Mid-Term Review: 2015-2020 Conservation Framework

Mid-term Review Public Webinar (part 3): Collaboration, Governance and Operations, Planning Integration, and Climate Change

September 7th, 2017

ieso
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Today's Agenda

- Conservation Mid-term Review overview and plan update
- Review of mid-term review current state summaries: collaboration, governance and operations, planning integration, and climate change
- Key questions for these topics:
  - Have the expected outcomes of delivery efficiencies and customer convenience been achieved through collaborative efforts undertaken to date? (Collaboration between local electricity distribution companies, or LDCs, and collaboration between LDCs and gas utilities)
  - Are the views of interested stakeholders adequately being reflected in the Conservation First Framework (CFF) and Industrial Accelerator Program (IAP) decision-making?
  - How can the opportunities for further integration of CDM solutions in the regional planning process be encouraged from various stakeholders?
  - Should aspects of the CFF and IAP be adjusted in light of Ontario's climate change policy objectives? If so, how?
  - What are the implications for customers with the introduction of Ontario's climate change action plan?
- Next steps (including how to submit written feedback and comments)

Section 1:
Mid-term Review Overview & Plan Update

I. Mid-term Review Overview and Outcomes
II. Project Plan Update

Overview: Conservation Framework Mid-term Review

- The IESO has initiated the mid-term review of CFF and IAP, including a formal engagement process with the establishment of the Conservation Mid-Term Review Advisory Group
  - Multiple opportunities for all interested parties to provide input to review
  - IESO expected to complete review in Q1 2018
  - Advisory Group membership includes LDCs, customers, service providers and manufacturers
- IESO is implementing a Mid-Term Review Work Plan that includes an in-depth analysis of seven elements:

  1) Customer and market engagement; 2) definition of CDM; 3) collaboration; 4) governance and operations; 5) planning integration; 6) climate change; 7) budgets, targets and cost-effectiveness (including non-energy benefits)
- Review will assess CFF and IAP implementation against any stated policy goals of the Minister of Energy and Long Term Energy Plan
- As an outcome of the review, IESO will provide recommendations to the Minister of Energy to address any identified challenges or opportunities

Anticipated outcomes of Mid-term review

- Allocated LDC targets/budgets that are achievable
- Plan/solutions to address outstanding needs identified by customers
  - E.g. multi-site customers; low-income customers
- Plan for establishing a target exchange mechanism, should one be needed
  - Options presented/assessed for structure of target exchange: LDC only, open market, others
- Tools to ensure Conservation delivers system value when/where needed
  - Programs to address peak demand/local planning needs
- Conservation programs to support Ontario's climate change objectives
- Government direction (if needed) to achieve the above
- Options for delivering energy efficiency beyond 2020

MID-TERM REVIEW STUDY PLAN

Issues were identified by the IESO and grouped into seven major topics that will guide the Framework Review through four key activities outlined below. The non-energy benefits topic will be explored as part of the final report pending inputs external to this study.

Current State Summaries

Topics	Report Date
Customer and market engagement and satisfaction	March 16
Definition of CDM	April 20
Collaboration	April 20
Governance & operations	May 18
Planning integration	June 15
Climate change	July 13
Budgets, targets, cost effectiveness	August 17 September 14
Non-energy impacts	October 12

Current State Summaries:

Summarize the current state of each theme (e.g., existing operations, policies, progress, decisions, etc.) and are used as a basis for market research

Market Research

Objectives:

- To confirm and enhance content of the topic reports
- To gather insights into future framework improvements, design, and delivery

May to August

Opportunities

Research, analysis, market research inform potential modifications

Cost-benefit and gap analysis to scope opportunities

Consolidated list of medium-term (before 2020), and long-term (post 2020) opportunities for prioritization by the IESO

September/October

Final Study Report

Consolidation of findings, feedback, and identification of issues and opportunities

Methodologies and approach clearly discussed

Out of Scope:

- New mass market research
- 2011-14 framework in-depth analysis
- New program design
- LDC Mid-term incentive
- Evaluation Measurement &Verification protocols
- Codes and Standards

November to February

Section 2:
Current State Summaries

I. Collaboration
II. Governance and Operations
III. Planning Integration
IV. Climate Change

CONSERVATION FRAMEWORK MID-TERM REVIEW

I. COLLABORATION

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COLLABORATION TOPIC
FOCUS AREAS

Focus Areas

I. Conservation First Framework:

- Types of collaboration activities that have occurred
- Outcomes of collaboration activities
- LDC collaboration
- Cross fuel collaboration and costs
- Cross fuel cost effectiveness inputs
- Attribution and cost sharing
- Collaboration opportunities with government funded initiatives

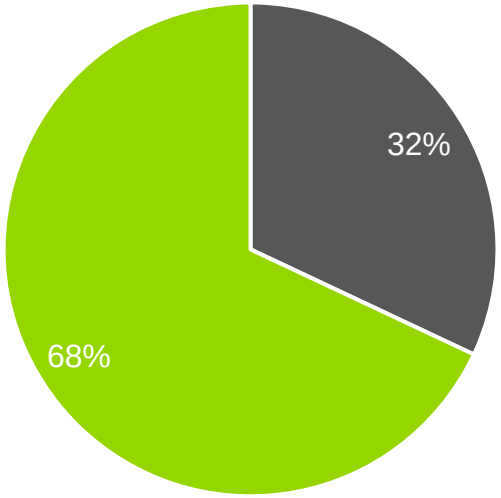
II. Industrial Accelerator Program:

- Cross fuel collaboration and costs

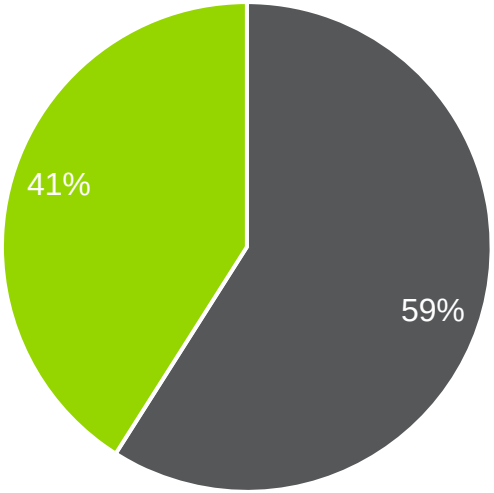
COLLABORATION TOPIC
JOINT CDM PLANS REPRESENT A MAJORITY OF THE PROVINCIAL TARGET

- 68 percent of LDCs are in Joint CDM plans, which represents 41 percent of all CDM plans
- 83 percent of the provincial CDM target (7 TWh) is captured by Joint CDM Plans

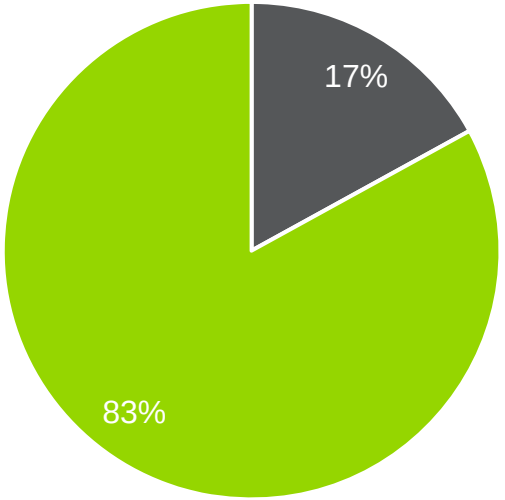
Proportion of LDCs
with Joint CDM Plans (out of 71)



Proportion CDM plans
that are Joint (out of 39)



Proportion of provincial CDM target
covered by Joint CDM Plans (out of 7 TWh)



■ Individual ■ Joint

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Source: IESO, All CDM Plans

COLLABORATION TOPIC
CONSERVATION FIRST FRAMEWORK SNAPSHOT

AREA	METRIC	DESCRIPTION	RESULT	INSIGHTS
Conservation First Framework: CDM programs	# LDCs collaborating on Programs and Pilots	# of electric LDCs collaborating on local/regional programs and/or innovation pilots	18/71	• There is collaboration amongst electric LDCs on programs and pilots, however, collaboration between electric and natural gas utilities is limited • Market research will attempt to understand collaboration that occurs without IESO funding • Quality metrics (e.g., quantitative impact to customers or costs) are not clearly defined as part of the Collaboration Fund criteria and as such were not collected
	# of Programs and Pilots with cross fuel collaboration	Proportion of local/regional programs and innovation pilots that feature cross fuel collaboration	4/32	
Conservation First Framework: Collaboration Activities	# of collaboration fund projects	# of approved IESO Collaboration Fund applications (includes: approved, complete or executed)	26/32	
	# collaboration fund projects with cross fuel collaboration	# of approved IESO Collaboration Fund applications that involve both a natural gas and electric utility (includes: approved, complete or executed)	2/26	
Industrial Accelerator Program: Cross-fuel Collaboration	# of collaboration activities	# of collaboration activities (planned within the next quarter or complete) between IESO and natural gas utilities	11	

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COLLABORATION TOPIC
NEXT STEPS & KEY QUESTION

Based on the preliminary assessment of the current state of collaboration, the following areas will be considered in the market research phase:

- Investigate non IESO-reported collaboration
- Investigate Collaboration Fund activities that have resulted in ongoing collaboration (i.e., benefits are such that it is worthwhile to continue without supplementary funding)
- Barriers to collaboration between electric utilities experienced as it relates to the framework and possible solutions
- Barriers to collaboration experienced and possible solutions specifically related to natural gas and electric collaboration.
- Uncover more information on the value of collaboration (savings – both kWh and $ and customer satisfaction/engagement)
- Investigate opportunities to leverage other conservation efforts that are outside of the Conservation First Framework (e.g. Climate Change Action Plan, federal programs or initiatives, etc.)

