



# ***Nova Scotia's Enhanced Net Metering Program – An Essential Component to Growing the Province's Solar Industry***

***Briefing Paper Submitted to Nova Scotia Department of Energy and Mines***

***November 18, 2019***

*CanSIA is a national trade association that has advocated on behalf of the solar energy industry in Canada since 1992. We proudly represent manufacturers, installers, developers, builders, owners, engineers, consultants, and other companies and stakeholders who want to see solar energy grow in Canada. On behalf of the membership, CanSIA promotes the unique economic, environmental and technological benefits of solar energy in Canada. CanSIA's role as an industry association is to represent members on current issues while positioning the industry for sustainable growth for years to come.*

## 1.0 Introduction:

CanSIA has become aware that Nova Scotia Power Inc. (NSPI) is considering filing an application with the Nova Scotia Utility and Review Board (UARB) recommending changes to the Enhanced Net Metering Program. Any proposed changes to the program could negatively impact home owners who are looking for innovative ways to lower their energy bills. At the same time such changes could significantly impact the local solar industry currently flourishing in both urban and rural regions of the province.

Nova Scotia's Enhanced Net Metering Program falls under the Province's Electricity Plan Implementation Act established in 2015. Any decision to conduct a review resulting in proposed changes to the current program would require formal approval by the UARB. Since the program falls under provincial legislation, the Province would also have a formal decision-making role regarding any proposed changes.

The following briefing paper prepared by CanSIA puts forward arguments on the benefits of the current Enhanced Net Metering Program. The paper also includes a series of recommendations the Province and UARB should consider before considering any policy changes to the current program.

It is important to note that current provincial legislation limits the maximum solar production from a single solar facility to 100 kW. While this cap does not impact the residential sector (as most systems are 10 kW or less), it has a significant impact on the commercial and industrial sectors who wish to utilize solar PV to reduce their electricity costs. While CanSIA has formed a working group to address the challenges associated with the 100 kW cap, this briefing paper will focus on the relationship between the current Enhanced Net Metering program and residential rooftop solar.

While solar deployment in Nova Scotia has grown substantially due to the popularity of the SolarHomes Program, the amount of solar being generated currently represents less than 1 percent of the province's electricity generation. As a result, CanSIA would argue there is no rationale to review or make changes to the existing program.

CanSIA recommends that if any such review is initiated, it must require thorough consultation with industry and consumer stakeholders, provide a reasonable notification period and must take into consideration the recent provincial job growth in the solar PV sector.

## 2.0 Background:

The core of net metering programs specify that excess energy exported to the grid has the same value as energy bought from the grid, based on the utility's rate structure. It represents a critical policy for valuing and enabling distributed generation.

The U.S. based Solar Energy Industry Association (SEIA), has outlined a set of basic principles for net metering programs related to rate design and compensation for distributed solar generation.<sup>1</sup> These include the following:

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<sup>1</sup> Solar Energy Industry Association. *Principles for the Evolution of Net Energy Metering and Rate Design*. May 2017.

- *Customers have a right to reduce their consumption of grid-supplied electricity through clean distributed generation and should always receive the full retail price value for behind-the-meter choices that reduce grid-supplied energy consumption.*
- *Solar rate design and compensation mechanisms should support customer economics to invest in solar that are sustainable, consistent with the full stream of values provided by the system, and fair to all stakeholders.*
- *Net metering is a proven mechanism for driving solar deployment, liked and understood by customers, and is preferred in most circumstances.*
- *Most studies have shown that the benefits of distributed solar generation equal or exceed costs to the utility or other customers where penetration is low. Assertions that current or future solar customers have shifted or will shift costs to others, and/or create new costs, must be demonstrated with valid, transparent data that reflects the values, avoided utility costs, and results of deploying solar at the distribution level, as well as the utility cost of providing service.*

More than 50 countries now have different varieties of net metering programs, indicating its popularity on a global scale. Within North America, net metering exists in every Canadian province and territory and 44 of the U.S. states. All net metering programs typically stipulate eligibility requirements such as limitations on individual system size. Some provinces and states have also set subscription limits based on total capacity of net metered solar allowable within the utility territory.

