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Distributed Generation Task Force Recommendation Report

March 17, 2016

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Executive Summary

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

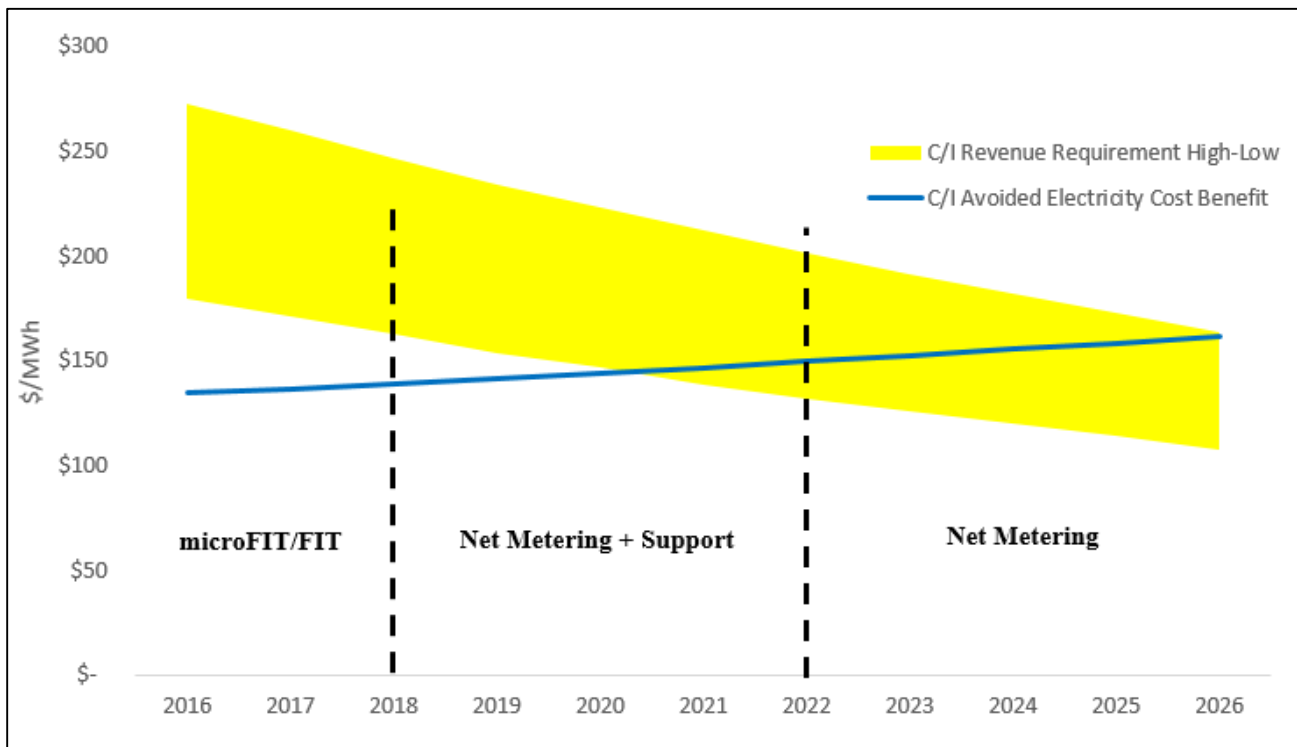
CanSIA created the Distributed Generation Task Force (DGTF) in early 2015 to consult on and design a transition for the Ontario distributed solar industry to move away from the current Feed-in Tariff (FIT) regime and into a net metering based framework. This transition, and the resultant net metering 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 1 illustrates the timing of this transition from the conclusion of the FIT Program, through a period of transitional 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 1: Distributed Solar Generation Cost Curve



The DGTF has developed the following transition strategy that balances a number of government and rate-payer priorities, and CanSIA wishes to work with the sector stakeholders to consult on implementing these recommendations throughout 2016 and 2017.

FIT 5 and FIT 6 Rules Should Evolve Toward Net Metering

Fulfilling Ontario’s commitment to FIT 5 and FIT 6 will provide certainty for continued investment in our solar industry while supporting the transition to a net metering program. The final rounds of the FIT program provide certainty for investors and thereby fuel continuing reductions in solar costs. Additionally, the creation of a successful net metering framework will need key stakeholder coordination and technical action, which will require time, before a program can be launched. In order to utilize the existing FIT Program to evolve the industry toward net metering the FIT Rules should be revised to:

- Set Prices well in advance of an Application Period
- Implement pre-set Price Schedule digressions of 5% for solar
- Reduce Contract Capacity Set-Asides
- Permit in-series metering
- Simplify the Application review process to reduce cost and timing

Net Metering Regulation Amendments

The base net metering regulation must also be modified in order to have it effectively compensate behind the meter solar generators for their generated electricity. Specifically, the net metering regulation should:

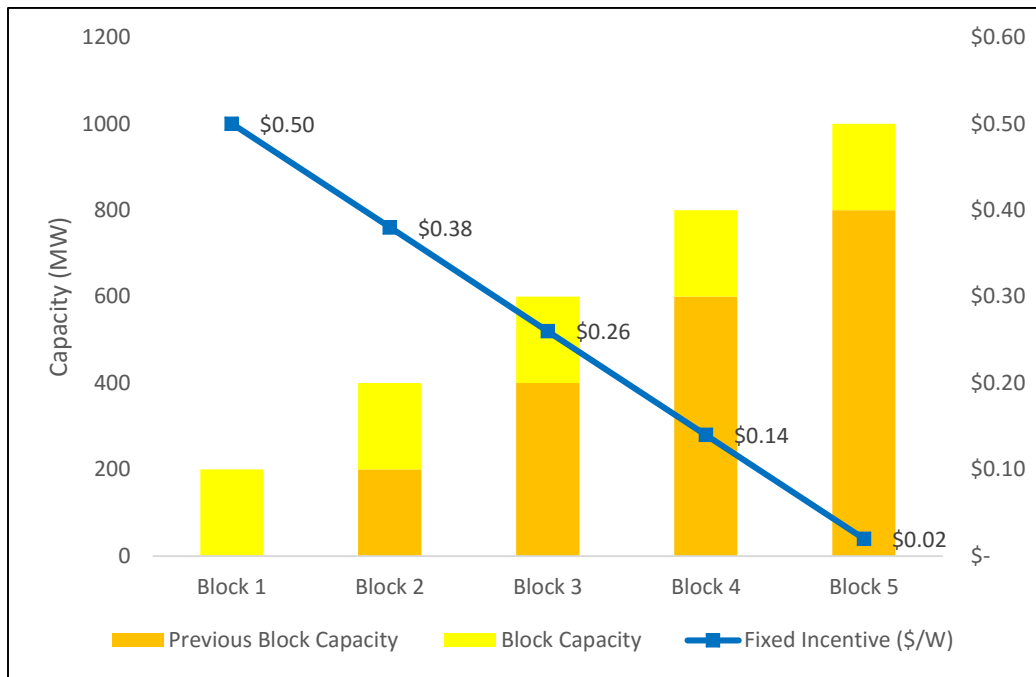
- Permit any sized distribution connected project to be eligible and consider project size limits tied to customer consumption volume
- Credit net metered generators at Time of Use (TOU) rates rather than Regulated Price Plan Tiered Rates
- Pay out any end of year hourly surplus generation credits
- Permit community net metering (or virtual net metering) to provide a backstop in the event of the loss of the load customer electricity consumption

Transitioning to Net Metering

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 2)
- 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 2: 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.

Message from President of CanSIA and Chair of the DGTF

We are proud to issue this report which captures the hard work of a leadership group of 13 of CanSIA's members, CanSIA staff, and external consultants. This group is dedicated to a long-term energy supply mix that includes solar photovoltaics, especially in its role as a critical asset in the distribution system.

CanSIA created the Distributed Generation Task Force (DGTF) in 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.

DGTF Objectives

The objectives of the DGTF were to research, assess and make recommendations in the following areas:

- **Post-FIT Solution:** Build a new customer-based adoption model that gives Distributed Solar Generation (DSG) greater, faster, and more efficient access to Ontario's electric grid through specific policy and regulatory enhancements
- **FIT Transition:** Identify near-term changes to the current FIT program that will support and align with a post-FIT solution
- **Solar Market Growth:** Empower customers to invest in DSG, thereby continuing to power job growth in a robust and established Ontario solar industry

DGTF Scope of Work

In meeting the objectives outlined above, the DGTF executed the following scope of work:

- Reviewed other jurisdictions for best practices in administrative process, regulation, standards and codes concerning customer-based DSG
- Identified existing opportunities for and barriers to the development of customer-based generation in Ontario, relying on market mechanisms rather than the FIT program
- Determined a framework that will enable and facilitate customer-based DSG in Ontario and align with key stakeholders' interests
- Identified key regulatory, legislative and technical changes required to implement a customer-based DSG adoption model in Ontario
- Reviewed the current FIT program and recommended changes to maximize the benefits of DSG and support a transition to a customer-based adoption model
- Defined clear policy objectives for consultation with government to ensure alignment of efforts with long term policy vision for the sector
- Engaged electricity industry stakeholders to identify opportunities for a customer-based DSG adoption framework

DSG provides benefits to the electricity system, allows individuals and businesses to participate directly in the production and consumption of their own energy, spurs jobs and economic development, and contributes to reducing emissions in support of the provinces climate change goals. Capturing these benefits in earnest occurs when

a grid parity situation is reached. CanSIA and the DGTF see this intersection point coming soon, however, when it occurs is dependent on factors including the completion of regulatory and infrastructure upgrades and project cost digression. We are excited to work with all stakeholders in the electricity sector to implement the recommendations contained within this report and to realize these benefits while simultaneously continuing to build a robust and sustainable solar industry within Ontario and Canada.

John Arthur Gorman
President and CEO, CanSIA



Fidel Reijerse
Chair, DGTF and President, RESCo



Solar Energy’s Benefit to the Ontario Electricity Market

Ontario is undergoing significant economic changes due to internal and external trends that will reshape the province and its electricity market. DSG is a unique energy resource that can help Ontario move towards a prosperous low-carbon future and support a robust domestic solar industry. These trends will require new technical capabilities and policy changes for the electricity sector to ensure the continued delivery of safe, reliable, clean and cost-effective electricity to consumers in Ontario.

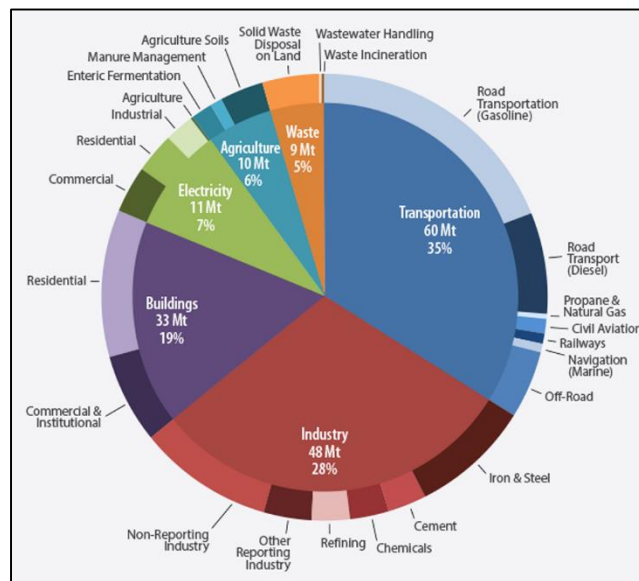
Macro Trends Impacting Ontario’s Electricity Market

There are a wide range of global and local factors that will influence the future of Ontario’s electricity sector. The DGTF gave special attention to three key trends that will have the highest impact on Ontario’s economy and electricity sector.

Climate Change Policy

Climate change policy is entering a new phase on the provincial, federal and global stage that will have a direct impact on the Ontario and Canadian economy. At the provincial level, the Ontario government has committed to reducing Greenhouse Gas Emissions (GHG) by implementing a cap-and-trade program in 2017. Placing a price on carbon will change the consumption and spending patterns of all Ontarians.

Figure 3: Ontario's 2013 GHG Emissions by Sector¹



¹ MOECC, Climate Change Strategy, <https://dr6j45jk9xcmk.cloudfront.net/documents/4928/climate-change-strategy-en.pdf>, pg. 25.