Key Question:

- Have the expected outcomes of delivery efficiencies and customer convenience been achieved through collaborative efforts undertaken to date? (Collaboration between local electricity distribution companies, or LDCs, and collaboration between LDCs and gas utilities)

CONSERVATION FRAMEWORK MID-TERM REVIEW

II. GOVERNANCE AND OPERATIONS

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Focus Areas

I. Conservation First Framework:

- Framework governance structures (roles and responsibilities)
- Review central services/IESO processes and opportunities for improvement
- New tools to support program development
- Review LDC services/processes and opportunities for improvement

II. Industrial Accelerator Program:

- Assess Account Manager model
- Assess application and supporting processes

GOVERNANCE AND OPERATIONS TOPIC
ROLES AND RESPONSIBILITIES ARE MAPPED IN THE ENERGY CONSERVATION AGREEMENT AND CFIC CHARTER

Entity	CDM Plans		Funding	Programs			Other
	CDM Plan Development	CDM Plan Approval		Program Design	Program Operations	Program Termination	
IESO	✓ Provide tools and support for LDCs	✓ Approve CDM plans	✓ Approve CDM Plans, programs and pilots	✓ Approve new program designs	✓ Carry out activities where directed as per the ECA or program rules	✓ Determine non cost-effective programs & inform LDC of termination	✓ APS, reporting, communication promotions, training events, mid-term review, audit, EM&V
CFIC			✓ Endorse Working Group budget and workplan	✓ Make recommendation to Working Groups	✓ Monitor province-wide program progress towards target		✓ Input into other IESO efforts (e.g. APS)
Working Groups (WG)			✓ Submit annual workplan and budget to CFIC	✓ Recommend changes to programs (existing and new)	✓ Monitor, identify and provide guidance to LDCs regarding programs		
LDCs	✓ Develop and submit CDM Plans		✓ Choose CDM Plan funding model, and apply for pilots or program funding	✓ Design local programs and pilots	✓ Offer programs to customers & provide data and reporting results to IESO		

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Source: Energy Conservation Agreement (May 1, 2016); Charter for the Conservation First Implementation Committee and Associated Working Groups

GOVERNANCE AND OPERATIONS TOPIC
FIVE PROCESSES ARE CONSIDERED FOR FURTHER ANALYSIS

- The inventory of processes were ranked by “severity of impact” and “frequency of occurrence”
- Processes for further considered were selected based on:
  - Highest combination of “severity of impact” and “frequency of occurrence” ranking
  - Whether data was available to conduct further analysis (e.g., audit or evaluation)
- IESO is currently undergoing internal audits on the processes associated with business case and CDM plan reviews

Process	Description	Stakeholder Group	Impact	Frequency
Program Changes	The length of time from identification of opportunity by LDCs and/or working group to implementation of program change	IESO - LDC	High	Medium
Pilot/program review	The length of time from program business case submission to IESO by the LDC to business case approval	IESO-LDC	High	Medium
CDM Plans	The length of time and amount of effort involved in the CDM plan development and submission process	IESO - LDC	High	Low
Program Operations	The process from project initiation to post project submission by the customer for the Retrofit program	LDC – Customer, IESO - Customer	High	High
Settlements	The length of time from submitting post project completion documentation for the Retrofit program to receiving the incentive	IESO-Customer, LDC - Customer	High	Medium

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GOVERNANCE AND OPERATIONS TOPIC
NEXT STEPS & KEY QUESTION

Based on the preliminary assessment of the current state of collaboration, the following areas will be considered in the market research phase:

- Assessment of the tools that support the Conservation First Framework and identify where opportunities are for improvement in addition to what is working well
- Confirmation of the assessment of the processes that support the Conservation First Framework and identify where opportunities are for improvement in addition to what is working well
- Review process evaluation results and 2016 realization rates from evaluation reports when available
- Additional insights from customers to assess the processes that support the Conservation First Framework and Industrial Accelerator programs
- Perceptions and experience with the governance structures that support the Conservation First Framework to assess their effectiveness.
  - This is currently being explored by an IESO internal audit process, the results of which will inform the final version of this topic report.
- Perceptions and customer feedback on the account management model for Industrial Accelerator Program
- Explore how and where the Conservation First Framework and Industrial Accelerator Program can better leverage partners
- Examine the role of CFIC and evolution of the governance layers currently in place in the CFF
- Explore the value and application of KPIs and other tracking metrics in the CFF and IAP beyond budgets, targets and CE results

Key Question:

- Are the views of interested stakeholders adequately being reflected in the Conservation First Framework (CFF) and Industrial Accelerator Program (IAP) decision-making?

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CONSERVATION FRAMEWORK MID-TERM REVIEW

III. PLANNING INTEGRATION

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PLANNING INTEGRATION TOPIC
FOCUS AREAS

Focus Areas

I. Conservation First Framework:

- Forecasts account for demand impacts of LDC energy targets
- Local deferral opportunities through additional targeted EE
- Impact of energy only targets
- Integrated planning

II. Industrial Accelerator Program:

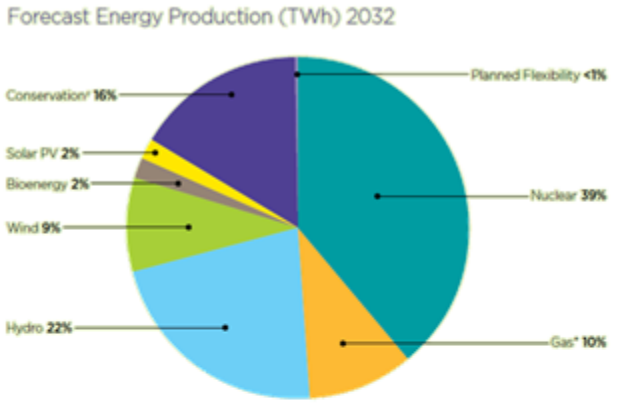
- Avoiding costs of local infrastructure improvements
- Economic growth
- Integrated planning

PLANNING INTEGRATION TOPIC
PROVINCIAL CONSERVATION IS CONSIDERED IN ALL PLANNING PROCESSES

- Policy sets provincial conservation which is taken into account in load forecasts in all planning processes

Planning Process	Description
Bulk system planning	Ensures reliability and stability of Ontario's electricity system, subject to oversight by the Ontario Energy Board (OEB). Addresses provincial electricity system needs and policy direction (e.g., Long Term Energy Plan (LTEP)).
Regional planning	Integrates local electricity priorities with regional electricity system needs and provincial policy direction. There are 21 planning regions in Ontario
Distribution planning	Connects with regional and municipal energy planning and subject to OEB oversight. Ensures reliability of the local (LDC) electricity system.

LTEP sets **provincial conservation target of 30 TWh by 2032** (contributing 16% to Ontario's forecast energy production)



Regional planning **integrates provincial conservation** into the local planning forecast and **considers incremental conservation** as a potential option to help address identified system needs

Incremental conservation would be implemented through the distribution planning process **(LDCs' Distribution System Plans)**

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PLANNING INTEGRATION TOPIC
THE REGIONAL PLANNING PROCESS AND THE CONSERVATION FIRST FRAMEWORK TARGETS USE DIFFERENT METRICS

- In the regional planning process, the impact of conservation is measured through its effect on peak demand, however, Conservation First Framework targets are set as energy savings
- Different regions also use different definitions of peak (i.e., winter vs. summer peak demand), however, the Conservation First Framework only uses summer peak metrics (e.g., for cost effectiveness calculations)

Examples of two Integrated Regional Resource Plans	Planning (target) metric	Season
Northwest Greater Toronto Area	Coincident peak demand* measured at the sub-region and station level (MW) each year	Summer (mid-afternoon)
Thunder Bay		Winter (evenings)
Conservation First Framework		
Conservation First Framework	Energy (7 TWh by 2020)	Summer peak for cost effectiveness assessments

*Coincident peak demand is the one-hour period each year when total demand for electricity is highest

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Source: IESO IRRPs

PLANNING INTEGRATION TOPIC
NON-WIRES ALTERNATIVES CAN BE DEPLOYED USING DIVERSE BUSINESS MODELS THAT WILL DEPEND ON THE JURISDICTION

- Non-wires alternatives are at an early stage of development, and there is not yet a standard business model for incorporating NWAs into utility planning procedures, but various emerging models
- In Ontario, there is a need to communicate potential cost recovery mechanisms or there is little likelihood of getting uptake from RFP, Auctions, etc.