Net metering policies across North America include a number of rules based on the following:

- Technical requirements for installation and interconnection to the grid, such as limits on system size and specifications of what equipment is permitted
- Determining the value of exported energy – typically the same value as the retail rate to buy an equivalent amount of energy
- How to compensate for unused credits – either compensated with a cash payout, held indefinitely, expired with a small amount of compensation, or expired with no compensation
- A limit on the MW capacity of renewables that can be installed within a utility territory. Once those caps are reached, no new customers can sign up based on existing rules. New rules would need to be created for new customers to enter the market.<sup>2</sup>

The Enhanced Net Metering Program is one of the key drivers for Solar PV deployment in Nova Scotia. Other key drivers include Efficiency Nova Scotia's SolarHomes Program, financing programs such as Halifax Solar City and the continuing decline in solar hardware costs.

The Net Metering Program enables customers to install a solar PV system to offset all or part of their own electrical consumption. Excess electricity generated beyond the customer's own usage is credited against purchased electricity for billing purposes over a one-year period. Any surplus generation

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<sup>2</sup> Andrew Gong and Samuel Adeyemo. *Analysis of Net Energy Metering Policy Changes in the United States*. Aurora Solar Inc. May 17, 2019, 2.

remaining at the end of a one-year period is purchased by NSPI at the retail rate.<sup>3</sup> It is important to note that all residential customers, including those net metered, still pay a monthly base charge.

Nova Scotia's Enhanced Net Metering Program is considered a best practice for net metering as customers are compensated for electricity credits at the retail rate and credits do not expire within a designated month but are averaged out over the course of the year. Moreover, interconnection fees to the customer are minimal; there is a one-time fee of under \$300.00 to pay for and connect the bi-directional meter to the system.

In the early years of net metering, the uptake of solar PV systems in Nova Scotia was relatively limited, with only an estimated 130 systems installed between 2007 to 2015. Since the formal launch of the Efficiency Nova Scotia's SolarHomes Program in August 2018, residential solar PV installs have increased substantially across the province. As of November 1, 2019, almost 1400 applications have been approved which, if all complete, will total 12.2 MW of solar generation.

The program is targeting up to 2,000 homes over the next two to three years. At the end of 2018, Nova Scotia's solar PV capacity was 5 MW. Even with the projected increase in solar PV due to the SolarHomes Program, total generation will still be less than 1 percent of Nova Scotia's electricity production.

### **3.0 Why Net Metering is Essential to the Growth of Residential Solar PV in Nova Scotia**

The cost to install a solar PV system in Nova Scotia, even with the current incentive offered under the SolarHomes Program, is still an expensive undertaking for many homeowners. In Nova Scotia, the average cost of a 9 kW residential solar PV system (including HST) as of July 2019 was approximately \$20,000 after rebate with a payback period of ten years.<sup>4</sup>

Solar PV households participating in the Enhanced Net Metering Program are saving an average of 50 percent on their electricity costs. At over 15 cents per kWh, Nova Scotia's residential electricity rates are one of the highest in the country. It is projected that rates will continue to climb at 2.7 percent annually between 2020 and 2040.<sup>5</sup> Increasing electricity rates will further justify the costs of installing a solar PV system as the potential for savings increases. Without this policy in place where excess generated electricity is compensated at the retail rate, the financial value of the energy that is in excess of that which is self-consumed would be lost and payback times would be much longer and less favourable for consumers.<sup>6</sup>

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<sup>3</sup> Nova Scotia Power. *Net Metering Regulations*. 2015.

<sup>4</sup> Information provided by Efficiency Nova Scotia. July 2019.

<sup>5</sup> Nova Scotia Power. *2014 Integrated Resource Plan Final Report*. 2014.

<sup>6</sup> *Jurisdictions that do not permit net metering or where the program does not compensate the customer for excess generation still permit self-supply of electricity as long as it is consumed behind the meter. This can be achieved*

## 4.0 Benefits of Net Metering

Net metering provides many economic and environmental benefits that can positively impact not only solar customers, but utilities, all orders of government, and the province as a whole. These benefits are outlined below.

### 4.1 Economic Benefits

The increase in residential solar PV installations – the overwhelming majority of which are net metered – is resulting in significant job creation across the province – from Yarmouth to Cape Breton. Of the total number of residential solar applications processed through the SolarHomes Program, roughly half were from outside the Halifax Regional Municipality (HRM) indicating strong solar interest in both urban and rural communities across the province.