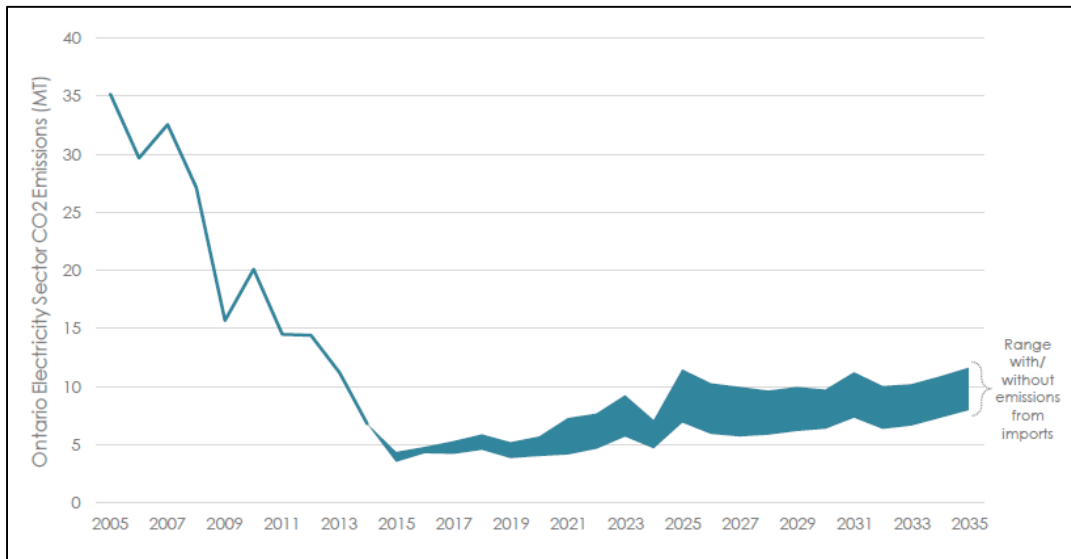
The adjustment to carbon pricing will result in a shift in investment between different sectors of the Ontario economy, anticipating the increased electrification of the transportation and buildings sectors. At the federal level, the new government has committed to taking action on climate change, working with provinces and territories to place a price on carbon and reduce carbon emissions. Canada is also taking action at the global level by committing to the climate change agreement adopted at the Paris Climate Conference (COP 21). The COP21 agreement will attempt to restrict GHG emissions to a level limiting the rise in global average temperature to “well below” 2°C, as compared with pre-industrial levels. Meeting these goals will involve significant changes in global energy consumption and investment.

In the 2015 Climate Change Strategy the MOECC identified specifically that it will establish GHG reductions as a priority in the next Long Term Energy Plan and that it will ensure a continuation of the positive trends in the electricity sector as well as continued improvement in conservation, efficiency and clean energy use to achieve deeper, long term GHG emission reductions.²

Uncertainty exists across the electricity sector in regards to how emissions will change over the initial compliance period of the Cap and Trade system. For example, the current Long Term Energy Plan (LTEP) forecasts meeting a prescribed target for conservation of 7 TWh by 2020. Meeting those targets (or not meeting them) has implications for energy production in the province and thus the GHG profile of the electricity sector. Local Distribution Companies (LDCs) have already begun signaling possible difficulties in meeting conservation targets using the usual energy efficiency measures available to them. For this reason some LDCs have funded behind the meter natural gas generation as a method of conservation. Meeting the conservation targets with behind the meter natural gas generation will increase GHG emissions. Ontario may also require additional renewable resources such as DSG to supply emissions free electricity to meet any increase in demand from the electrification of other economic sectors and to avoid IESO forecasted increases to GHG emissions from the electricity sector as a result of increased reliance on natural gas generation for meeting conservation targets and during periods of nuclear refurbishment. Figure 4, below, illustrates those forecasted emissions increases.

² MOECC, Climate Change Strategy, <https://dr6j45jk9xcmk.cloudfront.net/documents/4928/climate-change-strategy-en.pdf>, pg. 24.

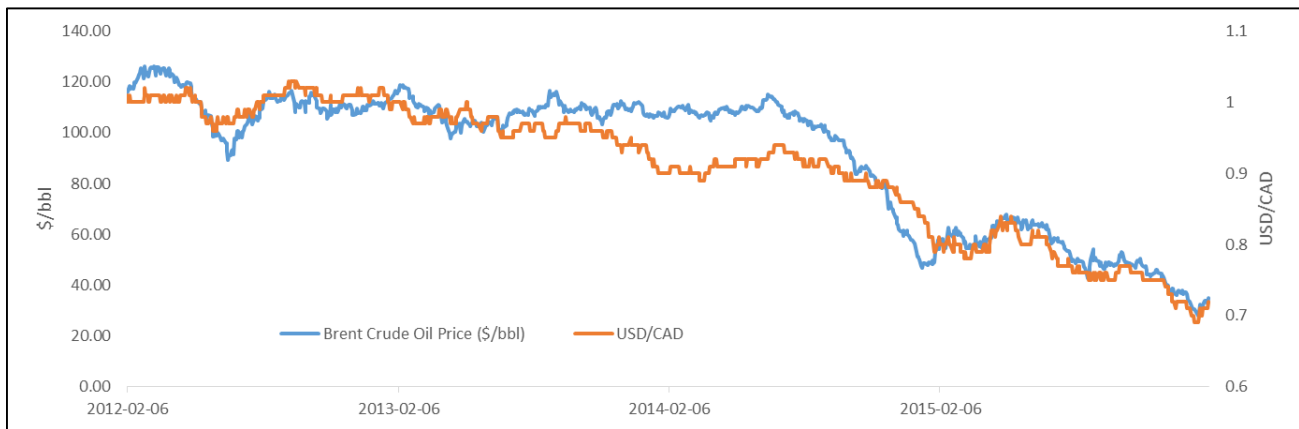
Figure 4: IESO Forecasted Electricity Sector Emissions



Oil Prices and the Impact on the Canadian Economy

The CDN/USD exchange rate has dropped rapidly, falling from near parity to approximately 70 cents by the end of 2015. This currency devaluation and global economic slowdown has depressed demand and prices for fossil fuels, further impacting the Canadian economy.

Figure 5: Price of Oil & Canadian/US Exchange Rate



Depressed oil prices and a weak Canadian dollar have typically been beneficial for Ontario’s manufacturing sector. The Ontario economy should benefit from increased manufacturing activity and stimulate domestic investment due to higher cost of imported goods from a weak Canadian dollar. These dynamics can have a meaningful effect on provincial electricity demand, consumer spending power and disposable income which will impact the customer economics and benefits of DSG systems. A depressed Canadian dollar also exerts upward pressure on solar project development costs as many components are priced in US dollars and sourced from international markets.

Challenges Facing the Traditional Electricity Business Model

Ontario's electricity sector is evolving in a way that could challenge the business model of traditional electricity stakeholders. Distributor revenue decoupling from electricity sales and the OEB's Renewed Regulatory Framework (RRF) fundamentally change the investment incentives and risks facing LDCs. LDCs are also expected to deliver the province's Conservation First framework. These changes challenge the traditional business models of LDCs and challenge stakeholders to find new paths forward.

The Conservation First framework was introduced as part of the Long Term Energy Plan (LTEP) in 2013. It is intended to cut costs for ratepayers and reduce community friction by prioritizing Conservation and Demand Management (CDM) activities over major investments in generation or transmission. CDM activities lower demand and reduce the need for infrastructure investment throughout the power system.

The OEB's RRF encourages LDCs to seek value for customers when planning their distribution system investments. Focusing on delivering value for customers rather than recovering costs has shifted the focus of LDC distribution planning to facilitate customer choice. LDCs are expected to enable new CDM activities, smart grid initiatives and energy management services. As third parties begin offering new technologies and services to consumers, LDCs will be required to approach distribution planning very differently than in the past. Facilitating customer choice in services such as DSG creates the ability for customers to respond to market signals and support distribution system needs.

The Unique Attributes of Distributed Solar Generation

DSG is a unique renewable energy resource with a diverse set of attributes. Compared to large centralized generation resources such as hydro-electric and nuclear, DSG can be scaled to precisely address power system needs while respecting grid connection constraints. DSG can be located anywhere with access to sufficient sunlight which makes siting DSG highly flexible compared other generation with fuel delivery needs. DSG does not require specific geographic features for development and can be sited in varying locations ranging from dense residential housing to commercial rooftops and even low-value land that is not suitable for agriculture.

The output of DSG aligns well with Ontario's electricity demand, with more production during peak hours than off-peak. Advances in energy storage, demand response and smart grids are expected to have a significant impact on electricity systems in the near future, and the dynamic controls available to DSG systems work well with these technologies.

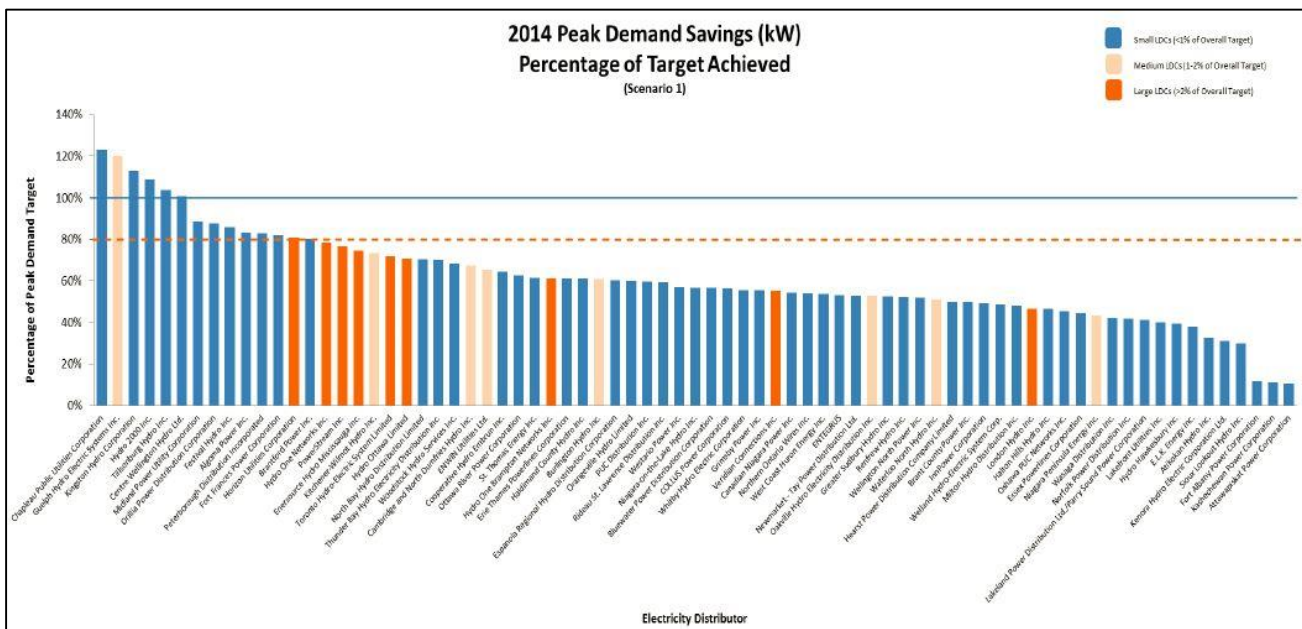
Benefits of Distributed Generation Solar to the Ontario Electricity Market

The valuable attributes of DSG can aid in Ontario's electricity system renewal, maximize rate-payer value and meet a wide variety of policy goals. Power system planners and operators can benefit from the technical capabilities of DSG in meeting power system needs at both the regional and bulk system level. The DGTF has identified five priority areas where the attributes of DSG can be valuable to the Ontario electricity system, rate-payers and government policy objectives over the next decade.

Conservation and Demand Management

Behind-the-meter and virtual net metering DSG installations support the province’s Conservation First policy and help LDCs to meet CDM targets. Behind-the-meter DSG can effectively lower the electricity demand of consumers throughout the day, especially during peak periods. The 2014 Distributor Scorecard published by the OEB shows that only 6 of 72 LDCs (8%) have met their Net Annual Peak Demand Savings target, and only 41 of 72 LDCs (57%) have met their Net Annual Energy Savings target. DSG can be an effective option for LDCs to meet their CDM targets while at the same time aligning the interests of LDCs and customer-driven DSG.

Figure 6: CDM Achievement by LDC 2011-2014³



DSG and net metered generation can help to drive interest in CDM participation by Ontario’s electricity consumers. Customers receiving excess generation payments (i.e. payments for surplus power export to the grid) will be incentivized to conserve and manage their demand to increase revenue from grid export. Through a net metering program, the majority of funding for a behind-the-meter DSG project will be realized from on-site avoided electricity savings, reducing the impact to already committed CDM budgets if they were made available to support DSG development.

³ OEB – CDM Report 2011-2014

Behind-the-meter DSG should be included in the conservation framework and LDCs should be able to include behind-the-meter DSG installations within their service territory towards their CDM targets. If the recommendations within this report are implemented, behind-the-meter solar generation could contribute an additional 220,000 MWh per year for each of 5 years, totaling savings of 1,100,000 MWh in year 5 and continuing for least 20 years. This installation schedule would meet 18.9% of the province-wide 2015 – 2020 CDM targets for systems installed in 2018 – 2020.

