

The literature review for this report did not find any projects in communities analogous to the Preston Township, or any project specifically focused on Black communities.

Though many solar projects have equity, self-determination, and economic empowerment as core tenets, they often focus on broader or different aspects of marginalization. For example, many communities' solar projects focus on low- and middle-income populations, where Black people are often overrepresented. Projects like the ACCESSolar or projects funded under the Portland Clean Energy Community Benefits Fund⁶⁷ place focus on racialized communities, but also chose to include other groups like women and recent immigrants. Many solar projects in Indigenous communities also focus expressly on economic self-determination and agency.

Though lessons can be learned from various equity-minded community solar projects, if the Preston Township chooses to embark on community solar projects, project proponents must develop unique solutions and models based on the community's goals and history.

Community Engagement – Shared Solar in the Preston Township

In order to understand how the potential for community solar might play out in the Preston Township, ONE North End and Clean Foundation developed a series of engagements to take place in communities of Preston Township. These were intentionally designed as a first conversation around community solar and its potential benefits to the Preston Township communities, with the end goal of gauging community interest. Five total engagements were held – one in North Preston, two in East Preston, and two in Cherry Brook/Lake Loon.

Engagement Methodology

This project employed a modified world café engagement approach, and then shifted to a kitchen table conversation engagement approach. World café style engagements focus on creating several small, meaningful spaces for directed conversation which participants cycle through during an engagement session⁶⁸. Kitchen table engagements focus on a more intimate, informal discussions, and are better suited to small groups.

Each session began with introductions, a land acknowledgement, and a prayer. Prayer was included to reflect the importance of the Church in the Preston Township. This was followed by a 15-minute presentation on community solar gardens, designed to give participants the background to engage in an informed manner. The presentation was followed by a brief question period. The slide deck for the presentation can be found in Appendix A.

Given the history of environmental racism in the Preston Township, and African Nova Scotian communities more broadly, it was important to make space for the collective trauma endured by the community. To ensure this was reflected in engagements, after the presentation, there was an open

⁶⁷ City of Portland, Oregon, 2023

⁶⁸ The World Café Community Foundation, 2015

space for the participants to acknowledge and reflect on the history of environmental racism in the community.

Following the presentation, participants were randomly assigned a ‘station’ or table to begin the conversation. Each station had a moderator, to guide the conversation, and a notetaker, to capture the conversation. These positions were filled by a youth from the community. Each station represented a different part of the conversation around the potential for shared solar in the Preston Township and had a theme and associated guiding questions. As participants filtered into the station, they were asked a dotmocracy/dot voting style⁶⁹ question to kick off the engagement. It must be noted that dotmocracy polling has been identified as prone to ‘band wagoning’⁷⁰. Once all participants were settled at the table, the moderator would open the conversation with the first guiding question. Table themes, dotmocracy questions, and guiding questions can be found in the table below.

Table 1: Engagement Themes and Questions for the Preston Township Engagement Sessions

	Theme	Dotmocracy Question	Guiding Questions
1	Land of Opportunities	Do you think owning your land deed is an important part of this conversation?	What is the potential limiting role of the land deeds issue on community solar, if at all? How do you ensure appropriate land use for community solar, including agricultural and cultural elements? Can we use shared solar to contribute to community pride and community cohesion?
2	Investing in our Future	Are solar gardens a way to invest in our future?	How do you finance/capitalize a shared solar project in the Preston Township that retains community involvement? How do we ensure shared solar in the Prestons is affordable to ensure uptake with wider audiences? Are subsidies required? How can they be financed? Can solar ‘shares’ be sold? To whom? Can this contribute to cross generational wealth in any way?
3	Building our Legacy	Can a legacy be built through solar gardens?	Can shared solar be used to build energy literacy? Can it impact home energy behaviors? Can a shared solar facility be used in environmental education for youth?

Participants would have approximately 25 minutes at each station, and then would switch stations. By the end of the session, each participant had cycled through each station.

When sessions at the stations ended, participants were gathered centrally and thanked for their time. This concluded the session.

