Submission: EBR 012-9270

1. Introduction

The Canadian Solar Industries Association (CanSIA) is a national trade association that represents the solar energy industry throughout Canada. CanSIA's vision for Canada's solar industry is for solar to be a mainstream energy source and an integral part of Canada's diversified energy mix by 2020. CanSIA also intends for the solar industry to be sustainable, with no direct subsidies, and operating in a supportive and stable policy and regulatory environment within a similar time frame.

While the majority of the draft regulation is supported by CanSIA, it is crucial that the Ontario Climate Change Solutions Deployment Corporation (the Corporation) be utilized to explicitly target a larger suite of building types than has been currently identified. Additionally, making modifications to the regulation to allow more direct participation of companies and corporations as recipients of incentives is also required in order to best target incentives towards the most appropriate entity (provider vs end user) depending on the type of project being pursued.

For the purposes of this submission CanSIA has identified specific sections of the draft regulation that are either strongly supported, or, that require modification. If a specific section of the draft regulation has not been identified in these comments, this can be interpreted as CanSIA supporting that specific section.

2. Comments on the Draft Regulation

2.1 Object

2.1.1 Section 3 (1)

The draft regulation specifies that the object of the Corporation is to "stimulate the development of industry, trades and business undertakings in Ontario that further the deployment in Ontario of technology that is commercially available and that reduces greenhouse gas emissions from buildings and from the production of goods."

CanSIA supports the object of utilizing technology that is commercially available as it will focus funding towards solutions that are proven to be implementable, have a longer history/track record, and can be deployed quickly.

CanSIA recommends that the Ministry of the Environment and Climate Change (MOECC) clarify explicitly within the regulation that the Corporation will include actions to reduce greenhouse gas (GHG) emissions from buildings, including from the sources of energy that are utilized in buildings and in the production of goods, including both electricity and other fuels. Depending on one's interpretation, including only the term "buildings", and not clarifying that the sources of energy (electricity and other

fuels) that contribute to GHG emissions from buildings, could exclude technologies that are designed to reduce the use of grid electricity and other heating fuels.

2.1.2 Section 3 (1)(b)

The draft regulation specifies that the Corporation will achieve its objective by, in part, "providing incentives and engaging in financing activities, including providing incentives to individuals".

CanSIA recommends that the MOECC clarify explicitly within the regulation that the Corporation will, when appropriate, provide incentives to entities that are not individuals (ex. directly to companies or corporations). For certain products and technologies, and in certain end-use scenarios, it may make more sense to provide an incentive directly to the implementing company rather than to the end-use customer. For example, under common solar PV net metering approaches such as Power Purchase Agreements (PPAs) between solar companies and customers, the customer (home or business owner), is not required to purchase a solar system upfront. Instead, the solar company utilizes its own capital for the purchase, installation, and maintenance of the system and the customer buys the generated electricity over time. Under this type of approach, the customer would not be the most appropriate recipient of the incentive as they have no upfront capital expenditure for the system. The solar company, on the other hand, incurs the upfront costs and would be best suited to receive the incentive. Under other net metering approaches, the customer may buy the system outright and is thus incurring the upfront capital cost. Under this type of approach, the customer would likely be the most appropriate entity to receive the incentive to defray the upfront cost of the system.

For all solar technologies, including solar air and water heating, the end-user of the system may be an institutional, commercial or industrial entity. For this reason it is important that corporations, and other non-Natural Persons, be eligible to receive incentives from the Corporation.

2.1.3 Section 3 (1)(d)

The draft regulation specifies that the Corporation will achieve its objective by, in part, "researching market barriers inhibiting the deployment of that technology".

CanSIA supports this activity as a function of the Corporation as there are a number of barriers to the deployment of solar PV that should be researched and addressed, with other relevant entities such as Local Distribution Companies (LDCS), in order to help ensure that the province's GHG emission reduction targets can be met using these technologies. The Climate Change Action Plan (CCAP) included the commitment to make Ontario one of the most cost effective jurisdictions to install solar panels in North America. Reducing the cost of solar development by addressing other barriers to deployment will help achieve a grid parity situation in Ontario more quickly and allow greater numbers of customers to adopt solar without any kind of government incentive. As grid parity is approached and achieved, solar adoption will also become a better and less expensive tool for system operators and LDCs to meet supply adequacy needs, for the province reduce GHG emissions, for electricity customers to reduce their

usage of the grid and electricity costs, and to provide grid benefits like reducing transmission/distribution costs. A summary of market barriers inhibiting the deployment of solar PV have been included in Appendix 4.1.

