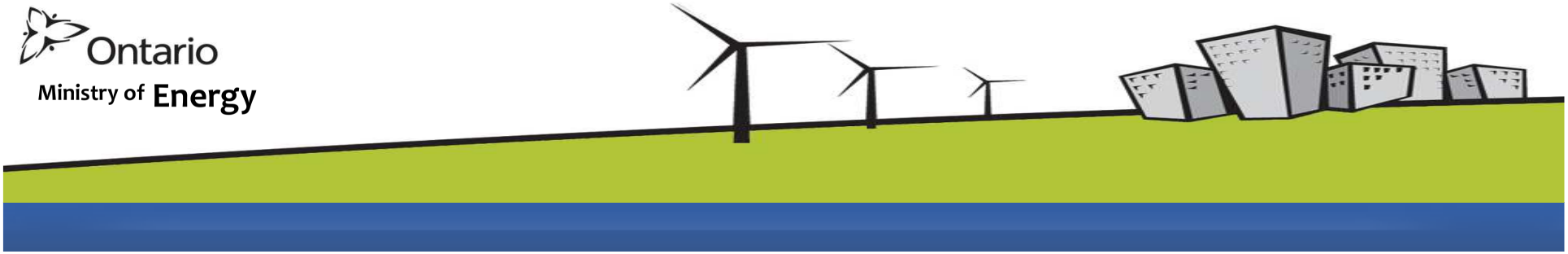
Ontario
Ministry of Energy

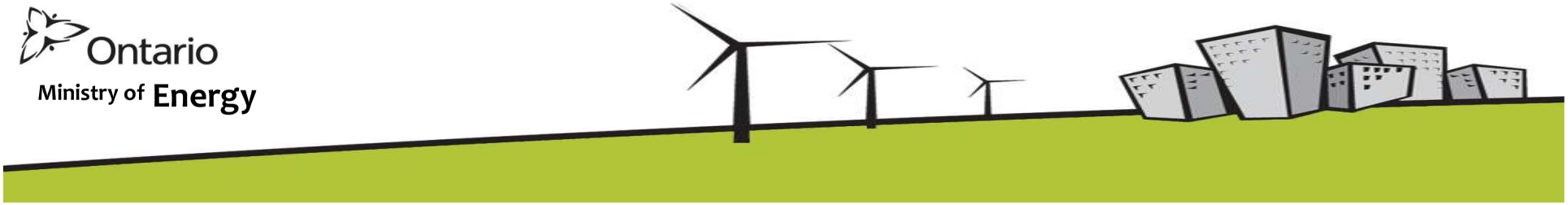


The Duty to Consult and the Integrated Power System Plan

Ministry of Energy

June 3, 2011

Ontario
Ministry of Energy



Background

- On February 17, 2011 the Minister of Energy issued a Supply Mix Directive to the Ontario Power Authority (OPA) to prepare the Integrated Power System Plan (Plan) to meet government goals and objectives.
- The directive acknowledges the important role that Aboriginal communities play in the development of Ontario's electricity system.
- It also states that the Government "expects the OPA to carry out the procedural aspects of any Crown duty to consult First Nation and Métis communities in developing the Plan."

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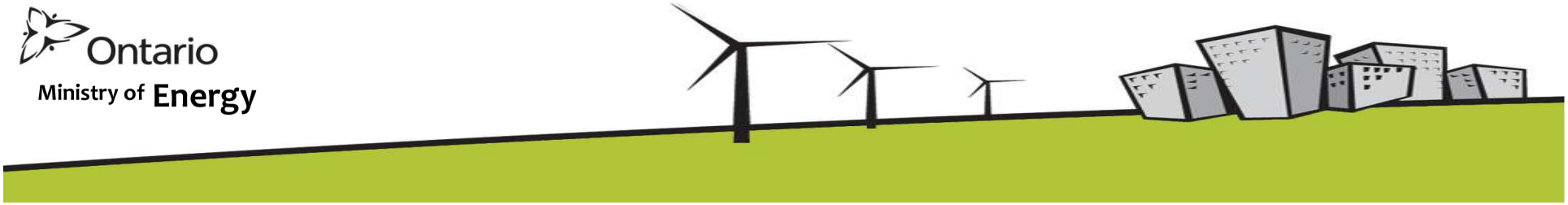

Roles of Crown and OPA

- The Crown has a duty to consult and, where appropriate, accommodate Aboriginal peoples where their rights may be adversely affected by a Crown action or decision.
- The Ministry of Energy takes the duty to consult very seriously and is committed to meeting its consultation obligations when energy initiatives have the potential to impact Aboriginal or treaty rights.
- The Ontario Power Authority has been delegated procedural aspects of any Crown duty to consult in respect of the IPSP.

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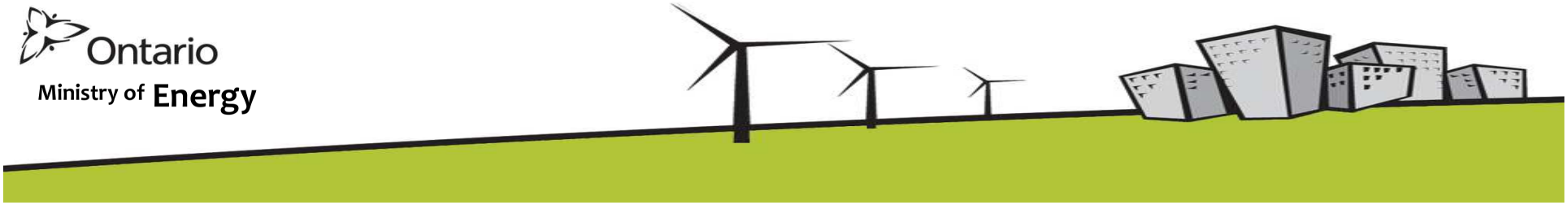
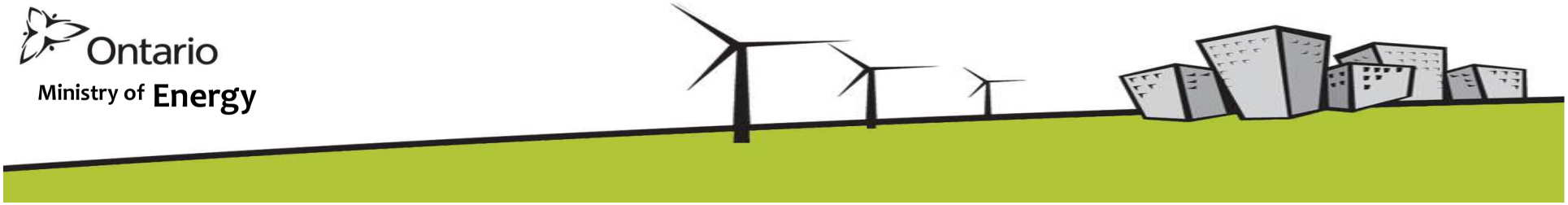


Context for Consultations

- The OPA is undertaking the work on a province-wide, strategic level Plan.
- The Plan has a 20-year horizon and requires updating every 3 years to consider new information and circumstances.
- The Plan is developed to meet the government's goals as set out in the February 17, 2011 Supply Mix directive.
- Projects identified in the Plan are required to undergo regulatory approvals prior to development occurring. This allows Aboriginal communities to identify adverse impacts of the project, prior to approvals.
- The views and interests of Aboriginal communities will help the OPA develop a Plan that will meet the government's objectives for a clean, modern and reliable electricity system for Ontario.

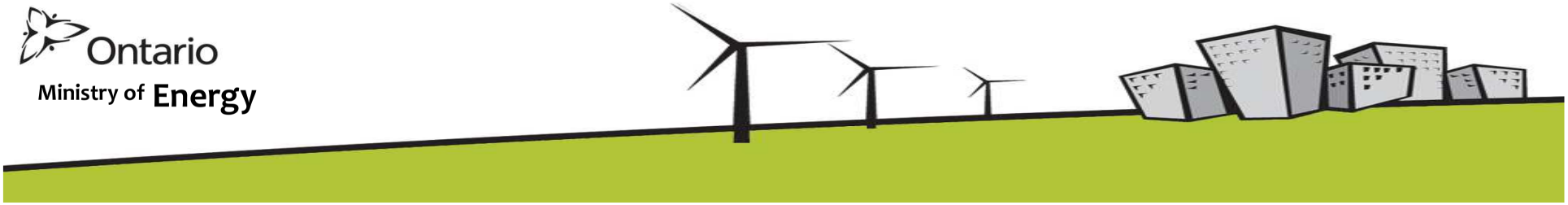
Ontario
Ministry of Energy



Consultation Process

- The OPA is undertaking a series of regional sessions with First Nation and Métis communities.
- The OPA will also offer community meetings with each First Nation.
- The OPA will write a report that will be shared with all Aboriginal participants, the Ministry of Energy, and the Ontario Energy Board for consideration.

Ontario
Ministry of Energy



Next Steps and Opportunities for Further Input

- Anticipated Timelines:
  - Summer 2011 – Consultation with Aboriginal communities (regional sessions and community meetings)
  - 2011 – IPSP submitted to the Ontario Energy Board
  - 2011/12 – OEB hearings and decision on IPSP
  - Post 2012 – Ongoing work with communities
  - 2014 – Next IPSP update

Developing IPSP II

June 3, 2011

Overview

- Outline the process of developing and reviewing the Integrated Power System Plan (IPSP)
- Define the key challenges to be addressed in the development of the IPSP

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OPA's Role in Integrated Electricity System Planning

- The Ontario Power Authority (OPA) plans for a reliable, sustainable and cost-effective electricity system
- The OPA delivers on that mandate by developing integrated plans, providing advice to government and participating in regulatory proceedings for electricity projects
- The development and maintenance of an integrated long-term plan is central to that mandate.

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The Long Term Energy Plan and the Supply Mix Directive are the Foundations of the IPSP

- Long Term Energy Plan
  - The government consulted with key agencies and stakeholders as it developed its Long Term Energy Plan
  - Issued in Fall of 2010
- Supply Mix Directive
  - Posted for public comment on Ontario's Environmental Registry
  - Issued to the OPA on February 17, 2011
  - Replaces the previous Supply Mix Directive issued June, 2006 and September, 2008
  - Establishes the mandatory requirements that the OPA must comply with in developing the IPSP

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Review of the IPSP

- Integrated Power System Plan (IPSP)
  - Incorporates the mandatory requirements of the Supply Mix Directive and identifies potential additional requirements
- Ontario Energy Board (OEB) reviews plan to ensure that it:
  - Complies with Minister's directives and government regulations (O.Reg. 424/04)
  - Is economically prudent and cost effective
- OEB can approve plan or refer it back to OPA for further consideration and resubmission to OEB
- OEB required to facilitate implementation of approved IPSP

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Ontario Regulation 424/04 (IPSP Regulation)

- In development of an IPSP, the OPA shall comply with the regulation
  - Comply with directives issued by the Minister
  - Consult with stakeholders
  - Identify and develop innovative strategies to accelerate CDM
  - Identify opportunities to use natural gas in high efficiency/value applications in electricity generation
  - Identify and develop strategies to encourage/facilitate cost-effective measures for meeting system needs; consider competitive options when identifying and developing these strategies
  - Consider safety, environmental protection and environmental sustainability
  - Provide analysis for each project recommended in the plan

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The IPSP will comply with the mandatory requirements and address several issues

- how does the IPSP meet the mandatory resource requirements in the Supply Mix Directive?
- how can challenges to meeting those requirements be addressed?
- what incremental capacity, energy and ramping requirements remain after the mandatory requirements and other committed and directed resources have been accounted for?
- how does the IPSP address whether the achievement of the Supply Mix Directive's CDM targets may be exceeded and accelerated?
- how and when will alternative/additional resources (ex. conservation, supply, imports, storage, and transmission) need to be considered?

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Areas to be Addressed (continued)

- what are the IPSP's recommendations about the scope and timing of the five priority transmission projects?
- what other cost-effective transmission and distribution solutions are addressed through the IPSP and other decision processes?
- how will current assumptions respecting drivers for demand, project timelines, technology and energy policy framework be evaluated so that they are kept current and realistic in future IPSPs?
- what is the plan for remote community connections?
- how does the IPSP give consideration to smart grid developments?

