

## **Strategic solar actions for income-eligible Minnesota households:**

A State of Minnesota action plan delivered for the Clean Energy States Alliance “State Strategies to Bring Solar to LMI Communities” grant



Action Plan submitted by the Minnesota Department of Commerce based on input from the Connecting Low Income Communities to Efficiency and Renewable Sources (CLICERS) stakeholder advisory committees

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# Strategic solar actions for income-eligible Minnesota households

## Background

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The State of Minnesota Strategic Solar Action Plan is developed through support from a U.S. Department of Energy (USDOE), Office of Energy Efficiency and Renewable Energy (EERE), Solar Energy Technologies Office grant being administered through the Clean Energy States Alliance (CESA). The Minnesota Department of Commerce (Commerce) is a subcontractor to CESA. The overall project goal is to empower five states, Connecticut, Minnesota, New Mexico, Oregon, and Rhode Island, plus the District of Columbia to develop and implement strategies for expanding market penetration of solar PV among low and moderate-income (LMI) residents and communities. Each participating state is developing goals and a plan of action that matches its programmatic needs, demographic profile, solar potential, and financial resources. Each state's strategy must include quantitative targets for the number of LMI households it expects to reach and projections of the cost of proposed programs. The project will disseminate best practices nationally through case studies, webinars, presentations, and website postings.

In pursuit of developing strategies that are data driven, based on national best practices and local stakeholder input, Commerce implemented a new initiative known as Connecting Low-Income Communities through Efficiency and Renewable Sources (CLICERS) that includes the following components:

- Stakeholder engagement
- Data analysis
- Literature and best practices review
- Gap analysis
- One-on-one interviews
- Collaboration with CESA, other participating states, and a second USDOE initiative by the Better Buildings Challenge known as the Clean Energy for Low Income Communities Accelerator (CELICA)
- Engagement with other Commerce programs such as Weatherization Assistance Program (WAP), Low Income Home Energy Assistance Program (LIHEAP), and the Conservation Improvement Program (CIP)

Participants in the CLICERS Core Advisory Committee, Program Evaluation Task Force, and Reducing Energy Poverty Task Force helped shape the strategies that are included in this action plan focused on solar-based strategies as well as a second plan for the US Department of Energy (US DOE) Clean Energy for Low-Income Communities Accelerator (CELICA) initiative which focuses on the use of efficiency and renewables to reduce energy burden among income-eligible households. In addition, existing state policies and goals, emerging goals and programs, analysis of household characteristics, existing and potential resources, barriers, gaps, and constraints were all considered in building this plan.

## Definitions

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**Income-eligible:** For the purposes of this plan, Minnesota has chosen to identify low-income households as those that are income-eligible to receive energy assistance or weatherization assistance. Generally this includes families who earn incomes which are at or below 50% of state median income.

**Energy burden:** Energy Burden is defined as energy costs divided by income and is displayed as a percentage. For this plan, high energy burden is defined as having an annual energy burden of greater than 10%.



## Conservation & efficiency first

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In order to have the greatest impact on reducing energy burden for income-eligible households this plan acknowledges that energy efficiency improvements and conservation measures remain as the most economical way to reduce energy costs and should be done prior or in conjunction with installing or committing to any renewable energy solutions.

## Existing state policies and goals

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Minnesota has numerous state policies, statutes and action plans that have been taken into consideration in developing the state action plan, including:

[Next Generation Act of 2007](#) setting a renewable energy standard (RES) for electric utilities in Minnesota.

[Solar Energy Legislation of 2013](#) built on the next generation act, adding a 1.5% Solar Electricity Standard (SES) on top of the existing RES. Ten percent of the 1.5% SES is set to come from solar PV projects with a capacity of 40 kW or less. Enabling legislation for a Community Solar Garden (CSG) program was also established in the 2013 legislation and with multiple performance-based incentive programs, the combined initiatives fueled rapid solar expansion in Minnesota, growing in state capacity from less than 1 MW of installed solar in 2009 to 715 MW by the end of 2017.

In its September 6, 2016 Order in Docket No. E002/M-13-867<sup>1</sup>, the Minnesota Public Utilities Commission (Commission) directed Xcel Energy to “file a proposal or proposals to develop a solar garden specifically for low-income customers.”