2.2 Program Development

2.2.1 Section 6 (1)

The draft regulation specifies that the Corporation will, "for each of the following sources of greenhouse gas emissions, develop a program in furtherance of its object:

1. Existing residential buildings, including those with low-income residents;
2. New residential buildings; and
3. The production of goods."

CanSIA supports the inclusion of the above sources of GHG emissions as areas to target program development of the Corporation. CanSIA recommends also, however, that the sources of GHG emissions be expanded to include institutional, commercial, industrial and agricultural buildings. According to the provinces Climate Strategy, within Ontario the institutional, commercial and industrial building stock account for a significant portion of GHG emissions from buildings as well as from energy used within those buildings, including electricity generated from natural gas. While the Corporation would not be precluded from developing programs to target these types of buildings based on the current regulation, not including this focus as a specific mandate potentially excludes these buildings from inclusion.

CanSIA also recommends clarifying that multi-residential housing (including multi-residential and social housing for low income residents is included within the category of existing and new residential buildings. This may not be required to be clarified within the regulation itself, however, should be clarified in supporting materials at a minimum.

2.2.2 Section 6 (3)

The draft regulation specifies that the Corporation, in developing its programs, will determine an appropriate balance among a number of related priorities, including:

1. Maximizing absolute GHG reductions;
2. Stimulating the use of technology that supports fuel switching, energy storage, and deep energy retrofits;
3. Stimulating economies of scale for the technologies utilized;
4. Stimulating private sector financing for technology deployment;
5. Stimulating the use of technology to address the specific needs of low-income households; and
6. Stimulating the construction of new buildings that significantly exceed the energy efficiency requirements of the Ontario Building Code (OBC).

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In principle, CanSIA supports all priorities identified in the draft regulation. The Corporation's main focus should be reducing GHG emissions in Ontario and deploying technologies that enable Ontarian's to accomplish this goal. CanSIA recommends, however, certain modifications to the identified priorities as well as to the overall order of prioritization. These recommendations are detailed below.

CanSIA recommends modifying priority 2 to require energy storage to be paired with onsite renewable generation to ensure that GHG emissions are being offset rather than simply shifted. The absolute GHG emissions offset by energy storage technologies depends on the supply mix of the generation fleet at the time the project is charging vs discharging. While the generation fleet will generally have a higher GHG profile during peak times (due to the use of natural gas generators), there are rarely times when there is not some portion of the supply mix made up of generation from natural gas. This means that even energy storage technology that is charged during off-peak times will generally have a GHG profile. Generation from renewable resources like solar PV, however, do not contribute emissions to the GHG profile of the generation profile and can be paired with energy storage technologies to lessen the GHG impact of those technologies.

In seeking to prioritize the maximization of absolute GHG emission reductions and stimulating the use of technology that supports fuel switching, energy storage, and deep energy retrofits, CanSIA wishes to draw the MOECC's attention to two past submissions regarding the GHG reductions from solar PV and solar heating systems installed in Ontario. CanSIA has attached portions of these submissions as Appendix 4.2 and Appendix 4.3, respectively. These submissions include analysis demonstrating offset GHGs from both technologies as well as recommendations on how to best utilize incentives to stimulate their uptake.

CanSIA recommends modifying and re-prioritizing priority 6 (stimulating the construction of new buildings that significantly exceed the energy efficiency requirements of the OBC) to explicitly include net-zero buildings. The OBC is currently undergoing revisions with an updated code due out in 2017. The OBC has not been revised to include requirements (forward looking or otherwise) for net zero residential or commercial/industrial buildings. As the OBC is generally revised on a five year basis, it will be 2022 before a new version of the code will be released that could include net zero building requirements (similar to those being implemented in California).

In California the Title 24 process is moving all new construction (and renovations above a certain threshold) towards being net zero energy. This process revises building codes to incorporate energy efficient design and performance standards that include on-site renewable energy generation. The state also has set goals that include: all residential buildings being net zero energy by 2020 and all new commercial buildings being net zero energy by 2030, providing incentives for owners and design teams, investing in new technologies and research for increased energy efficiency, and providing incentives for solar PV for new homes that meet high efficiency standards through the New Solar Homes Partnership.