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Supply and Demand for Electricity

Chuck Farmer

Presentation Outline

- Status of electricity service
- The integrated plan development process
- Demand overview
- Supply overview

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Factors that Guide the Development of IPSP II

- Ontario's electricity system is well-positioned to meet demand forecasts in the mid-term
- Mandatory requirements in the Supply Mix Directive meet most of the needs for the mid-term
- Focus of this Plan is on implementing the directive
- Significant coordination among agencies and LDCs required to achieve short and longer-term conservation goals
- Small capacity gap exists between 2015-2022, however, it can easily be filled with available short lead-time options:
  - Non-Utility Generators: contracts could be renegotiated according to a directive received November 23, 2010 (up to 1,500 MW by 2030)
  - coal-fired units: could be converted to natural gas as a result of a decision to be made by government in 2012 (up to 3,300 MW by 2030)
  - additional and/or acceleration of CDM resources
- Uncertainty emerges late in the Plan
  - high-growth scenario creates need for flexibility, but we have time to decide course

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Electricity Service Improvements Make this Planning Cycle Different From IPSP I

- A few years ago, we faced a tough electricity supply situation, but conditions have changed since the first IPSP was filed in August 2007:
  - Demand in Ontario has declined since reaching a peak in 2005, due partly to both economic restructuring and conservation
  - A significant amount of new supply has been added:
    - renewable energy
    - natural gas
    - refurbished nuclear
    - demand response
  - Major investments in new transmission infrastructure have been made
  - Green Energy Act
  - Long-Term Energy Plan
- These developments become the starting point for the next plan

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Government's Supply Mix Directive Addresses Electricity Supply and Demand Components

- Conservation and Demand
- Phase-out of coal-fired generation
- Non-Hydroelectric renewable generation (wind, solar, bio-energy)
- Hydroelectric generation
- Natural gas-fired generation
- Nuclear generation
- Transmission
- Smart grid

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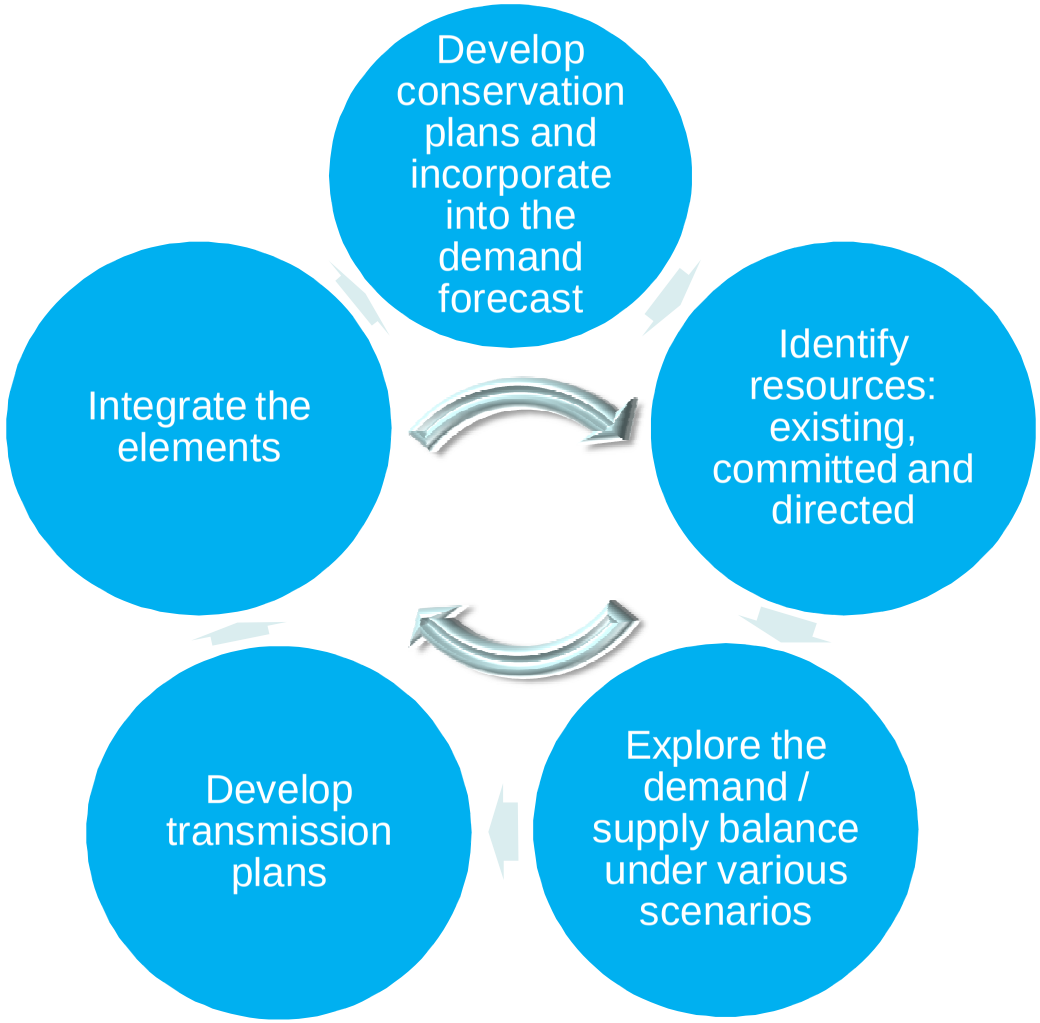
Integrated Nature of Planning



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Ongoing Planning Activities

- Project specific regulatory reviews
- Regional planning initiatives
- Demand and Supply Forecasting
- Conservation programs
- Procurement contracting

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Demand Forecasting

May 25, 2011

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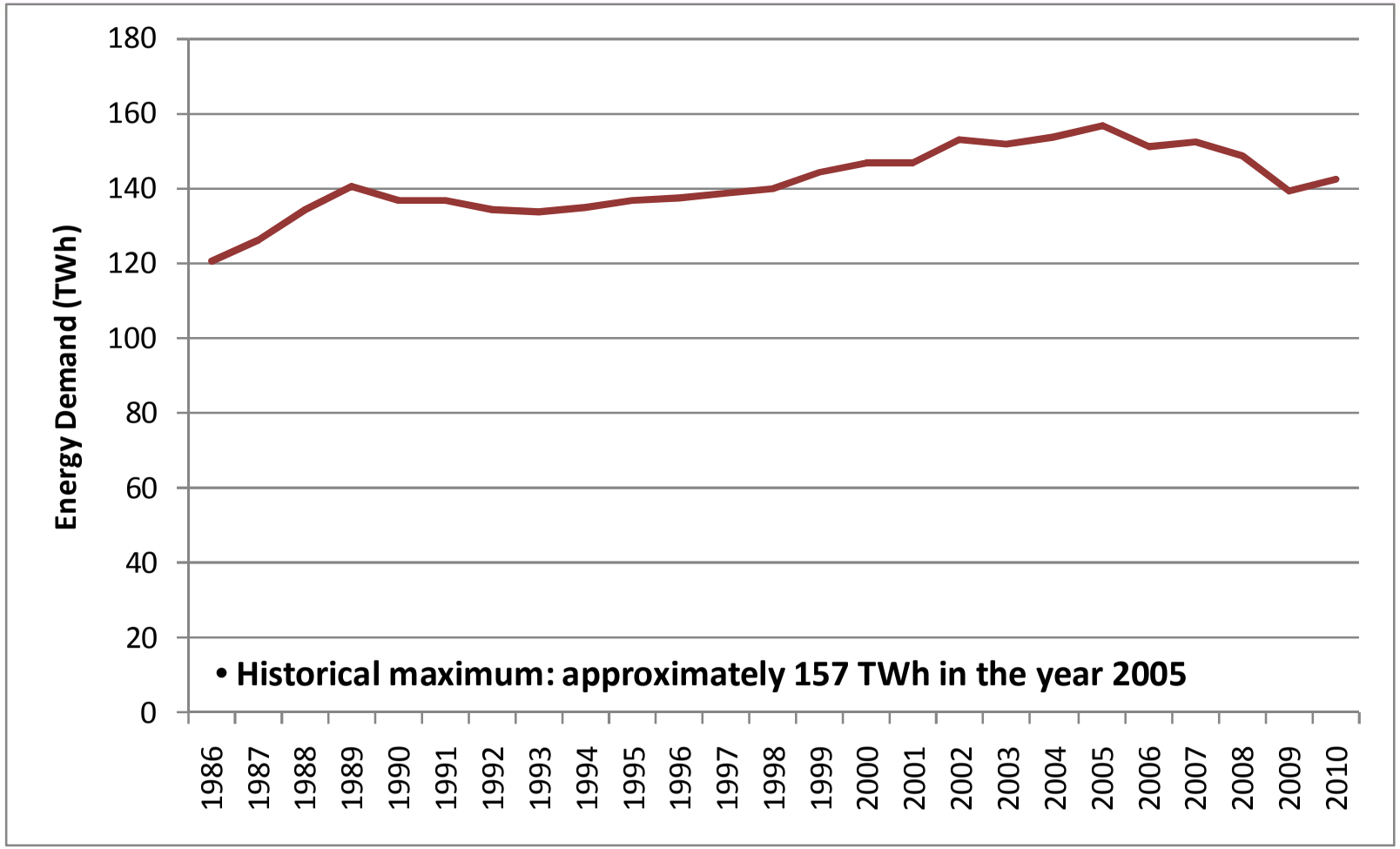
Historical Energy Demand: 1986 – 2010 (TWh)



- **Ontario's electricity demand was approximately 22 TWh higher in 2010 than in 1986**

Note: Data are not weather normalized.

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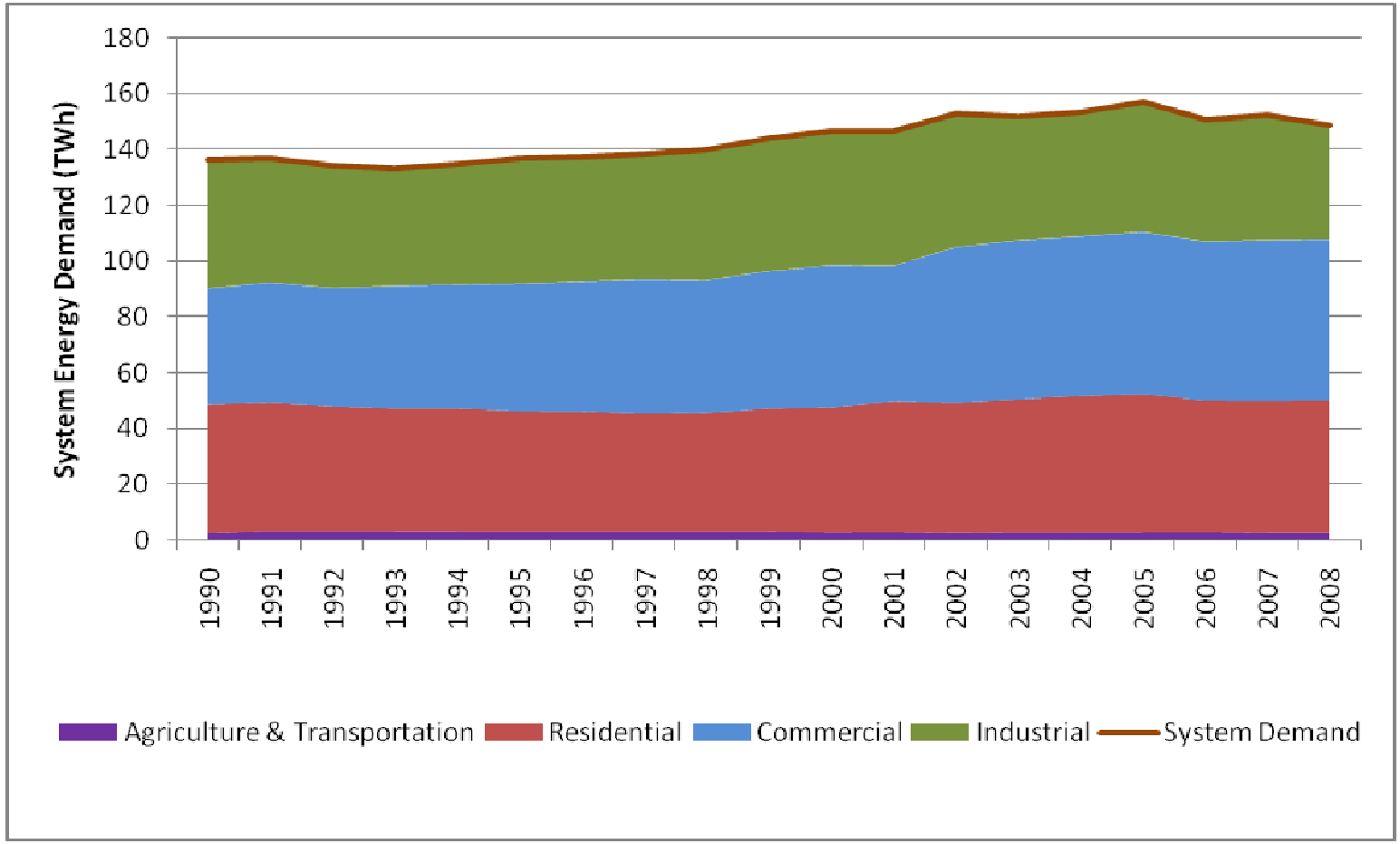
Contribution by Sector (TWh)