In April 2019, CanSIA released a Nova Scotia Residential Solar Market and Labour Force Study which projected up to 178 MW of solar by 2030; corresponding to approximately 22,000 residential solar installations and over 1100 jobs.<sup>7</sup>

A recent report prepared on behalf of the Ecology Action Centre projected over 15,000 green jobs per year in Nova Scotia by the year 2030 if certain goals are achieved including GHG reductions, increasing renewable energy supply, net zero social housing, increasing energy efficiency in the electricity sector and reducing car dependence/electrifying personal and public transport.<sup>8</sup> A significant number of these projected green jobs could be in the solar sector.

As of November 2019, there were over 50 solar companies registered under Efficiency Nova Scotia's Trade Network. There were less than 20 solar companies in Nova Scotia prior to the launch of the SolarHomes Program. Moreover, a number of large national solar distributors have set up warehouses within the Halifax Regional Municipality. This would include HES PV, Guillevin and Polaron Solartech Corp.

Solar installation training can serve as an economic development driver for marginalized communities. A new solar installer training program developed by the Nova Scotia Community College (NSCC) in conjunction with the Nova Scotia Department of Energy and Mines, has designated a certain number of seats for both First Nation and African Nova Scotian communities. The training provided by NSCC meets the basic criteria required to participate in the SolarHomes Program.

While Nova Scotia's unemployment rate is 6.4 percent which is slightly higher than the national average of 5.8 percent, certain regions of the province have extremely high unemployment rates such as Cape

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*through installing a battery, curtailing output, or sizing the facility such that output is not greater than consumption. This is not ideal for the customer resulting in longer pay-back periods.*

<sup>7</sup> CanSIA. *Nova Scotia Residential Solar Market Outlook and Labour Force Study*. April 2019.

<sup>8</sup> Ecology Action Centre. *Nova Scotia Environmental Goals and Sustainable Prosperity Act: Economic Costs and Benefits for Proposed Goals*. September 2019.

Breton at 16.7 percent.<sup>9</sup> Appleseed Energy, a long-serving solar company and CanSIA member based in Cape Breton, has recently hired a number of new employees to keep up with the increased demand for solar PV installs. Creating a number of good paying jobs in areas of high unemployment can be a significant economic boost to the region.

Electricity bills represent a considerable portion of a household budget. Nova Scotia home owners that have elected to go solar have reduced their electricity bills on average by 50 percent. Over the long-term, solar can serve to protect homeowners from future annual increases in electricity costs.

#### 4.2 Environmental Benefits

Solar PV, as a renewable and distributed energy resource, provides a number of environmental benefits:

- It encourages energy generation with minimal environmental impact. Renewable energy – especially in the forms most conducive to local deployment – allows for electric generation that reduces pollution and GHG emissions. This leads to improved air quality and a healthier environment.
- Solar PV does not produce any emissions in the production of electricity. That is why the shift to solar and other renewables will enable Nova Scotia to achieve critical GHG reduction and renewable energy targets<sup>10</sup>.
- Homeowners utilizing solar PV mitigate approximately four tonnes of carbon emissions annually thus significantly reducing their carbon footprint.

#### 4.3 Direct Benefits to the Utility

There is near consensus amongst regulators and utilities that Distributed Energy Resources (DER) such as solar PV can help avoid the need for new distribution capacity.<sup>11</sup>

The transition to renewable energy, particularly solar PV, offers a number of direct benefits for utilities including the following:

- Distributed renewable energy properly managed can enhance the stability of Nova Scotia's energy infrastructure while promoting energy independence. It can reduce the likelihood of major power outages by diversifying the energy mix and locations of power generation and reducing the load on overtaxed transmission lines.
  - For example, a 2012 study conducted by the Interstate Renewable Energy Council (IREC) on the Public Service Company of New Mexico found that the on-site generation helped the utility avoid energy costs, line losses, capacity upgrades, and transmission costs worth over 15 cents per kWh. Even when balanced against the transmission and

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<sup>9</sup> Nova Scotia Finance and Treasury Board. *Labour Market Trends*. March 2019.

<sup>10</sup> It is important to note that the manufacturing and shipping of solar modules and Balance of Systems components does create a carbon footprint. There is also the issue of recycling solar modules at their end-of-use life which is approximately 25 years.