Pilot DSG CDM Program

In its 2015 CDM plan, PowerStream outlines a residential solar incentive program for 2018-2020 that would pay customers an incentive for DSG systems, to reduce load on the distribution grid.

Economic Development and Job Creation

Using the NREL Jobs and Economic Development Impact (JEDI) model, the effects of the proposed DSG installations were examined. It was found that the 200 MW installed each of five years from 2018 – 2020 would create roughly 14,500 person-years of employment and \$2.5 billion of economic activity over their lifetime.

Figure 7: JEDI Modeled Economic Development Impacts

During Project Construction Years	Total Cumulative Job Years	Total Earnings - \$Million (2015)	Total Output - \$Million (2015)
<i>Project Development and Onsite Labor Impacts</i>			
Construction and Installation Labor	2,359	\$349.95	\$349.95
Construction and Installation Related Services	1,843	\$133.97	\$211.57
Subtotal	4,201	\$483.92	\$561.52
<i>Module and Supply Chain Impacts</i>			
Manufacturing Impacts	785	\$56.37	\$181.19
Trade (Wholesale and Retail)	2,506	\$166.94	\$481.05
Finance, Insurance and Real Estate	0	\$0.00	\$0.00
Professional Services	374	\$22.86	\$63.61
Other Services	681	\$100.54	\$213.66
Other Sectors	2,402	\$120.48	\$351.64
Subtotal	6,748	\$467.18	\$1,291.15
Induced Impacts	2,562	\$143.18	\$503.16
Total Impacts	13,511	\$1,094.29	\$2,355.83

During Operating Years (Cumulative)	Total Cumulative Job Years	Total Earnings - \$Million (2015)	Total Output - \$Million (2015)
<i>Onsite Labor Impacts</i>			
PV Project Labor Only	597	\$82.24	\$82.24
Local Revenue and Supply Chain Impacts	278	\$18.39	\$46.91
Induced Impacts	139	\$7.77	\$27.31
Total Impacts	1,014	\$108.40	\$156.46

Job Years refers to full time equivalent (FTE) employment for 1 year (1 FTE = 2080 hours).

Earnings refers to wages and salaries of workers, as well as benefits such as health insurance, retirement etc.

Output refers to economics activity or the value of production in the state or region being analyzed (Ontario).

Regional Planning and Distribution System Planning Incentives

Regional planning ensures the Ontario power system is developed in a reliable and cost-effective manner that maximizes rate-payer value. These activities identify areas of the province that have system needs requiring coordination between the system planner (IESO), transmitter (Hydro One) and LDCs. Detailed consultation with communities is required in order for their input to be included in regional plans and subsequent siting of electricity infrastructure. Options to address regional planning needs must balance technical requirements of the power system with community concerns and municipal priorities. The ability of DSG to be sited beside or on existing load customer sites reduces the overall local impact, and thus DSG is often more acceptable to communities than traditional solutions.

DSG can partner well with new and emerging technologies such as energy storage to meet evolving power system needs. It can reduce the need for new transmission and distribution investments and reduce the risk of stranded assets of LDCs. DSG can also address multiple power system needs at the bulk, regional and local level. As climate change policy begins to drive the electrification of different sectors of the Ontario economy, the value of DSG to regional and electricity system planners will only increase as increased reliance on existing natural gas assets, or the construction of new natural gas assets, becomes more expensive as the cost of fuel increases with the cost of carbon.

Engagement with electricity consumer associations and DSG developers is also needed to ensure that the regional plans adequately address power system needs using cost-effective resources addressing technical, environmental and social goals simultaneously. Currently there is little consultation between DSG providers and regional planners as to the capabilities and benefits of DSG to address power system constraints. Increased consultation between developers and regional planners would maximize benefits for rate payers by supporting the capability for DSG to tailor solutions to meet the unique technical needs in a region and provide clarity of future DSG uptake expectations for future plans.

The IESO and LDCs should investigate how to include DSG representatives in regional planning consultations. Regional planning should also clarify cost thresholds and timelines for certain levels of distributed generation investment to meet regional needs. Regional and distribution planning should quantify all benefits of integrating

distributed generation, including support of smart grid initiatives and new data for planners seeking more fine-grained insight into the power system.

Consumer Choice and Preference

As more consumers become engaged with and informed about their electricity consumption options, a diverse set of delivery options will find appeal throughout the spectrum of customer types. Consumers' own cost/benefit analysis of electricity services should be aided by assistance and input from key stakeholders. Electric utilities, regulators, service providers and government policy advisors will need to ensure that a mix of options are available for consumers to balance needs and risks.

The OEB's RRF aims to shift the investment incentives and associated risks faced by LDCs through its revenue decoupling and move to fixed charges for distributor's revenue. LDCs will be repositioned as managers of the distribution network, facilitating new customer-centric value propositions. Revenue decoupling largely removes the risk of cross-subsidization – that customers who adopt distributed generation will adversely impact customers that do not adopt DSG. DSG is complimentary to the changes initiated by the RRF and consequently is expected to have minimal impact on LDCs as a whole due to revenue decoupling. Since DSG is a resource with a fixed upfront cost, consumers and LDCs can utilize DSG to provide a cap or hedge on electricity rates. Consumer choice should continue to be prioritized in future power system planning and rate structure decisions, and thus future CDM programs, planning initiatives, codes and regulations for behind-the-meter DSG should support customer choice in a simple and fair manner.

Low Risk Supply Option, Supply Diversity and Climate Change

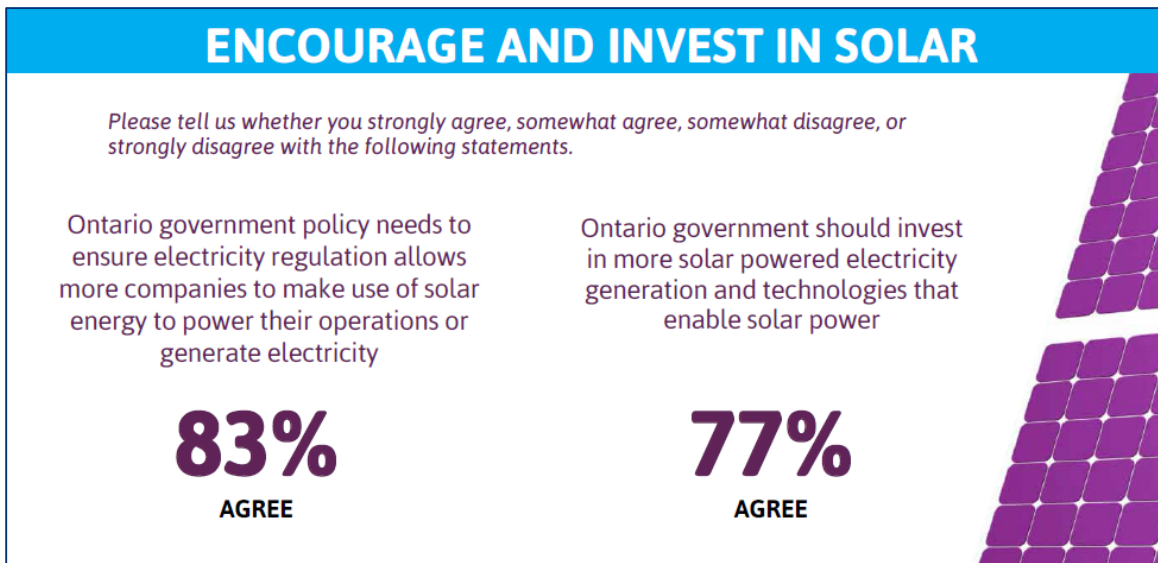
DSG is a low-risk supply mix diversification option for Ontario. As a passive renewable resource, it has no fuel supply cost and minimum maintenance costs. DSG produces energy during periods of high system demand and the dispersed siting adds flexibility, reducing the risk that a loss of any one facility will be harmful to the stability and reliability of the power system. Over time, investments in DSG may be able to reduce the reliability requirement of the centrally operated grid by decreasing the risk of shortfall during the loss of two or more bulk system facilities. Reducing reserve requirements has significant savings potential for all rate-payers. DSG in a net metering regime is also beneficial for reducing overall system cost as it is primarily funded through the private sector, as opposed to the province. Similarly, performance risk is held by the private sector.

To maximize these benefits, DSG should be considered as part of all supply mix assessments in Ontario. The ability of DSG to act as a hedge against rising electricity rates for consumers – or as a price cap – is an important benefit for future supply mix plans. Other supply resource options are exposed to fuel price increases or carbon liabilities that can negatively impact their availability and cost.

Public support

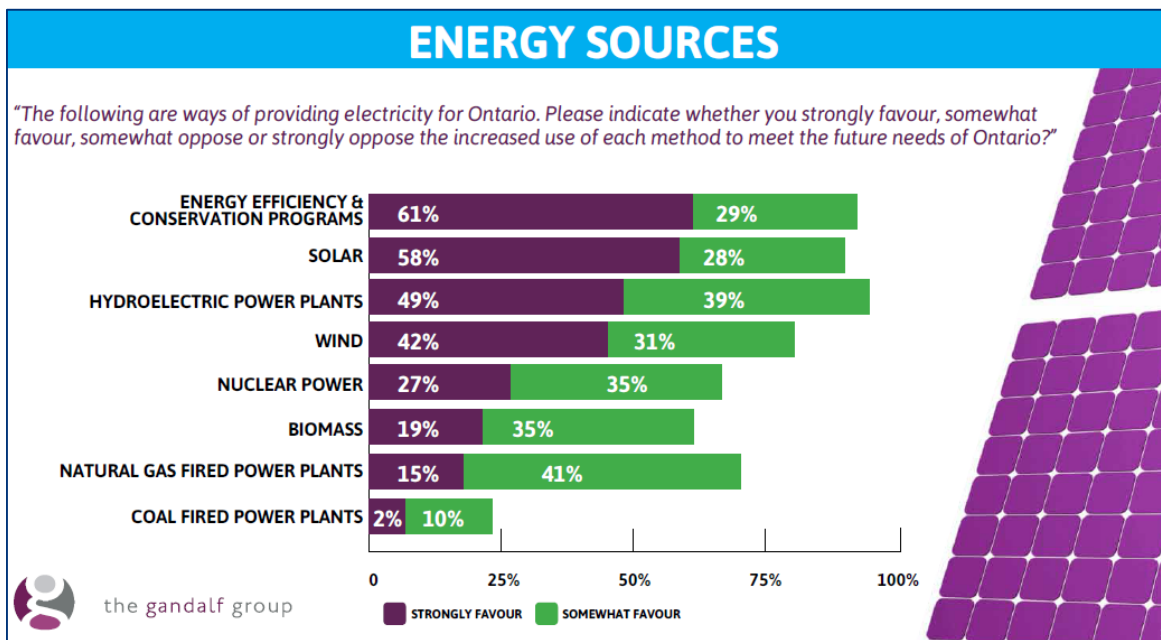
Solar generation is very popular among Ontarians and continues to be broadly supported throughout the province. In May 2015, the Gandalf Group, on behalf of CanSIA, undertook market research that found job creation and the economy to be the most important issues identified. Ontarians support significant reductions in air pollution, and support measures that would maintain these reductions or go even further.

Figure 8: Ontarians' Views on Solar Energy⁴



Solar generation resonates with the public as a tool for fighting climate change, supporting high-tech and job creation in this sector. The study found very little opposition to increased use of solar to meet future needs and a preference for solar on rooftops compared to fields. Solar generation was considered the most popular source of energy, after energy efficiency.

Figure 9: Ontarians' Views on Solar Energy, Technologies and Policies



⁴ Gandalf Group, May 26, 2015.