- **The commercial sector's share of total electricity demand in Ontario has been rising**

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Electricity Demand: Supply Mix Directive and Long-Term Energy Plan

- In developing the Plan, the OPA must use "a medium electricity demand growth scenario" that "balances the expected growth in residential and commercial sectors with modest, post-recession growth in the industrial sector"

- **Under this scenario, "Ontario's demand would grow moderately (approximately 15 percent) between 2010 and 2030, based on the projected increase in population and conservation as well as shifts in industrial and commercial needs"**

- **The IPSP must have enough flexibility to accommodate the potential for "a higher growth outcome" driven by technological changes such as the adoption of electric vehicles and the potential electrification of public transit**

- **Three electricity demand growth scenarios are described in the government's Long-Term Energy Plan (LTEP) released in November 2010: high growth, medium growth and low growth**

- **The IPSP will incorporate the three electricity demand scenarios described in the LTEP**

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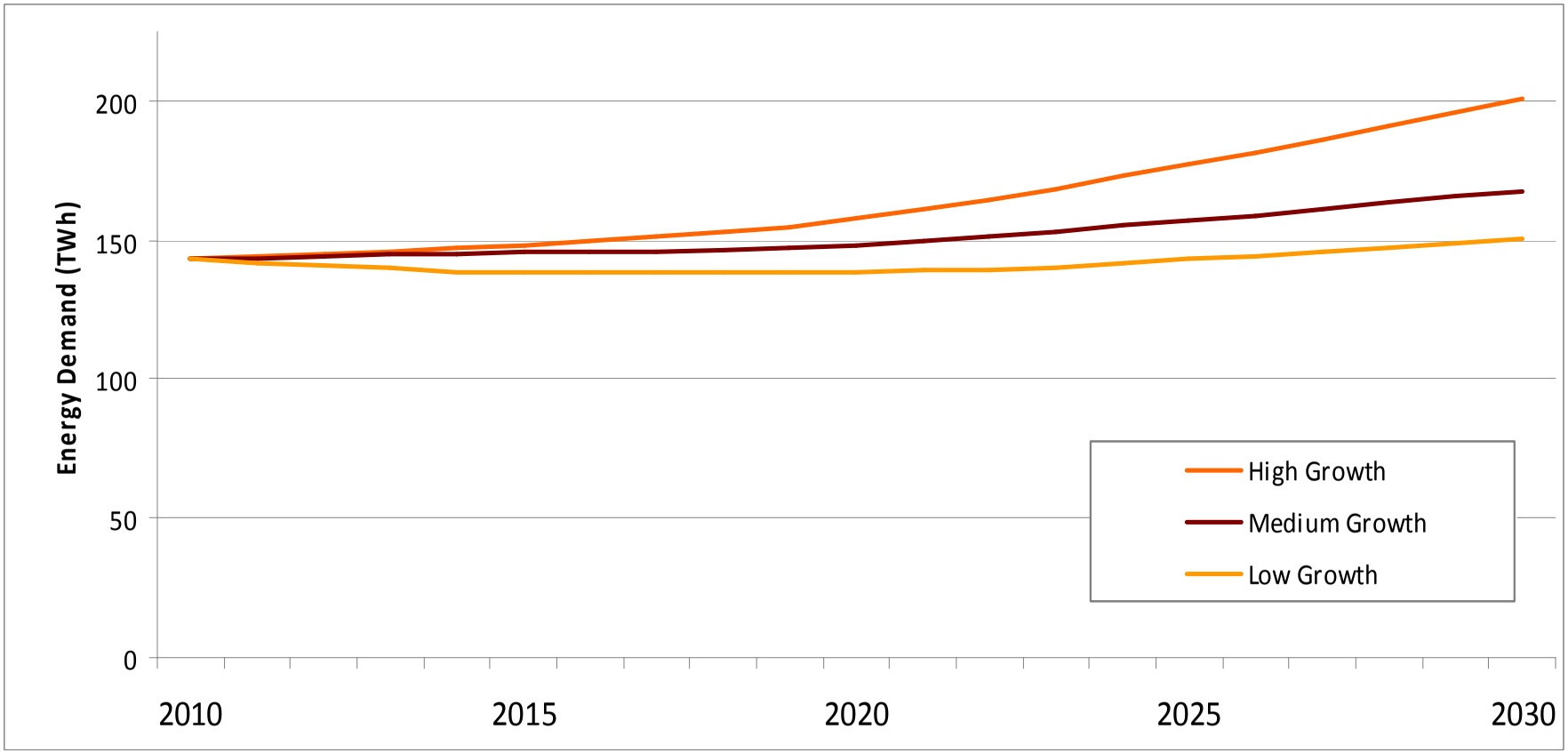
Demand Outlook 2010-2030



- Demand is net of conservation targets

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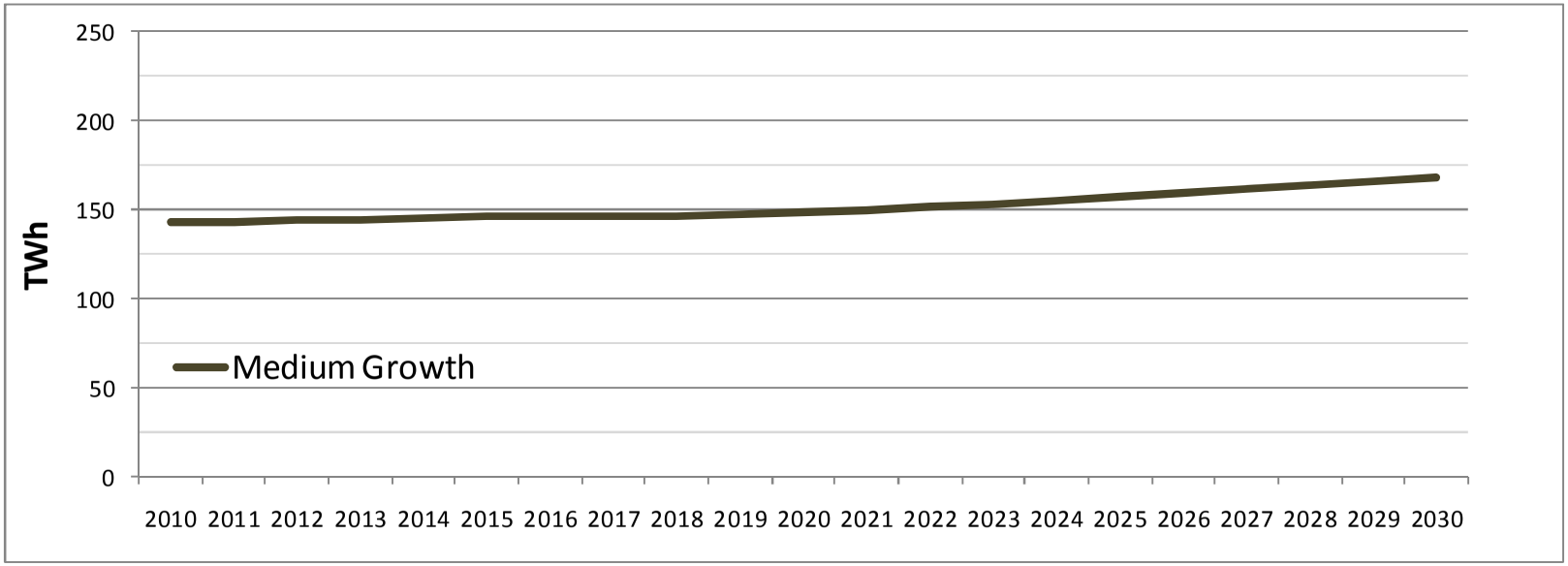
Medium-Growth Demand Scenario

- Recovery of most of Ontario's industrial sector electricity demand from the recent lows, but to levels that are below those experienced in 2005
- Continued growth in the residential, commercial and transportation sectors
- Overall growth rates and trends returning to levels observed before the recent economic slowdown
- Existing conservation targets are met



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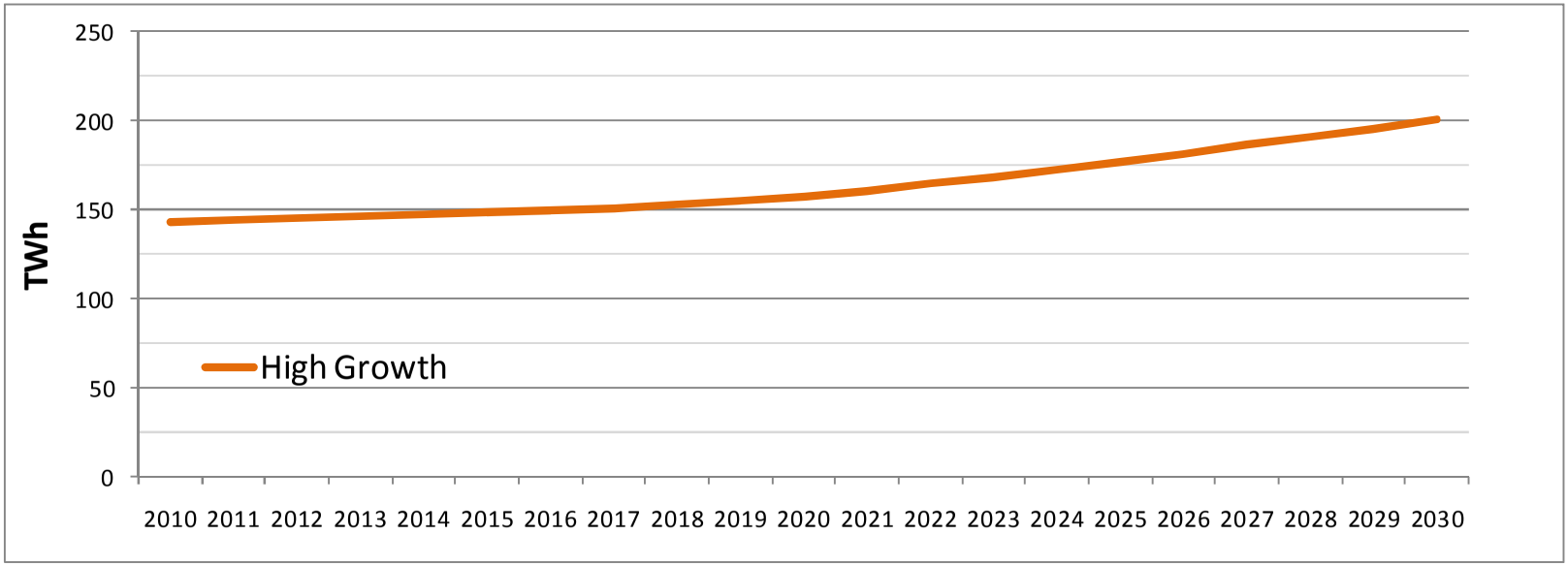
High-Growth Demand Scenario