<sup>11</sup> ICF. *The Hunt for the Value of Distributed Solar*. February 2019.

distribution costs, and power generation costs to the utility of supporting net metering, the policy had a net benefit of 7.8 cents per kWh, a 13-cent difference.<sup>12</sup>

- By facilitating distributed renewable energy development on-site, net metering accesses the greatest benefits of renewable energy without the need to mitigate against other environmental impacts associated with utility-scale solar and wind generation facilities.
- Nova Scotia’s electricity grid is carbon-intensive. Utilizing solar, in addition to other renewable technologies, will play an essential role in transitioning Nova Scotia’s grid from “coal to clean”.
- Increased solar deployment will enable NSPI to assist the Province in meeting its GHG reduction, renewable energy and climate change targets.
  - For example, the electrification of space and water heating, vehicles and other industrial applications will mean significant increases in electricity usage. The growth of renewable energy generation will need to be even greater to help offset this increased usage while moving toward a clean energy future.
  - In addition, with hotter Nova Scotia summers, there will be an increased use of HVAC’s for air conditioning which could create a new peak power demand across the province. Increased deployment of solar PV can help shave this peak load as solar electricity is most productive in the summer months between 10:00 am and 4:00 pm when air conditioning is most widely used.

Studies have shown that the benefits of distributed solar generation equal or exceed costs to the utility or other customers where penetration rates are low. For example, a cost-benefit study conducted by E3 on Nevada’s Net Metering Program reached the following conclusions:

1. Net Metering in Nevada creates a net present value benefit of roughly \$36 million for NV Energy’s non-net metered ratepayers.
2. On average, net metered users in Nevada pay about \$0.02/kilowatt-hour (kWh) more for electricity than non-NEM users, which creates a net cost of about \$135 million over the 25-year lifetime of those users’ systems.
3. Before 2014, net metering increased Nevada utility bills slightly. However, going forward, NV Energy bills should “decrease substantially” due to net metering, on the order of \$716 million for PV systems installed through the year 2016 over their lifetime of 25 years.
4. Net metering moderately increases electricity costs, by about \$0.02/kWh, due primarily to the lower cost of utility-scale solar compared to distributed solar.
5. Including societal benefits in the calculation does not significantly alter E3’s other conclusions, primarily because Nevada has a 25 percent Renewable Portfolio Standard.
6. If the Net Metering Program was changed to include higher fixed costs and lower variable costs, the benefit to non-net metered customers would increase from \$36 million to \$95 million<sup>13</sup>

This research demonstrated that net metering benefits all customers, not just the program participants. *It is important to note that the benefits are largely tied to the state’s Renewable Portfolio Standard.*

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<sup>12</sup> John Farrell, *Net Metering a Cost to Utilities, or a Benefit?* Institute for Local Self-Reliance. April 11, 2012.

<sup>13</sup> E3. *Nevada Net Energy Metering Impacts Evaluation*. 2014.

## 5.0 Potential Changes to Net Metering and its Impacts

As solar deployment increases beyond a certain saturation point, many utilities in North America, including NSPI, have raised concerns about maintaining net metering programs in their existing form. Such concerns include cost shifting to non-solar customers, potential financial impacts on achieved earnings and return-on-equity, and a desire to develop more efficient price signals for customer investments in Distributed Energy Resources.<sup>14</sup> As a result, some utilities have advocated for amendments to net metering programs, reducing benefits to customers who have adopted solar. Examples of potential changes include:

- Net Billing - Customer continues to be able to offset own usage with solar generation (as under Net Metering), but any generation exported to the grid is compensated at some specified price other than the retail (often wholesale) rate. Those exports may be measured instantaneously or over intervals of up to an hour.<sup>15</sup> *It is important to note that recent research has demonstrated that a large residential rooftop PV system could have a shorter payback period between 4–8 years when excess electricity generation is credited at the full-retail rate instead of a wholesale rate.*<sup>16</sup>
- Buy-all/Sell-all – Customer purchases 100% of its consumption from the utility at the retail rate and sells 100% of the generation back to the grid at some other specified price; compensation for all DG generation is thus settled completely separate from charges for consumption. This method typically requires two meters.<sup>17</sup>
- Higher fixed distribution service charges.
- Expiring unused credits once per year.

Within the United States, ten jurisdictions now offer compensation at a level lower than the full retail rate of electricity.<sup>18</sup>

The specific month when the annual credit expiration occurs is significant. For example, if credits expire in March the customer can accrue credits in summer months which can be used to pay for electricity

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<sup>14</sup> Satchwell, Cappers, and Barbose. *Current Developments in Retail Rate Design: Implications for Solar and Other Distributed Energy Resources*. Lawrence Berkeley National Laboratory. 2019. 24.