## Planning and Coordinating Efforts

Numerous state planning efforts have been occurring over the last several years that guide the development of solar energy development in Minnesota. These include:

- [Minnesota 2025 Energy action plan](#) which supports expanding and improving utility green power options for renewable electricity.
- [Minnesota Climate Change Advisory Group](#) which advocates for increasing the Minnesota RES among other strategies.
- The [Minnesota Office of Sustainability](#) which promotes best practices across state agencies including the integration of solar into state-owned facilities.
- The [Minnesota Solar Pathways](#) project to find least-risk, best-value strategies for Minnesota to achieve its solar energy goals.

## The Connecting Low-Income Communities to Efficiency & Renewable Sources (CLICERS) effort

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The Connecting Low-Income Communities to Efficiency and Renewable Sources (CLICERS) effort, made up of two USDOE supported initiatives with deliverables among two action plans, has overlapping goals. This Solar Action plan is designed to break down barriers for bringing the financial benefits of solar to income-eligible households. The second is a barrier resolution plan, being completed simultaneously with the goal to reduce the crippling energy burden of income-eligible households by comprehensively integrating energy efficiency and renewable energy solutions. Three advisory groups were established to inform the work: the Program Evaluation Task Force, Reducing Energy Poverty Task Force, and the Core Advisory Committee. Each of the groups met three times

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<sup>1</sup> *In the Matter of the Petition of Northern States Power Company, dba Xcel Energy, for Approval of its Proposed Community Solar Garden Program, Order Approving Value of Solar Rate for Xcel’s Solar Garden Program, Clarifying Program Parameters and Requiring Further Filings, Docket No. E002/M-13-867, September 6, 2016.*

between August and December 2017. In addition, a number of interviews were conducted with key stakeholders to gain a deeper understanding of the current Minnesota landscape and emerging trends and needs. In the early stages of this overall stakeholder engagement process, several principles emerged guiding this work, namely:

- Prioritize income eligible households that would qualify for energy or weatherization assistance
- Prioritize highest energy burden households
- Collaboratively work with others living and working in resource constrained communities
- Utilize a coordinated approach of income-eligible, efficiency, and solar initiatives, building on, rather than competing, with current efforts
- Use a data-driven approach to target specific audiences and quantify results and future needs
- Prioritize funding for solar where these funds will result in the greatest energy burden reduction
- Ensure adequate consumer protection and financial benefit to the consumer
- Implement programs that have potential for replicability or sustainability over time
- Tailor resources to match the specific needs of the consumer

At the last meeting of each of the groups, participants were asked to identify target audiences, prioritize strategies, suggest champions for these strategies and recommend partner organizations to leverage resources for the greatest impact.

## Analysis of household characteristics among income-eligible households in Minnesota

### Energy Burden among income-eligible Households

- Minnesota's state median household income (SMI) for a family of four in 2017 was \$94,388. To be income-eligible for energy assistance, a family of four could earn up to 50% of SMI or \$47,197<sup>2</sup>.
- 498,000 households were eligible in 2017 for energy assistance while only 133,000 households received energy assistance and only 1,700 households received weatherization assistance.
- Among children, poverty rates were highest for those who are Black (39%), American Indian (28%) and Hispanic (26%)<sup>3</sup>.
- The average energy burden based on the Area Median Income (AMI) as seen in Figure 1 among the income-eligible households were greater than 20% and some parts of the state saw over 30% energy burden.
- Of those receiving energy assistance, the household energy burden was reduced but still exceeded the national average. After receiving energy assistance, the percentage of energy burden ranged from 7.6% to 20.2%