There are four main business models utilities currently use:

Request for Proposals (RFP)	Auction	Current Implementation with Contractors	Internal Utility Resources
• Most common model for NWA procurement • Includes detailed description of NWA project need • RFPs are reviewed on cost of project, implementer capabilities, impact on community, and applicability to project need	• Best fit for complex projects, or for when there are few RFP applicants • May not find project with lowest cost per load reduced • Auctions can cover all or some of the NWA project and timeline • Example: ConEd BQDM DR Auction	• Simple method that alters current implementation contracts to procure and NWA project • Changes to: customers targeted, programs offered, specific marketing • May not be allowed in some regulatory jurisdictions	• Utilities can leverage their own resources to implement NWAs • Examples include: utility scale storage, utility solar, and other utility controlled DG • Some regulatory structures do not allow this model

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PLANNING INTEGRATION TOPIC
NEXT STEPS & KEY QUESTION

Based on the preliminary assessment of the current state of collaboration, the following areas will be considered in the market research phase:

- Understand LDC experience with the regional planning process as it relates to CDM
- Understand barriers to planning integration as it relates to meeting specific needs
  - Is there sufficient knowledge, infrastructure, and data to design, deliver, and monitor CDM assets? Is enhanced Evaluation, Measurement and Verification needed when deferring a reliability asset?
- Identify implications of and desire to align metrics between CDM and planning
  - Local vs. provincial: How to determine who benefits? How does this impact cost recovery? How to appropriately express the value? How to balance provincial consistency and meeting local needs? What are the regulatory/policy barriers?
- Industrial Accelerator Program customer insights into planning considerations
- Understand OEB perspective on CDM as part of distribution planning and implications on regulatory matters

Key Question:

- How can the opportunities for further integration of CDM solutions in the regional planning process be encouraged from various stakeholders?

CONSERVATION FRAMEWORK MID-TERM REVIEW

IV. CLIMATE CHANGE

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CLIMATE CHANGE TOPIC
FOCUS AREAS

Focus Areas

I. Conservation First Framework:

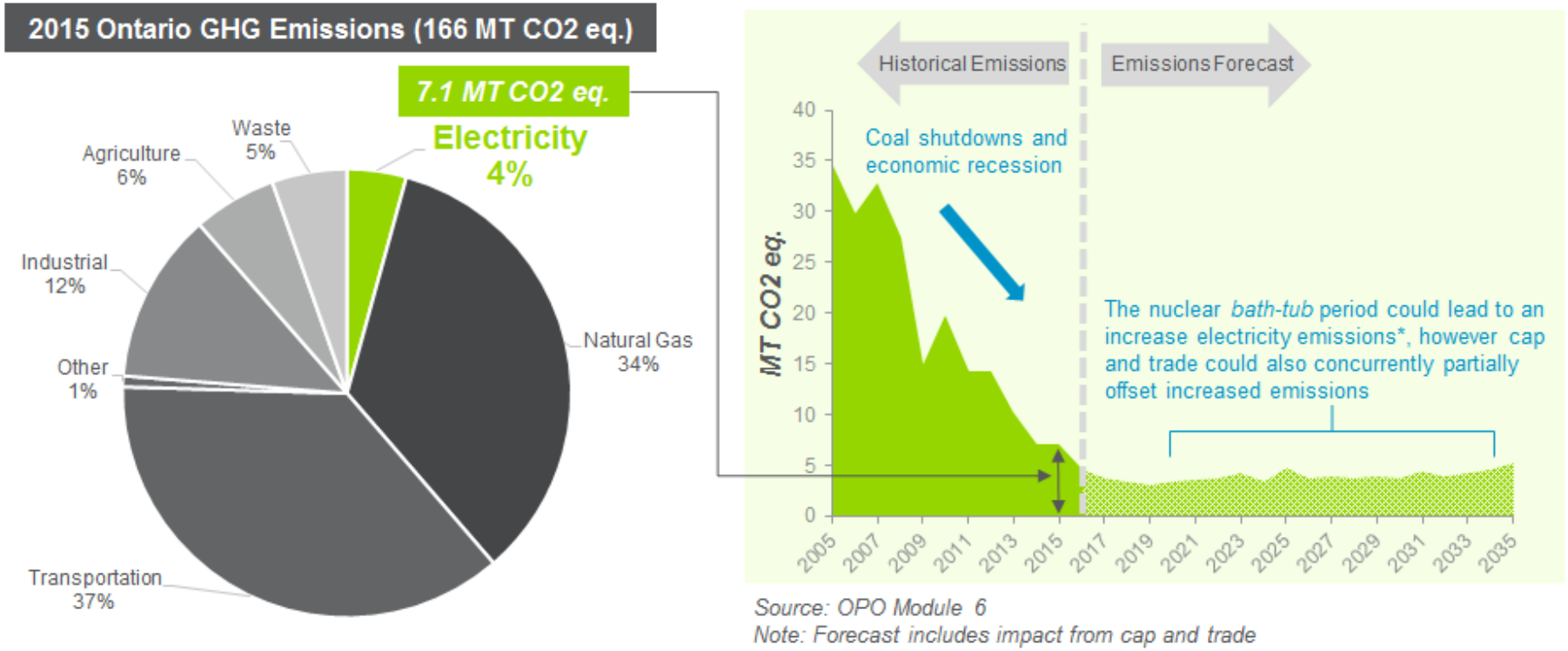
- Aligning with Climate Change Action Plan (CCAP), greenhouse gas (GHG) reduction target to complement energy targets
- Effect of CCAP on Conservation First Framework budgets, targets, programs
- Impact of Cap & Trade on Conservation First Framework programs and customers
- Energy Efficiency/DSM (right use, right time, right cost)
- Impact on environmental attributes

II. Industrial Accelerator Program:

- Impact on environmental attributes
- EE/DSM (right use, right time, right cost)
- Impact of Cap & Trade on program participation
- Aligning with CCAP, GHG target to complement energy targets

CLIMATE CHANGE TOPIC
GHG EMISSIONS FROM ONTARIO'S ELECTRICITY SECTOR

- **Ontario's CCAP does not explicitly define goals for emissions reductions (or energy savings) from the CFF or IAP**
- Electricity sector emissions have decreased significantly over the past decade and represent a small fraction of Ontario emissions, however electricity savings through CFF and IAP can still deliver emissions savings*
  - Eliminating all electricity emissions (~5 MT) would only contribute 8% and 3% to the 2030 / 2050 targets, respectively



Source: OPO Module 6
Note: Forecast includes impact from cap and trade

*According to the Ontario Planning Outlook Scenario B. Values to be updated upon release of the 2017 Long Term Energy Plan.

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**Long Term Energy Plan 2017 may provide some guidance as to how the incremental need will be met during this period*
Source: Environment and Climate Change Canada (2017) National Inventory Report 1990–2015

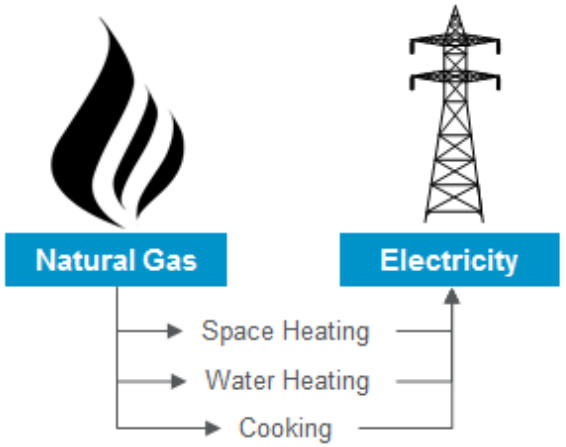
CLIMATE CHANGE TOPIC
FUEL SWITCHING

- **Fuel switching** refers to the replacement of a particular source of energy with a lower carbon-emitting alternative – for example:
  - Gas to Electricity; or
  - Propane / Oil / Wood to Gas / Electricity

CCAP actions related to Fuel Switching

- Boost low-carbon technology in homes - *B&H 4.1*
- Help retire older wood stoves - *B&H 4.22*
- Set lower-carbon standards for new buildings - *B&H 5*
- Establish low-carbon content for natural gas - *B&H 6.1*

B&H = Building & Homes



Considerations

- Reductions in GHG emissions arise from **most fuel-switching combinations** (e.g., X to Y)
- **Codes and standards** for building envelope, and electric or gas equipment can contribute to GHG reductions
- **Natural gas will remain cost-effective alternative** to electricity in areas with natural gas access (particularly for space and water heating purposes)

Areas of Alignment

- **Cooperation across electric/gas utilities** to track GHG emissions reductions through any fuel-switching combinations, in addition to the delivery of dual-impacts measures
- A **standardized approach for estimating GHG savings** for fuel-switching programs involving gas, propane, wood, or fuel oil equipment
- Extended role of DSM to promote adoption of equipment that **exceeds codes and standards** – which may in turn merit higher incentives for adoption

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CLIMATE CHANGE TOPIC
CHP AND OTHER DER

- **Combined Heat and Power** (CHP) systems use a natural gas engine or turbine to generate electricity. Waste heat is captured and used for other purposes.
- **CHP projects qualify for incentives under either the IESO's CFF or IAP**. Renewables projects do not qualify for CFF funding or IAP. FIT/microFIT provides funding for renewables, however microFIT will transition to a "net metering" scheme.
- The CCAP did not specify any actions related to CHP systems.