After the first engagement session, the engagement team pivoted the approach toward kitchen table conversations to better reflect the needs of the community. This provided a less formal and structured

⁶⁹ Dotmocracy or dot voting refers to a method of engagement where participants “vote” using a dot sticker to denote yes or no on a simple question. Refer to <https://dotmocracy.org/> for more information.

⁷⁰ Dotmocracy, n.d.

environment and was better suited to small groups. Conversations were still guided by the same questions, and participants were still asked to complete the dotmocracy polls.

Engagement Results

Five total engagements were held – two in East Preston, one in North Preston, and two in Cherry Brook/Lake Loon. Together, these five engagements drew 17 participants. Participants included prominent leaders in the community, landowners, and citizens passionate about environmental issues in the Preston Township. Engagement sessions were held in community facilities as a means of bringing the conversation to known, safe, community-oriented spaces that act as traditional hubs of community activity and engagement. Sessions were facilitated in partnership between the Clean Foundation and ONE North End and included support from a third-party consultant. This approach combined technical expertise from those connected to energy and environmental initiatives along with representation and established relationships of trust through ONE North End and their staff. The organization brought in “credible messengers” which provided us greater access to communities, due to the “credible messengers” relationships within their respective communities. Results are divided by theme below.

Land of Opportunities.

The ‘Land of Opportunities’ discussion brought forward several themes. First, it became clear that the land deed issue is very much at the forefront of community members minds, in North Preston. Clear anxieties emerged around the potential for a shared solar project to be expropriated, or ownership coming under contest.

In a similar vein, participants emphasized the need to have checks and balances to ensure community solar is done well. Community involvement, advisory committees, environmental assessments, and guidelines or bylaws. Participants also repeatedly highlighted that a pilot project in community would be quite useful in proving the concept.

Apart from this, participants clearly identified that community solar could be an avenue for generating generational wealth and long-term economic value for the community. Community members who are coming out to events like solar engagements are identifying both challenges and opportunities unique to their community.

Investing in Our Future.

This set of questions predominantly brought out potential sources for funding. Participants identified several specific grants or foundations, government grants for home solar installation, and the Nova Scotia Community Economic Development Investment Fund. Participants also began to identify features of funding that could be important – community involvement, crowdsourcing funding, and outreach to local investors were all highlighted as potential avenues to fund a shared solar project.

Participants also spoke on how to equitably implement shared solar, identifying that different households have different energy needs and financial situations. The tension between helping households who are energy poor and not having the solar resource unfairly exploited was discussed. Participants did highlight that the purpose of a shared solar project would be to give back to the community. These engagements were unable to determine the specifics of what equitable distribution of solar benefits would look like but did take a critical first step towards understanding what it would look like in the Preston Township. Participants raised the potential for lower-income community

members to have their solar subsidized, or for higher-income community members ‘sponsor’ a lower-income community member’s solar share. Regardless of the particular form the distribution of benefits might take, participants identified that shared solar must be built with the whole community’s benefit in mind.

Building Our Legacy.

When guided with questions from the ‘Building our Legacy’ theme, participants agreed that energy literacy and education could be integrated into a shared solar project. Participants repeatedly highlighted that collective responsibility and interest would be important to the success of shared solar and are a powerful tool in educating the community. With this vested interest expressed, there is a great opportunity to educate youth and future generations, which will aid in building the long-term growth and legacy of shared solar. Finally, participants highlighted the potential for collaboration with other African Nova Scotian communities to use shared solar as a collective resource.

Dotmocracy results are contained in Table 2.

Table 2: Preston Township Engagement Sessions Dotmocracy Results

Question	Yes	No
Do you think owning your land deed is an important part of this conversation?	16	1
Are solar gardens a way to invest in our future?	17	0
Can a legacy be built through solar gardens?	17	0

Dotmocracy results indicated that community members who chose to participate in engagement sessions were broadly aligned on the questions posed. In these engagements, dotmocracy was used to begin the conversation but was supplemented with more in-depth and nuanced discussion.