- Efforts are made to reduce carbon emissions, through application of aggressive North American greenhouse gas ("GHG") regulation

- Changes **in customer** preferences for energy sources could drive electrification in residential and commercial markets and lead to faster adoption of electric vehicles



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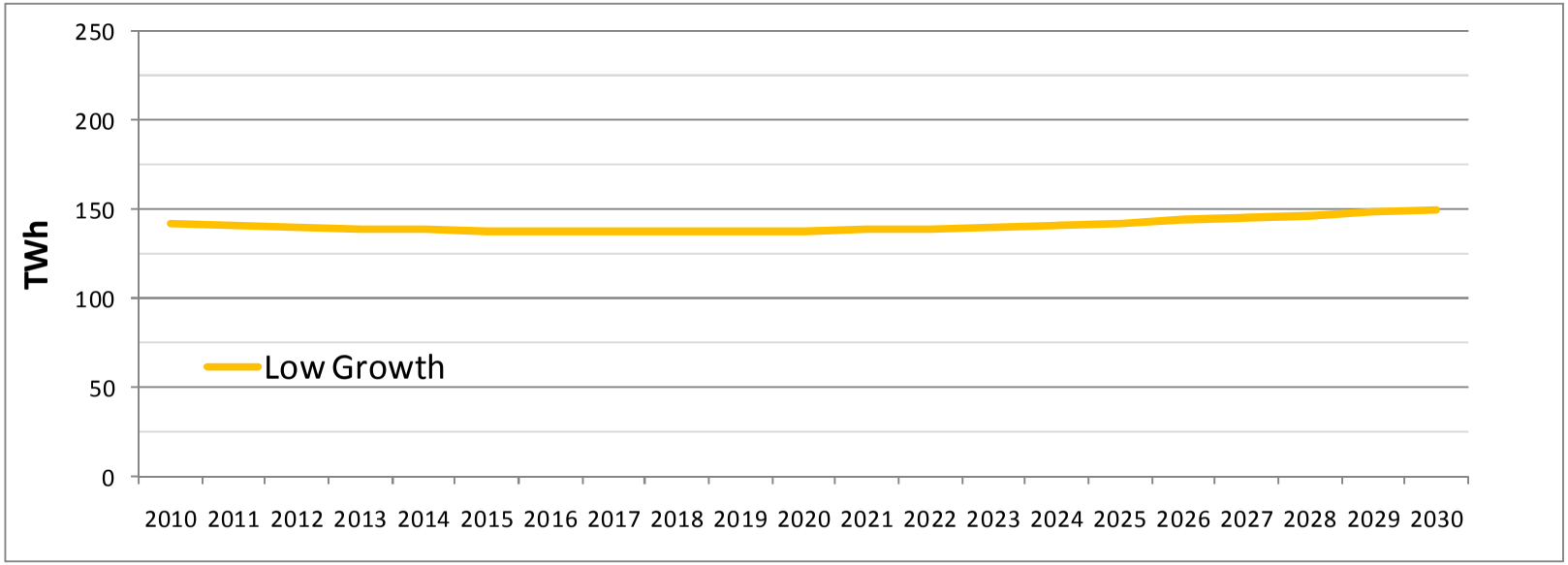
Low-Growth Demand Scenario

- Ontario industrial demand continues to grow modestly, continuing with the current trend
- Reduced demand in the industrial sector is driven by a persistent move away from energy-intensive industry
- Accompanied by a reduction in the growth rate of the residential and commercial sectors as the number of industrial jobs and related services decline



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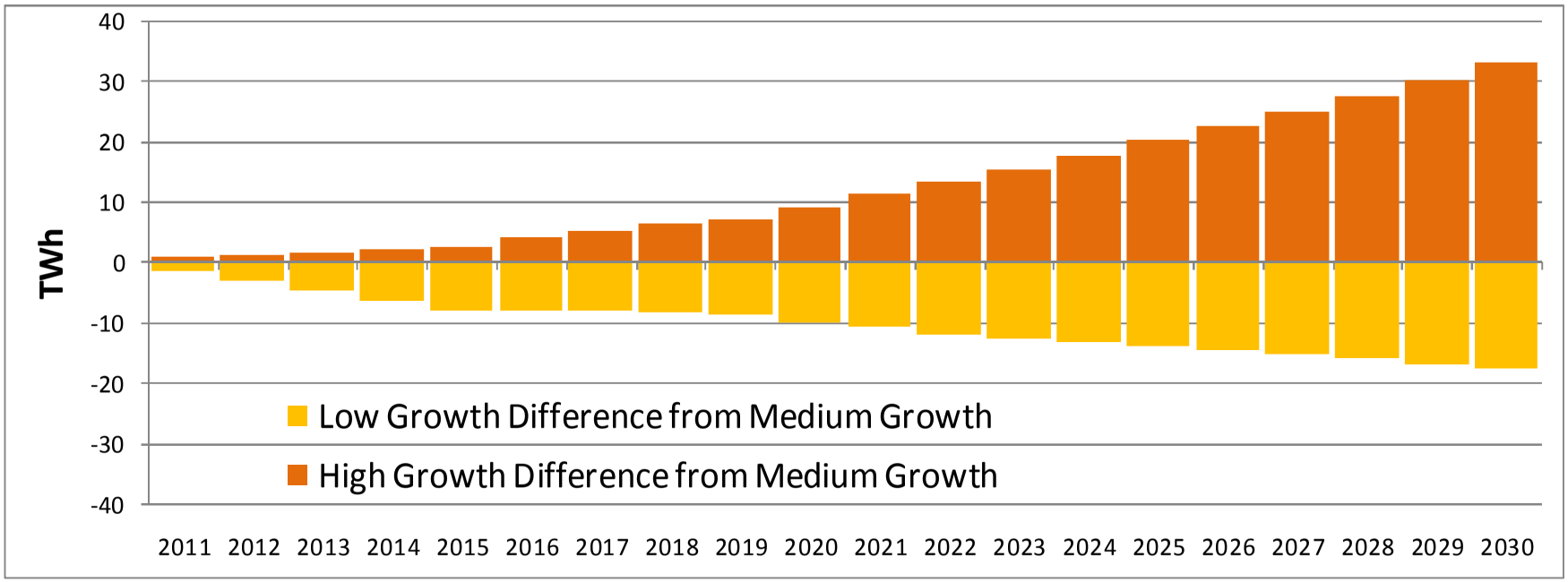
Comparison of Demand Growth Scenarios (TWh)

- Scenarios are comparable in the near-term
- Greater differences are seen in the long term as drivers have increasing impact



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Insights From Demand Scenarios

- Demand to 2015 similar under all three scenarios
- Monitoring signposts:
  - economy
  - conservation
  - sector trends and related end-uses (industrial, commercial and residential)
  - population
  - government policy
  - energy prices
  - technology developments
- Future plans will address longer term demand uncertainty

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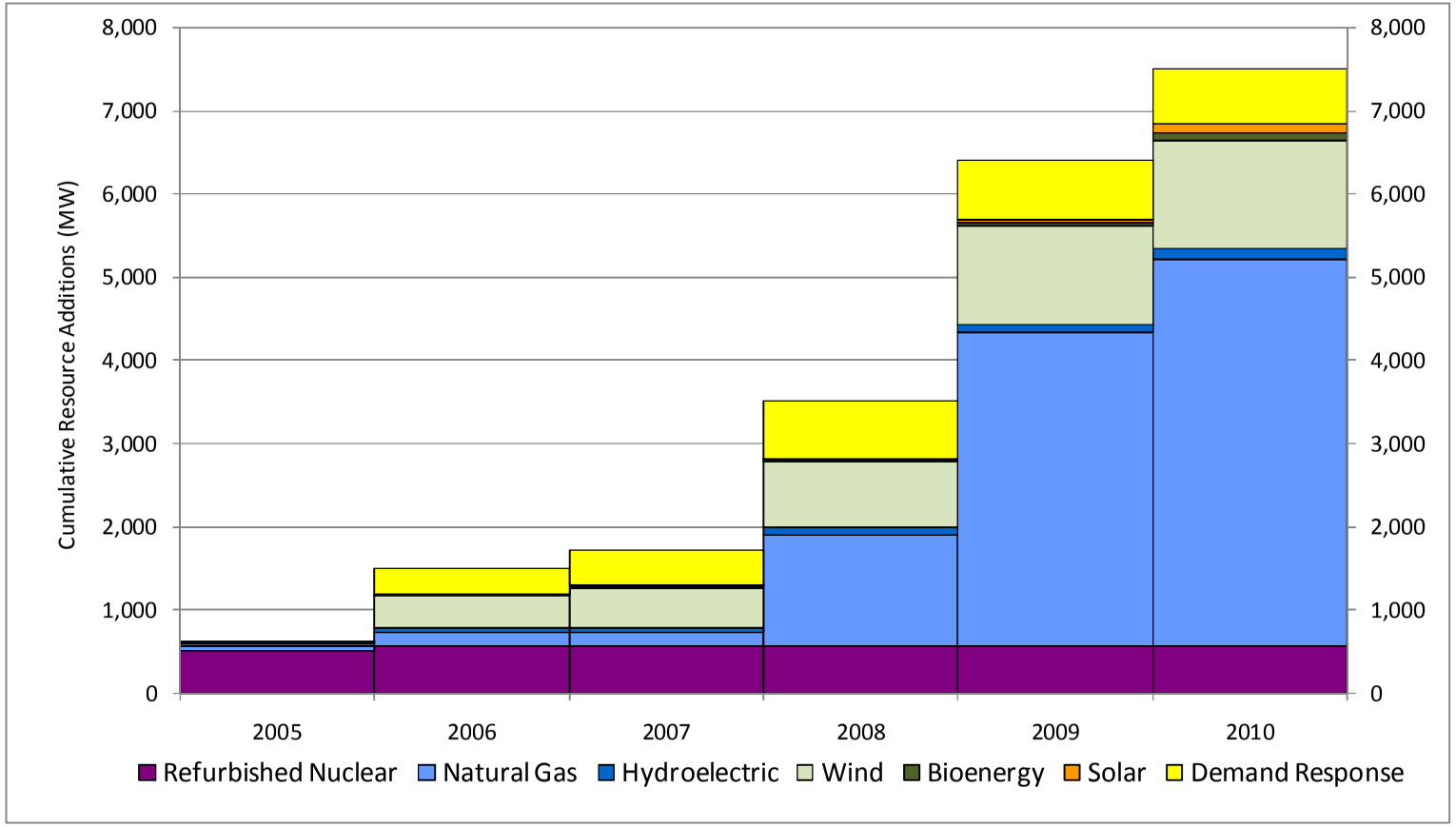
Supply