CCAP actions related to Renewables

- Support hospitals, universities and colleges (renewables) – *B&H2.2*
- Boost low-carbon technology in homes – *B&H4.1*

B&H = Building & Homes

Emission Factors by Resource

	g/kWh	vs. ON
ON (2016)	32	-
Renewables	0	***-32***
CHP	254	***+222***
SCGT	346	***+314***
CCGT	510	***+478***
Diesel	723	***+691***

Considerations

- Ontario's electricity **emissions intensity is well below levels from any gas resources**
- In other jurisdictions, CHP may be a less carbon-intensity alternative, however, in Ontario **CHP is more carbon-intensive than current supply mix**
- The *BMG Potential Study* evaluated various CHP adoption scenarios based on various funding levels and impact of cap & trade. Results showed little impact on CHP potential
- **Funding for renewables projects will decrease** with the shift from microFIT to net-metering

Areas of Alignment

- **Funding for CHP is at odds with Ontario's climate change strategy if CHP offsets grid-electricity** which may displacing funding from emissions-reducing technologies
- **Increased focus on renewables through CCAP** and **decreased funding for microFIT** projects present an opportunity for establishing renewables incentives and/or renewable energy credits (REC)

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CLIMATE CHANGE TOPIC
ELECTRIC VEHICLES

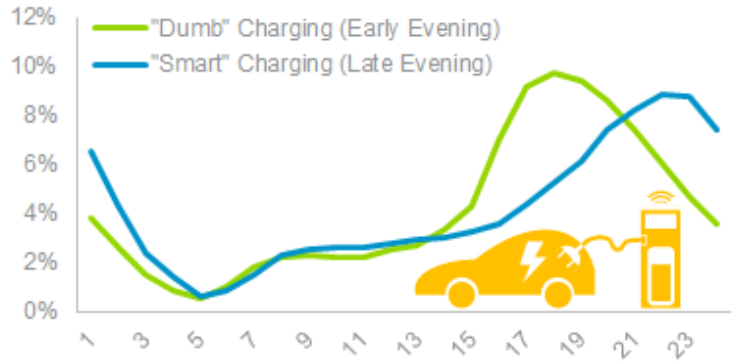
- The transportation sector accounts for 37% of CO2 emissions in Ontario (61 MT of CO2 eq.), of which 75% are related to road transportation; this includes gasoline vehicles, trucks, and motorcycles (46 MT)
- An average passenger vehicle emits 4.7 tonnes of CO2 (equivalent to 156 MWh of EE at an emission factor of 30 g/kWh)

CCAP actions related to Electric Vehicles

- Free overnight electric vehicle charging - *T2.2*
- Ensure charging infrastructure is widely available – *T2.5*
- Require electric vehicle charging in surface lots – *LUP1.1.1*
- Electric-vehicle-ready homes (New homes) – *T2.5.2*

T = Transportation, LUP = Land-Use Planning

Illustrative Smart vs. Dumb Charging



Considerations

- **EV adoption does not deliver electricity savings**, however, time-distribution of charging may induce lower system peaks
- **"Smart" charging:** On-peak charging may increase utilization of gas peakers and GHG emissions, while off-peak charging is unlikely to increase GHG emissions
- **System peaks are unlikely to change** with near-term EV adoption, however EVs can be > 3 to 5 times the peak load of an average detached home (5-10 kW vs. 2 kW)

Areas of Alignment

- CCAP requirements for ***EV-ready homes*** **may facilitate adoption of "smart" charging**
- **Incentivizing "smart" charging** at home and public infrastructure through incentives (in addition to TOU/CPP or free charging) may deliver GT&D and GHG savings
- **Tracking GHG emission savings** from EV adoption will require a standard calculation and establishing a baseline level of emissions (which may vary)

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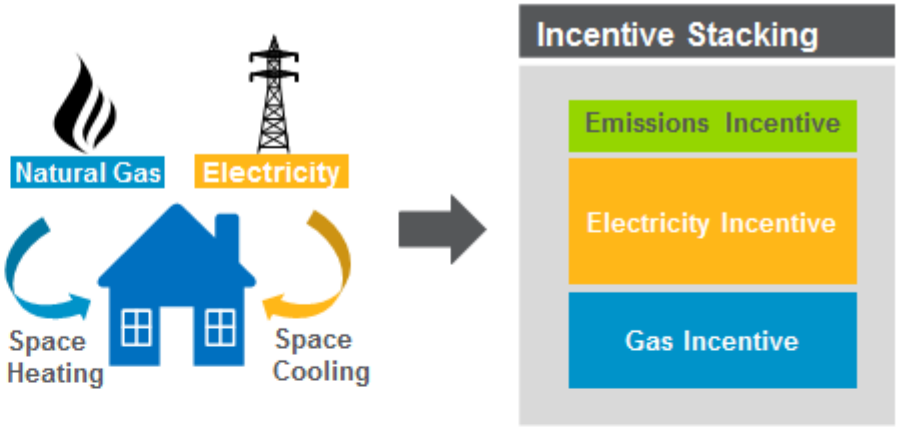
CLIMATE CHANGE TOPIC
INCENTIVE STACKING

- **Dual-impact measures** – such as home energy report (HER) or smart thermostats – deliver both electricity and natural gas savings
- This dual impact nature means that these measures are eligible for incentives for both electricity and gas savings
- **Incentives for GHG emissions reductions** may also be applicable so that measures may benefit from "incentive stacking" (i.e., electricity + gas + GHG)



Considerations

- **Dual impact energy efficiency measures** reduce GHG emissions through electricity savings and natural gas savings
- Incentive stacking may require a customer or an LDC (on behalf of customers) to apply for incentives to **three separate agencies** – the IESO (for electricity), the OEB (for gas), and a third agency for GHG emissions

Areas of Alignment

- A **common approach** for quantifying and monetizing GHG reductions from electricity and gas savings may facilitate tracking and reporting of GHG emissions
- A **single and common process for EE incentives** may simplify the evaluation of measures and facilitate adoption

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CLIMATE CHANGE TOPIC
NEXT STEPS & KEY QUESTIONS

Based on the preliminary assessment of the current state of climate change, the following areas will be considered in the market research phase:

- Understand barriers to collaboration and communication (expanding on the efforts associated with the collaboration current state summary)
- Better understand the opportunities between CCAP and Conservation First Framework and Industrial Accelerator Program and what the roles of the various entities could be
- Discuss potential coordination with other entities to identify how the areas of alignment could be realized (e.g., OEB, gas utilities, government)
- Considerations of the feasibility and impact of modifying the structures within the Conservation First Framework and Industrial Accelerator Program
- Additional consideration of metrics to support integration/accounting of CCAP
- Through market research gage customer interest in areas of alignment and other potential opportunities (e.g., Fuel Switching, CHP / DER, Electrification, and Incentive Stacking)
- Investigate how to feasibly align Conservation First Framework with climate policy for 2018-2020 and build the ability to stay nimble to prepare for 2020+

Key Questions:

- Should aspects of the CFF and IAP be adjusted in light of Ontario's climate change policy objectives? If so, how?
- What are the implications for customers with the introduction of Ontario's climate change action plan?

Section 4:
Key Questions and Next Steps for Engagement Participants

Key Questions for Engagement Participants

IESO invites your written input on the key questions outlined on subsequent slides and any other aspect, specifically related to:

1. Have the expected outcomes of delivery efficiencies and customer convenience been achieved through collaborative efforts undertaken to date? (Collaboration between LDCs and between LDCs and gas utilities)

2. Are the views of interested stakeholders adequately being reflected in the Conservation First Framework (CFF) and Industrial Accelerator Program (IAP) decision-making?

3. How can the opportunities for further integration of CDM solutions in the regional planning process be encouraged from various stakeholders?

4. Should aspects of the CFF and IAP be adjusted in light of Ontario's climate change policy objectives? If so, how?

5. What are the implications for customers with the introduction of Ontario's climate change action plan?

Next Steps

- Please send written comments to engagement@ieso.ca by September 21, 2017
  - IESO will post responses to comments in November 2017
- Next Mid-term Review webinar to be held in fall of 2017 on final topics: Budgets, targets, cost effectiveness and non-energy impacts
  - A summary of market research findings will also be provided
- Access full versions of study plan and all current state summaries completed to-date on the Mid-term Advisory Group website and remain engaged via:

http://www.ieso.ca/sector-participants/engagement-initiatives/engagements/conservation-framework-mid-term-review

APPENDIX A: TOPIC BACKGROUND

NAVIGANT

COLLABORATION TOPIC
REVIEW FOCUSED ON IESO-REPORTED COLLABORATION

- This summary assessed the extent to which collaboration reported to IESO is taking place as part of the Conservation First Framework or Industrial Accelerator Program and whether that collaboration is achieving the outcomes of **1) customer convenience** and **2) cost efficiencies** per the Conservation First Framework Direction
- For the purposes of the current state summary, collaboration is defined as IESO reported sources of collaboration as specified in the table below and described on subsequent slides
- Market research will aim to obtain information about LDC collaboration that is not IESO reported