Comments on Engagement Results

Engagement results consistently highlighted that community members who did choose to engage do see the potential for shared solar to play a role in empowering the residents of the Preston Township. This was supported by kitchen table discussions and dotmocracy results. However, several considerable tensions arose.

The first is the question of owning the deed to the land shared solar is developed on. This feeds into a theme around conflicting interests when it comes to government.

The government was identified as a potential threat to shared solar in the Preston Township (e.g., what if the government expropriates a successful shared solar project?) and a source of support through funding and grants. Specifically, regarding funding, a shared solar project, participants both highlighted a desire to fund shared solar from within community and not have to rely on the government, and the government as potentially providing subsidies or funding.

Participants also repeatedly brought up the idea of pilot projects as a 'proof of concept', highlighting that this would be important to fostering acceptance and trust in shared solar among community members. A shared solar project would likely have to be supported by efforts to educate on and demonstrate the appropriateness of shared solar within the Preston Township. Without this, shared solar could be a controversial development.

Challenges and Opportunities

Engagements

All events were promoted three weeks in advance, giving community time and knowledge of upcoming events. The global COVID-19 pandemic had a major affect on the Preston Township which left residents with more important issues of concern, rather than participating in engagements. Engagements were not paired with any larger campaign of information or promotion. Furthermore, engagements were held during and after the Christmas holiday season – this may have influenced attendance.

As detailed in the section of the report on the history of the Preston Township, the community is quite insular and cautious of collaboration with outsiders. This project mitigated that by employing “credible messengers”. ONE North End employed project staff from the Preston Township, these staff went over and beyond by going door to door in some instances which lead to personal invites and a better understanding of what would be relevant considering the day and time and issues that community members were dealing with in real-time. Events were also promoted by both ONE North End and Clean Foundation through social media channels.

Expectations and Clarity on Solar

In engagement sessions, community members often identified solar with rooftop solar. To try to provide clarity on the differences between rooftop solar and community shared solar, the engagement began with a presentation on shared solar. In the interest of keeping the audience engaged, this was done in a 15-minute presentation thus limiting the depth of content covered. It was challenging to provide practical and essential information on solar within a limited time and without constraining participants’ understanding of shared solar.

This was compounded by the fact that the project was not supported by other educational campaigns around shared solar, making this a new topic for many participants. Though we attempted to create an environment where participants were approaching the engagement from an informed position, there was a limited amount of information and context we could provide.

There were also challenges around managing expectations of what shared solar can provide to a community. For example, the T’sou-ke Nation has achieved a significant degree of energy autonomy, largely thanks to their shared solar project⁷¹. This is not a promise that can be made about every shared solar project. In some cases, where subscribers participate because of a shared value around renewable energy, shared solar can be more expensive than standard energy purchase through a utility. Generating excitement and making a case for the potential of shared solar without over-promising was a careful balance in this project.

The challenge of balancing expectations was compounded by the fact that this social feasibility study does not have a technical study element. This made it more difficult to give ideas of what a realistic expectation for shared solar in the Preston Township might be. Participants often asked questions about the capacity or size of an array or how much could be generated at a certain site in the community. These questions could not be answered during engagement sessions, as these would be decisions community would ultimately make during the procurement process.

⁷¹ Bhattacharya, 2018

Pressing Community Issues

Land deeds and land ownership were repeatedly identified as potential barriers to community solar in North Preston and should be taken seriously into consideration for this area. There is the obvious barrier of needing to own land to build a solar garden on it. The other emerging theme was a fear that a developed solar project would be expropriated from the community. Concerns voiced around the land deeds dispute in North Preston suggest that this might be an issue that needs to be resolved before serious discussions of community solar can be had in the North Preston community. It also might suggest that ownership of the plot of land the solar garden sits on by the community is of higher importance than it might be in other cases. This should not disqualify North Preston from conversations with other Preston Township communities on future shared solar projects, as shared solar principally should help avert North Preston specific issues.

Statement on Feasibility

Considering the policy and regulatory environment in Nova Scotia has become more amendable to developing community solar, momentum gained through the engagements in Preston Township needs to continue to support the ongoing dialogue being held throughout Preston Township - empowering them to determine whether solar gardens can be feasible in their communities.