May 25, 2011

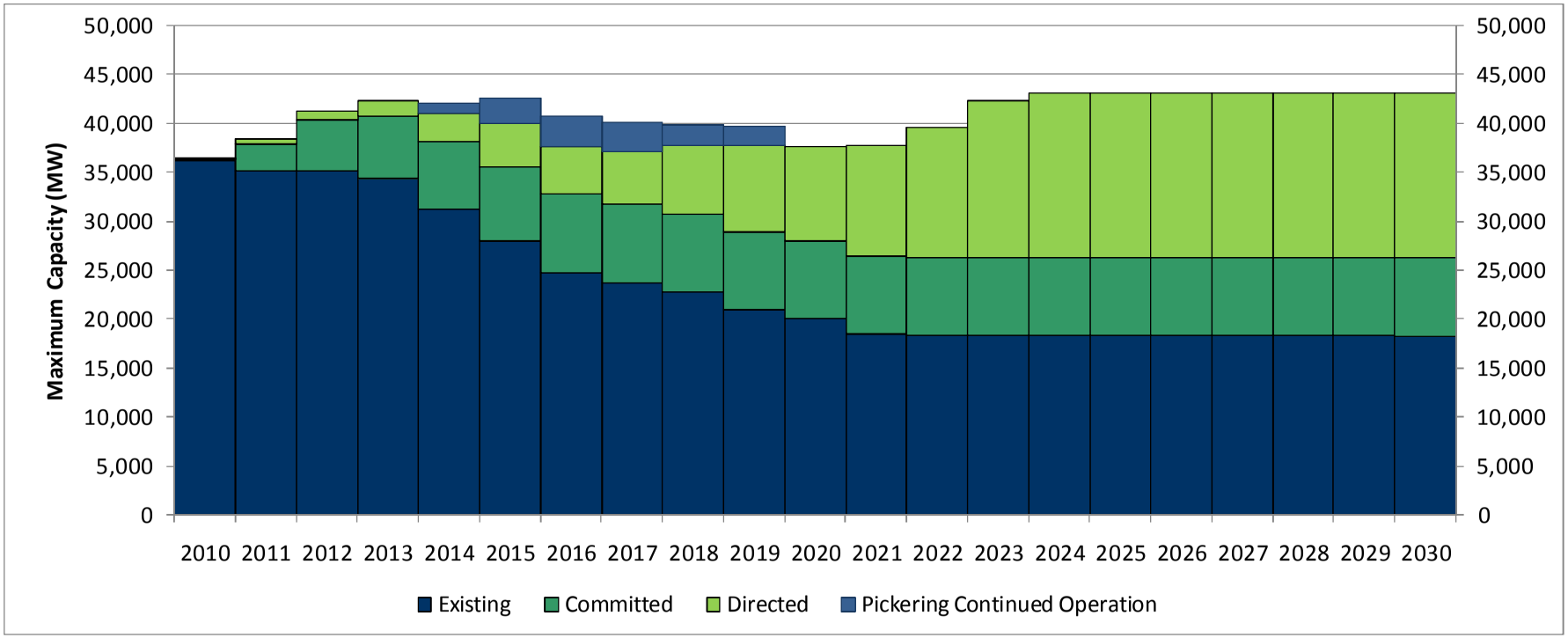
ONTARIO POWER AUTHORITY

Recent Investments in Electricity Supply Have Been Significant

- Since 2005, about 7,700 MW of new supply has been added, eliminating the supply deficit and setting the stage for coal phase-out.



More Generation is Committed and Directed



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Supply Mix Directive Requirements Related to Nuclear

- **Nuclear**
  - Nuclear generation to account for about 50 percent of total Ontario electricity generation:
    - Refurbishment of Bruce and Darlington
      - coordinated refurbishment schedule
    - Plan to assume government's procurement of two nuclear units (approximately 2,000 MW) at Darlington

Supply Mix Directive Requirements Related to Coal

- **Coal phase-out and potential conversion**
  - All coal units to be phased out by the end of 2014 or sooner
  - Coal Conversions:
    - Atikokan GS to biomass
    - Thunder Bay GS to natural gas
  - OPA to assess the conversion of some or all of the remaining units at Lambton GS and Nanticoke GS to natural gas
    - decision to convert these units will be made by government after 2012 once better information on nuclear capacity is available

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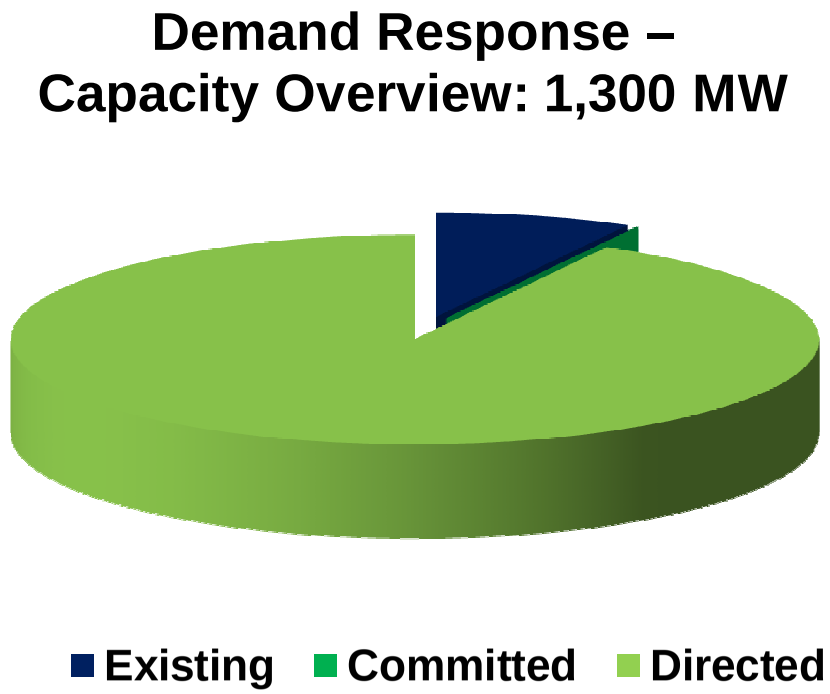
Role of Demand Response

- Load reductions from demand response contribute to meeting Conservation targets



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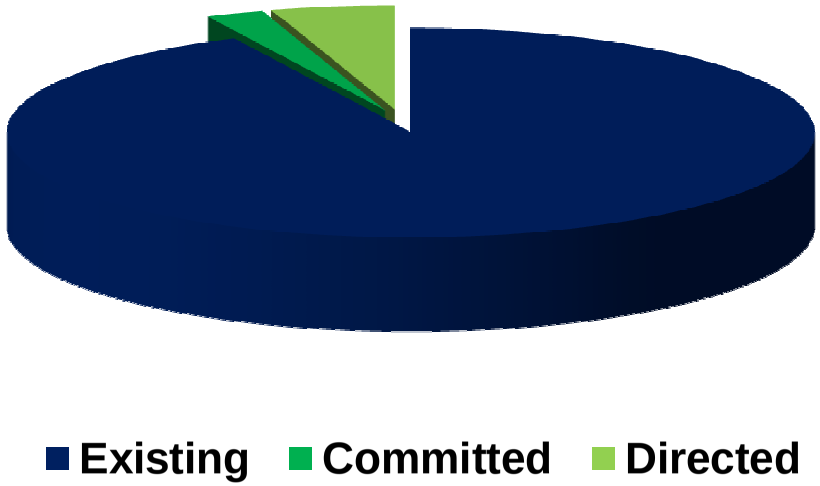
Supply Mix Directive Requirements Related to Hydroelectric

- Plan for installed hydroelectric capacity to reach 9,000 MW by 2018
- OPA will continue to explore cost-effective opportunities for further hydro development

Hydroelectric – Capacity Overview: 9,000 MW



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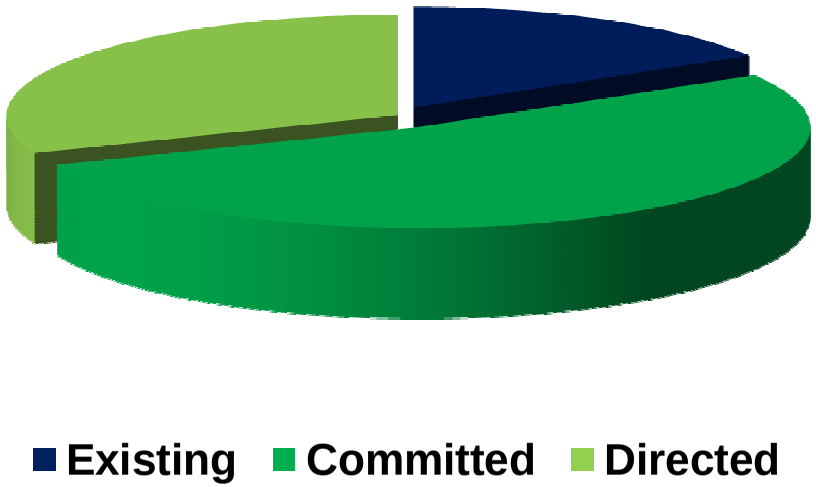
Supply Mix Directive Requirements Related to Non-Hydroelectric Renewables (wind, solar and bio-energy)

- Plan for 10,700 MW of non-hydroelectric renewable capacity by 2018
- To date, approximately 7,000 MW of non-hydroelectric generation is existing and has been committed through various programs
- The government will continue to look for opportunities to increase renewable capacity taking into consideration cost-effectiveness, transmission and demand

Non-Hydroelectric Renewables – Capacity Overview: 10,700 MW



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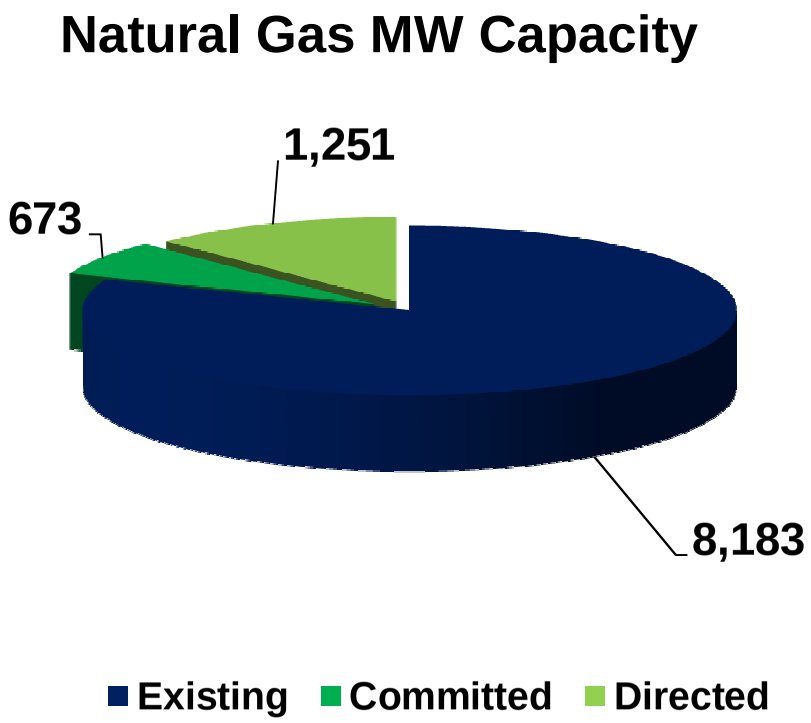
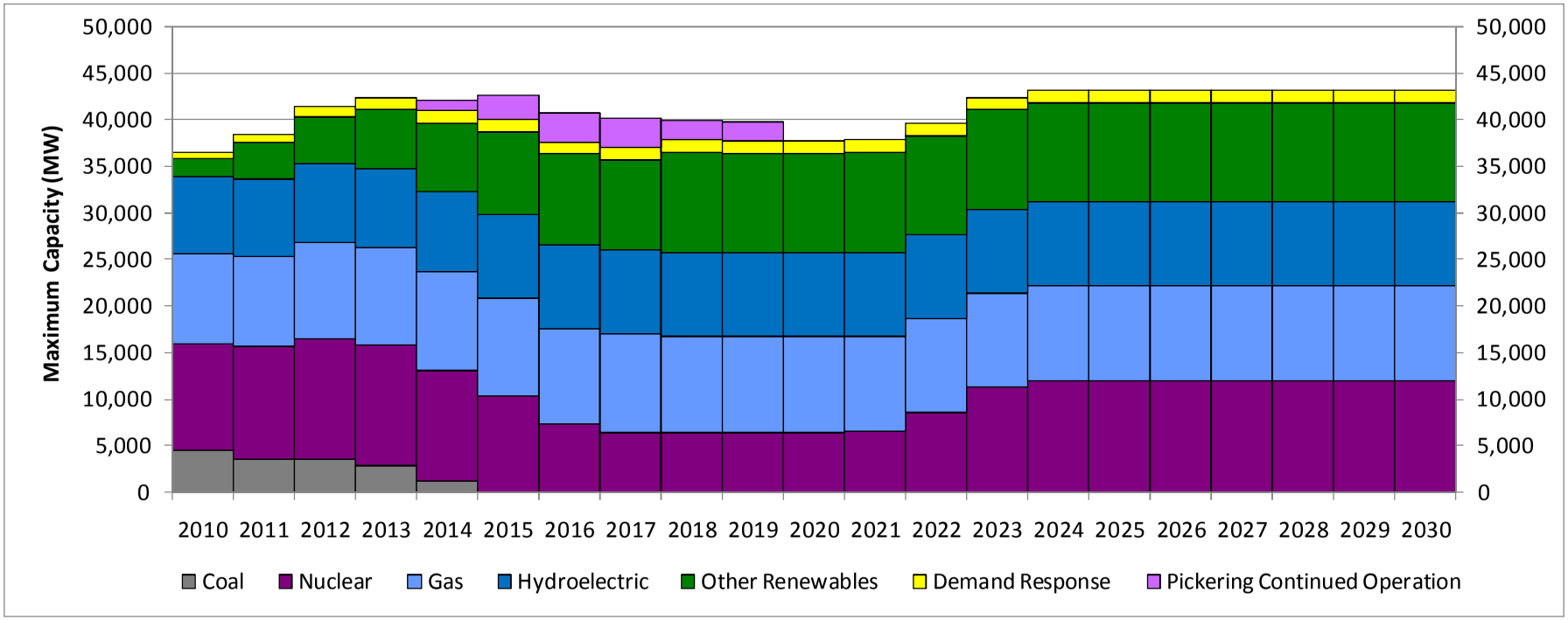
Supply Mix Directive Requirements Related to Natural Gas