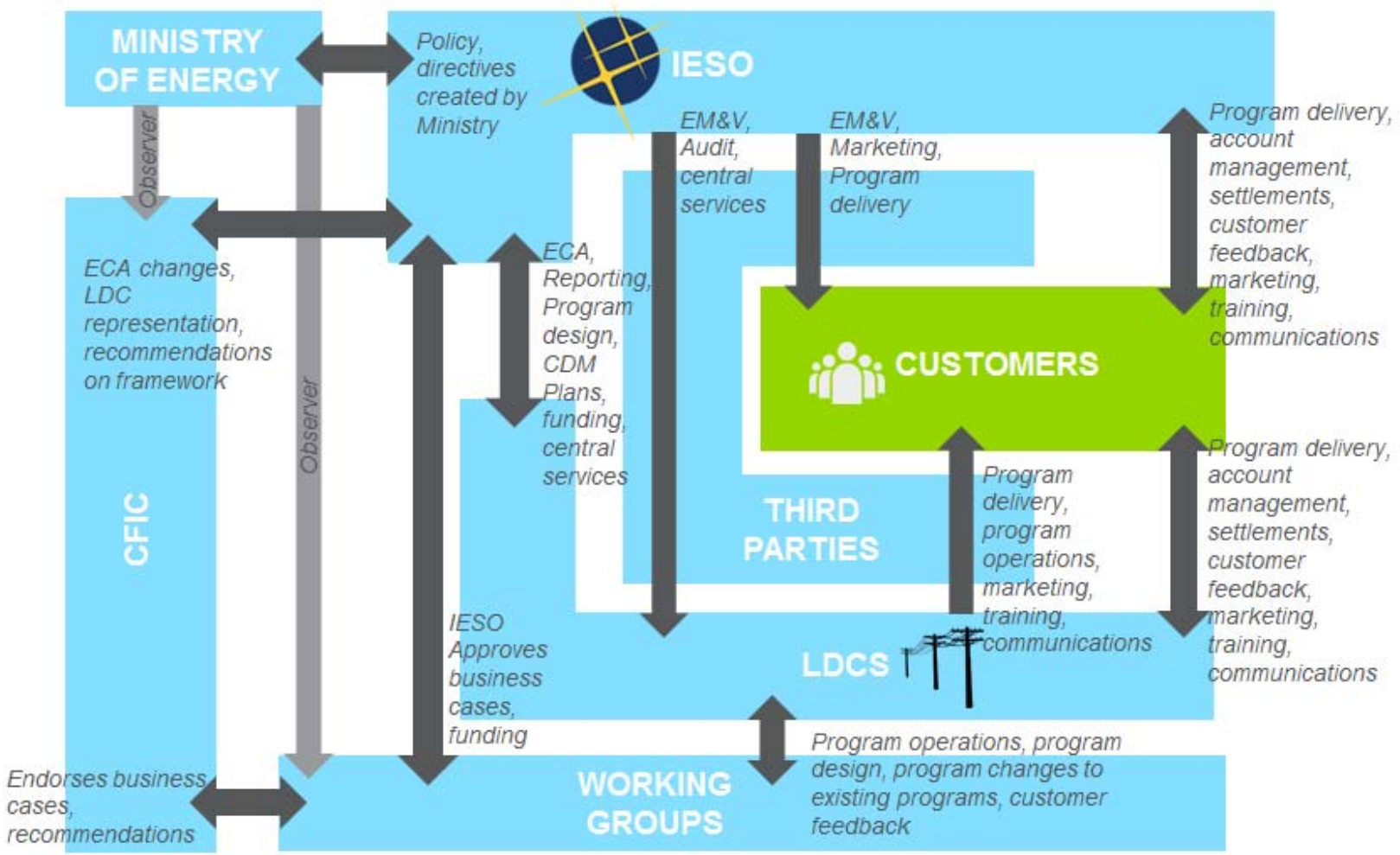
Status in this Report	Collaboration	Collaboration Activity
Included	• Joint CDM Plan • Mid-Term Review Advisory Group participation • Stakeholder Advisory Committee participation • LDC Working Group participation	• Collaboration Fund • Local/regional program involving more than one LDC
Not Included *	• Informal information sharing and meetings • Formal collaboration groups not reported by IESO	• Informal collaboration on projects or events • Information collaborative outreach to customers

** To be investigated through market research*

NAVIGANT

GOVERNANCE AND OPERATIONS TOPIC

PROCESSES SUPPORTING THE CONSERVATION FRAMEWORK INVOLVE MULTIPLE STAKEHOLDERS WITH VARIED RESPONSIBILITIES



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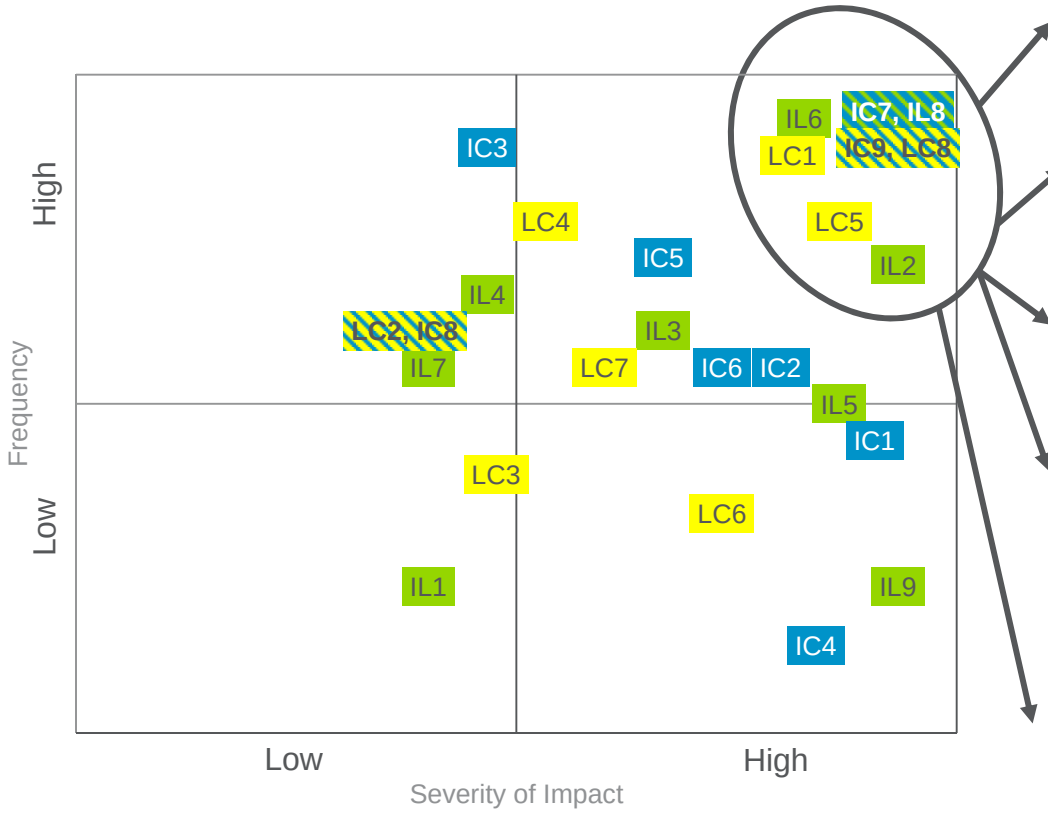
GOVERNANCE AND OPERATIONS TOPIC
PROCESSES WERE RANKED BASED ON ESTIMATED IMPACT OF PROCESS FAILURE AND FREQUENCY OF THE PROCESS

- Processes with the highest impact of process failure and severity of impact were selected as shown below



CFF IESO-LDC	
CDM Plans	IL1
Existing Program Changes	IL2
Pilot and Program Review	IL3
Reporting	IL4
Settlements	IL5
Program Operations	IL6
Training, Events	IL7
Audit and Compliance	IL9
CFF LDC-CUSTOMER	
Settlements	LC1
Measurement & Verification	LC2, IC8
Events	LC3
Marketing/Sales	LC4
Programs Operations	LC5
Multi-Distributor Customer	LC6
Channel Relationships	LC7
Application process	LC8, IC9
CFF IESO-CUSTOMER	
Account Management	IC1
Evaluation, Measurement & Verification	IC2
Settlement	IC3
Application Process (e.g. iCON)	IC7, IL8
IAP IESO-CUSTOMER	
Account Management	IC4
Settlement	IC5
Evaluation, Measurement & Verification	IC6

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PLANNING INTEGRATION TOPIC
CUSTOMERS ARE ENGAGED IN THE REGIONAL PLANNING PROCESS

- The IESO engages relevant stakeholders at various stages in the regional planning process
- Significant standards of transparency have been built into the planning process

Needs Assessment (led by Transmitter)	Scoping Assessment (led by IESO)	IRRP (led by IESO)
Dedicated web pages (by Transmitter & IESO)	Calls to municipal planners, first nation communities and direct-connect customers as needed prior to posting of draft (some meetings are confidential in nature)	Meetings with municipalities, First Nation and Métis communities and Large Direct Connect /Transmission Connected Industrials
E-blasts (by IESO)	Posting of draft report for feedback and E-blasts	Establish Local Advisory Committee (LAC) and dedicated First Nation LAC, if required
	Two-week comment period: meetings as required	LAC meetings during development of IRRP. All meetings are public and information is posted
	Posting of final scoping document and E-blasts	Continued engagement to seek feedback from municipalities and communities and Large Direct Connect /Transmission Connected Industrials
		Broader community engagement/dialogue based on LAC feedback

