

## 1. LRP I Results and LRP II Outlook

The 16 LRP I contracts offered on March 10, 2016 have been signed and executed. The important LRP II timelines have been provided. Scroll down to get more details on these two procurements.

## 2. FIT 5 Outlook

The FIT 5 procurement schedule has been announced, with details on the procurement targets and the future of FIT. Scroll down to gain better insight on FIT 5.

## 3. Updates on Alberta and Saskatchewan

Both Alberta and Saskatchewan are in the process of developing a procurement process for large renewable projects, aiming to be released in the last quarter of 2016. Scroll down to find out more about expected timelines and which renewable technologies are included.

## 4. CanSIA Distributed Generation Task Force (DGTF) Net Metering Analysis

The DGTF produced a report regarding the transition between the FIT Program to Net Metering. Scroll down to learn more about the status of the report and the main points being brought forward.

## 5. OEB Commercial and Industrial Rates Staff Discussion Paper

The OEB has changed the fixed and variable portions of electricity bills for residential customers and is now proposing changes for industrial/commercial customers. Scroll down to find out more details surrounding the changes to electricity rates.

## 6. Energy Storage in Ontario

The IESO has completed a two phase procurement process and has awarded contracts for just under 50 MW of energy storage in Ontario. Scroll down to find out more about the history of energy storage in Ontario, details around the energy storage procurement, and the different types of energy storage technologies available.

## 7. Cap and Trade in Ontario

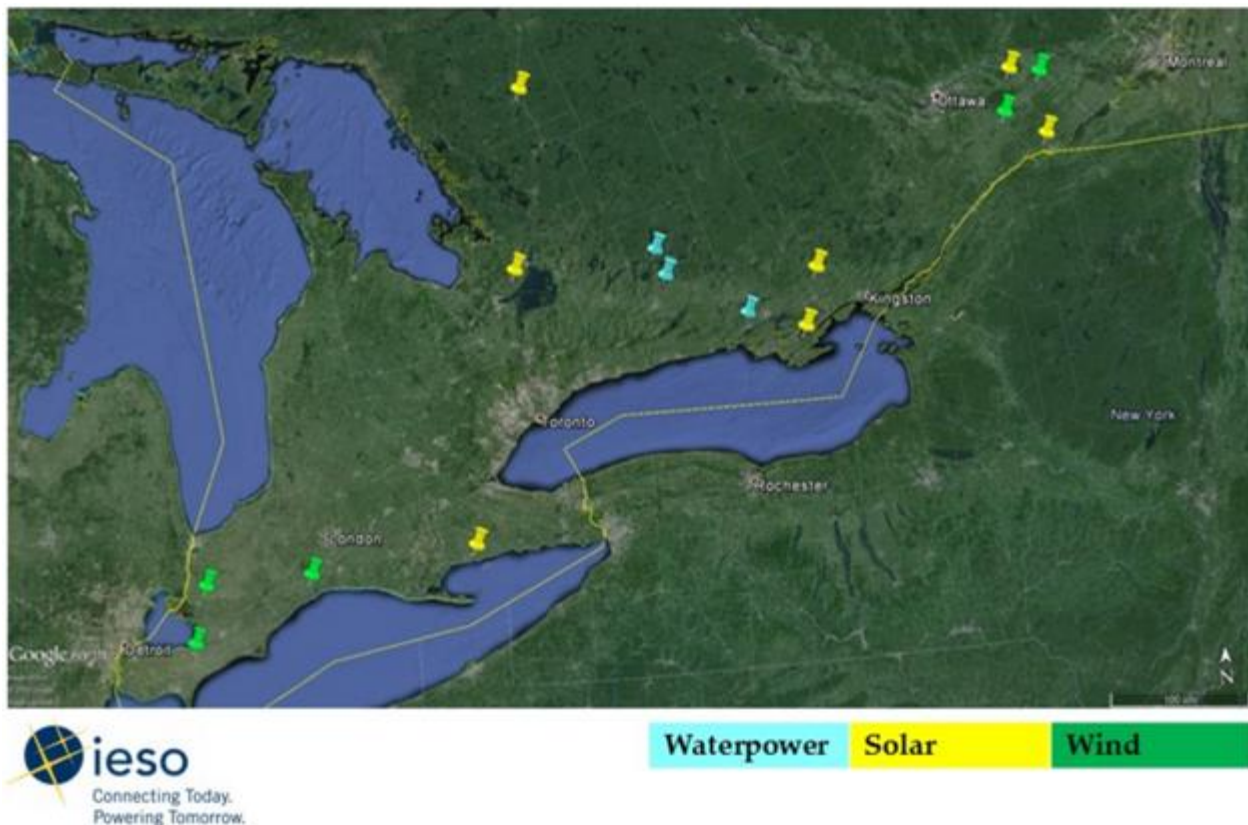
Ontario is moving forward with plans to implement a Cap and Trade system, to be tied in with similar systems in place in California and Quebec, through the Western Climate Initiative (WCI). Scroll down to learn more about Cap and Trade, as well as some details around Ontario's plan.