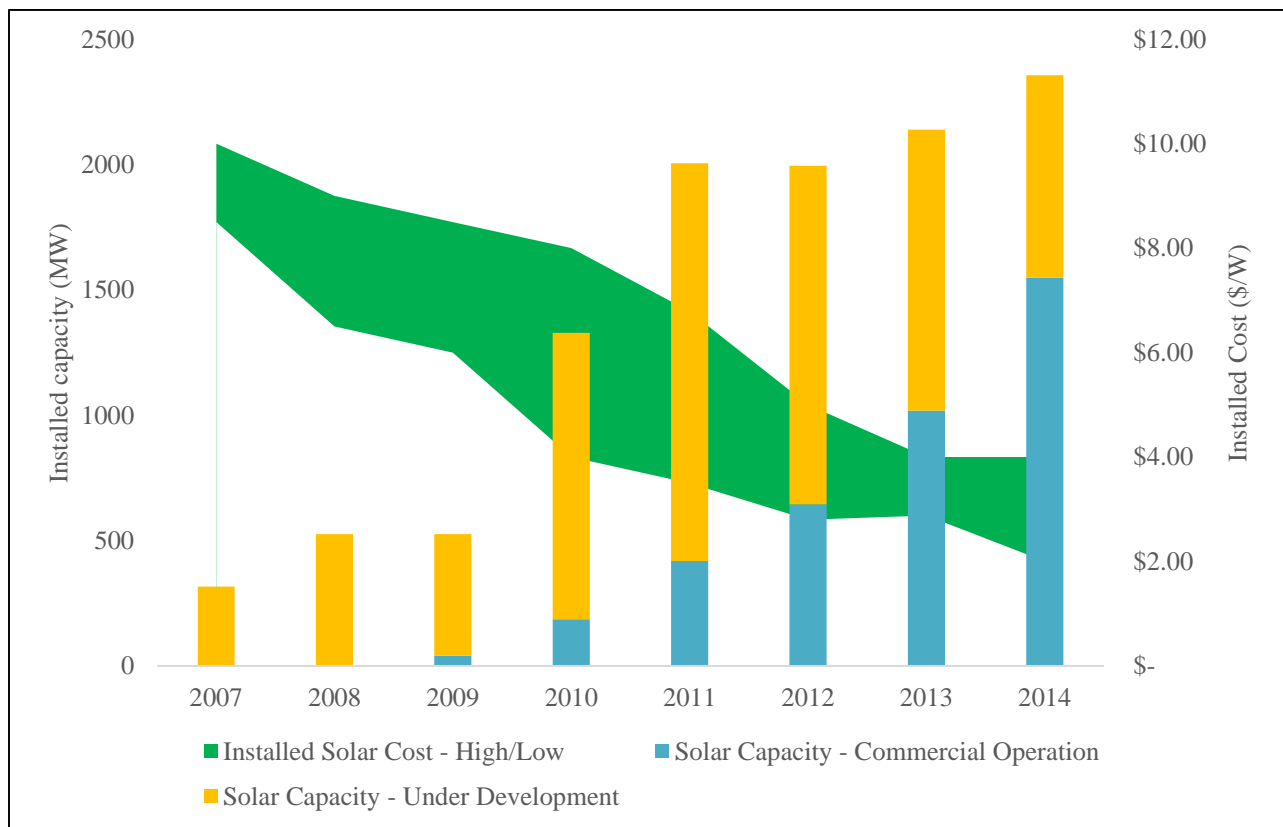
Economics of Solar: Present and Future

The cost of solar has fallen sharply in the last decade in Canada. This can be attributed primarily to a drop in the cost of modules but also to declines in costs associated with an industry of larger scale and predictable structure – such as customer acquisition, installation labour, utilization efficiency, and financing. As the cost of solar declines further, it will approach grid parity with the Ontario retail cost of electricity between 2020 and 2026.

History of Solar Costs

Solar costs in Canada have been dropping for four decades, but this decline accelerated rapidly in the last 8 years. During these years the installed capacity of solar has increased, driving recent cost declines in the face of stabilizing module prices.

Figure 10: DSG Installed Costs and Update in Ontario⁵



⁵ NRCAN – National Survey Report of PV Power Applications in Canada 2014 and IESO Progress Report on Contracted Electricity Supply.

While still appreciable, recent reductions in soft costs linked to economies of scale haven't been as pronounced as in jurisdictions with even larger and more evolved markets like California and New York; there is still room for gains in Ontario.

Forecast of Solar Cost

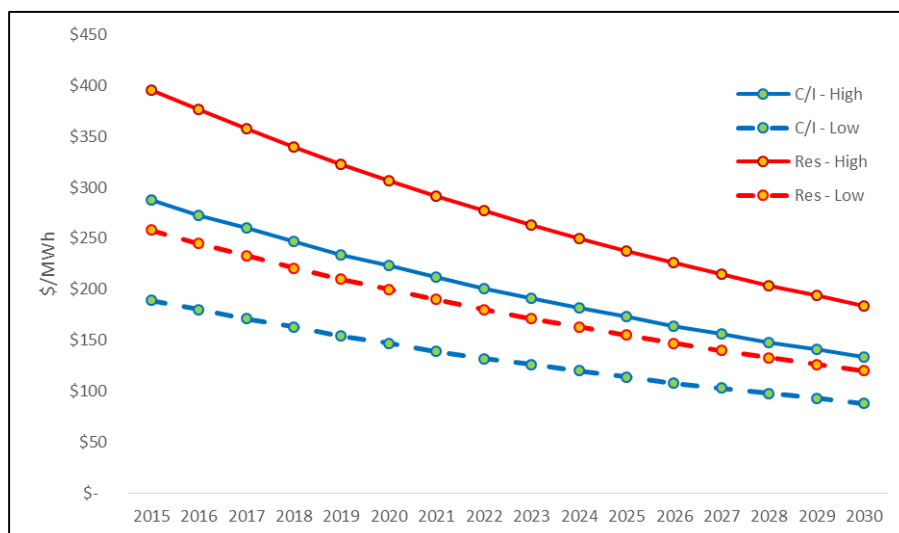
There are a number of solar industry experts that have differing views on the pace of cost reductions for solar PV into the future, but there is unanimous consensus that costs will continue to decline.

- NREL projects 0.4 - 4.7% annual system cost decline 2014-2025
- IEA projects 4.2% annual system cost decline 2015-2020
- Green Tech Media Research projects 5.6% annual module cost decline 2012-2017
- Tracking the Sun VIII – LBNL Sunshot (expects a 9% 2015 reduction)
- ITNPV projects 3.5% average annual system cost decline 2015-2025⁶

DGTF is targeting a 5% annual installed cost decrease over next 20 years for residential and commercial/industrial solar generation facilities. Price decreases are driven by technological advances and addressing barriers to the adoption of solar generation including soft costs. The DGTF developed a simplistic financial model to determine revenue requirement for future DSG installations. Financial results were modeled based on a range of input assumptions to account for a variety of different business models and financial options available to DSG developers and DGTF members.

The cost of solar is shown as a range of values representing the 20-year revenue needed to support the investment in a given year. A range of revenue requirements was used instead of a single data point to capture the variety of internal and external cost and revenue structures of customers.

Figure 11: DSG Investment Threshold

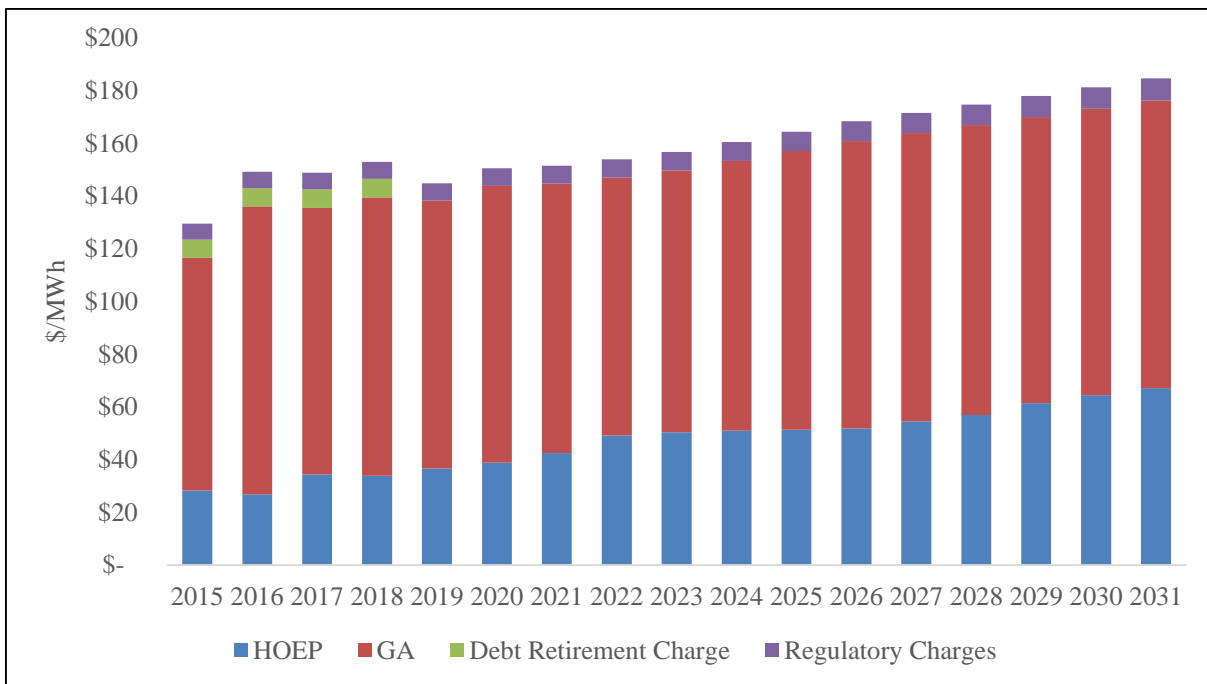


⁶ ITRPV 2015 Roadmap – Relative System Cost Development for Systems 2014 – 2025

Ontario Electricity Price Forecast

Behind-the-meter generation like solar provides cost savings for load customers through avoided consumption charges. To determine the avoided cost savings and a representative revenue stream for DSG, the DGTF has developed a forecast of the Hourly Ontario Energy Price (HOEP) and the Global Adjustment (GA), along with regulatory charges. The HOEP is the commodity electricity price for Ontario and the GA is cost of regulated and contracted generators along with conservation and demand management programs. The HOEP and GA forecasts are used to determine future electricity consumption charges for any load customer that may install behind-the-meter generation from a proposed DSG facility.

Figure 12: DGTF Ontario electricity price forecast C/I Consumer



Future of Solar in Ontario

With falling cost of DSG and rising Ontario electricity rates, retail grid parity is expected to occur in Ontario between 2020 and 2026. This mirrors similar trends internationally, with other jurisdictions at or near grid parity by that time or earlier.

Figure 13: C/I DSG v Avoided Electricity Cost Benefit

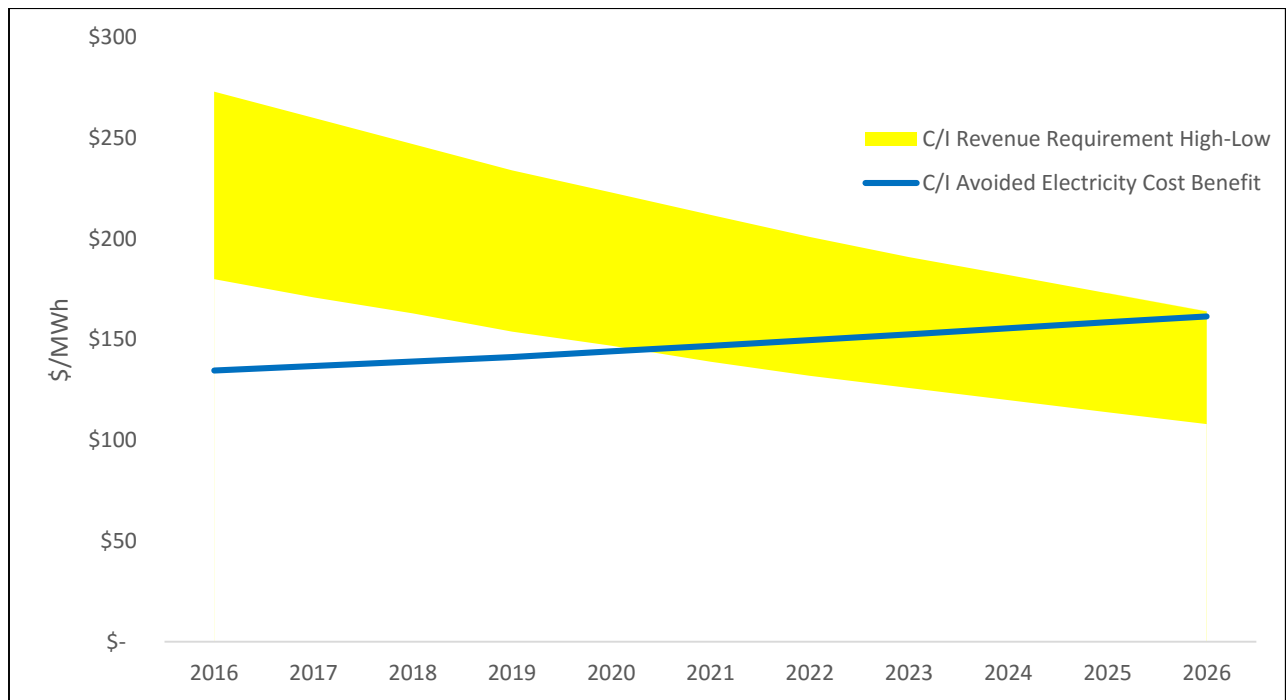


Figure 13 above shows a gap between the revenue requirements of DSG and the average electricity cost. The optimistic view has the gap closed by 2020 for commercial/industrial (C/I) customers. The pessimistic view has the gap being delayed to 2026 for C/I customers. Residential DSG shows a similar trajectory to grid parity, although over a longer timeframe. The timelines are impacted by a variety of factors such as; strong customer uptake, reduction of soft-costs and favourable federal tax policy. These positive factors can reduce the timelines in both the optimistic and pessimistic forecasts. Conversely, the gap can be extended with continued weak exchange rate, inconsistent policy on DSG or complex regulatory requirements.