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Source: IESO

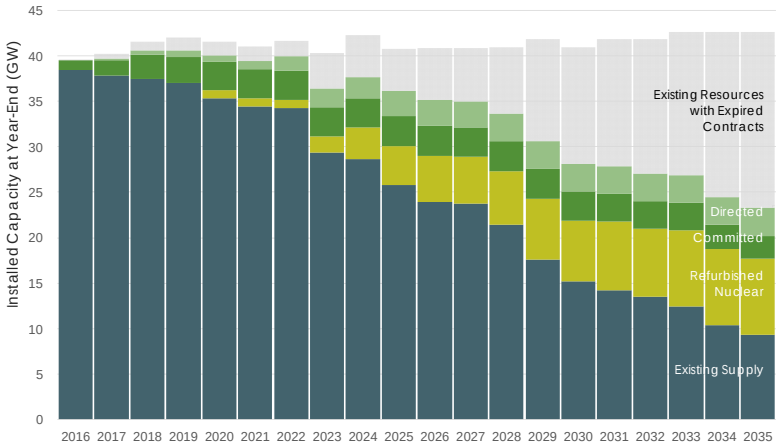
CLIMATE CHANGE TOPIC
CHALLENGES ASSOCIATED WITH QUANTIFYING AND MONETIZING GHG (1)

Accurately quantifying and monetizing GHG emissions can be a challenge due to:

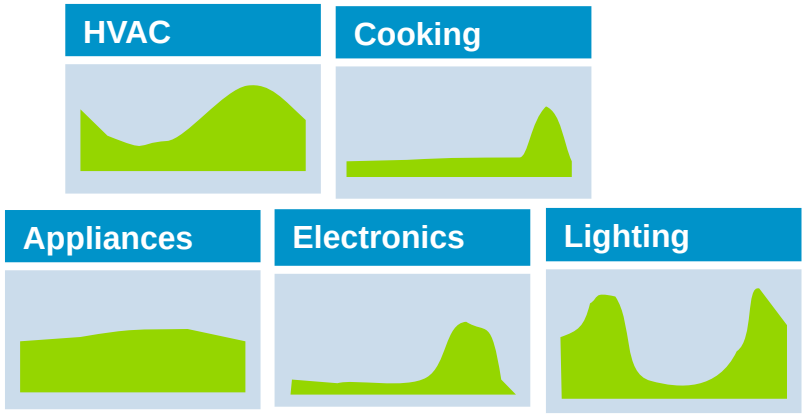
- The electricity supply mix changes with time;
- Current supply mix forecasts can only be so accurate;
- All gas peakers have different GHG/carbon intensities (e.g., SCGT vs. CCGT);
- All EE measures (and DR resources) follow different load-shapes; and
- Different load-shapes may or may not be coincident with GHG emitting resources

In 2016, IESO will be reporting avoided emissions using a method that considers the avoided emissions associated with the marginal resource and takes into account load shapes by end-use/equipment; IESO is currently undertaking this activity, avoided GHG emissions will be reported as part of the 2016 EM&V results

Ontario's Changing Supply Mix over Time



Illustrative Load Shapes by End-Use/Equipment



NAVIGANT

Source: Ontario Planning Outlook (2016). Module 4: Supply Outlook. Slide 5

CLIMATE CHANGE TOPIC
CHALLENGES ASSOCIATED WITH QUANTIFYING AND MONETIZING GHG (2)

Another consideration is that Ontario's emissions intensity is forecast to remain relatively low through 2036*

- Ontario's emissions intensity decreased drastically following the shut-down of coal plants (250 g/kWh to below 50 g/kWh)
- Emissions intensity decreased further from 2014/15 to 2016 due to decreased demand and decreased use of gas resources
- Emissions are expected to hit the lowest point in 2019 – prior to the beginning of refurbishment activities at Bruce

In the near term, the impact of energy efficiency on GHG emissions reductions will be limited because of low emissions intensity

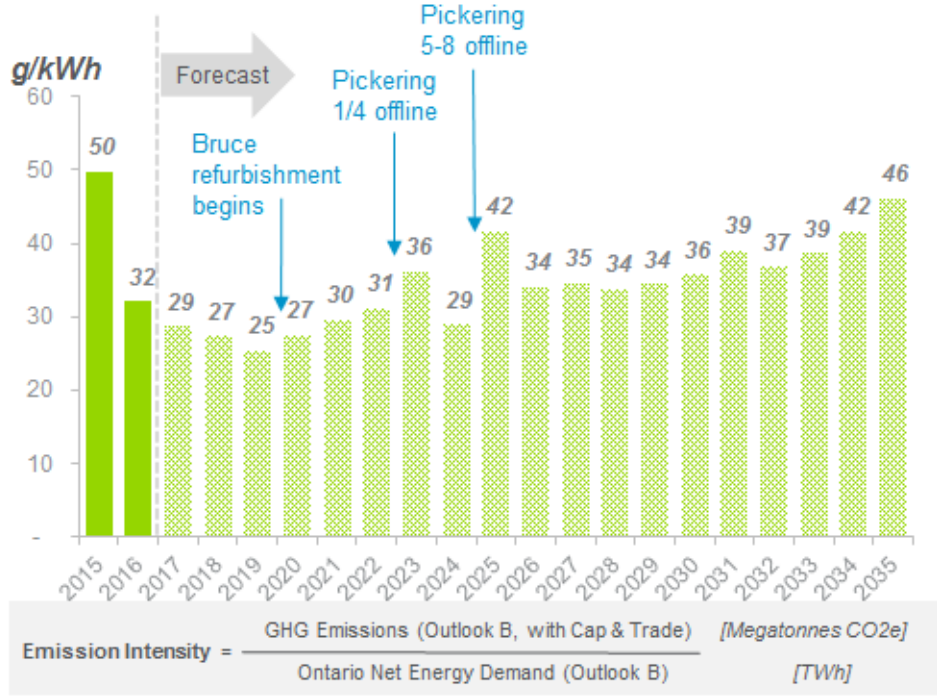
- In comparison, higher-emitting jurisdictions such as MISO and PJM can claim much higher GHG savings from energy efficiency

Emission Factors in Neighboring Jurisdictions

g/kWh	Off-Peak	On-Peak
ISO-NE	344	480
NYISO	352	510
PJM	812	605
MISO	965	789
Manitoba	0	0

Source: Ministry of Energy (2016). Proposed Default Emissions Factors for Ontario's Cap & Trade Program

Forecast of Ontario Emissions Intensity (g/kWh)



$$\text{Emission Intensity} = \frac{\text{GHG Emissions (Outlook B, with Cap \& Trade)}\ [\text{Megatonnes } CO_2e]}{\text{Ontario Net Energy Demand (Outlook B)}\ [\text{TWh}]}$$

*According to the Ontario Planning Outlook Scenario B. Values to be updated upon release of the 2017 Long Term Energy Plan.

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Source: Navigant analysis of OPO Module 6 (Emissions) and Module 4 (Supply)

APPENDIX B:
POLICY CONTEXT

NAVIGANT

COLLABORATION

Policy Context – 2013 Long-Term Energy Plan (LTEP) & Conservation First Framework/Industrial Accelerator Program Ministerial Directions

LTEP refers to a coordinated approach: "The government is committed to promoting a coordinated approach for all customers, including both electricity and natural gas utilities."

Ministerial Directions to the IESO further define the policy around collaboration – March 2014 Conservation First Framework Direction relating to LDC Collaboration:

- "The OPA shall encourage Distributors to aggregate Distributor CDM Targets with neighboring Distributors to develop 21 regional CDM targets for the period January 1, 2015 to December 21, 2020. The OPA shall encourage Distributors to work cooperatively to develop regional CDM Plans to meet the regional CDM targets."
- "The OPA shall encourage Distributors to maximize administrative and delivery efficiencies by utilizing appropriate program delivery models. Specifically, the OPA and/or Distributors shall provide enhanced coordination efforts with regard to:

  a) Opportunities to target consumers with multiple locations across several licensed service areas (e.g., national accounts) and CDM measures delivered or promoted through provincial or national channels (e.g. retailer in-store rebates or coupons); and

  b) CDM activities, including, nut not limited to, the marketing, procurement and delivery of CDM measures and/or services where these will afford significant administrative cost and/or delivery efficiencies (e.g., call centre, rebate fulfillment and appliance de-commissioning)."

March 2014 Conservation First Framework Direction relating to collaboration with gas distributors:

- "The OPA shall require Distributors, where appropriate, to coordinate and integrate Province-Wide Distributor CDM Programs and Local Distributor CDM Programs with natural gas distributor ("Gas Distributors") conservation programs to achieve efficiencies and convenient integrated programs for electricity and natural gas customers."
- "The OPA shall require Distributors, where appropriate, to coordinate and integrate low-income Province-Wide Distributor CDM Programs and Local Distributor CDM Programs with Gas Distribution low-income conservation programs."