<sup>15</sup> Satchwell, Cappers, and Barbose. 25.

<sup>16</sup> Barbose, Galen, John Miller, Ben Sigrin, Emerson Reiter, Karlynn Cory, Joyce McLaren, Joachim Seel, Andrew Mills, Naim Darghouth, and Andrew Satchwell. *On the Path to SunShot: Utility Regulatory and Business Model Reforms for Addressing the Financial Impacts of Distributed Solar on Utilities*. Golden, CO: National Renewable Energy Laboratory. 2016.

<sup>17</sup> Satchwell, Cappers, and Barbose. 25.

<sup>18</sup> Renewable Energy Policy Network for the 21<sup>st</sup> Century (REN 21): Renewables 2016 Global Status Report. 2016.



consumption during winter months. However, if the expiration month is September, the customer would lose all of their summer credits and have to pay for their net energy use throughout the winter.<sup>19</sup>

While most net metering programs offer annual credit expiration, some utilities have monthly credit expiration which prevents the customer from carrying credits from one month to the next. Customers facing this scenario lose more of their excess production value than those with an annual credit expiration.<sup>20</sup>

Utilities that abruptly suspend their net metering program can result in serious impacts to the local solar industry. On September 18, 2019, Saskatchewan's public utility, SaskPower, suspended its net metering program due to closely hitting its 16 MW cap. There was no consultation with the solar industry in reaching this decision. This put the livelihoods of 57 Saskatchewan solar companies in jeopardy in addition to the numerous customers who already purchased a solar PV system or built a solar-ready home that they can no longer connect to the grid. On November 1, SaskPower introduced an updated net metering program where customers will still be able to offset their energy use at their retail rate while their systems are generating. Any excess energy sent to the grid will be credited at a reduced rate of 7.5 cents/kWh against the customer's energy charge. The new price reflects SaskPower's average cost of energy for 2020 and 2021.<sup>21</sup>

It is important to note that jurisdictions that proposed to end net metering often end up reversing course and reinstating a version of the original program due to political pressure from the solar industry and the general public. This was the case most recently with Saskatchewan and also the state of Nevada in 2017 and Maine in 2019.<sup>22</sup>

## 5.1 Case Studies

### 5.1.1 Nevada

In 2017, Nevada reinstated Net Metering under Assembly Bill 405. Under this new legislation, net metered customers (including homes and small businesses) with systems up to 25 kW fall under a rate structure that is tiered and set to decrease over time as the amount of electricity produced by net metering systems hits 80 MW benchmarks set by the Nevada Legislature. The tiered rate structure starts off at 95% of the retail rate, followed by 88%, 81%, and 75%. Customers who sign up to net meter under one of the four rates will keep that rate for a period of 20 years at the location where the net metering system was originally installed.<sup>23</sup>

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<sup>19</sup> Aurora Solar Inc. *Analysis of Net Energy Metering Policy Changes in the United States*. May 17, 2019, 4.

<sup>20</sup> Aurora Solar Inc. 4.

<sup>21</sup> SaskPower Set to Launch Revamped Net Metering Program, Oct. 15, 2019 - <https://www.saskpower.com/about-us/media-information/news-releases/SaskPower-Set-to-Launch-Revamped-Net-Metering-Program>

<sup>22</sup> *It's official: Gross metering will end in Maine*, PV Magazine, April 3, 2019 - <https://pv-magazine-usa.com/2019/04/03/its-official-gross-metering-is-over-in-maine/>

<sup>23</sup> State of Nevada Public Utilities Commission: [http://puc.nv.gov/Renewable\\_Energy/Net\\_Metering/](http://puc.nv.gov/Renewable_Energy/Net_Metering/)

Prior to reaching this new tiered system, the previous changes introduced to the original net metering program were extremely controversial and divisive. Changes occurred as a result of Nevada hitting their net metering cap of 3 percent of peak load across the state.