- **Natural gas**
  - natural gas to continue to play a strategic role in Ontario's supply mix by complementing intermittent supply, meeting local and system requirements, and ensuring that adequate capacity is available as nuclear plants are modernized
  - meet adequate regional electricity supply in the Kitchener-Waterloo-Cambridge area



Installed Capacity – Pickering Continued Operations



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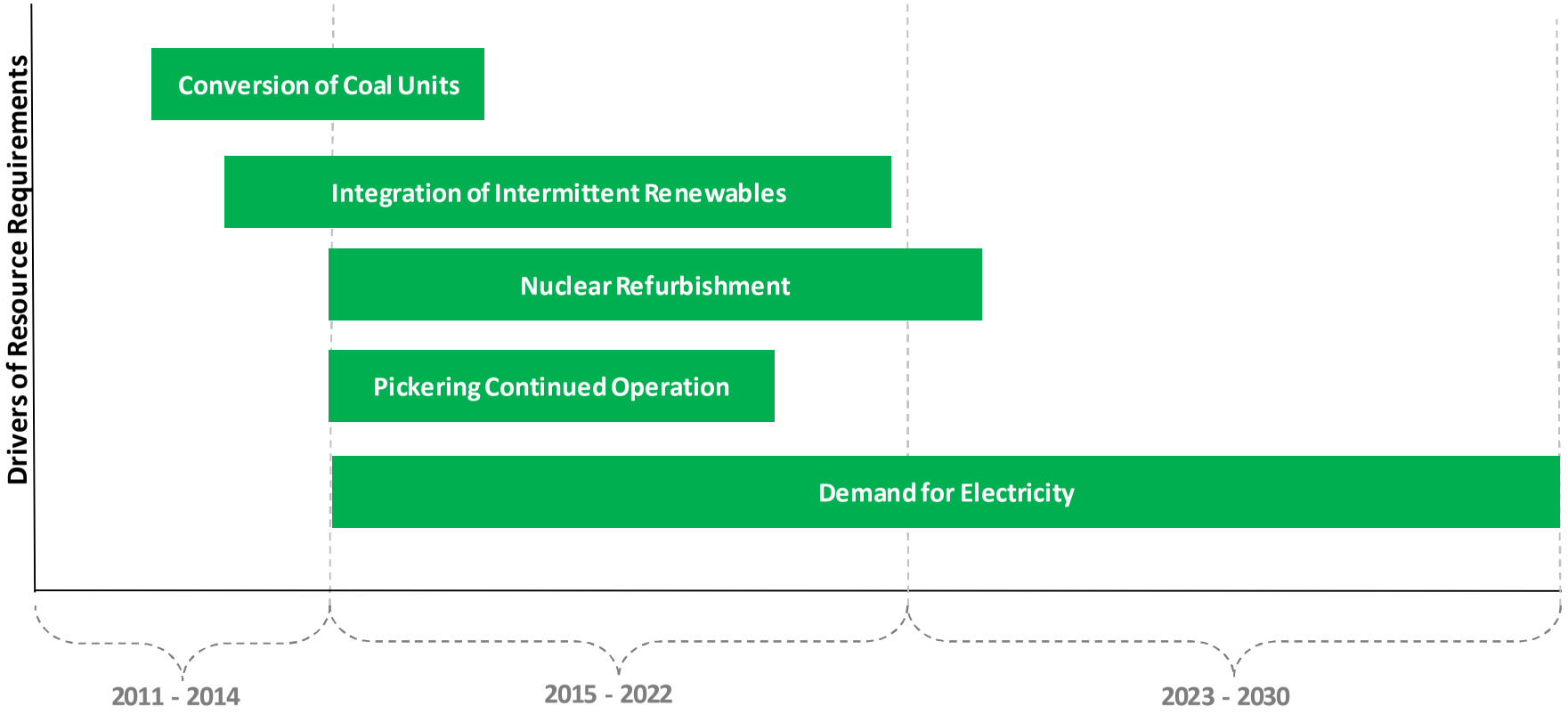
Capacity Outlook Will be Impacted by the Following Factors



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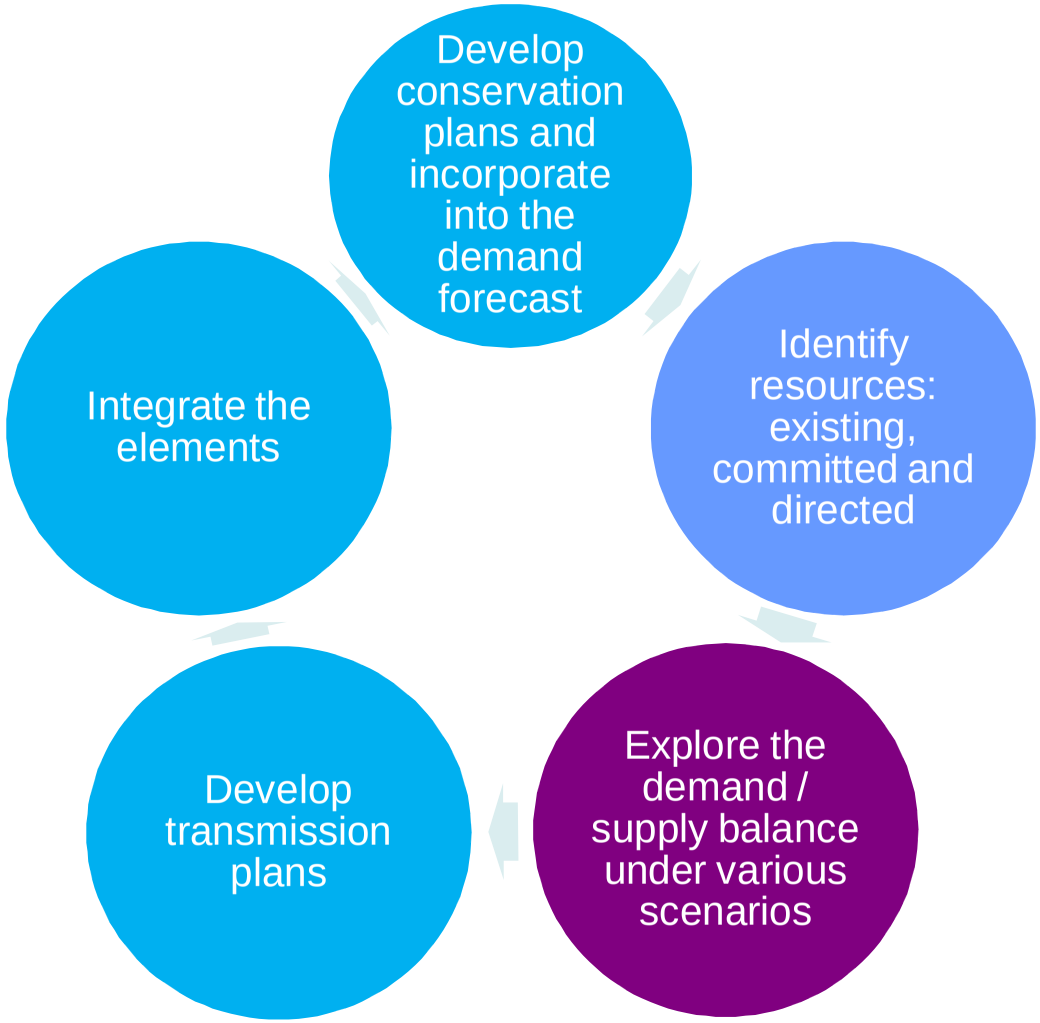
Explore Demand Supply Balance



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Four Steps to Compare Requirements to Supply

- First, account for conservation and energy efficiency in the demand forecast
- Second, add reliability reserve margins to demand to come up with required resources, this accounts for reliability of nuclear and gas
- Third, account for supply scenarios: e.g., Pickering continued operations
- Fourth, adjust installed capacity of resources to their contribution at time of peak. This applies mostly to renewables

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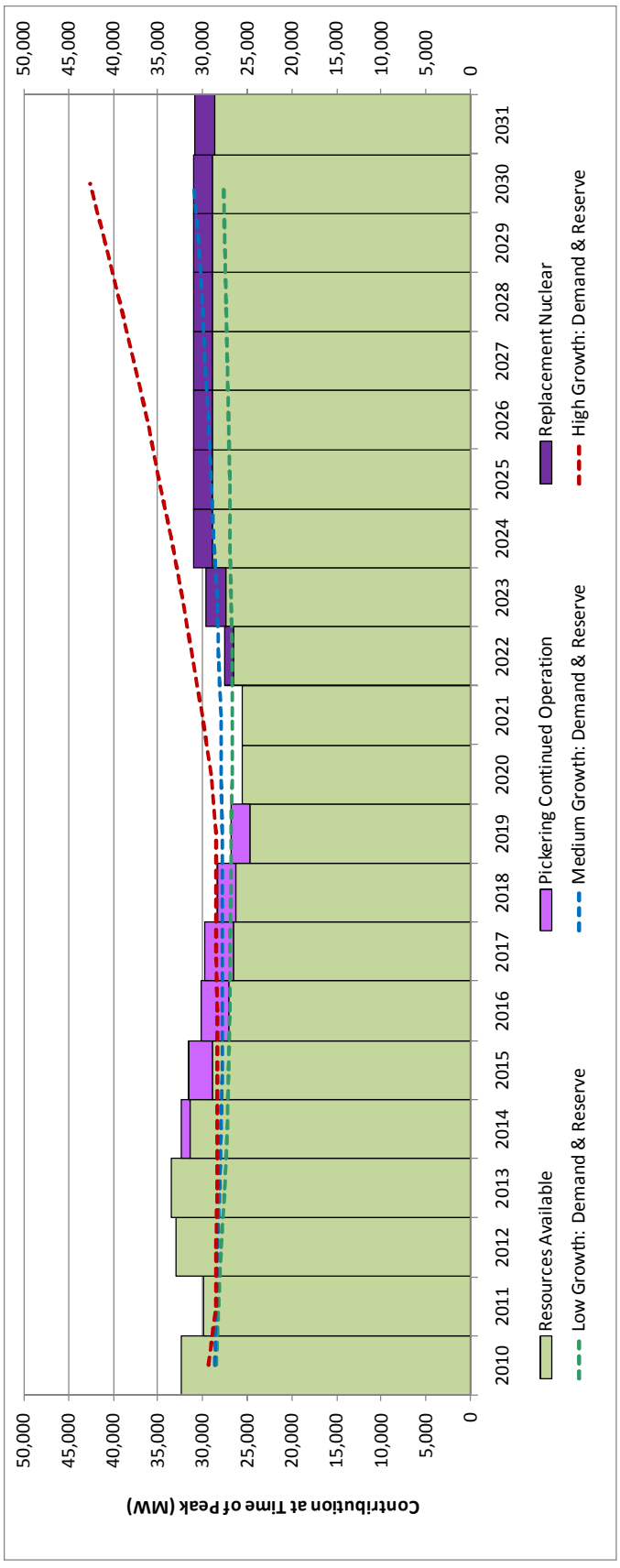
Ontario is in Good Shape Until 2018



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Ontario Has Options to Meet Potential Future Requirements

- Additional and/or acceleration of CDM resources
- Non-Utility Generators: contracts to be renegotiated according to a directive received November 23, 2010
- Lambton GS and Nanticoke GS: could be converted to natural gas as a result of a decision to be made by government in 2012 (up to 3,000 MW).
- Additional renewable supply
- Energy storage
- Imports
- Other gas-fired generation

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IPSP 2011 First Nations & Metis Stakeholder Consultation: Conservation

June, 2011

Session Goals

- To give Aboriginal Communities an understanding of the proposed Conservation and Demand Management (CDM) components of the IPSP; and

- To seek input from Aboriginal Communities on the proposed IPSP.