Engagements indicated that more education on community shared solar, who have historically been left out of by industry and government, could be beneficial in fostering an environment where future shared solar projects are more feasible. There is an enthusiasm that exists for solar that is blooming in Preston Township - The Preston Township Society, a recently launched society, have consciously decided to table community solar at the next meeting to continue conversations in the community on the potential benefits to ensure the community is included in this meaningful conversation that they have been left in the past.

References

- Bhattacharya, A. (2018). *Building a Network of Clean Energy Systems: A Case Study of the T'sou-ke First Nation Solar Project*. University of Northern British Columbia. <https://www.policynote.ca/tsou-ke-first-nation-building-a-network-of-clean-energy-systems/>
- Brehm, K., & Lillis, G. (2018). *Solar Commons Financial Analysis Results: Solar Commons Project Analysis Phase 1 of 2*. Rocky Mountain Institute. https://solarcommonsproject.org/wp-content/uploads/2020/12/RMI_SolarComFinancialReportPhase1_.pdf
- Bright Power. (2021, April 22). *NYCHA Announces Completion of Solar Installations at Queensbridge Houses*. <https://www.brightpower.com/nycha-announces-completion-of-solar-installations-at-queensbridge-houses/>
- Canadian Urban Sustainability Practitioners (CUSP). (2018). *Energy Poverty in Canada: a CUSP Backgrounder*. <https://cuspnetwork.ca/wp-content/uploads/2021/04/energypov-backgrounder.pdf>
- Canadian Urban Sustainability Practitioners (CUSP). (n.d.). *Energy Poverty and Equity Explorer*. Retrieved January 4, 2023, from <https://energypoverty.ca/mappingtool/>.
- City of New York. (2022). *ACCESSolar: Community Solar Gardens at NYCHA*. Retrieved January 5, 2023, from <https://www.nyc.gov/site/nycha/about/accessolar.page>.
- City of Portland, Oregon. (2023). *FAQ to Changes on PCEF Structure*. Retrieved January 24, 2023, from <https://www.portland.gov/bps/cleanenergy/faq-changes-pcef-structure>.
- Coughlin, J., Grove, J., Irvine, L., Jacobs, J. F., Johnson Phillips, S., Sawyer, A., & Wiedman, J. (2012). *A Guide to Community Shared Solar: Utility, Private, and Nonprofit Project Development*. National Renewable Energy Laboratory. <https://www.nrel.gov/docs/fy12osti/54570.pdf>
- Dotmocracy. (n.d.). *How to use dot voting effectively*. Retrieved March 8, 2023 from <https://dotmocracy.org/>
- DW Pilkey Consulting. (2018). *Preston Area Highlights*. United Way Halifax. <https://dennispilkey.ca/wp-content/uploads/2018/10/preston-area-highlights-march-2018.pdf>
- Encinas, F., Truffello, R., Aguirre-Nuñez, C., Puig, I., Vergara-Perucich, F., Freed, C., & Rodríguez, B. (2022). Mapping Energy Poverty: How Much Impact Do Socioeconomic, Urban and Climactic Variables Have at a Territorial Scale? *Land*, 11(1449).
- Energy Poverty & Equity Explorer. (2019). Canadian Urban Sustainability Practitioners. <https://energypoverty.ca/mappingtool/>
- Government of Canada. (2023). *Provincial and Territorial Energy Profiles – Nova Scotia*. Retrieved March 7, 2023, from <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial->

[energy-profiles/provincial-territorial-energy-profiles-nova-scotia.html#:~:text=The%20largest%20emitting%20sectors%20in,Canadian%20emissions%20from%20power%20generation.](https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/electricity/report/canadas-renewable-power/provinces/renewable-power-canada-nova-scotia.html#:~:text=The%20largest%20emitting%20sectors%20in,Canadian%20emissions%20from%20power%20generation.)