In 2015, with little consultation with industry, the Nevada Public Utilities Commission introduced new tariffs to their Net Metering program including higher fixed service charges, lower energy consumption charges, and lower credit given for exported electricity. Because the policy change was applied retroactively, it triggered enormous public outcry, and the steep new fees effectively put a freeze on new rooftop solar installations. Nevada saw a 32 percent decline in solar jobs over a one-year period after large residential installers chose to pull out of the state.<sup>24</sup>

Analysis of the impact of the tariff changes for a representative residential customer demonstrated that the increased monthly fixed charge lengthens the payback period of small distributed PV systems and the decreased credit for exported energy lengthens the payback period of large distributed PV systems.

Together these changes significantly reduced the financial performance of distributed PV of any size for a representative residential customer. The simple payback period for a representative residential solar PV system was estimated to lengthen from approximately 13 years to more than 22 years.<sup>25</sup> Residential solar PV installs tumbled from about 90 MW installed in 2015, to 55 MW in 2016 and 25 MW in 2017.<sup>26</sup>

Just two years after Nevada reinstated net metering, the state is breaking into the top rankings for solar installation in the U.S. A recent report from Wood Mackenzie and the Solar Energy Industries Association found Nevada installed the third-highest amount of solar in the first quarter of 2019, behind only Florida and California.<sup>27</sup>

### 5.1.2 Hawaii

Hawaii has reached distributed solar penetration levels far beyond any other state. By 2017, 36% of single-family residential homes in the state had rooftop PV systems – the next highest was California at 12%. This triggered a program review resulting in the closing of their Net Metering program in 2015. Two interim tariff options were introduced in its place – Customer Self Supply (CSS) and Customer Grid Supply (CGS). Under CSS, customers are prohibited from exporting solar generation essentially requiring onsite storage. Under CGS, customers can export generation similar to net metering, but the compensation level is set at a fixed price.

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<sup>24</sup> Nevada's New Solar Law Is About Much More Than Net Metering, Greentech Media, June 16, 2017. <https://www.greentechmedia.com/articles/read/nevadas-new-solar-law-is-about-much-more-than-net-metering#gs.4qj575>

<sup>25</sup> Pieter Gagnon, Ben Sigrin and Mike Gleason. *The Impacts of Changes to Nevada's Net Metering Policy on the Financial Performance and Adoption of Distributed Photovoltaics*. National Renewable Energy Laboratory. January 2017.

<sup>26</sup> Aurora Solar Inc., 2.

<sup>27</sup> Bailey Schulz, *Nevada ranks 3rd for solar installation in the U.S.* Las Vegas Review-Journal. June 18, 2019.

Following this interim measure, two new tariffs were introduced – a Smart Export rate set at a fixed price which allowed PV grid exports only during the hours of 4:00pm-9:00am. Similar to the CSS, it required onsite storage. The second new tariff was Customer Grid Supply Plus (CGS+) which was similar to the original tariff with the additional provision that permitted the utility to install controls to curtail PV output if required for grid reliability.<sup>28</sup>

While the majority of customers have opted for the CGS+ option due to high costs associated with battery storage, this trend is starting to shift as battery prices decline. Now roughly 27% of PV permits issued are including battery storage.<sup>29</sup>

The transition to the new tariffs significantly impacted Hawaii’s residential solar market. On a statewide basis, residential installations fell by roughly half from 9000-10,000 between 2014-16 to 5000 in 2017.

### 5.1.3 California

California is the solar leader across the United States with over 25,000 MW of installed solar at the end of 2018 – five times more than the number two state – North Carolina. Their initial net metering program set a subscription limit of 5% total peak demand which was reached in 2015. To ensure solar would succeed, a new program was created called Net Metering 2.0.

The new program preserved the key element that makes solar economical for California customers – retail rate bill credits. Home owners that enroll in Net Metering 2.0 still receive per-kWh credits for their solar electricity that are equal to the value of a kWh of utility electricity. The new program also prohibits many fixed charges for residential customers including demand charges, grid access charges, installed capacity fees and standby fees. What differentiates the new program from the original includes introducing time-of-use rates, interconnection fees and non-bypassable charges. The combined impact of these charges amounts to approximately \$10 per month compared to the original program.<sup>30</sup>

### 5.1.4 Arizona

Arizona replaced its net metering program with a net feed-in-tariff or Solar Export Plan. Under the revised program, new solar customers are paid a flat rate over ten years for energy sent back to the grid. In comparison, the old program compensated solar customers based on retail energy prices.

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<sup>28</sup> Satchwell, Cappers, and Barbose. 29.