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Agenda

1. Why Conservation
2. Conservation Success to 2009
3. Overview of proposed CDM plan in IPSP
4. Aboriginal Community Input

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Part 1: Why Conservation

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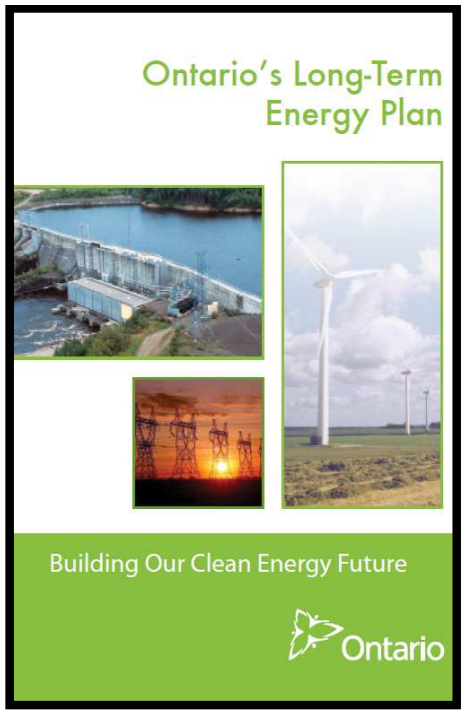
Conservation in the Long Term Energy Plan

- Conservation is environmentally friendly and a least cost resource
- The government set a target for conservation of 7,100 MW in peak demand savings and 28 TWh reduction in consumption by 2030
  - Over this timeframe, conservation is projected to save Ontario ratepayers $27 billion on an investment of $12 billion



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Supply Mix Directive

- The OPA is responsible for developing a plan to achieve the government's long-term CDM targets as prescribed in the Supply Mix Directive
  - The plan will look for feasible and cost-effective opportunities to exceed and/or accelerate the achievement of targets
  - Shall include forecasted savings from codes, standards, regulations and other initiatives that are progressive and reasonable based on OPA analysis

Date	2015	2020	2025	2030
MW Target	4,550	5,840	6,700	7,100
TWh Target	13	21	25	28

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CDM Benefits

- CDM also has economic, social and environmental benefits

Economic	Social	Environmental
• It is a least cost resource • Creates green jobs to stimulate economy • Provides opportunities for productivity gains and competitive advantage for industry and business	• Provides the education tools to empower consumers to use electricity wisely	• Reduces green house gas emissions ("GHGs") • Reduces other emissions that cause smog, acid rain and other health hazards

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Part 2: Conservation Success to 2009

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CDM Program Participation - Examples

- **Thousands of Ontario households and businesses have contributed to Ontario's CDM achievements by participating in CDM programs. Select examples below:**

Select OPA Programs (2006-2009)	Activity (2006-2009)*
Every Kilowatt Counts	**17.7 million** energy efficient products purchased
Cool Savings Rebate	**467,000** HVAC system upgrades
Electricity Retrofit Incentive Program	**2,400** commercial and institutional retrofit projects
Power Savings Blitz	**77,000** small businesses receiving free audits and direct installation of energy efficient products

*** 2010 results have not been included because undergoing verification.**

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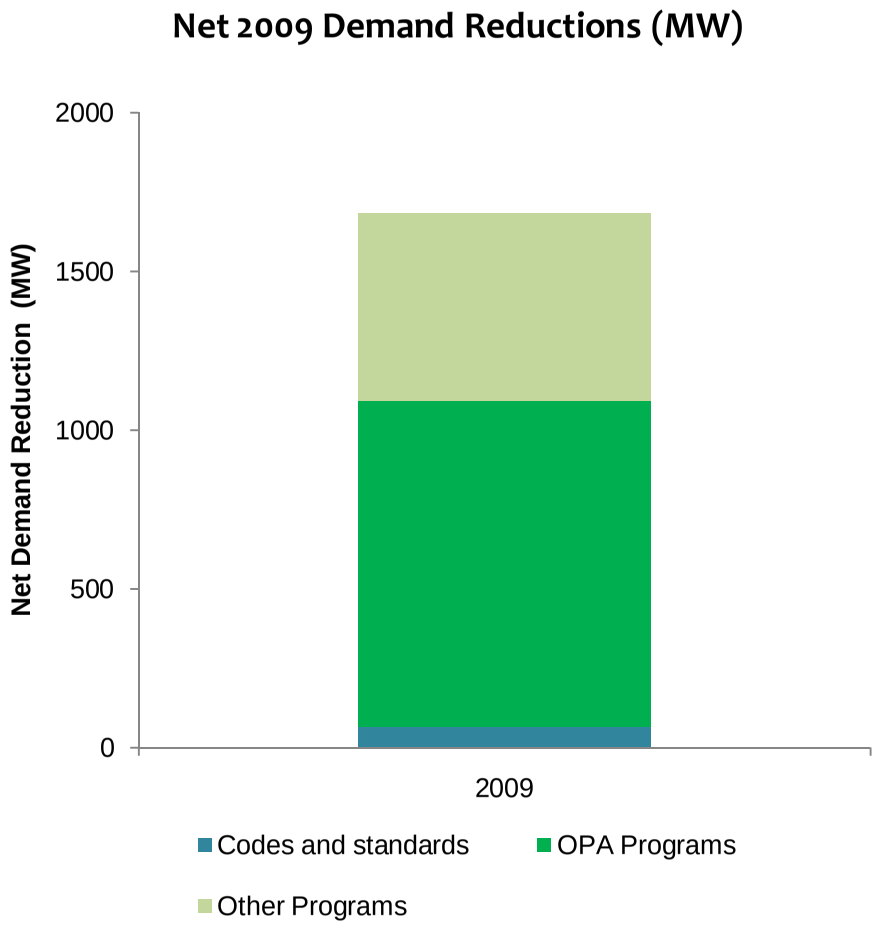
CDM Achievements to Date are Significant

- ~ 1,700 MW of CDM savings from activities implemented 2006-2009
- This is the equivalent of taking 500,000 homes off the grid
- CDM has assisted in restoring the reliability of the electricity system and has laid the foundation for the elimination of coal-fired generation by 2014