Government of Canada. (2022). *Canada's Renewable Power – Nova Scotia*. Retrieved March 7, 2023, from <https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/electricity/report/canadas-renewable-power/provinces/renewable-power-canada-nova-scotia.html> .

Halifax Regional Municipality (2022). *Municipal Planning Strategy for North Preston, Lake Major, Lake Loon, Cherry Brook and East Preston*. https://cdn.halifax.ca/sites/default/files/documents/about-the-city/regional-community-planning/northpreston_lakemajor_lakeloon_cherrybrook_eastpreston-mps-eff-22sep15-caserp16-16-toclinked.pdf

Heeter, J., Bird, L., O'Shaughnessy, E., & Koebrich, S. (2018). *Design and Implementation of Community Solar Programs for Low-and Moderate-Income Customers*. National Renewable Energy Laboratory. <https://www.nrel.gov/docs/fy19osti/71652.pdf>

New York City Housing Authority. (2023). *ACCESSolar: Community Solar Gardens at NYCHA*. City of New York. Accessed 15 February 2023. <https://www.nyc.gov/site/nycha/about/accessolar.page>

New York City Housing Authority. (2022a). *NYCHA 2022 Fact Sheet*. https://www1.nyc.gov/assets/nycha/downloads/pdf/NYCHA_Fact_Sheet_2022.pdf

New York City Housing Authority. (2022b). *Resident Data Book Summary 2022*. <https://www1.nyc.gov/assets/nycha/downloads/pdf/Resident-Data-Book-Summary-2022.pdf>

New York City Housing Authority. (2022c). *ACCESSOLAR*. https://www.nyc.gov/assets/nycha/downloads/pdf/ACCESSolar_April_2022.pdf

New York City Housing Authority. (2021). *NYCHA Sustainability Agenda*. https://www1.nyc.gov/assets/nycha/downloads/pdf/NYCHA_Sustainability_Agenda.pdf

Nova Scotia Legislature. (2022). *Proclamations of Nova Scotia Statutes*. Accessed 12 December 2022. <https://nslegislature.ca/legislation/proclamations-nova-scotia-statutes#e>

Nova Scotia Power. (2021, November 29). *Nova Scotia's first community solar garden is open for applications*. Retrieved March 7, 2023 from <https://www.nspower.ca/about-us/press-releases/details/2021/11/29/nova-scotia-s-first-community-solar-garden-is-open-for-applications> .

Shared Solar NYC. (n.d.). *NYC Solar Partnership*. Sustainable CUNY. <https://shredsolarnyc.org/access/content/learn/>

- Preston Area Highlights. (2018). DWPilkey Consulting. <https://dennispilkey.ca/wp-content/uploads/2018/10/preston-area-highlights-march-2018.pdf>
- Province of Nova Scotia. (2022, April 7). *Amendments to Electricity Act, Public Utilities Act*. Retrieved March 7, 2023, from <https://novascotia.ca/news/release/?id=20220407002> .
- Province of Nova Scotia. (2015). *Our Electricity Future: 2015 – 2040*. [https://energy.novascotia.ca/sites/default/files/files/FINAL%20Our%20Electricity%20Future\(1\).pdf](https://energy.novascotia.ca/sites/default/files/files/FINAL%20Our%20Electricity%20Future(1).pdf) .
- Simmonds, A. (2014). *This Land is Our Land: African Nova Scotian Voices from the Preston Area Speak Up*. Nova Scotia Barristers Society. <https://nsbs.org/wp-content/uploads/2020/11/This-land-is-our-land.pdf>
- Solar Commons Project. (n.d.a). *The Project*. <https://solarcommonsproject.org/>
- Solar Commons Project (n.d.b). *SC 1.0 Tucson, Arizona*. <https://solarcommonsproject.org/tucson-arizona/>
- Solar Commons Project. (n.d.c). *Toolkit*. <https://solarcommonsproject.org/toolkit/>
- T'Sou-ke First Nation. (2021). *Welcome to T'sou-ke First Nation*. Retrieved January 24, 2023, from <http://www.tsoukenation.com/welcome-to-tsouke-nation/>
- Tucson Urban League. (n.d.). *Our Mission*. <https://mytucsonurbanleague.org/>
- Whitfield, H. A. (2003). Black Refugee Communities in Early Nineteenth Century Nova Scotia. *Journal of the Royal Nova Scotia Historical Society*, 6(2003). 92-109.