Ontario DSG needs predictable net metering regulations that provide full value for energy production in order to achieve grid parity in a timely manner. Incentives are needed between the end of current microFIT and FIT programs in 2017 and the achievement of grid parity under a net metering regime. In addition to the incentives, DSG will depend on customer demand and commercializing new value streams from addressing power system needs. It is important to note that the incentives could be provided through any combination of incremental revenue from one or more of CDM contributions, and/or provincial and federal tax incentives or Cap and Trade revenues, as is the practice throughout the United States to help support DSG installations.

Ontario Solar Evolution: Policy and Procurement Strategy

CanSIA has been a strong supporter of the Ontario government’s commitment to the green energy economy, which has seeded a capable solar industry in Ontario. After almost a decade of support for renewable energy, the province has arrived at a point of transition. Procurement policies that are cost-effective, customer-focused, and efficient are now required to maintain the momentum of the industry and deliver the significant benefits of DSG to rate-payers.

CanSIA and its members envision a solar electricity industry in Ontario that is sustainable, with no direct subsidies, and operating in a supportive and stable policy and regulatory environment that recognizes the benefits of solar generation to the electricity grid, to reducing the impacts of climate change, and to electricity rate-payers.

CanSIA is proposing the smooth transition of Ontario’s distributed solar industry from the current FIT and microFIT programs towards a subsidy free, market driven end-state. The managed transition for the solar industry follows the path that is common in much of North America which can be characterized as:

- **microFIT/FIT:** Initial industry kick start with incentives and support mechanisms (FIT or other)
- **Net Metering + Support:** Net Metering with declining levels of financial support
- **Net Metering:** Net Metering uptake, consider a cap or limit on subscription

The following section further describes the DGTF’s vision for the evolution of solar policy in Ontario.

FIT/microFIT

Completing FIT 5 and FIT 6 provides increased certainty in Ontario’s solar industry for investors as a net metering program is developed and implemented. The solar industry continues to enjoy the stability that was provided in the Minister’s Directive in 2013 for the procurement of 900 MW of FIT over a number of years, and the FIT program as a whole. These commitments should be actioned in full. Continued procurement for the last two rounds of the FIT program will also help to manage continuing reductions in DSG costs.

Figure 14: FIT/microFIT Procurement History

Procurement	Timeframe	MW Target (FIT/microFIT)
FIT 3.0	2013	70 / 30
FIT 3.1	2014	100 / 50
FIT 4.0	2015	200 / 50
FIT 5.0	2016	150 / 50
FIT 6.0	2017	150 / 50
Total		900

Transitioning to Net Metering

Despite the improving economics of DSG, the move away from the 20-year government backed contract will still require some short-term financial support to bridge the gap between costs and revenues for small scale solar projects. This additional support should start when a new net metering program is launched.

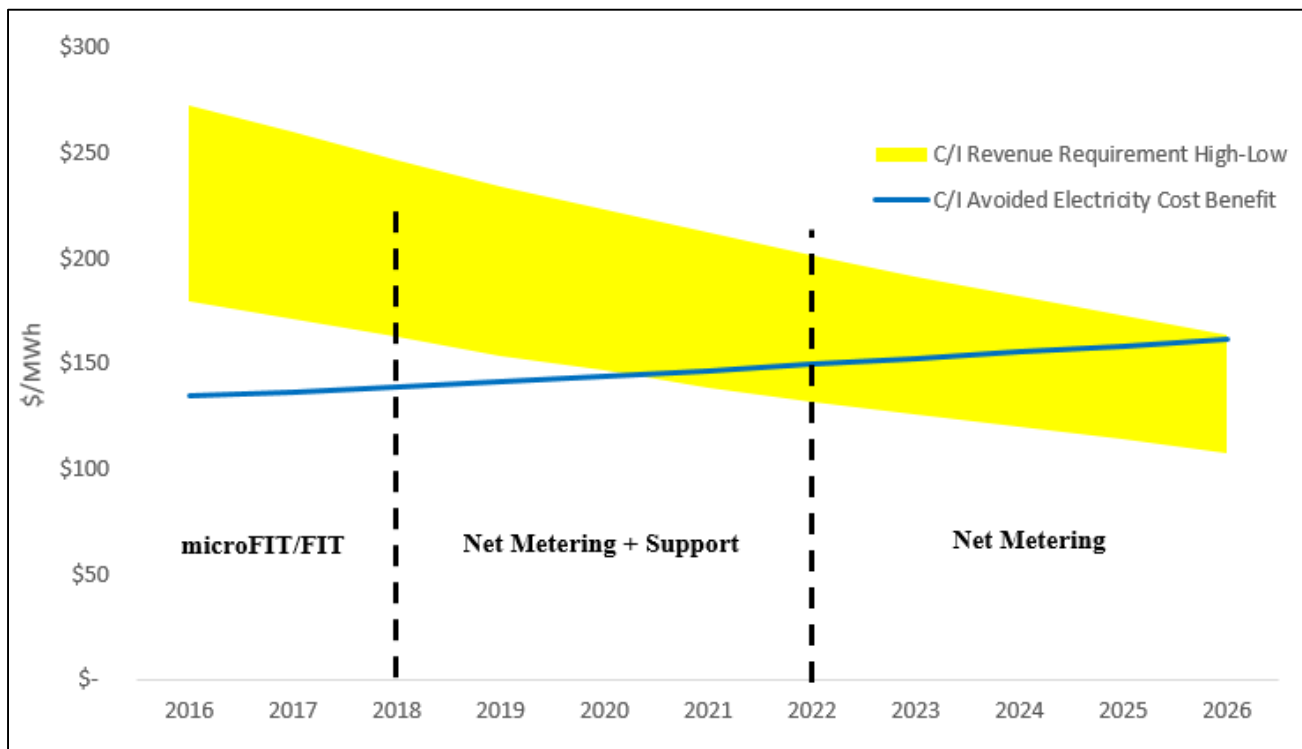
- A large share of the value proposition of net metering comes from avoided consumption, so additional support will be significantly lower compared to a FIT program
- An updated net metering approach and streamlined processes should be designed and developed in 2016/17 and support the existing LDC CDM framework

Net Metering

Steady cost reductions and efficiency improvements mean that DSG is expected to be economic in the near term after which no additional financial support will be required. Additional support during the interim period before the intersection of these two values will decline until it is no longer be required.

The graph below represents CanSIA’s vision for the evolution and managed transition of the solar sector in Ontario.

Figure 15: DSG Cost Curve and DGTF Policy Steps



FIT 5 and 6 Recommendations

Each of the individual sections touched on briefly in section 5, above, will now be expanded upon.

Completing FIT 5 and FIT 6 procurement rounds provides stability for continued investment in Ontario's solar industry while the transition to a net metering program is developed. TOU compensation and the data management tools required by the IESO and LDCs for net metering will also take time to implement. The design and implementation of an LDC CDM program for solar will require consultation and detailed design decisions, and in this time FIT 5 and 6 will continue to support the distributed solar industry.

CanSIA and the DGTF recommends maintaining primary aspects of the current FIT program with minor enhancements that will position the industry to a more customer based model that aligns with net metering.

Setting Contract Price

- The Ministry of Energy and IESO should implement pre-set Contract Price digression of 5% for Solar PV for each of the next two rounds of FIT procurement.
- Implementing a pre-set, targeted, reduction to the Price Schedule for solar would give Applicants advance knowledge of the expected digression and remove the need to run full-scale Price Reviews each time a new round of procurement is launched.
- The DGTF has targeted a 5% annual reduction in solar project development costs between now and 2022 – a similar pre-set reduction amount of 5% is recommended for implementation in FIT for each of the next two rounds of procurement.
- The IESO could conduct a reasonability check based on available information to determine whether the pre-set 5% reduction amount remained valid and would maintain the ability to modify the Price Schedule based on the results of their analysis.

Price Schedule Applicability and Visibility

- The Price Schedule should be established as early as possible in advance of the opening of an Application Period to give Applicants sufficient time to determine their level of participation, to determine which projects should be pursued given the available price, and to determine what level of Price Reduction can be feasibly pursued.
- A Price Schedule should be tied to a round of procurement rather than a calendar year to give certainty on the Contract Price that will be applicable for a particular Application Period.

Contract Capacity Set-Asides

- The amount of MW apportioned to Contract Capacity Set-Asides (CCSAs) should be reduced from the current 2/3rd to a maximum of 1/3rd. The majority of the Procurement Target should be available to all Applicants regardless of whether they are a Participation Project or not.

In-Series Metering

- As previously proposed by the IESO in their 2014 microFIT Enhancements Discussion Paper, revise the FIT Rules and Contract to permit in-series metering configurations.

Simplify the Application Review Process to Reduce Cost and Timing

- The Application Review process should be significantly streamlined by the IESO, through the elimination of forms and the use of professional review and signoff confirmed at NTP and COD. The current application review process focuses on administrative consistency between documentation, rather than any characteristics of the project or its potential benefit to the grid.

Net Metering Regulation Amendments

The Ontario net metering regulation⁷ became law in 2006 in order to support small renewable generation facilities. Net metering in Ontario is currently available to renewable generation facilities with a nameplate capacity of 500 kW AC or less.

Customers are only charged for their net electricity consumption between their total output and total gross consumption over the course of the billing period. Customers are still responsible for charges not calculated on the basis of the customer's consumption (i.e., monthly fixed charges or peak demand based charges).

Excess renewable generation greater than consumption in a month creates a credit for the customer that can be carried forward for up to a rolling 12-month period. After 12 months, any excess generation credit is reduced to zero and lost by the customer.

The Distribution System Code (DSC) requires distributors to make net metering available to all eligible generators until the cumulative generation capacity equals 1% of the distributors annual maximum peak load (averaged over 3 years). Net metering generation capacity in excess of the 1% can be offered at the distributor's choice. The OEB has indicated that it intends to remove this limit as fixed residential distribution charges are introduced (see box).

...The new rate design will ensure that distribution system costs are fully recovered from all residential customers, including net metered customers who want the assurance of a reliable back-up supply from the distributor. As a result, the OEB will be able to remove the current restrictions on net metering and customer-owned renewable generation...

Board Policy - A New Distribution Rate Design for Residential Customers
Ontario Energy Board EB-2012-0410 p. 10
April 2, 2015

The Ministry of Energy has engaged with stakeholders through its Net Metering / Self-Consumption Advisory Working Group to assess options for the evolution of the microFIT program to a net metering program after the current microFIT procurement commitments expire in 2017.

The DGTF recommends the following enhancements to Ontario's current net metering regulations in order to ensure a smooth transition away from the microFIT and FIT programs and improve the prospects for net metered DSG.

No Capacity Cap per Service Territory

There should be no arbitrary cap on the amount of solar generation installed in any particular geographic area or within any particular LDC service territory. The DGTF is instead recommending a cap on the total financial support available province-wide in a given year. Should a net metered generator wish to connect to the grid without supplementary financial support, they should be permitted to do so, subject to grid capability. The DGTF would

⁷ O Reg 541/05 <http://www.ontario.ca/laws/regulation/050541>.

consider a provincial net metering cap of 5% as a reasonable trigger for revisiting the net metering policy, as was adopted in California by its regulator in 2013⁸.

Permit Any Sized Distribution Connected Project with Appropriate Site Limitations

Net metering can serve different electricity customers in different ways. A residential customer might want to reduce their electricity bill, while a commercial customer might want to secure onsite green energy as an environmental objective or to provide a price hedge against distribution charges. There is no need to limit the options for consumers to meet their many objectives.

Net metering is intended to allow a customer to offset on-site consumption. The DGTF is comfortable with project size limits being imposed on net metering installations that would restrict a generation facility to be sized at the approximate level of local customer electricity consumption. The DGTF also believes this is a fair requirement if project size limits in general are removed from the net metering regulation. As long as projects are sized appropriately with respect to the project sites' load (for instance at the previous year's total electricity consumption) the absolute size of a net metering project should not be an issue. The capability of the distribution system to integrate the net metering generation facility should be the only other limiting consideration.

Residential System Size Limits
 In New York, residential systems are limited to 25 kW; in California they are limited to 1 MW (but practically speaking, to a load customer's consumption).

Time of Use Compensation for Net Metered Production

Net metering customers are currently switched from RPP TOU rates to RPP Tiered rates by their LDCs when they initiate net metering. This switch is driven by billing system and IT infrastructure limitations of the LDCs and IESO but unfortunately results in lost value for on-peak solar generation.