## 1. LRP I Results and LRP II Outlook

### **Large Renewable Procurement (LRP) I**

The Large Renewable Procurement (LRP I) contracts, offered on March 10, 2016, have been signed and executed. The full list of projects can be found [here](#). The LRP I process is now concluded. These projects

are required to obtain all necessary licenses and approvals, such as the Renewable Energy Approval, before beginning construction. The map below displays the locations of the LRP I projects. No projects were offered in Northeastern Ontario, as it was capacity constrained.



The average contract price for solar and wind projects was 156.67 \$/MWh and 85.94 \$/MWh, respectively. Stakeholder and community engagement has been initiated to invite feedback on the LRP I process and understand where improvements can be made for LRP II. The IESO has posted a [survey](#) to collect feedback on LRP I, which is posted on the LRP Engagement page.

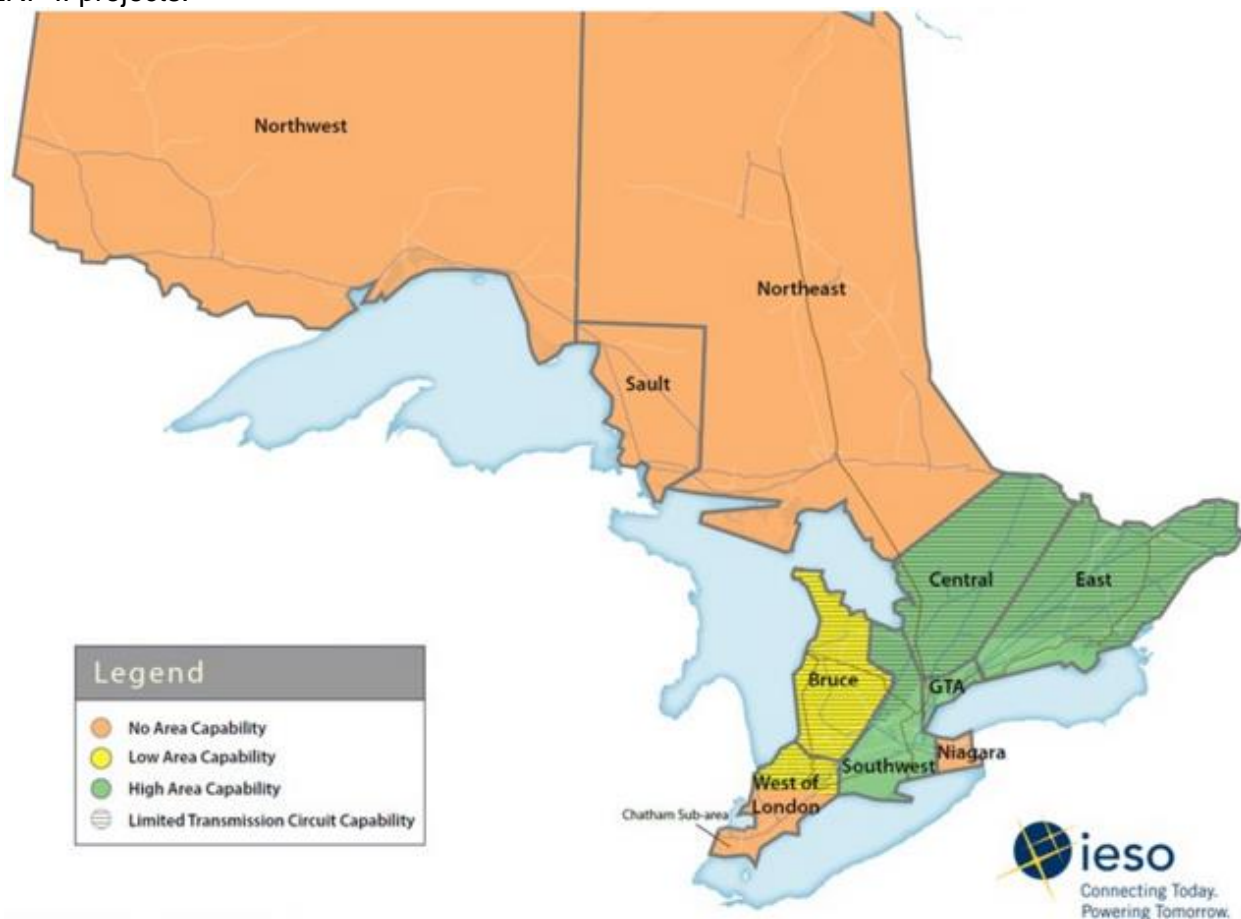
### **Large Renewable Procurement (LRP) II**