Community Solar Gardens

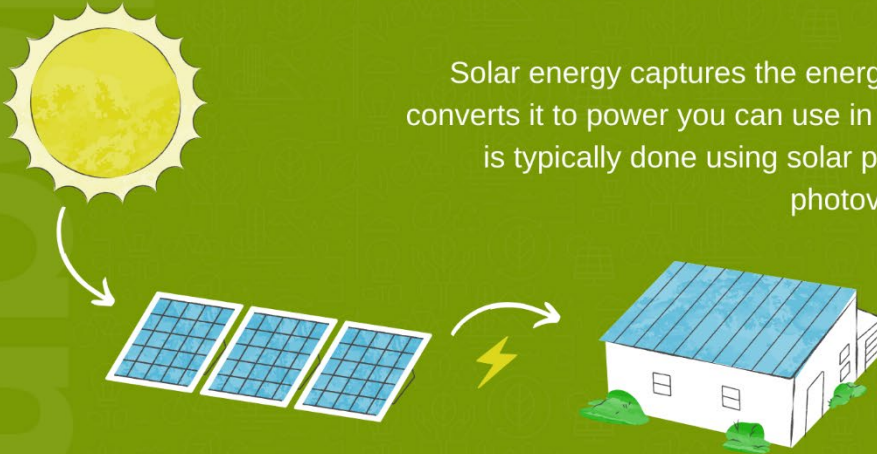
A brief introduction to community solar gardens, how they work, and how they're being developed.

Questions to Answer

-  What is solar?
-  What are community solar gardens?
-  What are some of the models for community solar gardens?

What is solar?

Solar energy captures the energy of the sun and converts it to power you can use in your home. This is typically done using solar panels covered in photovoltaic (PV) cells.

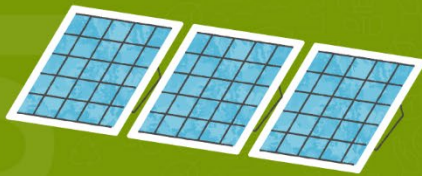
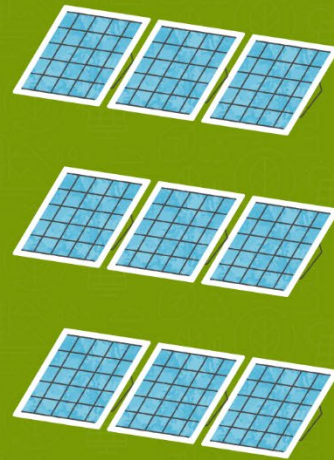


A solar farm in Amherst, NS



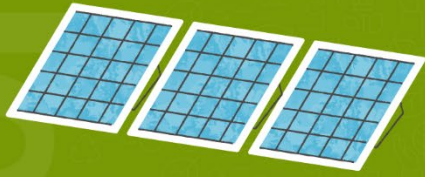
Rooftop solar installation

Solar is a renewable source of energy that's much more environmentally friendly than fossil fuels. Installing solar can offset energy costs. Solar can also create jobs - installing and maintaining solar panels requires various skilled trades positions.



There can be barriers to installing rooftop solar. The physical features of your roof or property, whether or not you own your property, and installation costs can all make solar hard to install.