Comparing Net Metered Credits under Tiered Rates vs TOU Rates

- Current 2016 Tiered Rates of \$0.099/kWh and \$0.116/kWh
- Current 2016 winter TOU Rates

\$/kWh	On-Peak	Mid-Peak	Off-Peak
Winter	\$ 0.175	\$ 0.128	\$ 0.088
Summer	\$ 0.161	\$ 0.122	\$ 0.080

⁸ See CPUC decision AB327, <http://www.cpuc.ca.gov/General.aspx?id=3800>.

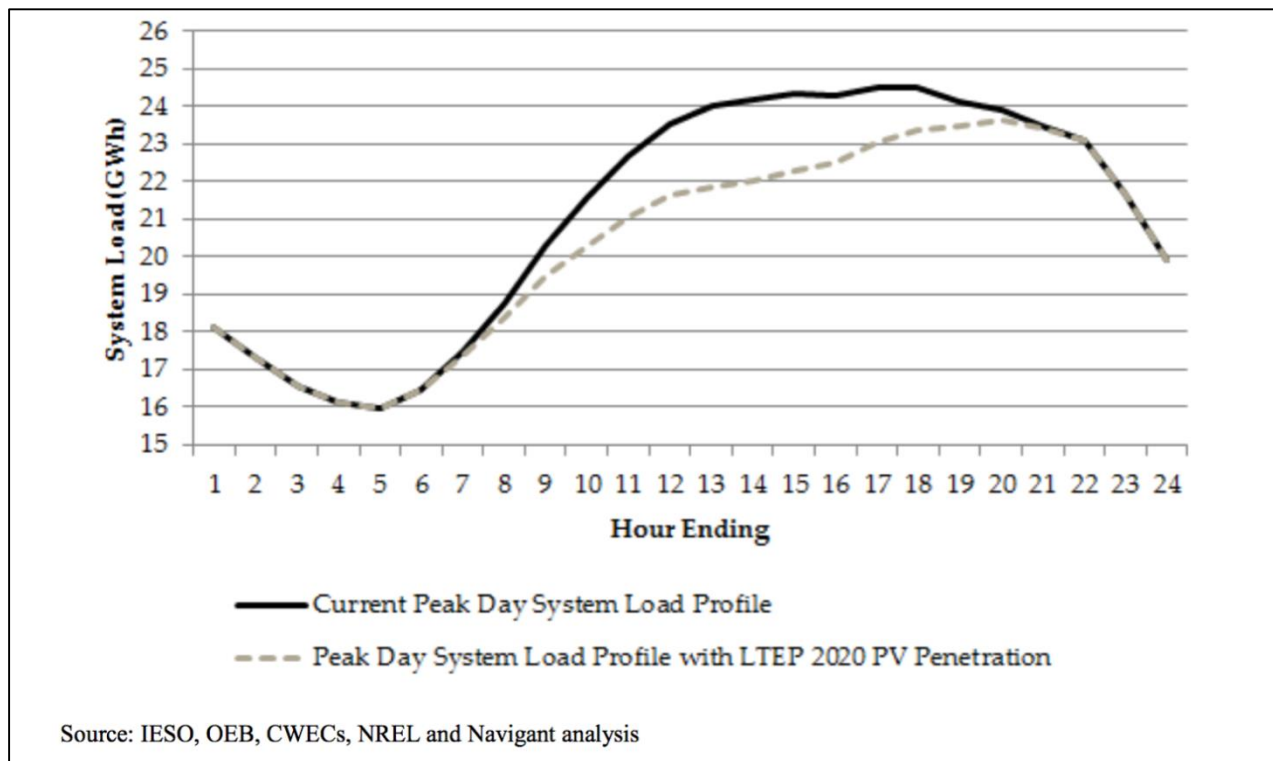
Sample Comparison of Annual Revenue of Typical 5kW System under Tiered Rates and TOU Rates

Rate Structure	Annual Revenue	% TOU Revenue
TOU	\$ 785.37	100%
Tiered (@0.116/kWh)	\$ 726.67	93%
Tiered (@0.099/kWh)	\$ 620.17	79%

*Actual computations will be specific to customer consumption and solar production

Currently, net metering customers could be forgoing 7% to 21% of annual revenue under the tiered rates. Solar generates during valuable on-peak periods, and this additional value is forfeited under this regulatory approach. California’s regulator (CPUC) has decided that net metered customers should be billed and settled with TOU rates by 2016.⁹

Figure 16: Comparison of Load Profile with and without DSG¹⁰



⁹ <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M156/K443/156443378.PDF> see p. 89

¹⁰ RPP Roadmap Report of the Board 2015

Managing Revenue Risk under a Net Metering Framework

The major challenge transitioning from the revenue certainty of microFIT and FIT contracts to net metering is the increased uncertainty around revenue recovery, and associated repayment by the electricity customer. Greater uncertainty results in higher borrowing costs, and thus reduced payback on an investment in a DSG project. The DGTF recommends one of two options to mitigate this risk of lost customer electricity demand:

- If the net metered installation loses its associated load customer, the generator should be allowed to enter into a virtual net metering arrangement with another electricity customer of close geographic proximity (but not necessarily at the same site). This is a common practice in the US, referred to as virtual net metering or community net metering. It mitigates the risk of stranded investment, reduces risk and cost, and facilitates project financing; and/or
- Ensure full retail energy (electricity commodity) compensation for all surplus generation, paying the net metered generator TOU rates for production that is surplus to the load customer's consumption, paid out at the end of the year. This approach further ensures that there is ongoing incentive to reduce electricity consumption at the site without fear of losing some of the benefit from local generation.

Streamline Administration

A primary objective of any update to Ontario's net metering regulation should be to maintain the streamlined net metering administration for the benefit of consumers and rate-payers. A simple net metering program would eliminate administrative delays, the requirement of IESO to manage 20-year PPAs for tens of thousands of suppliers, and would align DSG investment decisions with CDM initiatives.

An important feature of the revised net metering regulation must also incorporate an element of certainty/grandfathering for net metering customers based on the regulation in force when they build their system. If further revisions to the net metering regulation occur in the future, those revisions should not affect already constructed projects.

Transitioning to Net Metering

Net metering regimes throughout the U.S. have benefited from support programs as the costs of solar approach grid parity, driven by both a 30% federal investment tax credit and state level support. DSG in Ontario will be uneconomic between 2018 and 2022 without the presence of support programs. A combination of federal and provincial support programs can be modeled on incentive design from the U.S. and integrate with Ontario's existing framework.

Net Metering + Support Regimes

The DGTF has reviewed a number of jurisdictions strategies for solar support as the transition to a subsidy free industry becomes reality. Best practices and the most efficient strategies involve technical solutions that will facilitate the deployment of distributed solar generation, as well as reasonable policies that balance the interests of consumers, the industry and stakeholders.

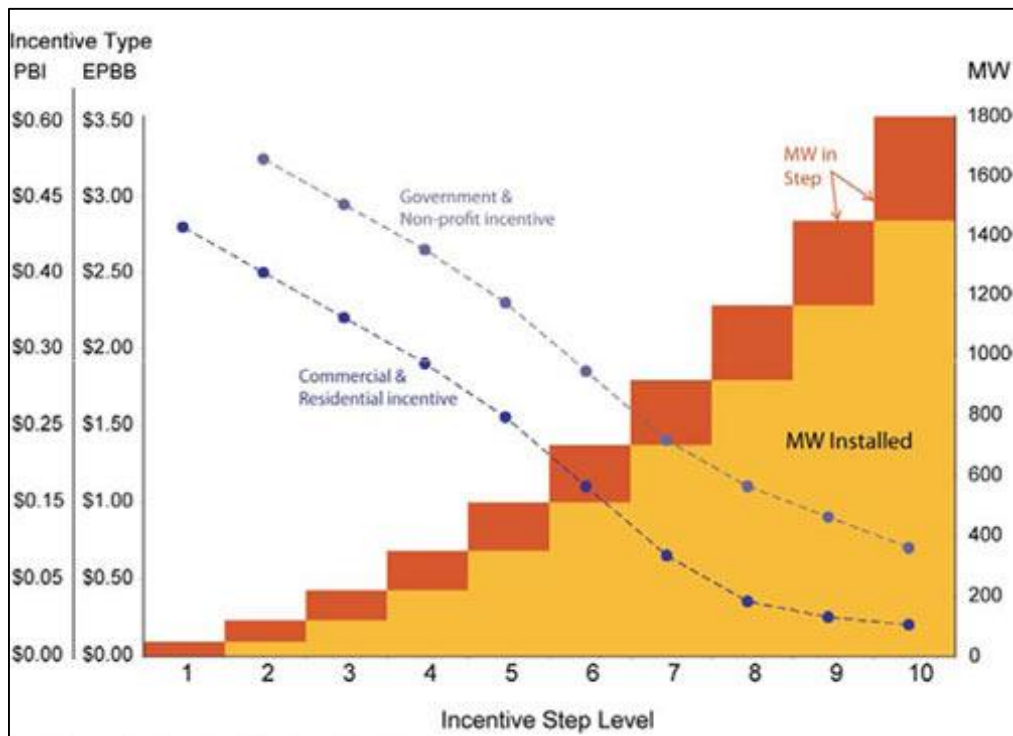
California

In California, monthly excess generation is credited to customer's future bills and provides this credit at retail rates. Net metering is limited to system sizes of 1 MW or less. Customers own the Renewable Energy Credits (RECs). Technologies eligible for net metering are exempt from interconnection application fees and initial/supplemental interconnection review fees. Currently, no new or additional charges beyond those applicable to the customer's applicable rate class are allowed. Virtual net metering is allowed for certain multi-tenant customers.

At the end of each year customers can roll their remaining credits into the next year or can receive payment for these credits at a 12-month average market price (from 7 am to 5 pm).

The California Solar Initiative was a successful block incentive program that consisted of both Performance-Based Incentives (PBI) in \$/kWh and Expected Performance-Based Buydown (EPBB) in \$/kW. The PBI was paid monthly over 5 years and was mandatory in systems larger than 30-50 kW.

Figure 17: California DBI Program



New York

Net metering is generally limited to renewable technologies of 2 MW or less. At the end of the year, excess generation for residential customers is paid out at an “avoided cost rate” for non-residential customers it is carried over to the next year. Virtual net metering is currently allowed for low-income customers, and for all customers on May 1, 2016.

New York’s utilities collect levies from customers and transfer these funds to the New York State Energy Research and Development Authority (NYSERDA), who administers state level programs. New York’s state support program for net metering is NYSEDA’s C&I Megawatt Block program. This incentive varies by system size and geography and paid per watt. Installation targets for each of two regions are broken into blocks, with incentives in each block based on historical demand, market penetration, installed cost per watt, and equity. For example, the first block pays \$0.60 per watt in Con Ed’s territory, and about \$0.40 per watt elsewhere. Commercial projects receive 25% of the incentive each year for four years.