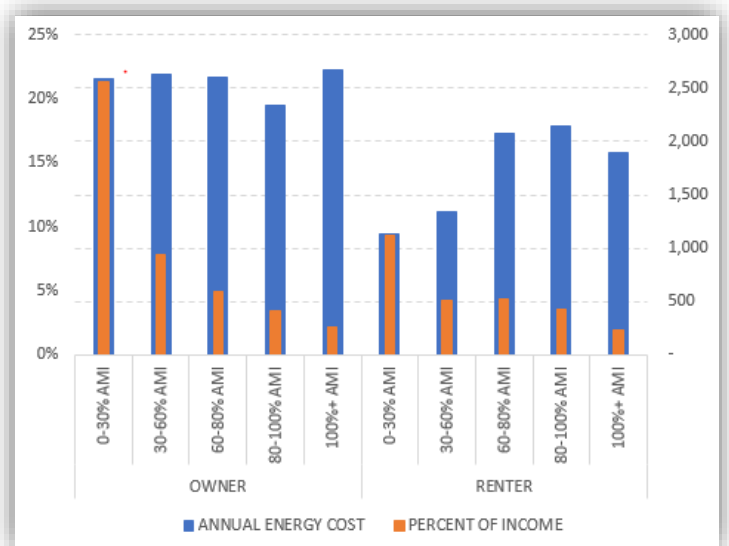


Figure 1: NREL Low Income Affordability Data tool, 2017

<sup>2</sup> Minnesota Department of Commerce, [LIHEAP Policy Manual FY 2017](#)

<sup>3</sup> Ibid

## Heating Fuel Type

According to information gathered by the Minnesota Department of Commerce 67% of the income-eligible households (HH) receiving energy assistance in Minnesota used natural gas, and 13.5% used propane as their primary heating fuel source.

## Type of Home

Single family homes comprise 61.3% of the households that received energy assistance in 2017. A distant second are apartments at 24.3%, which is defined as a building with five or more units, third are mobile/manufactured homes at 10.5%, and two to four unit buildings comprise 3.9% of households. While mobile/manufactured homes are a smaller percentage of overall household type served, these homes often have the least ability to combat their energy burden with weatherization efforts.