CanSIA recommends that the Corporation have a strong focus on encouraging the development of net zero energy buildings and communities by prioritizing program development towards this purpose at the same level as priorities 1 and 2.

3. Conclusion and Summary of Recommendations

The Ontario Climate Change Solutions Deployment Corporation (the Corporation) will provide a vital set of services to Ontarians to enable them to reduce their own GHG emissions and help achieve the province's emission reduction targets. In general, CanSIA is in support of the majority of the proposed framework that will structure the Corporation. For brevity, only recommended modifications or clarifications to the draft regulation have been re-specified here. Areas of agreement and support have not been reiterated.

1. CanSIA recommends that the MOECC clarify explicitly within the regulation that the Corporation will include actions to reduce greenhouse gas (GHG) emissions from buildings, including from the sources of energy that are utilized in buildings and in the production of goods (ex. electricity and other fossil fuels).

2. CanSIA recommends that the MOECC clarify explicitly within the regulation that the Corporation will, when appropriate, provide incentives to entities that are not individuals (ex. directly to companies or corporations).

3. CanSIA recommends that the sources of GHG emissions be expanded to include institutional, commercial, industrial and agricultural buildings.

4. CanSIA recommends clarifying that multi-residential housing (including multi-residential and social housing for low income residents) is included within the category of existing and new residential buildings.

5. CanSIA recommends modifying priority 2 to require energy storage to be paired with onsite renewable generation to ensure that GHG emissions are being offset rather than simply shifted.

6. CanSIA recommends modifying and re-prioritizing priority 6 (stimulating the construction of new buildings that significantly exceed the energy efficiency requirements of the OBC) to explicitly include net-zero buildings.

While the Corporation holds significant potential to both reduce GHGs as well as stimulate domestic clean tech industry, CanSIA is, however, concerned that the time it will take to establish the Corporation and develop programs could jeopardize its ability to hit emission reduction targets and timelines specified in the CCAP. For this reason, CanSIA recommends that the MOECC consider carefully the

potential to utilize existing entities and frameworks for certain programs. For example, the MOECC should consider utilizing the Independent Electricity System Operator's (IESO) conservation programs for the delivery of programming for solar PV. Modifications to the Conservation First Framework may be required in order to accomplish this goal (ex. allowing net metered solar to be eligible as conservation), however, this existing structure may be better suited to quickly and efficiently rolling out incentives.

All of which is respectfully submitted.

Sincerely,

Ben Weir
Director of Policy and Regulatory Affairs, Canadian Solar Industries Association

CC: John Gorman, President & CEO, Canadian Solar Industries Association
Wes Johnston, Vice President, Canadian Solar Industries Association

4. Appendices

4.1 Market Barriers Inhibiting the Deployment of Solar PV

4.1.1 Connection Threshold Limits

In Ontario, residential DSG is subject to limits on the amount of generation that can be connected on a given feeder. While these limits can differ across LDCs, most LDCs tend to use Hydro One Networks Inc.'s (HONI) limits which are:

- 7% of peak load on a single phase feeder (F class feeder); and
- 10% of peak load on a three phase feeder (M class feeder).

These threshold limits not only present a significant difficulty for the DSG industry by limiting the total market size, they also jeopardize the government's long term net zero home strategy. As outlined within the CCAP, the government of Ontario intends to move new construction towards being net zero between now and 2030.

A net zero energy building is defined as a building that produces as much energy as it consumes over the course of a year. These buildings achieve net zero energy status first through high levels of energy efficiency, and then through the addition of clean, on-site renewable power generation, typically solar PV.[1] From a sustainable development perspective, ensuring as much future building and community development as possible achieves net zero energy status should be one of the most important focuses of governments operating in a carbon constrained environment. In Ontario, approximately 17% of total GHG emissions come from buildings and 9% come from the electricity sector.[2] A building's emissions profile is largely made up of fossil fuel use for heating (space and water), and electricity use that can come from fossil fuel sources (the percentage of which changes depending on the time of day and how much generation is sourced from the natural gas fleet). Additional deployment of solar technology can reduce emissions from both sources.