Figure 18: Current Status of NYSERDA Program

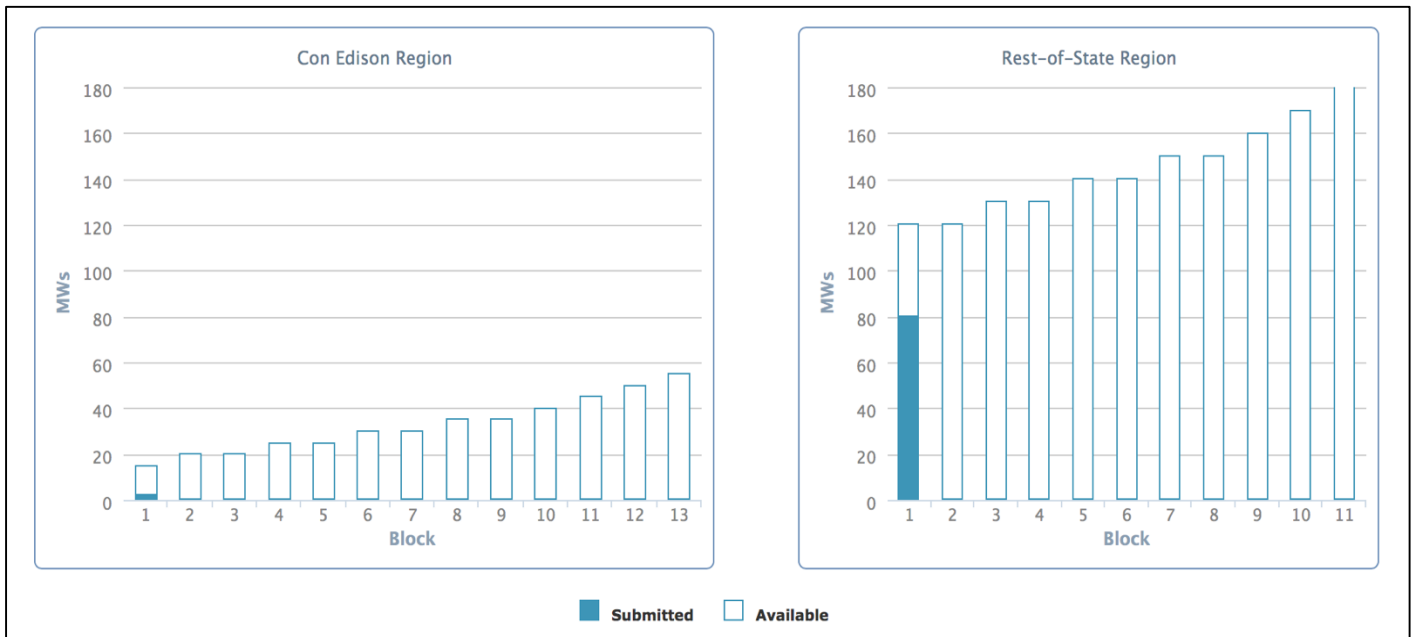
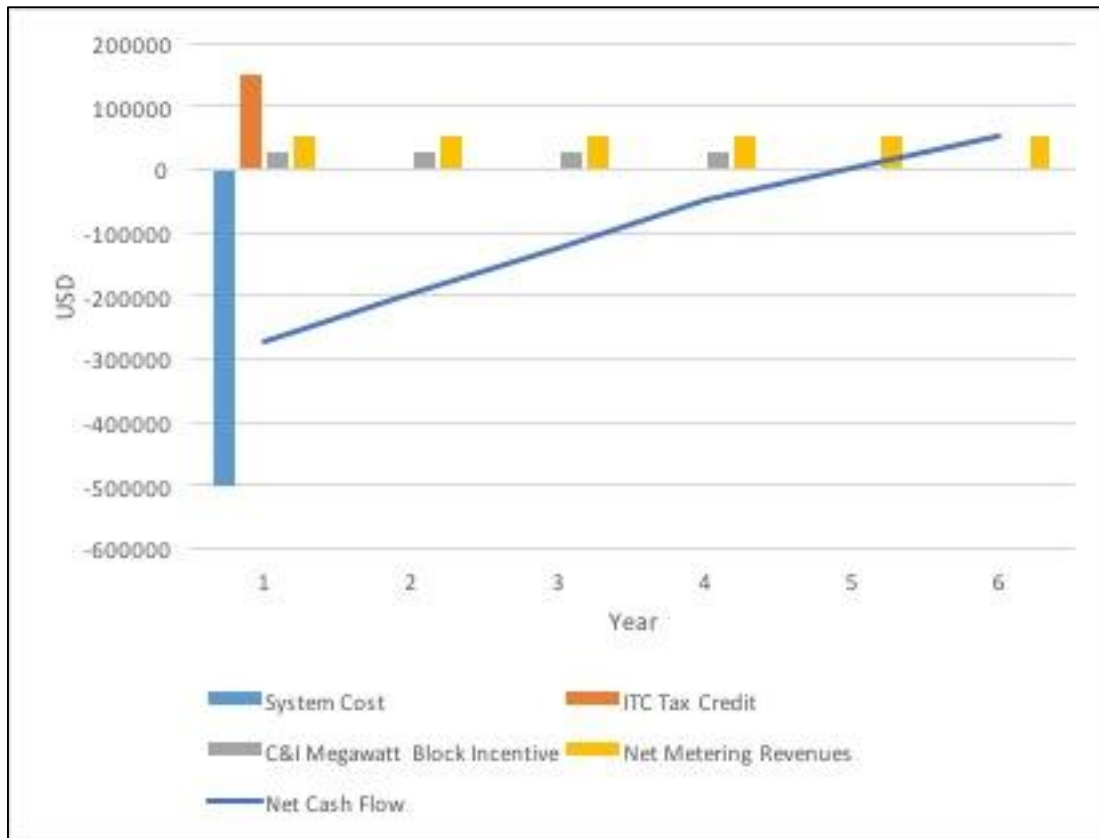


Figure 19: NYSERDA C&I Megawatt Block Program



New Jersey

New Jersey's Renewable Portfolio Standard (RPS) is one of the most aggressive in the United States. It requires each electricity provider serving retail customers in the state to procure 22.5% of the electricity it sells in New Jersey from qualifying renewables by Energy Year (EY) 2021*.¹¹ In addition, the RPS contains a solar specific provision which requires providers to procure at least 4.1% of sales from qualifying solar electric generation facilities by Energy Year 2028.

Systems that generate electricity and fall under Class I in the state RPS (solar, wind, geothermal, wave, tidal, landfill gas or sustainable biomass resources, including fuel cells), are eligible for net metering. No specific system size cap exists, however the system size remains limited to that needed to meet annual on-site electric demand. There is no firm aggregate limit on net metering, although the Board of Public Utilities (BPU) is permitted to allow utilities to cease offering net metering if statewide enrolled capacity becomes excessive.

All electricity providers must demonstrate their compliance with New Jersey's solar specific RPS using Solar Renewable Energy Certificates (SRECs). Each SREC is equivalent to 1 megawatt-hour (MWh) of production and represents the renewable attributes of solar generation.¹² New Jersey's SREC Program provides a means of creating, verifying, and selling these certificates. A solar facility must be grid connected in order to participate in this program. Additionally, facilities qualify to generate SRECs for 15 years after the date of interconnection.

U.S. Solar ITC

The solar Investment Tax Credit (ITC) is a 30% tax credit that is a major driver behind the growth of the solar industry in the U.S. Annual U.S. solar installations have experienced a 76% CAGR since the ITC was implemented in 2006. It was recently extended through to 2022. CanSIA is promoting the introduction of a federal tax credit for solar projects to the new federal government.

Capital Cost Incentive through Declining Block Incentive

The DGTF is recommending a capital cost incentive program as a support mechanism for the development of net metered DSG facilities. The capital cost contribution incentive (CCI) would bridge the current gap between net metering revenue and DSG costs by providing a fixed incentive (i.e. \$/W) for qualified net metering installations. DSG facilities would be expected to receive the majority of their income from customers' avoided electricity cost savings. A CCI program aligns well with the long term goal for DSG to be developed under a pure net metering framework.

Ontario is committed to cost-effective electricity resource development. To provide a pragmatic cap on support from the CCI program during the transition period the DGTF recommends that the CCI program be a declining block incentive based program. A declining block incentive would pre-determine the amount of capacity Ontario is willing

¹¹ DSIRE, *New Jersey Renewable Portfolio Standard*, March 28, 2014, accessed July 11, 2014

http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NJ05R

*Energy Year 2021 runs from June 2020 – May 2021

¹² DSIRE, *New Jersey Solar Renewable Energy Certificates (SRECs)*, August 16, 2012, accessed July 11, 2014

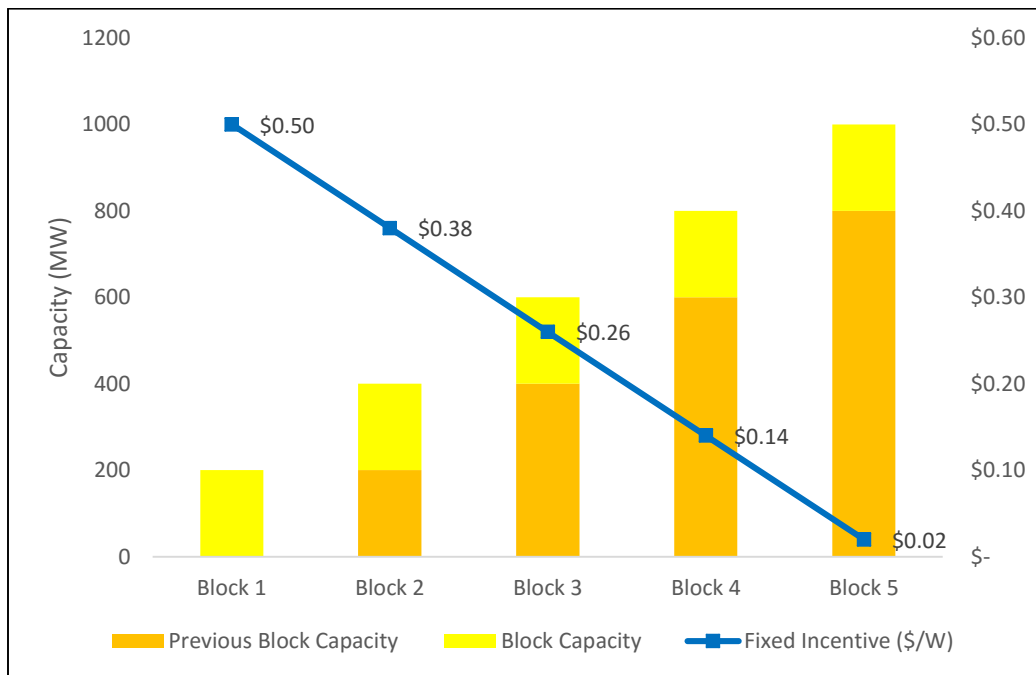
http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NJ07F&State=federal¤tpageid=1&ee=1&e=1

to support and the finite budget for that support over the time period of the CCI support program. Each block would have a capped quantity (in MW) and fixed incentive (in \$/W) which would represent a fixed budget. Since the DGTF expects the gap between the cost of DSG and avoided electricity rates to decline over time, the fixed budget for each block would also decrease over time in line with Figure 22 below.

DGTF Recommended CCI Program

The DGTF recommends that a CCI declining block program be developed with five blocks of 200 MW. Each block of CCI could be reserved for a specific year.

Figure 20: Capital Cost Incentive Declining Block Program

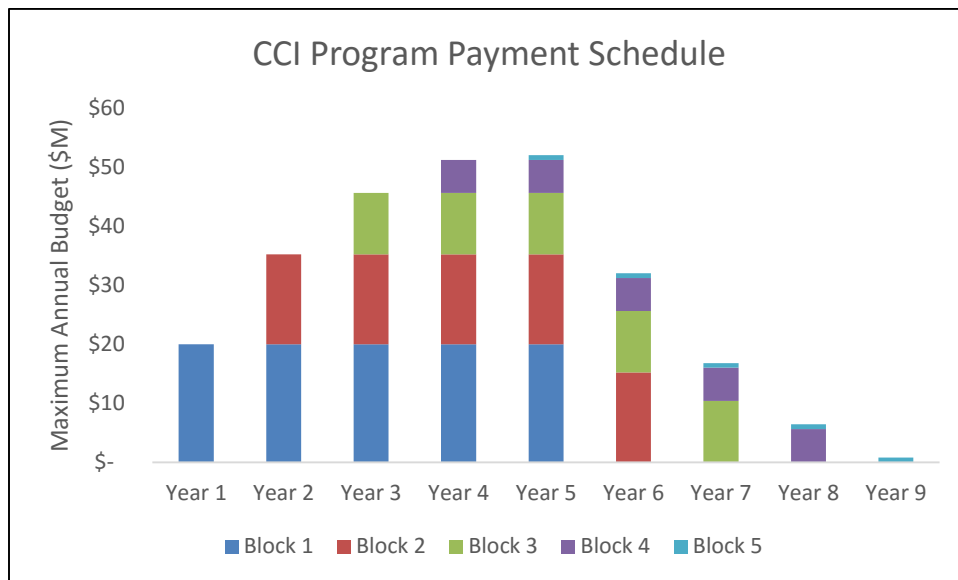


The figure above shows the proposed CCI declining block program for supporting the transition to net metering in Ontario. The DGTF recommends that block capacities and fixed incentive amounts be determined together as part of the initial CCI program development to provide guidance to participating consumers, LDC and DSG developers. A multi-year incentive plan for the CCI program will provide certainty for consumers and DSG developers. The fixed incentive amount and block capacities can be revisited and adjusted based on the experience with the program as required.

DGTF Recommended Incentive Rate

Based on the forecast for installed DSG costs and forecasted electricity prices in Ontario, DGTF has determined that a CCI program starting in 2018 would require a capital incentive of \$0.50/W DC and drop \$0.12/W per year until the final year has an incentive of \$0.02/W. The total budget over the 5 years of the CCI program would be \$260M and an average incentive of \$0.26/W.

Figure 21: CCI Program Payment Schedule



To encourage project success and reduce upfront costs, the DGTF recommends that the CCI incentive be delivered to successful DSG projects over a 5-year period after commercial operation (see figure above). This program budget would peak at roughly \$50M a year before decreasing steadily until the program payments are concluded. This can be compared to the approximate \$300 million per year that the province is investing in LDC CDM programs.