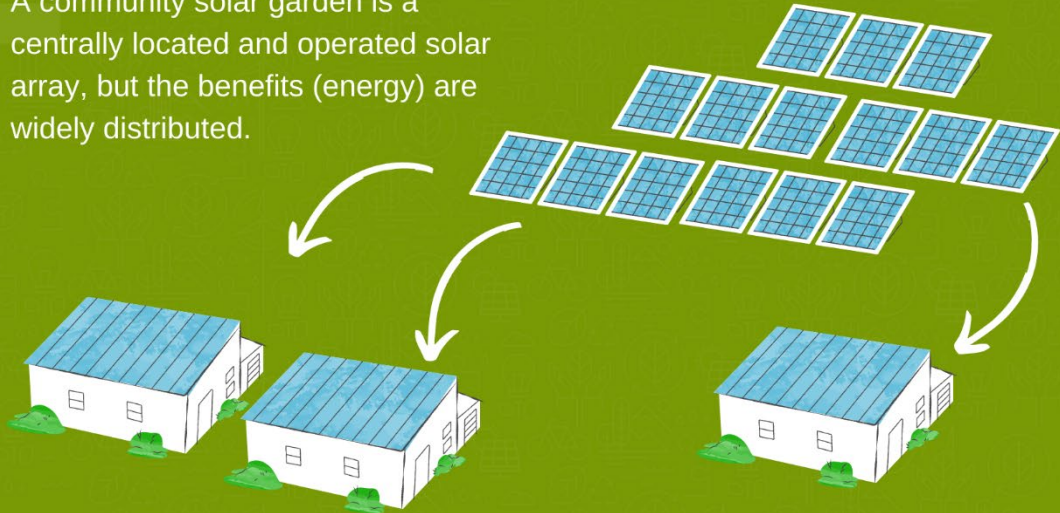
So what can you do if installing rooftop solar isn't an option?

Community solar gardens!



What is a community solar garden?

A community solar garden is a centrally located and operated solar array, but the benefits (energy) are widely distributed.



This can offset costs, bypass challenges around property ownership or suitability, and create opportunities for communities to move towards energy independence.

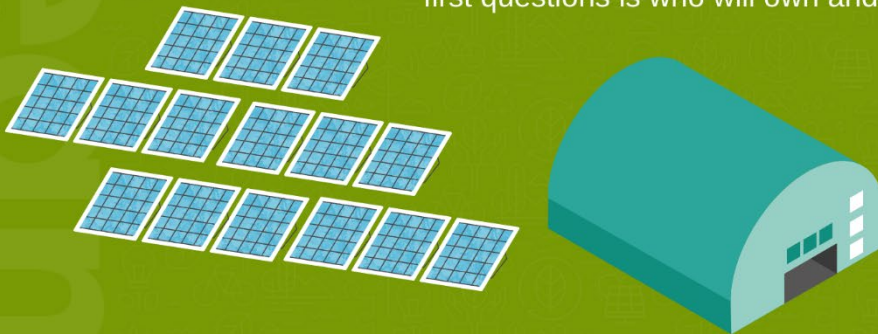


Solar array at Eskasoni First Nation

Models for community solar gardens

Ownership & Operation

When creating a community solar garden, one of the first questions is who will own and operate the actual solar facility.



Utility Owned

A utility provider, like Nova Scotia Power, can own the solar garden, but still distribute the benefits to communities.

Community Organization Owned

A local not-for-profit, co-op, or charity can own and operate the solar community garden.

Third Party Owned

Third parties, like private companies can also own and operate the solar community garden.

Distributing the Power

The next question is how power will be distributed to residents.



Subscription - Panel Lease

In this model, you lease a panel (or panels) in the array, and get the power they produce.

Subscription - Power Purchase Agreement

You pay a predetermined rate for power produced in the solar array.

Panel Ownership

In this model, you buy a panel in the solar community garden. You're entitled to the power produced by this panel, but the entire array is still owned by one body.



Solar at the Tracy Aviary in Utah

But there are really endless ways that solar power can be generated and distributed - the really great thing about solar panels is they're kind of like Lego blocks.

Solar community gardens

A solar community garden in Amherst, NS



- Nova Scotia's pilot community solar garden project
- Subscription based service - anyone in the province can subscribe, and have their energy costs offset
- Partnership between Natural Forces and the province



Part of the solar array at T'Sou-ke First Nation

- ☀ Three dimensions - an energy conservation program, solar hot water systems, and a solar PV array
- ☀ All power for the band is generated on site, and the surplus is exported to the grid
- ☀ Combined with community education, youth led energy program, and more

Questions?