The threshold limits imposed by HONI and other LDCs, however, will severely limit the extent to which buildings can achieve net zero status through the use of solar PV by constraining the amount of solar PV that can be connected on a given feeder.

4.1.2 Connection Requirements

[1] California Public Utilities Commission, http://www.californiaznehomes.com/#!faq/cirw.
[2] Ministry of the Environment and Climate Change, Climate Strategy, https://dr6j45jk9xcmk.cloudfront.net/documents/4928/climate-change-strategy-en.pdf, pg. 25.

There is currently different treatment by LDCs in Ontario as to the necessity of, and payment responsibility for, various different connection requirements for DSG. For example, some LDCs will require the inclusion of Supervisory Control and Data Acquisition (SCADA) or transfer trip equipment for certain sizes of DSG projects. The sizes that trigger the need for SCADA and transfer trip differ across LDCs as does the LDC's opinion on which entity must bear the cost of the cost of installing the equipment.

The OEB has given high level guidance on the payment responsibility for items such as SCADA and transfer trip within the Distribution System Code (DSC) in Section 3.3.2 on renewable enabling improvements. Renewable enabling improvements are intended to be cost recoverable through the rate base rather than from generators. This section of the DSC specifies that renewable enabling improvements to the main distribution system to accommodate the connection of renewable energy generation facilities include both the provision of protection against islanding (transfer trip or equivalent) and SCADA system design, construction and connection.

These and other connection requirements provide an opportunity for collaborative action between LDCs and the OEB to clarify existing regulatory frameworks as well as investigate potential alternatives to certain connection requirements in order to maintain safety and reliability while reducing the cost of installing solar.

4.1.3 Regional Planning

There are a number of drawbacks with the current approach to regional planning as it relates to opportunities for solar generation. Solar generation uptake to meet regional needs, along with other types of DERs, are only considered in regional planning as part of broader central procurement initiatives (ex. FIT, CHP, etc.) overseen by the IESO. By considering only the uptake of solar generation in a specific region through a central procurement, regional planning is not providing a full analysis of the uptake potential nor of innovative solutions that could be proposed to meet a regional need. This partial assessment of uptake potential for solar generation reduces the perceived capability of solar generation to address potential system needs. To adequately understand the ability for DSG to meet system needs, a specific regional assessment of DSG including a potential regional procurement (or DER credit offering) should be considered. A regional assessment could determine what solar generation projects may be available for development and how well the location of those projects matches with the current connection capability in a distribution or transmission network.

Additionally, regional planning has in recent past only considered the peak capacity contribution of solar generation. There are a number of other benefits (e.g. reactive power compensation, regulation services etc.) that solar generation can provide to power systems (if utilizing the necessary inverter and control technologies) that should be considered as a part of the IRRP. By limiting the comparison of solar generation solutions to other options (ex. Traditional wires options) primarily to meet peak demand needs, solar generation is not able to leverage its full value to the power system.

4.2 Avoided GHGs and Program Structure Recommendations for Solar PV

4.2.1 Avoided GHGs

As of 2015, the electricity sector accounted for roughly 7% of Ontario's GHG emissions.[3] Since the retirement of coal fired electricity generation in 2014, GHGs from the electricity sector have come primarily from the use of natural gas generation (a small portion is also produced from the transmission and distribution of electricity, or from imports from jurisdictions with dirtier grids). While relatively clean compared to other comparable US and Canadian jurisdictions, Ontario's electricity sector GHG emissions are a function of how the natural gas fleet is utilized to meet demand. The more the natural gas fleet is called into service to meet demand, the higher the emissions from the Ontario electricity sector will be.

Ontario's natural gas fleet is comprised of a combination of simple cycle and combined cycle generators. CanSIA has assumed that 85% of energy from natural gas generation is attributable to combined cycle facilities and 15% of energy is attributed to simple cycle facilities. Generally, simple cycle facilities (average heat rate of 11 MMBtu/MWh) contribute greater emissions than combined cycle generators (average heat rate of 7.5 MMBtu/MWh). CanSIA has excluded both the generation and associated GHG emissions from behind the meter natural gas generation (ex. Combined heat and power generators located behind the meter at industrial facilities), which would increase the overall emissions from natural gas electricity generation in Ontario, but is difficult to quantify.