<sup>29</sup> *Hawaii DBECT (2018) Solar PV Battery Installations in Honolulu: 2017*. Hawaii Department of Business, Economic Development & Tourism (DBECT), Research & Economic Analysis Division. January 2018.

<sup>30</sup> EnergySage. *Explaining Net Metering 2.0 in California*. 2019.

New solar customers will also switch to Time-of-Use rates where the utility charges different rates depending on the time of the day. Times of high demand or peak charge (3pm-8pm) have a higher rate than low demand or off peak (8am-3pm) times.<sup>31</sup>

## 6.0 Criteria and Conditions for Considering Alternatives to Net Metering

The Solar Energy Industry Association (SEIA) has put together a series of best practices for utilities to consider when contemplating changes to their net metering program.<sup>32</sup> These are outlined below.

- *Penetration level should be the leading threshold criteria for consideration of alternatives to net metering.*
- *Customers who installed solar under net metering should be grandfathered for a reasonable period of time. Customers have a reasonable expectation that rate structures (as opposed to rates themselves) will not change dramatically. A gradual phase-in to any new compensation methodology should be provided at the end of the grandfathering period.*
- *Process: Early, i.e. pre-litigation, data collection and analysis under the guidance of the state<sup>33</sup> and utilities can provide opportunities for collaboration toward the development of a factual basis for future changes to rate designs, compensation, and other mechanisms.*
- *Simplicity, Gradualism, and Predictability: The simplicity of the Net Metering compensation mechanism facilitates customer adoption of distributed solar. Any future design should consider customer needs for simplicity and any changes should be applied gradually and predictably.*
- *Shadow billing and voluntary pilot programs to analyze opportunities to increase the benefits that net metered systems provide to the grid, and to assess the actual impacts of proposed changes (for example, time-of-use pilot programs) should be considered before making substantial mandatory changes to compensation or rate design.*
- *Hold harmless policies should be in place for low-to-moderate income customers.*
- *Net Metering imports and exports are generally netted monthly in most states and tried up annually. More granular netting generally reduces solar customer economics, but may be worthy of consideration when penetration levels increase, or in conjunction with deployment of other DER's such as storage.*
- *Alternative compensation methods should take into account the efficacy of integrating solar with other forms of DER (i.e. storage) in the grid of the future, assuring that barriers to new technologies are not created.*
- *Solar-specific surcharges such as installed capacity fees are discriminatory, generally unsupported by facts, and impede distributed solar generation system economics.*

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<sup>31</sup> Sunrun. *Understanding Arizona's New Solar Export Rate Plan*. Retrieved from <https://www.sunrun.com/solar-by-state/az/understanding-arizonas-new-solar-export-rate-plan>

<sup>32</sup> Solar Energy Industry Association. May 2017. Retrieved from [https://www.seia.org/sites/default/files/NEM%20Future%20Principles\\_Final\\_6-7-17.pdf](https://www.seia.org/sites/default/files/NEM%20Future%20Principles_Final_6-7-17.pdf)

<sup>33</sup> *As this is based on a U.S. publication, CanSIA would suggest that provinces adopt similar principles.*

CanSIA recognizes that as the deployment of net metered solar PV increases, NSPI will want to file an application with the UARB to examine alternative rate and compensation mechanisms to the Enhanced Net Metering Program. This should only occur pending a program review that provides a full cost-benefit analysis of net metered solar PV and includes input from all relevant stakeholders.

Some utilities trigger their net metering program review based on reaching a prescribed subscription limit. This is typically based on a percentage of peak demand or percentage of total electricity capacity. Nova Scotia’s Enhanced Net Metering Program currently has no set subscription limit; this is the case with most provincial and territorial jurisdictions.

NSPI had over \$1.4 billion in electricity sales revenue in 2018, over 50 percent of which came from the residential sector at over \$731 million (*see Table 1 below*). From 2017 to 2018, NSPI’s revenue growth in residential was over \$50 million. As a result, any lost revenue to the utility attributed to the increase in net metered customers is miniscule when compared to their total electric revenue and continued revenue growth in the residential space.