Third Party Ownership within CCI Program

The FIT program is indifferent as to whether the electricity customer or a third party partner owns the generation at a customer site. The microFIT program imposes legal ownership restrictions. The current price levels for microFIT and FIT are compelling reasons to allow the market to determine and define new and creative ownership and financing models which can reduce costs. The vast majority of net metering development in the US is managed and installed through third party ownership at both the residential and commercial scale.

Further net metering involves only one LDC electricity customer, and the customer may select an appropriate third party project partner. A net metering support program in Ontario should anticipate and welcome either direct electricity customer participation or third party participation and not create any barriers to this customer choice.

Funding Options for CCI Program

Funding for the CCI Program does not need to come from a single central source. Instead, the DGTF recommends the full range of funding sources be investigated before final prices for the CCI program be established. The four primary sources that the DGTF proposes investigating are:

- Funding through participating in CDM activities delivered by LDCs
- Cap and Trade auction revenues

- Location specific capital contribution incentive for regional planning areas identified by the IESO
- Tax incentives through Federal and/or Provincial policy changes

Participation in CDM through LDCs

The DGTF recommends integrating behind the meter DSG into the LDC CDM program portfolios, aligning the interests in customers wishing to install solar and the LDC business objectives, and evolving solar support into an existing regulatory structure could be easily adopted. An additional expected benefit of behind the meter generation is lower connection voltages generally reducing connection costs and complexity.

LDCs are currently struggling to achieve CDM targets for both energy and capacity. Inclusion of DSG as part of the LDC CDM portfolios will provide another valuable option for LDCs to meet or exceed their CDM targets.

The DGTF recommends that the CCI program model mirror the current design and administrative approach to behind the meter generation for combined heat and power natural gas on-site generation. The IESO administers the Process System Upgrade Initiative through Ontario LDCs as a CDM program offering a 40% capital grant to participants. The solar net metering CCI program could adopt a very similar approach using existing processes and strategies.

Cap and Trade Auction Revenues

The government of Ontario has identified key areas in which GHG reductions may be funded with Cap and Trade auction revenues in The Climate Change Mitigation and Low Carbon Economy Act (Bill 172). Schedule 1 of the Act identifies these areas which include:

- The production or installation of renewable, low-carbon, carbon-free and net zero alternative energy
- Distributed renewable energy generation and energy management technologies to support load-shifting, energy storage, net metering and other measures to eliminate the need for grid-based electricity during natural gas peaking
- Geothermal solutions, insulation, and other technologies that will reduce greenhouse gas emissions from buildings and neighbourhoods
- Support for increasing consumer demand for near-net-zero and net zero buildings, structures and communities
- The design, construction and retrofitting of buildings and structures to reduce greenhouse gas emitting energy sources related to space and water cooling and heating

Accessing a portion of the revenues from Cap and Trade emission allowance auctions could provide an additional source of funding for the DGTF's recommended CCI program.

Regional Planning Area Adder

Another funding option to encourage DSG in areas that provide greater system benefit would be to establish regional planning area price adders. The IESO would determine which areas of the province would benefit from increased uptake of net metering generation and provide a capital contribution incentive in those areas. The capital contribution incentive for regional planning areas could be scaled so that areas of higher need receive a higher rate compared to areas of lesser need. The administration of the program could be tied with CDM activities overseen by

the LDCs. The IESO would set the rate for the CCI program and the LDC would add the rate through the CDM program.

Federal and Provincial Tax Incentives

The DGTF believe that the development of the Canadian DSG industry has been largely driven by Ontario's progressive green energy policy over the last decade and that it is the time for the Federal Government to partner with Ontario and the rest of Canada in supporting the adoption of DSG.

In the US, a federal incentive tax credit has been shown to drive the uptake of renewable generation across the country. With climate change as a federal priority, federal tax incentives are a perfect policy response that complements provincial or even municipal action. Tax incentives for DSG facilities could provide indirect capital cost contribution and support DSG and actions on climate change that benefit all Canadians.

The DGTF recommends the implementation of a transition program toward net metering in Ontario, using best practices and familiar practices taken from lessons learned in the US and elsewhere. A declining block capital cost incentive program, made up from contributions from Ontario LDCs, Cap and Trade auction revenues, Ontario tax incentives and federal tax incentives would allow for a managed transition from the current microFIT and FIT programs. The completion of FIT 5 and FIT 6 in 2017 and 2018 would provide the time to design and implement a successor net metering program in Ontario, with meaningful stakeholder consultation to get it right.

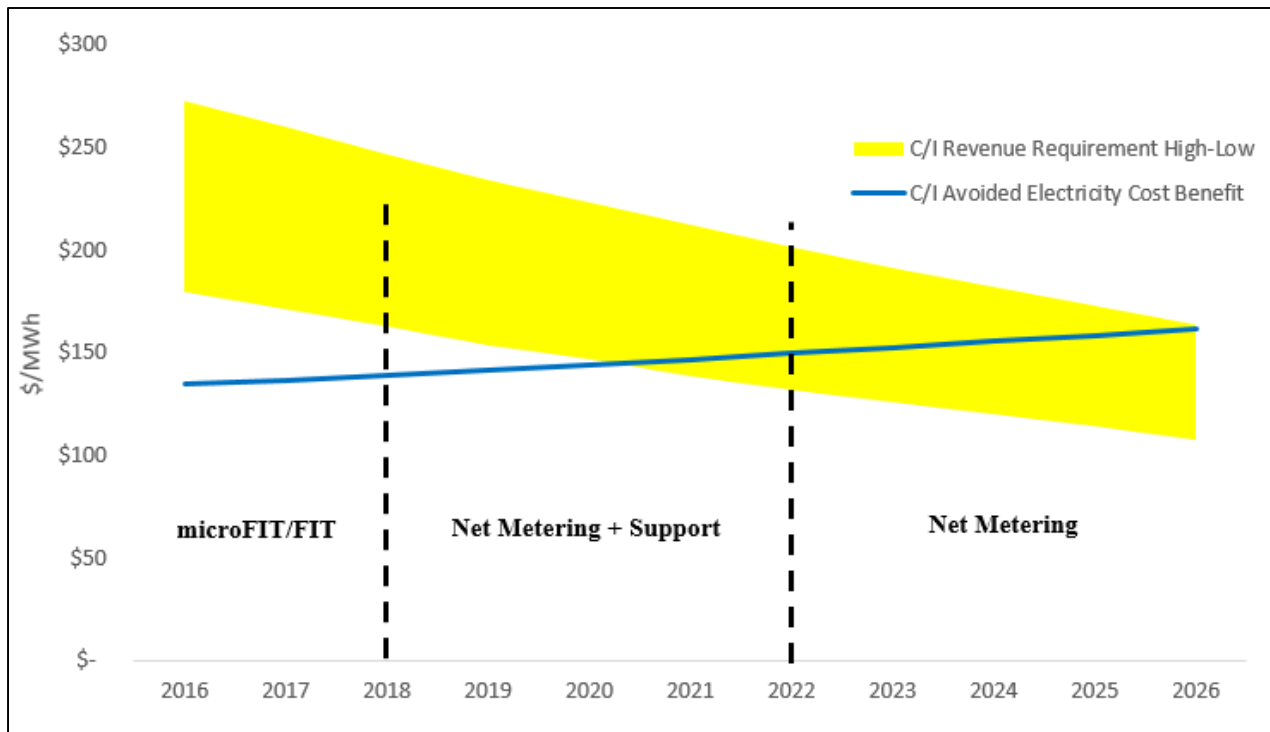
Conclusion and Summary of Recommendations

The objective of the DGTF was 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.

The Ontario electricity market is undergoing a significant change influenced by many factors such as provincial climate change goals and the need for renewal of strategic assets. As a passive resource with minimal fuel supply risk adaptable to a wide variety of siting locations, DSG is an excellent option for Ontario as it navigates this time of change. The DGTF has identified five priority areas where it believes DSG can provide immediate value and benefit to the Ontario electricity market:

- 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

The cost of DSG in Ontario has fallen rapidly over the past decade, and the DGTF expects that solar costs will continue to decrease over the next 10 – 20 years. Over that same forecast period the DGTF expects that Ontario electricity prices will increase and lead to a crossover point. The crossover point – grid parity – occurs when the revenue required to fund a DSG facility is equal to the avoided cost of electricity it would provide. The DGTF estimates this crossover period will occur in Ontario between 2020 and 2026, depending on the size of the system and the associated project development costs.



The DGTF believes Ontario’s DSG policy should transition from the current FIT program to a net metering regime during the period that grid parity is achieved. The DGTF recommends that the transition be managed over three stages:

- Maintain FIT 5 and FIT 6 with some modifications to support the transition
- Enact new net metering regulation and launch a Capital Contribution Incentive Program (CCI Program) to support DSG during the gap years before grid parity
- DSG development within an unsubsidized and unfettered net metering regime, emphasizing customer choice and innovation

For stage one, the DGTF recommends the FIT 5 and FIT 6 be completed with the following changes:

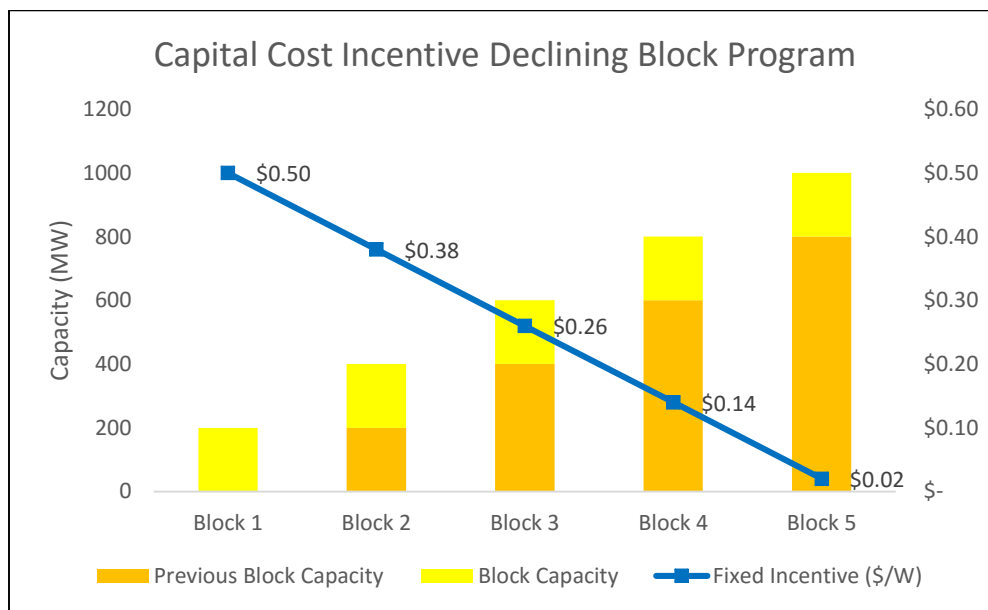
- Set Prices well in advance of an Application Period
- Implement pre-set Price Schedule digressions of 5% for solar
- Reduce Contract Capacity Set-Asides
- Permit in-series metering
- Simplify the Application review process to reduce cost and timing

While FIT 5 and FIT 6 are being procured, the process to complete and implement changes to the net metering regulation and associated program should continue. Beginning this process in parallel to the operation of FIT 5 and FIT 6 reduces the risk of disruption to the DSG industry which would jeopardize continuing cost reductions and frustrate customers wishing to adopt DSG.

For stage two, the DGTF recommends the following amendments to the current net metering regulation:

- No capacity cap per service territory
- Permit any size of distribution-connected project to be net metered with appropriate site limitations
- Time of Use compensation for net metered DSG
- Full retail value compensation with an end of term payout level
- Reduce administration burden to develop net metered DSG

For stage three, the DGTF has concluded that a CCI program, with declining incentives per capacity block, is the best method to support DSG as the gap to grid parity closes. The DGTF recommends that the CCI program include five capacity blocks of 200 MW with the initial incentive level starting at \$0.50/W and decreasing by \$0.12/W when each block is fully subscribed.



Funding for the CCI program can be gathered from a variety of sources instead of a single source as is currently done with the FIT Program. The DGTF recommends that four primary sources be considered initially:

- Funding through participating in CDM activities delivered by LDCs
- Cap and Trade auction revenues
- Location specific capital contribution incentive for regional planning areas identified by the IESO
- Tax incentives through Federal and/or Provincial policy changes

Capturing the benefits described in this report in earnest occurs when a grid parity situation is reached under a net metering framework. CanSIA sees this intersection point coming soon. In order to reach that intersection point, a smooth transition into net metering is required after the conclusion of the FIT and microFIT Programs. Net metering is a cost-effective, customer-centric and efficient procurement strategy that unleashes the full significant benefits of DSG and allows individual electricity customers, rather than government, to bring the benefits of DSG to the grid.