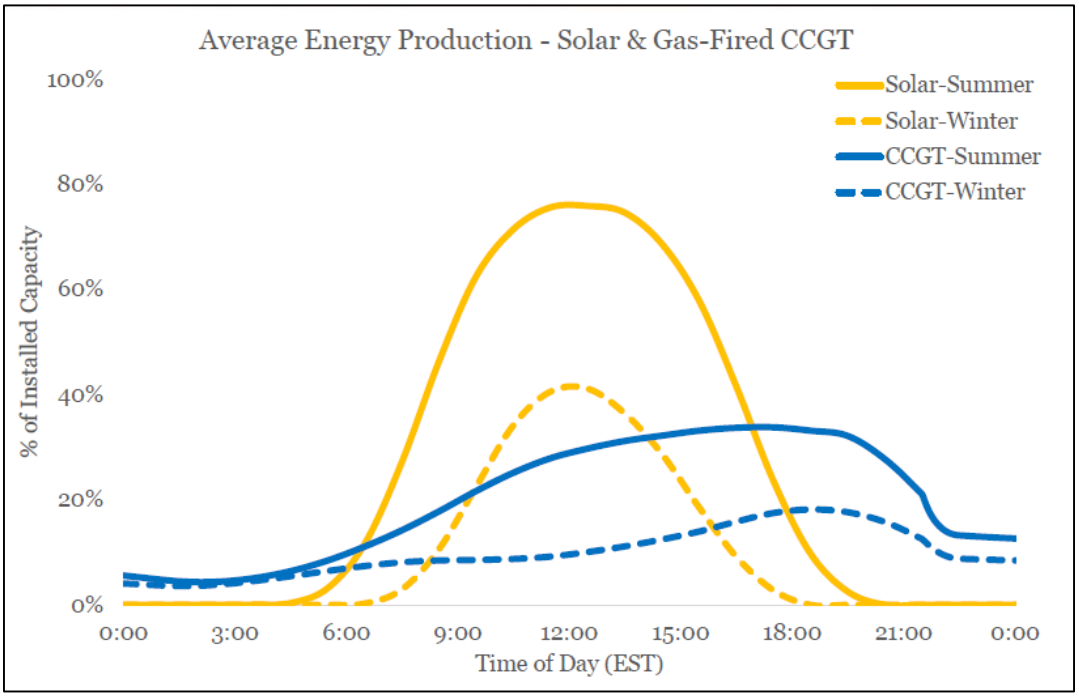
Using the assumed split between simple cycle and combined cycle natural gas electricity generators, and the average energy generation from natural gas in Ontario, it is estimated that each kWh of generation in contributes approximately 0.43 kg of GHGs to the province's emissions profile. This assessment takes into account how natural gas is used in the province in conjunction with all other generating sources (which in Ontario are emissions free).

Solar PV's central contribution to emissions reduction in Ontario is through the avoidance of GHGs from natural gas fueled electricity generation. Each kWh generated by solar PV and consumed by electricity customers will avoid a kWh of grid based electricity. Further, solar PV generation will often directly correlate to production when natural gas generation is used most. This is due to both natural gas generation and solar PV generating during peak times, when electricity demand and price are highest. CanSIA's analysis has factored in Ontario's historical demand profile as well as the generation profiles of natural gas (and all other generation) and solar and what the GHG composition of a kWh from the grid would be based on the amount of natural gas being utilized to meet demand. Currently, natural gas generation in Ontario is generally used to meet periods of peak demand on the electricity grid. When possible, the IESO tends not to dispatch natural gas generators for purposes other than meeting peak demand or providing ancillary services as the continued and steady operation of natural gas facilities is

[3] Ministry of the Environment and Climate Change, Ontario's Climate Change Action Plan, https://www.ontario.ca/page/climate-change-action-plan, pg. 6.

expensive and inefficient. The congruence between the generation profiles for solar PV and the natural gas fleet in Ontario are presented in Figure 1, below.

Figure 1: Solar PV vs Natural Gas Generation Profiles



A further contribution to emissions avoidance from solar PV is provided by avoiding the need to generate electricity from centralized natural gas generators and transmit that electricity through the transmission and distribution system. This helps avoid line losses which would otherwise result in additional natural gas generation being required to ensure local demand, often located far away from the source of generation, is met. A small amount of GHGs are also generated from the functioning of transmission and distribution infrastructure which can also be reduced.