COLLABORATION (CONT.)

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions

July 2014 Industrial Accelerator Program Direction:

- "The OPA shall, where appropriate, coordinate and integrate the Industrial Accelerator Program with natural gas distributor conservation programs to achieve efficiencies and convenient integrated programs."

June 2016 Direction to the IESO detailed the Whole Home Pilot and Pay-for-Performance Program requirements – the Whole Home Direction sets out to encourage a coordinated approach to delivering CDM for electricity and gas to homeowners:

- "The IESO shall, in consultation with Distributors, centrally design, fund and deliver two CDM programs ("Centrally-Delivered Programs"): […] b. A province-wide whole home CDM pilot program for residential consumers ("Whole Home Pilot Program").
- "The IESO shall, where appropriate, deliver Centrally- Delivered Programs in coordination with natural gas distributors. The IESO may manage its relationship with the natural gas distributors on a non-competitive basis."
- "Implementation of the Multi-Distributor Program and Whole Home Pilot Program shall commence by the end of the Fall of 2016."

GOVERNANCE AND OPERATIONS

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions

LTEP refers to the role of LDCs in the 2015-2020 Framework:

- "In collaboration with its agencies and partners, the ministry will work on new conservation initiatives, significantly increase Demand Response capability, and give LDCs a greater role and more flexibility to address local conditions."
- "Subject to further discussion with our partners, the government intends to build the new Framework on the following principles: There will be long-term, stable funding for conservation so that customers and LDCs have the certainty they need to implement and deliver programs. […] LDCs will have accountability for meeting their assigned conservation goals, and will be provided the authority and means for meeting them cost-effectively."

The March 2014 Direction to OPA for Conservation First Framework and Industrial Accelerator Program delve into more detail around governance *(paraphrased below due to volume of clauses devoted to this topic):*

- Summary of Conservation First Framework Governance:
  - New streamlined contract between OPA and LDCs (now ECA), support to LDCs in submitting CDM plans, LDCS will have flexibility to design, deliver and administer province-wide and local programs
- Summary of operational direction for Conservation First Framework:
  - Streamlined review and approval process for CDM plans and programs with established guidelines – to be reviewed within a 60 day review service standard
  - Approval criteria: approve unique programs that avoid marketplace confusion and duplication, programs that incent measures with longer lifespans and savings persistence and deliver system value at peak times, programs that are cost-effective (TRC and PAC)
  - LDCs can make changes to CDM plans on an annual basis or more frequently

GOVERNANCE AND OPERATIONS (CONT.)

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions

December 2016 Direction to IESO re: Delivery of Province-wide Programs:

- "Where a Distributor with eligible program participants is not making an approved Province-Wide Distributor CDM Program(s) available to eligible program participants in its licensed service area, the IESO shall deliver the Province-Wide Distributor CDM Program(s) in that Distributor's license service area if a Distributor has not submitted a revised CDM Plan indicating an intention to do so per the timelines in Section 3.6(i)." [May 1, 2017]

July 2014 Industrial Accelerator Program Direction on Governance:

- "The administration of the Industrial Accelerator Program will be streamlined and simplified, where appropriate, to encourage greater participation in the program"

Dec 2016 Direction to Industrial Accelerator Program re: distribution-connected facilities:

- "The IESO shall allow transmission-connected customers with distribution-connected sites to elect to have their transmission-connected and distribution-connected sites administered through the Industrial Accelerator Program. Any associated electricity savings that result from distribution-connected sites participating in the Industrial Accelerator Program shall count toward Distributor CDM Targets under the Conservation First Framework Direction."

PLANNING INTEGRATION

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions

LTEP 2013 places conservation first in Regional Planning decisions:

- "Regional plans will promote the principle of Conservation First while also considering other cost-effective solutions such as new supply, transmission and distribution investments."

The March 2014 Conservation First Framework Direction mentions the following:

- "The OPA shall encourage Distributors to aggregate Distributor CDM Targets with neighboring Distributors to develop 21 regional CDM targets for the period January 1, 2015 to December 21, 2020. The OPA shall encourage Distributors to work cooperatively to develop regional CDM Plans to meet the regional CDM targets."
- "The OPA shall encourage Distributors to incent CDM measures with relatively longer lifespans and energy savings persistence and shall consider the system value of the measures, including reductions at peak times."

The July 2014 Industrial Accelerator Program Direction mentions a similar requirement:

- "The OPA shall incent measures with relatively longer lifespans and energy savings persistence and shall consider the system value of the measures, including reductions at peak times."

CLIMATE CHANGE

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions & MOECC Plans and Regulations

LTEP 2013 refers to climate change in the following statement regarding coal generation and the addition of renewables to the supply mix:

- "To date, Ontario has more than 18,500 MW of renewable energy online or announced, which includes more than 9,000 MW of hydroelectric capacity and more than 9,500 MW of solar, wind and bioenergy capacity. This is remarkable progress, and Ontario is proud of the role renewable energy is playing in the supply mix. This investment in clean, renewable energy sources is helping Ontario reduce its reliance on fossil fuels. The coal phase-out is the single largest climate change initiative in North America, reducing greenhouse gas emissions and air pollution."

- "Ontario will phase in wind, solar and bioenergy over a longer period than contemplated in the 2010 LTEP, with 10,700 MW online by 2021."

Directions regarding the Conservation First Framework and the Industrial Accelerator Program for the period of 2015-2020 reference the need to incent measures that deliver system value and promote conservation at peak times – the greatest opportunity for GHG reductions in ON is during peak times when natural gas generators are producing electricity.

The Ministry of the Environment and Climate Change's Climate Change Action Plan, Ontario's Cap and Trade program and the introduction of the Regulation under Development for the Ontario Climate Change Solutions Deployment Corporation should also be considered when assessing the policy considerations for Climate Change as it relates to CDM in ON

See next slide for further detail.

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CLIMATE CHANGE (CONT)

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions & MOECC Plans and Regulations

MOECC's Climate Change Action Plan:

- Total estimated Greenhouse Gas Reduction by 2020: 9,832,000 Tonnes
- New government greenhouse gas pollution target will be 37% below 2006 levels by 2030

Summary of actions related to current CDM policy and framework in ON:

- Establishing a green bank that would help homeowners and businesses access and finance energy-efficient technologies to reduce greenhouse gas pollution from buildings.
- Creating a cleaner transportation system by addressing greenhouse gas pollution from cars on the road today, by increasing the availability of zero-emission vehicles on the road tomorrow, by deploying cleaner trucks, and making transit more available.
- Halting the ongoing rise in building-related emissions by giving Ontarians more choices, incentives and tools to make the right energy choice for their homes and businesses, by providing better information about energy use by buildings and homes, and by making new buildings increasingly energy efficient over time.
- Making Ontario one of the easiest and most affordable jurisdictions in North America for homeowners and businesses to install or retrofit clean-energy systems like solar, battery storage, advanced insulation and heat pumps, while helping to protect and support low-income households, vulnerable communities and many renters from the cost impacts of carbon pricing.
- Supporting a carbon market that drives the lowest cost greenhouse gas emission reductions. Actions in this plan, supported by cap and trade proceeds, will help business and industry make investments that reduce greenhouse gas pollution. This will help save energy costs, improve productivity and global competitiveness, and protect and create jobs.
- Working in partnership with First Nations and Métis communities to address climate change, with actions guided by Traditional Ecological Knowledge, and helping to build capacity in these communities to participate in the economic opportunities that may arise from the actions.
- Building on progress, leading by example and acting on opportunities to make government operations carbon neutral. Ontario will achieve this by reducing greenhouse gas pollution across our facilities, operations and procurement.

CLIMATE CHANGE (CONT)

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions & MOECC Plans and Regulations

Ontario's Cap and Trade program began on January 1st, 2017:

- The cap limits how many tonnes of greenhouse gas pollution businesses and institutions can emit. The cap drops each year to encourage lower emissions. Companies can trade (buy or sell) allowances. For example, if a company emits more greenhouse gas emissions than permitted by the cap, it could buy credits in order to comply. Credits would be available for purchase from a company that reduced its greenhouse gas emissions and have surplus credits.
- Cap and trade is projected to generate about $1.9 billion per year in proceeds. By law, every dollar collected through cap and trade must be invested – in a transparent way – back into projects that reduce greenhouse gas pollution, such as: public transit, electric vehicle incentives, social housing retrofits.
- Ontario has already committed $325 million to the Green Investment Fund for projects that will fight climate change, grow the economy and create jobs. These investments are part of our plan to secure a healthy, clean and prosperous low-carbon future.
- Mandatory participants: an electricity importer, a facility or natural gas distributor that emits 25,000 tonnes or more of greenhouse gas emissions per year, a fuel supplier that sells more than 200 litres of fuel per year
- Voluntary participants: Participation in the cap and trade program isn't mandatory for facilities that generates more than 10,000 but less than 25,000 tonnes of greenhouse gas emissions per year.
- Market participants: Companies without emissions to report are still eligible to participate in the auction as a market participant. Market participants can include individuals, not-for-profit organizations and companies without compliance obligations.