As noted in the [Minister's Directive](#) issued April 5, 2016, the LRP II procurement targets were announced, as listed below, for a total of 930 MW.

Renewable Energy Technology	Procurement Target
Wind	600 MW
Solar	250 MW
Hydroelectric	50 MW
Bioenergy	30 MW

A recent IESO webinar initiating engagement provided a map of early LRP II Connection Availability. This map, displayed below, shows a large portion of Ontario as capacity constrained for LRP II projects.

These areas include, Northwest, Northeast, Sault, Niagara, and the southern part of West of London. It is important to note that these are preliminary results and the map may change.



Procurement Task	Proposed Timeline
Post final RFQ	August 1, 2016
Qualification	October
Submission Deadline	2016
Notification of Qualified Applicants	January 2017
Post Final RFP	Q2 2017
RFP Submission	Q4 2017
Deadline	Q4 2017
Issue LRP II Contracts	May 1, 2018

The timeline for LRP II documentation and important dates are listed above. The Draft LRP II RFQ will be posted for public review and comment prior to the final version being posted on August 1, 2016.

Future LRP engagement activities will be posted [here](#). The Directive also noted that there will not be a third round of LRP.

## 2. FIT 5 Outlook

The [Minister's Directive](#) issued on April 5, 2016, indicated that the FIT 5 procurement will have a base target of up to 150 MW plus MW to be allocated based on any contract capacity that has become available from any contract terminations under prior small FIT and microFIT procurements. Compass expects that the total procurement allocation will be between 240 MW – 250 MW. The total

capacity to be assigned to the FIT 5 procurement will be announced by December 31, 2016.

The proposed timelines for the FIT 5 procurement are displayed below. The Application Window is expected to open on November 1, 2016 and the FIT 5 Offer List is expected to be posted in May 2017.

Procurement Task	Proposed Timeline
Final Program Documents Posted (subject to updates)	June 2016
Price Review	July/August 2016
Price Schedule Posted (no later than)	September 1, 2016
Application Window Open (no later than)	November 1, 2016
Total Procurement Target Announced (no later than)	December 31, 2016
IESO Application Review (7 months)	December 2016 – April 2017
Contract Offer List	May 2017

The future of the FIT program is unknown and FIT 6 is uncertain as it is expected that both the microFIT program and the FIT program will transition into net metering programs.

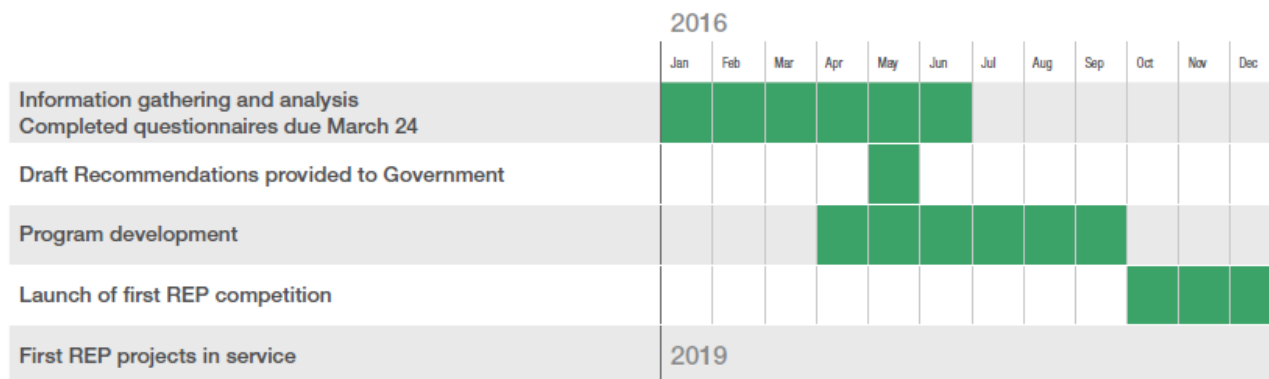
## 3. Updates on Alberta and Saskatchewan