Solar PV should be utilized in order to limit any increases in the GHG profile of the electricity sector. Limiting emissions will become more important over time as other sectors of the economy (buildings and transportation) are electrified in order to reduce their emissions. If emissions from the electricity sector increase, electrification will have an overall lower impact on reaching the provinces GHG emissions reduction targets.

4.2.2 Program Structure Recommendations

CanSIA created the Distributed Generation Task Force (DGTF) in early 2015 to consult on and design a transition for the Ontario distributed solar industry to move away from the current Feed-in Tariff (FIT)

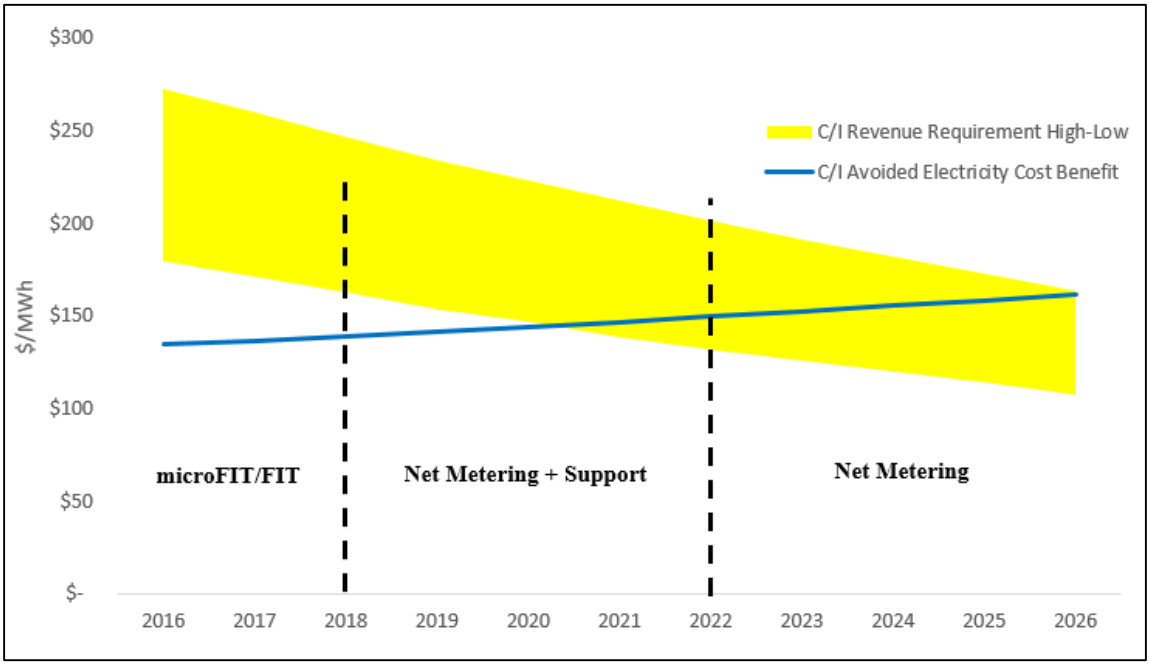
regime and into a net metering based framework. This transition, and the resultant net metering framework, is envisioned to be more responsive to electricity customer demand and to shift investment and performance risk to the market. Making this transition will allow the private sector to design and deliver projects efficiently within a timeline driven by economics and investment decisions rather than centralized procurement cycles.

Distributed Solar Generation (DSG) provides the following system value and benefits to Ontario:

- Located behind the meter, it is an effective Conservation and Demand Management measure
- Regional planning and distribution system planning benefit from having DSG as a grid-responsive and flexible resource option to meet power system needs
- It provides consumers an investment option to hedge against the risk of rising electricity rates and increases resiliency
- It is a supply mix diversification option that reduces peaking natural gas combustion in support of Ontario's climate change objectives
- It leverages strong public support for DSG to engage Ontarians in the electricity sector and its evolution

Ontario is currently capturing many of these benefits via the FIT Program. If the program is transitioned effectively to a net metering based framework, all benefits can be captured. The DGTF has determined that after the conclusion of the FIT program at the end of 2017, modest additional support for net metering projects will be needed for three to five years before net metering is economic without assistance. Figure 3 illustrates the timing of this transition from the conclusion of the FIT Program, through a period of transitionary support, and ending in straight net metering. Net metering is the established DSG policy in 46 of 50 United States and most Canadian provinces.