Description of Ontario Climate Change Solutions Deployment Corporation: "The corporation's activities would focus on reducing market barriers to deployment of low-carbon technologies, including through improved access to information, incentives, and strategic use of financial de-risking tools to encourage greater private sector investment, emphasizing fuel-switching, energy storage and deep energy"

APPENDIX C: GLOSSARY

NAVIGANT

APPENDIX B

GLOSSARY

Term	Description
APS	An Achievable Potential Study (APS) assesses the amount of energy efficiency, demand response, or other end use resources that can be obtained within a particular geographic region.
B/C Ratio, BCR	A benefit/cost ratio is the ratio of the benefits of a project or proposal, expressed in monetary terms, relative to its costs, also expressed in monetary terms.
BMG	Behind-the-meter generation; comes from a renewable energy system uniquely designed and built for a single building or facility to reduce the carbon footprint of the building by generating electricity from renewable sources
Bulk System Planning	Assesses electricity demand at the provincial level and assesses solutions to address system needs through, for example, generation and transmission assets.
C&T	Cap and trade; a market-based system that sets a hard cap on greenhouse gas emissions while giving flexibility to businesses and industry in terms of how they meet their caps
Carbon intensity	The amount of carbon dioxide emitted per unit of energy consumed
CCAP	The Climate Change Action Plan; Ontario's five-year plan to fight climate change, reduce greenhouse gas pollution and transition to a low-carbon economy
CCGT	Combined-cycle gas turbine; a combined-cycle power plant uses both a gas and a steam turbine together to produce up to 50 percent more electricity from the same fuel than a traditional simple-cycle gas turbine
CDM Plans	A six-year conservation plan that each LDC must complete demonstrating a plan to meet an allocated conservation target given an allocated budget in a cost-effective manner.
CFIC	Conservation First Implementation Committee. To support LDCs in the design and delivery of conservation programs, the IESO established the CFIC consisting of members from the LDCs, government, and other utilities to guide the success of the framework.
CHP	Combined heat and power (also known as cogeneration); small to mid-sized natural gas generators that produce both steam (heat) and electricity
CO2e / CO2 eq.	Carbon dioxide equivalent; a unit for measuring the carbon footprint of different greenhouse gases based on the global warming potential of each gas
Collaboration Fund	A fund that is designed to support collaboration activities for conservation. It is overseen by the IESO.
CEP	Community Energy Planning. Sometimes referred to as municipal energy planning, CEPs are long term plans carried out to reduce community energy consumption and greenhouse gas emissions.

APPENDIX B

GLOSSARY

Term	Description
Conservation Frameworks	High-level policy and associated directives for conservation activities in the province. There is a unique framework for both electricity conservation and natural gas conservation.
Delivery Cost	This is the cost to deliver conservation programs. Includes both incentive and non-incentive costs.
Demand Response	Changes in consumption by electricity users at different times of the day and different seasons to reduce peak demand. Currently procured in Ontario through an auction.
Demand/ Load Profile	A graph of the variation in the electrical load versus time
DER	Distributed Energy Resources (DERs) are distribution-connected resources that can be aggregated to meet demand. Could include distributed generation, storage and enabling technologies.
DG	Distributed generation includes small-scale generating assets on the distribution system that typically provide energy for on-site use. The definition of “small-scale” varies by jurisdiction.
Distribution Planning	LDC-led planning that focuses on meeting demand needs within an LDC's service territory.
Dx	Distribution System.
ECA	Energy Conservation Agreement: Sets out the contractual relationship between the IESO and LDCs under the Conservation First Framework.
Effective Useful Life (EUL)	An estimate of the number of years an energy efficiency asset is projected to remain in service.
Electrification	The process of powering by electricity and, in many contexts, the introduction of such power by changing over from an earlier power source
EM&V	Evaluation, measurement and verification; the collection of methods and processes used to assess the performance of energy efficiency activities so that planned results can be achieved with greater certainty and future activities can be more effective
Emission Factors	Measure of the average amount of a specific pollutant or material discharged into the atmosphere by a specific process, fuel, equipment, or source
EVs	Electric vehicles; vehicles propelled by an electric motor

APPENDIX B

GLOSSARY

Term	Description
FIT / microFIT	Feed-in-tariffs / micro feed-in-tariffs; payments to ordinary energy users for the renewable electricity they generate. In Ontario, the distinction is made between large and small renewable energy projects: those equal to or less than 10kW are subject to the micro feed-in-tariff rates
FS	Fuel switching; replaces inefficient fuels with cleaner and more economical alternatives
g/kWh	Grams per kWh, a unit measuring emissions per unit of electricity
Gas Distributors	Organizations that distribute natural gas to customers in Ontario. Consist of Enbridge Gas Distribution and Union Gas.
Gas peakers	Used when there is a high peak in electricity demand
GHG	Greenhouse gas; an atmospheric gas responsible for the greenhouse effect
GJ	Gigajoule; a unit of energy
HVAC	Heating, ventilation and air conditioning.
Incentive Costs	Costs incurred by a CDM program that are provided to the customer to encourage energy savings behaviours or offset the cost of energy efficient technologies.
Incremental Conservation	Conservation activities that are carried out in addition to the provincial conservation under CFF and IAP. These are typically considered for planning purposes in the IRRP.
Integrated Regional Resource Plan (IRRP)	The IRRP is part of regional planning and considers incremental conservation (and other resources) to meet demand needs in a particular region.
ISO-NE	The Independent System Operator of New England, Inc.; an independent, non-profit Regional Transmission Organization, serving Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
KWh, MWh, GWh, TWh	kilowatt-hour, megawatt-hour, gigawatt-hour & terawatt-hour. Units of energy of differing orders of magnitude.
LAC	Local Advisory Committees (LACs) are engaged, and provide feedback through the regional planning process.

APPENDIX B

GLOSSARY

Term	Description
LDC(s)	Local Distribution Company. Provides electricity and conservation programs to distribution-connected customers.
Load shape	Refers to the distribution of energy requirements over time
LTEP	Long term Energy Plan. A strategic plan developed by the Ministry of Energy to guide Ontario's electricity system. The previous LTEP was released in 2013, and an update is anticipated in 2017.
Measures	Technologies used in energy efficiency programs.
MISO	Midcontinent Independent System Operator; provides open-access transmission service and monitors the high-voltage transmission system in the Midwest United States and Manitoba, Canada and a southern United States region which includes much of Arkansas, Mississippi, and Louisiana
MOE	The Ontario Ministry of Energy; tasked with developing the electricity generation, transmission and other energy-related facilities that power Ontario's economy
MOECC	The Ontario Ministry of Environment and Climate Change; tasked with protecting Ontario's land, air, and water and coordinating climate policy
MT	Metric tonne; a unit of weight
MW	Megawatt. A unit to measure electricity demand or supply.
Net metering	A system in which renewable energy generators are connected to a public-utility power grid and surplus power is transferred onto the grid, allowing customers to offset the cost of power drawn from the utility
NWA	Non-wires alternatives (NWAs) are solutions to electricity planning that does not involve conventional infrastructure upgrades. NWAs include conservation, distributed generation and other methods to provide capacity relief.
NYISO	The New York Independent System Operator; monitors the reliability of the state's power system and coordinates the daily operations to distribute electricity supply
OEB	The Ontario Energy Board; Ontario's independent energy regulator, tasked with overseeing how energy companies operate to ensure the public interest is served
OPA	Ontario Power Authority. Previous entity responsible conservation and demand management. Now merged with the IESO (as of January 1, 2015)

GLOSSARY

Term	Description
Peak Demand	The highest point of electricity demand during a period, measured in MWs. Typically, electricity planning is focused on meeting peak demand.
PJM	PJM Interconnection, Inc. is a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia
Program	A Conservation & Demand Management offering focusing on a particular opportunity or customer end-use (i.e. Retrofit, Heating & Cooling) from the 2015-2020 Conservation First Framework.
QA/QC	Quality assurance / quality control; the combination of quality assurance, the process or set of processes used to measure and assure the quality of a product, and quality control, the process of ensuring products and services meet consumer expectations
R&D	Research and development; work directed toward the innovation, introduction, and improvement of products and processes
Regional Infrastructure Plan (RIP)	The RIP is part of regional planning and identifies wires-only solutions to meet regional needs.
Regional Planning	Carried out by the transmission utility, the IESO, LDCs and LACs. Regional planning investigates wires-and non-wires alternatives to meet demand. Overlaps with bulk and distribution system planning.
Regional Program	Programs serving regional needs in multiple LDC territories.
Retrofit program	Incentive program to reduce project and operational costs for business to upgrade to more efficient systems (lighting, HVAC, chiller, building envelope etc.).
Save on Energy	Save on Energy: The brand that represents energy conservation programs for homes and businesses. Programs are delivered through LDCs or directly through IESO and funded by the IESO.
SCGT	Simple cycle gas turbine; a type of gas turbine most frequently used in the power generation, aviation (jet engine), and oil and gas industry (electricity generation and mechanical drives)
Supply Mix	Refers to the mix of energy sources of given electricity supply
Tx	Transmission System.
Working Groups (WG)	Groups with representatives from LDCs, Gas utilities and government organizations, intended to represent all electric and gas utilities in the province. WGs are funded by the Collaboration Fund, and facilitate collaboration initiatives and strategies for conservation programs.