### ***Alberta Renewable Energy Procurement***

The Government of Alberta (“GOA”) instructed the Alberta Electric System Operator (“AESO”) to develop and implement a program to bring on new renewable generation capacity over the period to 2030. The GOA has requested that the AESO provide draft recommendations on its plan by May 2016. Following GOA approval, the AESO expects to continue development of the program throughout

2016, with the first RFP expected launch in the fourth quarter of 2016, with projects to be in service by 2019. The Panel’s recommendations included procurement of new renewable resources on the basis of lowest cost bids, through a combination of market revenues as well as Renewable Energy Credits (RECs). The price cap on support from RECs associated with the RFP are recommended not to exceed \$35/MWh or roughly the equivalent to a \$90/tonne of CO<sub>2</sub> premium over gas generation.

## Anticipated Timeline for AESO's Renewable Energy Procurement



Feedback Questionnaire: [www.aeso.ca/rep/](http://www.aeso.ca/rep/)  
Source: <http://www.aeso.ca/rep/>

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The instruction to the AESO required that the REP ensure:

- “...keeping the costs of doing so as low as possible through a competitive process...” and
- “... the Government of Alberta has not chosen to fundamentally alter the current wholesale electricity market structure.”

These two statements, as well as discussions with decision makers in Alberta, lead Compass to believe that the 2016 RFP for renewable power will not include a

specific solar allocation and that solar and wind and other renewables will compete based on lowest REC price offered, supported by energy only market revenue.

It is expected that there will be subsequent rounds of the REP and those rounds will include solar carve out from the total MW target of the REP II. Key in any REP process for wind or solar projects will be for proponents to register their projects for connection through the System Access Service request process and getting registered with the AESO connection queue.

### **Saskatchewan Large Renewable Procurement**

SaskPower has committed to meet the overall 50% target of renewable generation over the next 14 years compared to the Alberta target of 30%. SaskPower will likely develop up to 1,600 MW of new wind generation between 2019 and 2030. Saskatchewan is predicting steady growth in energy demand with a 16% load growth in

the past five years, and are expecting 11.5% load growth over the next five years. SaskPower, it is planning to move forward with utility-scale solar power generation, which would include at least 10 MW of solar and 100-200MW wind, with a competitive procurement beginning in 2016.

Generation Option	Timeline	Description
Wind	Q3- 2016	Expected size: 100-200 MW Request for Qualification (RFQ) Request for Proposals (RFP)
Solar	Q3-4 2016	Expected size: 10 MW Request for Qualification (RFQ) Request for Proposals (RFP)

### **Alberta Micro-Generation**

The development of Alberta Renewable Energy Programs (“REPs”) continue to advance after the Alberta’s Climate Leadership Plan released November 22, 2015. Alberta’s Climate Change Advisory Panel (“the Panel”) submitted the report to the Minister consisting of climate change recommendations to:

- complete phase-out coal by 2030,
- introduce economy-wide carbon pricing transitioning to \$30/tonne,
- impose an absolute cap on oil sands emissions of 100 MT per year, and
- target 45% methane gas emissions reduction from oil and gas operations [1].

The plan accelerates the transition from coal to renewable power and other sources and

will require significant investment to reach proposed targets. Plans are still under development and decision makers are receiving feedback from stakeholders pursuing solutions that will facilitate the ambitious transition.

The current Micro-Generation Regulation includes projects up to 1MW in size with 10.6MW of installations as of February 2016. Slow uptake of micro-generation results from economic feasibility as the program credited generation does not equal the total retail electricity charge on a bill including rates associated with transmission and distribution. Alberta has launched two programs with over \$5M in rebate funding to develop solar projects on municipal buildings and on-farm developments.