**Table 1: NSPI Annual Electric Revenues: 2017-2018**

	2018	2017
Residential (millions)	731	679
Commercial (millions)	405	387
Industrial (millions)	233	200
Other (millions)	43	43
<b>TOTAL (billions)</b>	<b>\$1,412</b>	<b>\$1,309</b>

Source: EMERA 2018 Annual Report

NSPI’s total installed generation capacity is currently 2453 MW. Even with the approved SolarHomes applications which will soon bring total solar PV generation to just over 11 MW, this still represents under 1 percent of total capacity. As a result, a program review is not justified at this time.

## 7.0 Recommendations

Given that the Enhanced Net Metering Program falls under the Province’s *Electricity Act*, CanSIA recommends that the Province and UARB consider the following recommendations regarding any proposed review or changes to the current program:

- 1. Formal Program Review:** No changes to the current Enhanced Net Metering Program, including any proposed tariffs or alternate rate structure, should take place until a formal program review is conducted. The review should include the Solar Energy Industry Association’s net metering best practices as identified in Section 6.0. The review should separate out the residential sector from commercial, industrial and institutional sectors, and include all relevant stakeholders - NSPI, the solar industry, CanSIA, Solar Nova Scotia, the Province, NS UARB, Efficiency Nova Scotia, and solar customers. Any review undertaken should ensure the continued growth of solar PV across the province while acknowledging the many economic and environmental benefits solar PV provides. ***Given total solar PV generation currently represents under 1 percent of the province’s total capacity, a program review is not justified at this time.***

2. **Fair Customer Solar Compensation:** Customer compensation should be maintained at the retail rate – at least for all solar generation that covers up to 100% of the customer’s electricity costs. Anything generated beyond this amount could be set at an alternate rate. Consideration should be given to increasing fixed costs rather than altering the retail rate structure.
3. **Grandfathering Existing Customers:** Under current legislation, the net metering contract is in place for 25 years and protects customers from any new program changes for the duration of the original contract. This must remain in place.
4. **Transition Period:** Any possible program changes should be implemented gradually over time with an adequate notification period for solar installers and customers.
5. **Establishing 2030 Targets for GHG Emissions and Renewables:** To continue achieving the benefits associated with net metering, it is essential that the Province set 2030 targets for GHG emission reductions and renewable energy. While the Province recently set new GHG reduction targets for 2030, no 2030 target has been set for renewable energy. CanSIA has recommended the following renewable energy target in its submission to the Province regarding the new Sustainable Prosperity Act: *That the Province legislate a 2030 renewable energy target of at least 50% from local sources, with a solar set-aside representing at least 5% of total electricity production.*

## 8.0 Conclusion

The Enhanced Net Metering Program is a key market driver for solar PV deployment across the province. The current program is considered a best practice among net metering programs across North America as it pays out credits at the retail rate, credits don’t expire in a particular month and customer participation fees are low. As a utility, it is in NSPI’s best interest to pursue best practices that increase renewable energy targets, reduce GHG’s while lowering customer’s electricity bills.

The Net Metering program, in conjunction with SolarHomes and the declining costs of solar hardware in general, has resulted in a burgeoning solar industry in Nova Scotia. Solar companies are now hiring to keep up with growing demand. These jobs are being created not only within HRM, but many rural areas of the province where good-paying jobs are harder to find. Any changes to the existing program that reduces customer demand for solar could have a serious impact on the local industry. This is what occurred in Nevada when sweeping program changes were introduced without industry consultation.

One of the most important factors for promoting renewable energy is policy stability. Once policies begin to shift, industry often suffers, particularly if the shifts were unexpected, drastic or introduced retroactively.<sup>34</sup> That is why it is imperative that all solar stakeholders in the province are consulted if and when a program review is conducted.

If NSPI decides to file an application with the UARB to amend the existing Enhanced Net Metering Program, it must conduct a full analysis on both the values and costs of distributed solar generation

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<sup>34</sup> Davies, L.L., Allen K. *Feed-in Tariffs in Turmoil*. West Virginia Law Review. 2014.

including: existing rate structure design, utility cost-recovery mechanisms, transmission and distribution line congestion issues, and the ability of behind-the-meter solar generation to shave peak loads.<sup>35</sup> Existing net metered customers must not be impacted by any new rule changes and should be grandfathered in to current program over the next 25 years. The current legislation reflects this policy which must remain in place.

CanSIA welcomes the opportunity to work with the Province, NSPI, the UARB and other key stakeholders to ensure continued success of the Enhanced Net Metering Program.

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<sup>35</sup>Rocky Mountain Institute, 13.