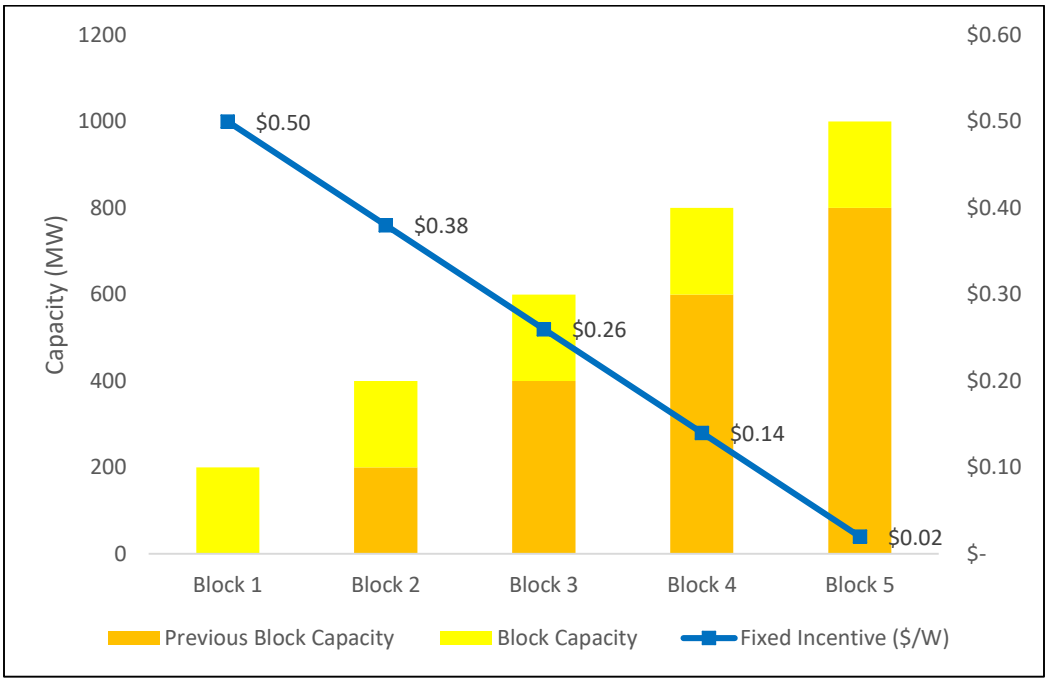
Figure 2: Distributed Solar Generation Cost Curve



Additional financial support will initially be required when a new net metering program is launched after FIT. The majority of revenue under a net metering regime comes from avoided electricity consumption, so additional support will be significantly lower compared to a FIT program. This additional support can decline year over year and will no longer be required post 2022.

- Provide interim support to net metered projects between 2018 and 2022 to bridge the gap to grid parity
- Offer a declining capital cost contribution for a capped quantity of 200 MW and finite budget (see Figure 3)
- Incent projects that support distribution grid need or regional planning system need through existing LDC distribution system planning and rate making processes and IESO regional planning processes
- Continue dialogue with the federal government for improved tax treatment and tax incentives for renewable generation, that could further accelerate reaching grid parity

Figure 3: Proposed Capital Cost Incentive Program



The above annual targets represent a cap on DSG eligible for the specified level of capital incentive, and the years are indicative only. If there is a year with under-subscription then the incentive would continue to be available in the subsequent year, and the schedule could be pushed out.

It is expected that the capital incentive would be needed until 2022, after which net metering at TOU rates would be an adequate incentive for customer adoption of DSG.

The DGTF's recommendations are an off-ramp from the current centralized FIT and microFIT procurement programs. They seek a reasonable balance between ratepayer protection and continued modest and steadily declining support for solar's participation in the supply mix. They harness a Conservation First approach in order to bend the cost curve for ratepayers. Ontario's evolution from FIT through supported net metering to a customer self-consumption model allows for the Province to capture the full value of being an early champion of renewable energy. This balanced approach ensures that Ontario continues to have the support mechanisms and a regulatory environment necessary to enable enhanced energy services for customers and advance toward a collective smart grid future.