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## **4. CanSIA Distributed Generation Task Force (DGTF) Net Metering Analysis**

CanSIA’s Distributed Generation Task Force (DGTF) released its final Recommendation Report on March 17, 2016. The group was created to consult on and design a transition for the Ontario distributed solar industry to move away from FIT to net metering. The DGTF advocates a continued commitment to FIT 5 and FIT 6, followed by a period of net metering with interim support from 2018 – 2022 before eventually moving to net

metering alone. A capital cost incentive program featuring five declining blocks of defined \$/watt support has been suggested as the support vehicle, to be funded through LDC CDM measures. It also suggests time of use compensation for net metered distributed solar. The DGTF and CanSIA are now working to advance the recommendations among stakeholders and key audiences.

## 5. OEB Commercial and Industrial Rates Staff Discussion Paper

In 2015 the OEB laid out a plan to move residential distribution rates from a fixed and variable charge model to one solely comprised of a fixed charge. Residential distribution rates will have a larger fixed component beginning in 2016, until they are completely fixed by 2019. The OEB acknowledges a desire to align the interests of distributors and generators so that both work to reduce obstacles to connection. Commercial and industrial customer rate design proposals have been assembled that endeavor to better reflect the true costs of both connection demand (e.g. equipment sized to connect the customer) and aggregated demand (e.g. equipment sized to serve many customers). Not all designs were proposed for all customer classes:

- Fully fixed charge, time of use energy, energy use blocks, and minimum bill

designs proposed for both General Service < 50 kW and > 50 kW customer classes;

- Three-part demand and time of use demand rates for General Service > 50 kW, Intermediate and Large customer classes.

These rates include time varying components for both energy and demand, as well as varying fixed components. Net metered and load-displacing customers can expect greater predictability and stability of rate policy. Proposals that increase the amount of a monthly bill comprised of fixed and demand-based components is generally less attractive to net metered solar customers. Conversely, the energy use blocks proposal could increase the opportunity for net metered solar to reduce bills. Comments on the Staff Discussion Paper are due on May 27, 2016.

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## 6. Energy Storage in Ontario

The electricity system is required to be operated on an instantaneous basis, where the electricity produced satisfies the demand in that moment. Up until recently, electricity could not be stored in large quantities feasibly. With the emergence of multiple types of energy storage technologies, energy can be produced and used when it is most convenient to do so.

The benefits of energy storage to the Ontario electricity system include the following:

- Smoothing out fluctuations of solar and wind resources, bringing added stability to the electricity system

- Easing points of congestion in transmission and distribution networks by temporarily absorbing surges and excess power flow, allowing utilities to defer, or even avoid expensive system upgrades
- Absorbing surplus baseload generation when the output is higher than minimum demands
- Providing critical reliability services that support voltage and frequency on the system

### **Procurement Process – Phase I and II (50 MW)**

The Independent Electricity System Operator (IESO) has run two phases of energy storage procurement in Ontario. The first phase saw procurements from five companies that will offer ancillary services to support increased reliability and efficiency of the grid. The cost of these contracts is approximately \$14 million per year for 3 years. These projects total 34 MW of energy storage and are listed below.

<b>Proponent</b>	<b>Technology</b>	<b>MW</b>
Canadian Solar Solutions Inc.	Battery	4
Convergent Energy and Power LLC	Battery Flywheel	12
Dimplex North America Ltd.	Thermal	0.74
Hectate Energy	Battery	14.8
Hydrogenics	Hydrogen	2

In the second phase of procurement, the IESO offered 10 year contracts to five companies for nine separate energy storage projects totaling 16.75 MW. These projects, listed below, offer a range of performance

### **History of Energy Storage in Ontario**

While energy storage seems like a new technology, it has actually been around for quite some time. Ontario Power Generation's (OPG) Beck Pumping Station in Niagara has provided approximately 170 MW of storage capacity to Ontario's electricity grid for nearly 6 decades. This system pumps water to reservoir during off-peak hours, and provides energy during peak hours. In 2012, the IESO procured 6 MW of energy storage from two

characteristics that can store energy when prices are lower and re-inject it when prices are higher, at peak times.

<b>Proponent</b>	<b>Technology</b>	<b>MW</b>
Ameresco Canada Inc.	Battery - Solid	2
Ameresco Canada Inc.	Battery - Solid	2
Sun Edison Canada Origination LP	Battery - Flow	2
Sun Edison Canada Origination LP	Battery - Flow	1
Sun Edison Canada Origination LP	Battery - Flow	2
NextEra Canada Development & Acquisitions, Inc.	Battery - Solid	2
NextEra Canada Development & Acquisitions, Inc.	Battery - Solid	2
NRStor Inc.	Compressed Air	1.75
Baseload Power Corp.	Battery - Flow	2

These procurements provide better understanding around the integration of energy storage into Ontario's electricity grid and the cost of doing so.

facilities to provide regulation services, as listed below.