Households Served by Heating Fuel Type

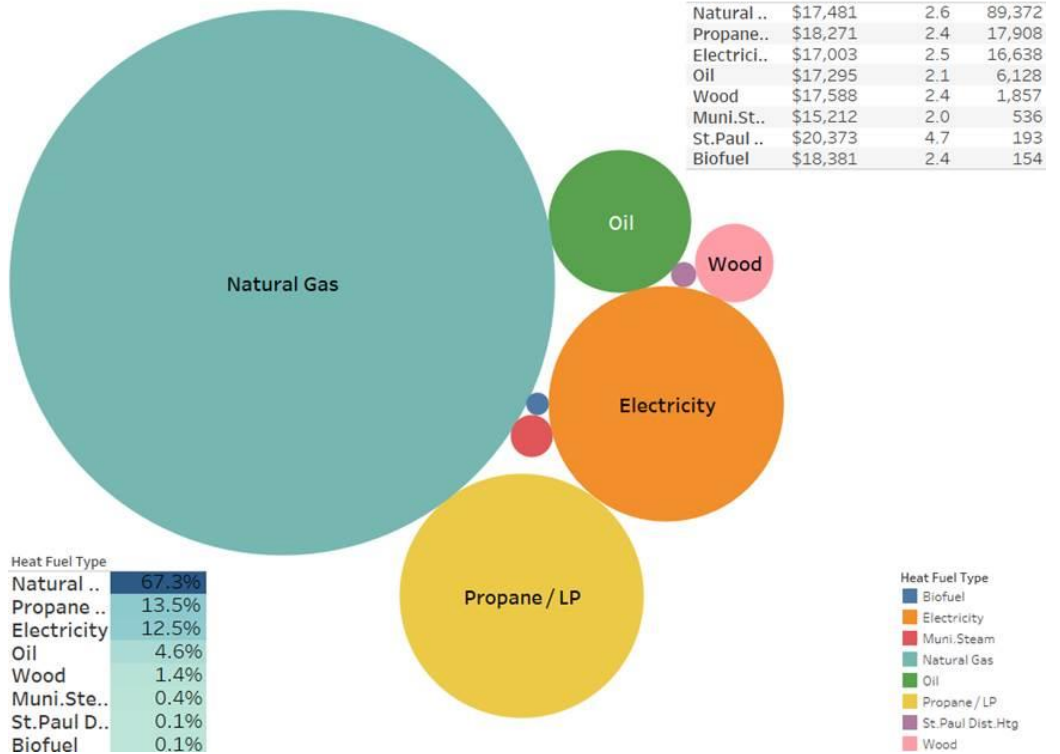


Figure 2: MN LIHEAP Participation, 2017

## Median Income of PV Adopters and Statewide Residential HHs

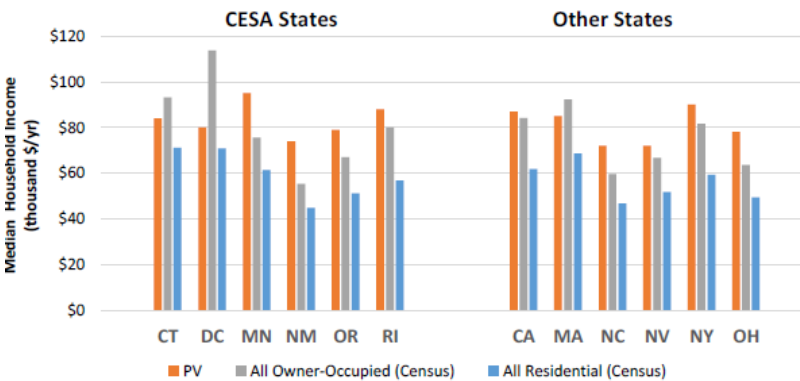


Figure 3: NREL, 2017

## Solar Adopters

The Lawrence Berkeley National Laboratory (LBNL) studied 2,330 on-site residential systems receiving an incentive payment to install solar<sup>4</sup> in Minnesota to determine the level of solar adoption by household income. The median income of PV adopters in Minnesota was found to be higher than statewide median income. Only 15% of the PV systems installed were installed on homes in the lower 40th percentile of income. In addition, renters were a small minority of on-site PV adopters, approximately 6% in Minnesota.

<sup>4</sup> Darghouth, Barbose, Hoen, Wisner, Millstein, "Tracking the Sun", Lawrence Berkeley National Laboratory, 2017. June 29, 2018

## Existing and Potential Resources

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### Solar Potential

Commerce, in collaboration with the University of Minnesota, funded the development of the [Minnesota solar suitability app](#). This tool helps business and homeowners determine whether their home or property is suitable for solar. The app is widely used by solar installers throughout Minnesota.

For those within the seven county metro, the Metropolitan Council, which reviews city comprehensive plans, has developed a [solar resource guide](#) to support cities in identifying the solar resources of their community.

The [Local Government Project for Energy Planning \(LoGoPEP\)](#) includes a city-by-city wedge tool. This wedge tool provides an estimate of the reduction of greenhouse gases a city may experience by implementing various strategies including efficiency, conservation and renewables. The wedge tool is currently available for only a few cities in Minnesota but it has the potential to expand throughout the state.

The National Renewable Energy Laboratory's state by state [Rooftop Solar Resource](#) potential analysis shows that Minnesota has the technical potential to meet 38.5% of its annual electricity consumption through rooftop solar photovoltaics.<sup>5</sup>

### Financial Resources

Multiple programs currently provide funding or financing to support the expansion of on-site solar:

- Xcel Energy Solar\*Rewards - \$40 million through 2020
- Minnesota Power Solar Sense - \$500,000 annually
- Minnesota Power Low Income Solar Pilot Program - \$55,000 annually
- MinnPACE Commercial Financing through the St. Paul Port Authority
- Ottertail Power Publicly Owned Property Solar – up to \$1,250 per kW

The majority of these programs are not specifically designed to support income-eligible households, and access to these resources vary depending on geography.

## Barriers, Gaps, and Constraints

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Through a combination of data analysis, program evaluation, and stakeholder engagement, five barriers emerged as the most significant in preventing access to solar for income-eligible households in Minnesota.

### **Barrier #1: Accessing community solar garden (CSG) subscriptions is more difficult for income qualified households**

As of August 2018, community solar gardens (CSG) were available in 30 electric utility territories throughout Minnesota. However, throughout the Twin Cities metro and greater Minnesota the lack of available CSG subscriptions continues. Where CSGs do exist, financial barriers persist such as a common requirement for an upfront down payment, 25 year contract, or a required minimum credit score. Along with these subscriber barriers, developers experience higher administrative and marketing costs needed to secure residential subscriptions which creates a disincentive for developers to focus their efforts on income-eligible households. Moreover, uncertainty on the true economic impact along with inconsistent consumer protection information prevents service providers from recommending CSG subscriptions to their clients.