4.3 Avoided GHGs and Program Structure Recommendations for Solar Heating

4.3.1 Avoided GHGs

For solar air heating to become commercially viable again in Ontario for retrofit applications, a payback of approximately 5 years is required. This means that an incentive as described in Figure 4 below is required to achieve an average payback range of between 5-10 years in different system applications. CanSIA recommends that all commercial and industrial building types be eligible for funding, as that is the most efficient way to scale a market. Restricting building types would thwart the ability of the industry to expand the quantity of viable applications. The table below represents average values for required incentive level, avoided GHGs and the cost per avoided tonne of GHGs for an average building.

Figure 4: Solar Air Thermal Avoided GHG Emissions

Average Total Installed Cost per square foot (ft^2) in Ontario	Required Incentive per square foot (ft^2)	Average GHG Displacement for Solar Air Collectors Tonnes / ft^2 / year	Cost per Tonne of GHG Avoided
Current Range: $50-60/$ft^2$	$26/$ft^2$	1 tonne / 50-70 ft^2 / year	$50

*Assume we can drive some immediate economics of scale with a program in place, we are targeting average installed cost of **$52/ft2.**

*CanSIA assumes this cost will decline roughly 20% to around $41/$ft^2$ in 5 years.

4.3.2 Program Structure Recommendations

With support mechanisms reinstated for solar air heating, it is reasonable to assume similar rates of growth that were experienced during 2007-2010 with the OSTHI program in place. Potential deployment scenarios over 5 years are detailed below. We assume declining incentives in Years 3-5. Uptake assumptions, associated incentive payments, and associated avoided GHGs are summarized in the table below.

Figure 5: Solar Thermal Program Deployment Impacts

	Solar Air Capacity Potential each Year (MW)	Installed Square Footage of Solar Air Collectors each Year (ft^2)	Solar Air Total Incentive Investment @ $26/$ft^2$ ($ Million)	Solar Air GHG Offset Estimates (tonnes) Per Year*[4]
Year 1	20 MW	400,000	$10.4 M	5,700 - 8,000
Year 2	40 MW	800,000	$20.8 M	11,428 - 16,000
Year 3[5]	60 MW	1,200,000	$28.8 M	17,142 - 24,000
Year 4[6]	80 MW	1,600,000	$35.2 M	22,800 – 32,000
Year 5[7]	100 MW	2,000,000	$40 M	28,570 – 40,000
Total Solar Air Heating	**300 MW**	**6,000,000 ft^2**	**$135 M**	**~85,000-120,000**
5 Year Program Total			**$185 M**	

*The 5 year program total has been increased by $50 million to account for an associated solar water heating incentive in commercial applications, as was available under the OSTHI Program previously.

It is important to also note that the air heating deployment summarized in the table above is expected to avoid approximately 2.5 – 3.6 megatonnes of GHGs over the life of the systems.

To ensure significant immediate uptake, CanSIA recommends establishing a prescriptive program under the CCAP for solar heating systems to drive uptake in the retrofit market for commercial, industrial, institutional, multi-residential, and agricultural buildings. In-line with the timelines of the CCAP, the program is recommended to run for an initial 5 years with a total budget of $135-185 million. The incentive would take the form of an up-front capital contribution to establish market clarity and spur immediate interest again in solar heating.

A solar heating program model previously existed in the province in the form of the very successful Ontario Solar Thermal Heating Incentive (OSTHI) Program and a similar structure could be easily re-implemented under the CCAP. This program operated from 2007-2010 and led to Ontario becoming the solar thermal capital of Canada, with close to 1,000 large solar heating systems installed on a wide variety of buildings. Ontario has a very strong base in solar air heating because of the origins of the SolarWall® technology in the province (the original solar air heating invention that shaped the global

[4] * Assuming average offset of 1 tonne of CO_2/ 50-70ft^2 of solar collector area
[5] Assume incentive could be declined to $24/ft2 in Year 3
[6] Assume incentive could be declined to $22/ft2 in Year 4
[7] Assume incentive could be declined to $20/ft2 in Year 5

industry). Overall solar heating is well established in Ontario, and will provide a strong contribution to bringing carbon-free heating into the mainstream and accomplishing the province's GHG emission reduction targets.