<b>Proponent</b>	<b>Technology</b>	<b>MW</b>	<b>Operation Date</b>
NRStor Inc.	Flywheel	2	June 2014
RES Canada	Lithium Battery	4	August 2014

Newer types of energy storage technologies are becoming more economically feasible and will provide many benefits to the grid.



## 7. Cap and Trade in Ontario

Ontario is moving forward with a Cap and Trade system, similar to the systems in place in Quebec and California, which aim to reduce greenhouse gas (GHG) emissions, reward innovative companies, and create more investment in green technology.

The Cap and Trade system works by putting limits on how many tonnes of GHGs that heavy emitting businesses can emit. The cap is set at a specific amount each year and declines over time. Concurrently the price per tonne of carbon increases. Ontario's cap in the first year is set at 142 million tonnes of GHGs per year and will decline to 125 million tonnes by 2020. Typically, companies will do one or more of the following items in order to comply:

- Invest in clean technologies to become more efficient
- Burn less fossil fuels
- Purchase additional credits

Some of the benefits of the cap and trade system include:

- Companies are rewarded for reducing their carbon footprint
- Biggest commercial and industrial emitters will have a financial incentive to reduce emissions
- Industries will be motivated to innovate and seek out new greener technologies
- The money collected will be reinvested in new green technology and projects, spurring economic development in green technology and green job creation

- Linking with Quebec and California in the Western Climate Initiative (WCI) provides a larger pool of low cost emissions reductions and an international playing field

The proposed [Climate Change Mitigation and Low-carbon Economy Act](#) will, if passed, ensure every dollar raised through the program will be invested in a transparent way back into green projects that reduce greenhouse gas pollution and help homeowners and businesses save energy, such as public transit, clean-tech innovation for industry, electric vehicle incentives and social housing retrofits. It is estimated that the cap and trade system will bring in \$1.9 billion annually starting in 2017.

The phase in approach to the Cap and Trade system mimics Quebec and California's approach. Ontario is providing temporary free allowances to particular industries, which are competitively sensitive, such as cement, lime, and steel. 14% of Ontario's businesses (102 large GHG emitters) will not be required to reduce their emissions until 2020, when the list of companies getting free allowances will be reviewed.

Some of the consequences of the cap and trade program for Ontario are displayed below, as presented by [Stikeman Elliot](#). It's important to note that these are initial cost estimates only and contain assumptions based on publically available data.

Impact	2017	2030
Expected Cost per Tonne of Carbon	\$18	\$95
Impact on Gas Price	+ 4.3 cents per litre	+ 22.69 cents per litre
Impact on Natural Gas Price	+ 3.3 cents per m <sup>3</sup>	+ 17.4 cents per m <sup>3</sup>
~ Annual cost for Consumers	\$120	\$630
~ Annual cost for Small Manufacturers	\$136,000	\$720,000

The Canadian federal government has proposed a national price floor of \$15/tonne GHG emissions. It has been suggested that the true cost of carbon ranges from \$160 - \$220/tonne GHG emissions, depending on which factors are included in the study. A comparison of the main features of the California, Quebec, and proposed Ontario cap and trade systems is displayed below.

Main Feature	California	Quebec	Ontario
Emissions Threshold	Emitters of at least 25,000 metric tonnes annually	Emitters of at least 25,000 metric tonnes annually	Emitters of at least 25,000 metric tonnes annually (with an opt in for emitters of between 10,000 and 25,000)
Target	1990 levels by 2020	20% below 1990 levels by 2020	15% below 1990 levels by 2020
Emissions Target (million tonnes GHG)	431 (by 2020)	67 (by 2020)	151 (by 2020)
Maximum Emissions (million tonnes GHG)	370 (in 2017)	59 (in 2017)	142 (in 2017)
Status	First auction on November 14, 2012; compliance obligations began January 1, 2013	Compliance obligations began January 1, 2013	Compliance obligations begin January 1, 2017
Price Floor at Auction	\$10/tonne in both 2012 and 2013 and rising 5% each year (plus inflation)	\$10/tonne starting in 2012 and rising 5% each year (plus inflation)	\$13.72/tonne starting in 2017 and rising 5% each year (plus inflation)

A more wholesome comparison of the Cap and Trade programs in California, Quebec, and Ontario can be found [here](#).