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<sup>5</sup> Pieter Gagnon et al, NREL, [2018 Environ. Res. Lett. 13 024027](#)  
June 29, 2018

## **Barrier #2: Accessing on-site solar incentive programs is more difficult among income-eligible households**

As on-site solar incentive programs have continued to evolve in Minnesota many have changed from a capacity-based to a performance-based incentive program, meaning rather than receiving payments shortly after installation, payments are paid annually based on energy output over a number of years. This increases the need for either upfront capital or long term financing. Currently solar incentive programs are not typically coordinated with financing. Additionally, while robust solar incentive programs exist in many metro areas, most of greater Minnesota lacks access to any solar incentive program.

## **Barrier #3: Housing types among income qualified households often limit access to renewables**

More than 60% of the families that receive energy assistance in Minnesota own their home. However, many of these homes are older or manufactured homes which have structural issues that limit on-site installations. In addition, households that rent their single-family home or live in multi-family dwellings often do not have access to renewable energy options because existing solar incentive programs do not allow direct participation by renters.

## **Barrier #4: Need greatly exceeds funding, causing competition for limited resources**

The number of income-eligible households greatly exceeds available funding for energy and weatherization assistance. This is true in regards to funding for energy improvements to income-qualified multi-family housing as well.

## **Barrier #5: Integration, awareness, and availability of services is inconsistent statewide**

Incentive funding and financing is inconsistent across geographic areas and there is limited funding available to coordinate efficiency and renewable services across Minnesota. A household's ability to secure these services is very dependent on where they reside. Lack of information in languages outside of English limits awareness among underrepresented groups. Complicating the problem further is that existing state policies do not include specific mandates for programs to target resources to income-eligible households to reduce their energy burden.

## **Action Plan Solutions and Strategies**

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Three main solutions have been identified to address the above listed barriers. An implementation plan will be developed by July 2018 that will further refine these strategies, identify champions and stakeholders who will support each solution, and leverage existing and new resources to support the plan's goals.

### **Solution one: Expand access to community solar gardens for income-eligible households**

**Barriers Addressed: #1 & #3**

#### **Solution one strategies:**

- 1) Clarify and communicate the impact community solar garden (CSG) subscriptions have on energy assistance payments to income-eligible households by fuel type.
- 2) Partner with a regional or national organization to develop a certification program for community solar gardens that ensures consumer protections for income-eligible households.



## Solution two: Develop a model income-eligible solar incentive program

*Barrier Addressed: #2*

Solution two strategies:

- 1) Support the establishment of an income-eligible sub-program within Xcel Energy Solar\*Rewards incentive program that serves income-eligible households through on-site or CSG subscriptions.

## Solution Three: Identify ‘no loss’ opportunities to leverage resources for income-eligible households

*Barrier Addressed: #4*

Specific Strategies:

- 1) Identify model leveraging activities taking place among weatherization assistance service providers
- 2) Develop an *Energy Burden Leverage Tool* to determine where solar can have the greatest impact as defined by the combination of actions that create greatest energy savings
- 3) Explore leveraging opportunities for efficiency plus solar funding
- 4) Work with governmental bodies and utilities to identify additional opportunities to leverage solar incentive funds
- 5) Survey of all Minnesota service providers about what resources they are leveraging and what other services they are providing their clients
- 6) Develop educational materials and presentations based on the survey results that would emphasize best practices for leveraging resources in their community

## Longer Term Solutions

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Explore alternative financing options

*Barrier Addressed: #4*

During the stakeholder process interest was expressed in exploring alternative types of financing that would bring additional capital to Minnesota and provide easier access to financing to under-resourced households. While these concepts may be beneficial they are unlikely to be implemented in the two year time frame of this grant. However, as resources are identified, financing options including social impact bonds, green banks, on bill tariff/financing, Pay as You Save (PAYS), residential PACE, and a universal service fund could be further explored and may present an opportunity for a long-term impact among low to moderate-income communities.

Educate and organize

*Barrier Addressed: #5*

This solution would establish a coordinated one-stop shop coordinated delivery program that would include an on-line robust referral network and a staffed phone line. This program would serve all Minnesotans regardless of dwelling type, fuel type, location, renter vs owner status, and income level, and it would include a menu of resources that would be tailored to meet the needs of each participant. The service would provide information on solar installers and financing throughout the state.

- 1) Development of an online one-stop-shop tool of residential energy efficiency and renewable energy programs and assistance
- 2) Establish a benefits coordinator position to help individual households access online resources