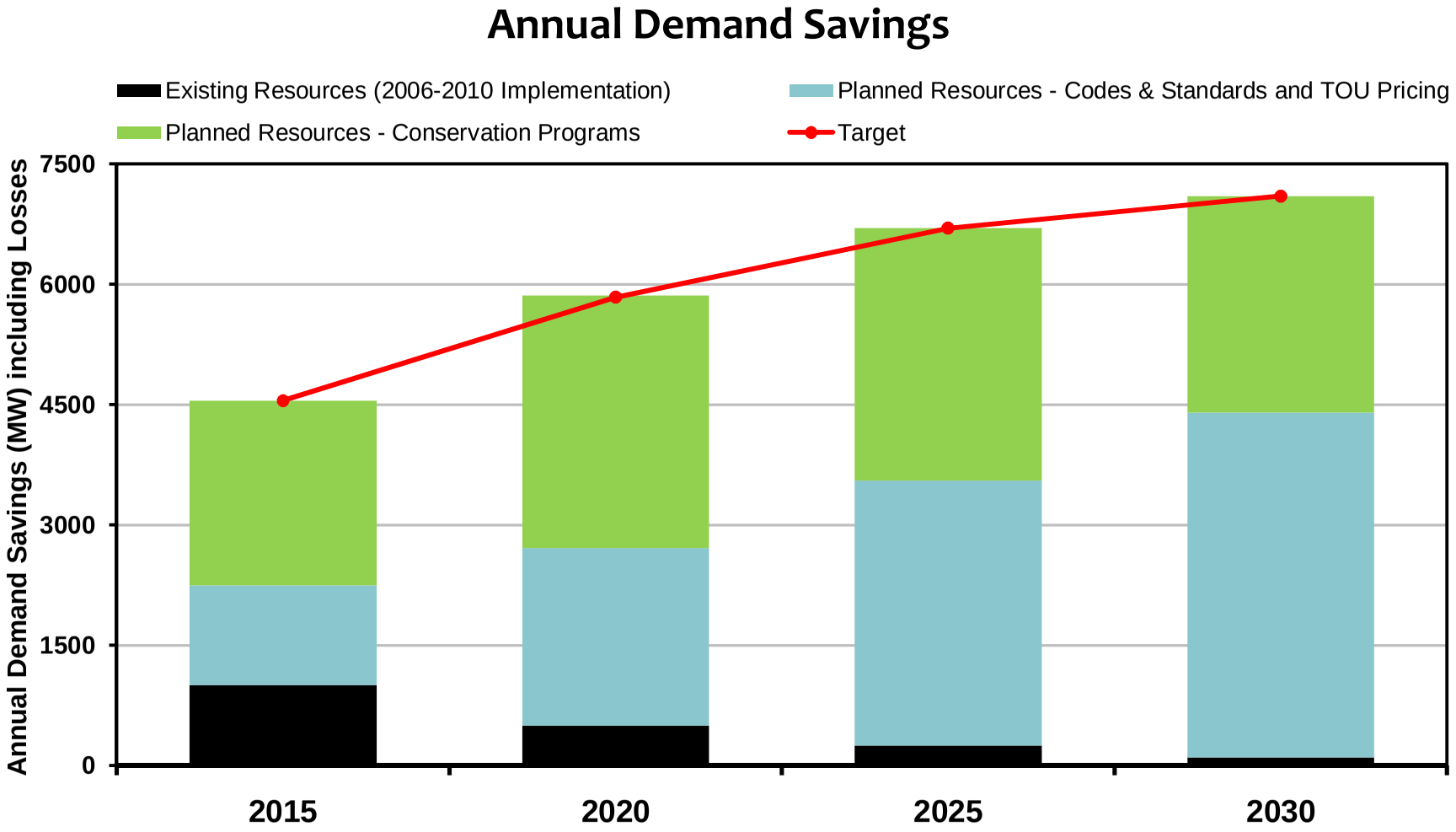


Part 3: Overview of CDM Plan in IPSP

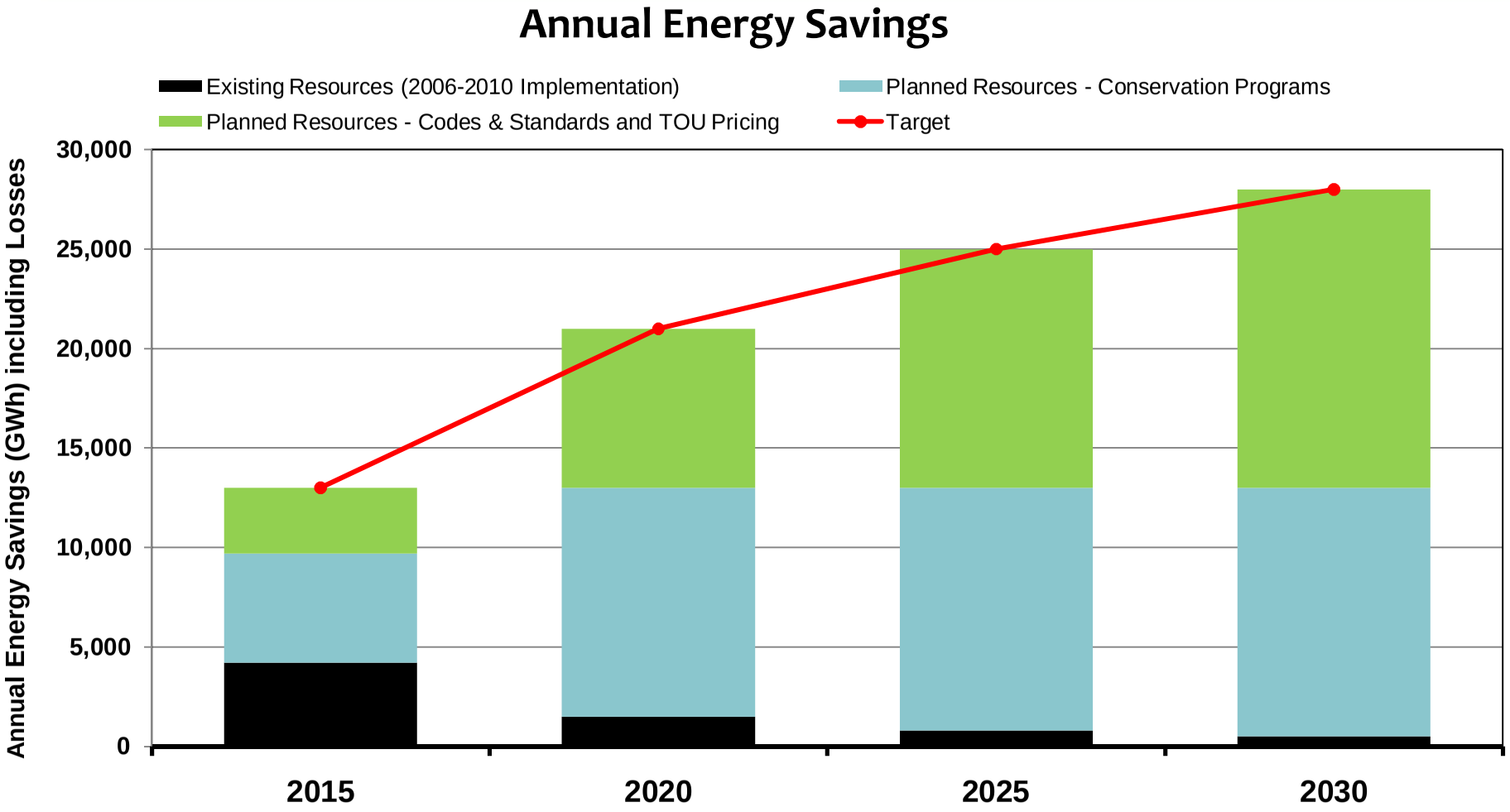
Areas to be Considered in the IPSP

- How does the IPSP meet the mandatory CDM requirements set out in the Supply Mix Directive?
- How can challenges to meeting those requirements be addressed?
- How does the IPSP address whether the achievement of the IPSP Directive's CDM goals may be exceeded and accelerated?

Forecasted Contribution of Each Tool Within the Plan



Forecasted Contribution of Each Tool Within the Plan



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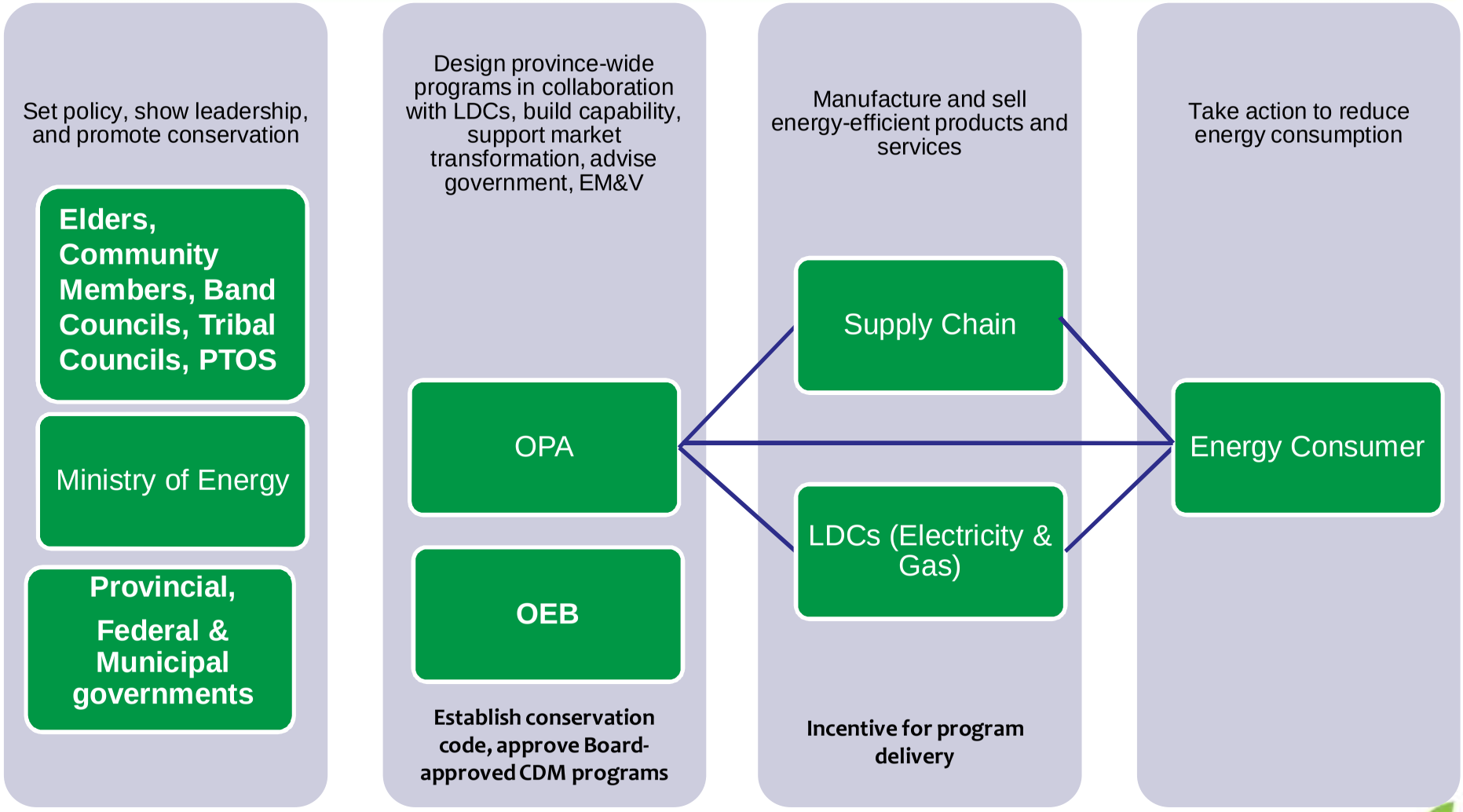
Many Players Contribute to CDM Success



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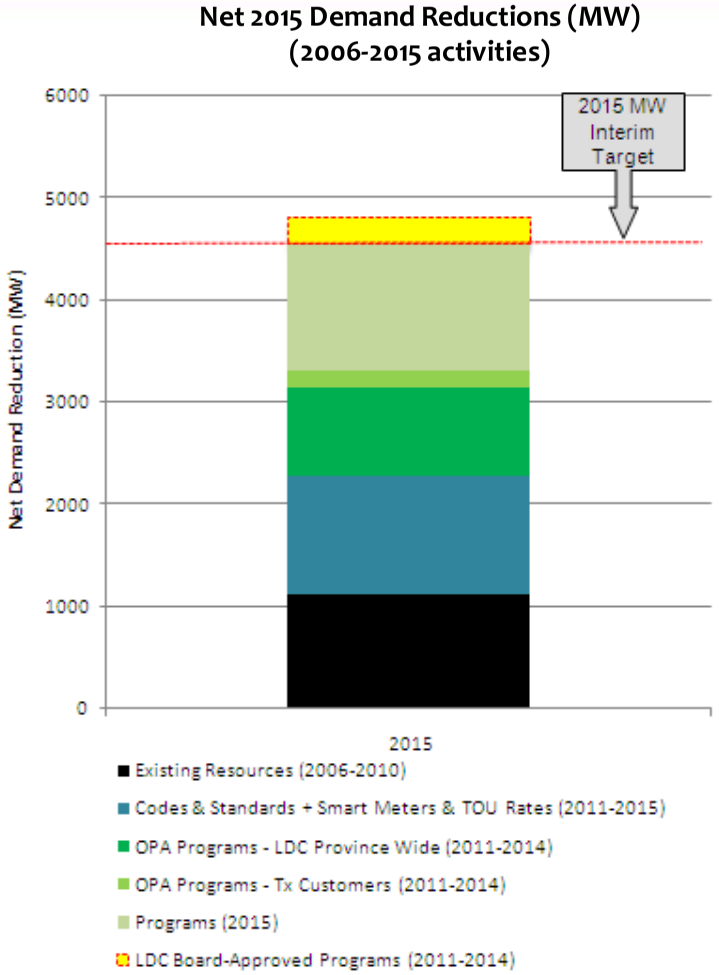
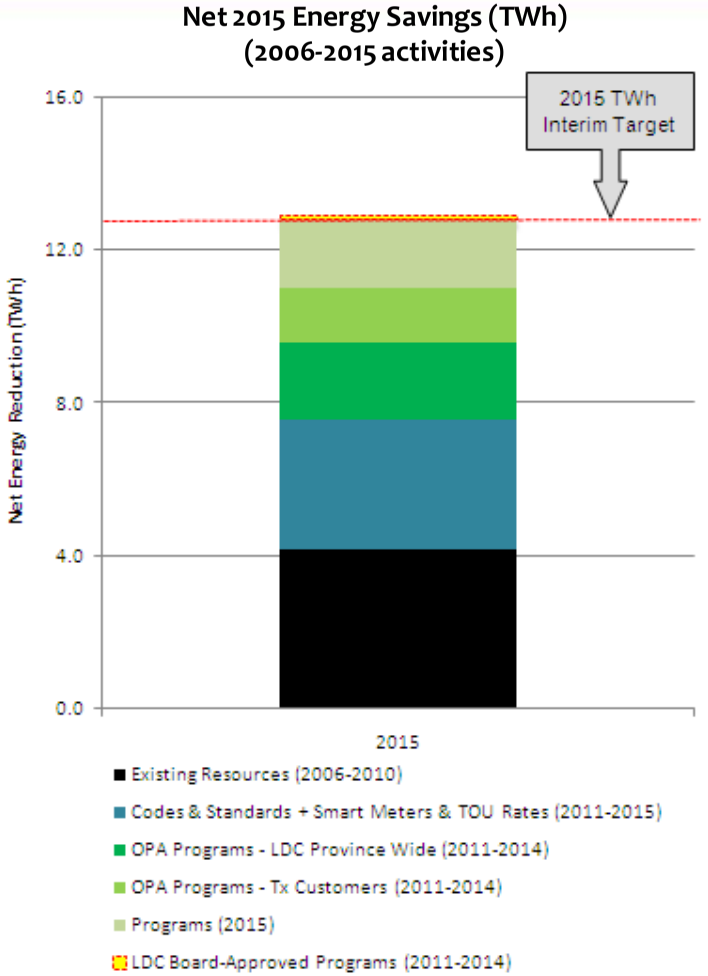
Meeting the 2015 Interim Milestones - Forecast





*Forecast may be adjusted by the time IPSP has been filed

*There is planning uncertainty with all conservation tools – codes, rate structures and programs

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Aboriginal CDM Program

- **Program Objectives:**
  - **To achieve energy savings and demand reductions through improved energy efficiency of the Aboriginal-owned/occupied building stock; and**
  - **To facilitate the adoption of CDM behaviours by building occupants and organizations responsible for these structures.**

	Participants	Program Elements
Aboriginal CDM Program	• First Nation Communities	• Four CDM initiatives, modeled on the new province-wide CDM programs will be delivered directly to First Nation communities and adapted to meet the needs of communities. Initiatives include: ▪ Residential Direct Install Initiative (RDII) (modeled on Province-Wide Low Income Program) ▪ Equipment Replacement Incentive Initiative (ERII) ▪ Small Commercial Direct Install (SCDI) ▪ Non-Residential New Construction (NRNC) • Communities will be prioritized for participation based on factors such as completion of a community energy plan and community commitment to participate in program
	• Métis Communities and Urban Aboriginal Communities	• Communities are dispersed across the province and are eligible for the province-wide CDM programs delivered by the LDCs; program will leverage existing delivery infrastructure established by LDCs • Program will provide specific outreach, promotion and application support - including events for community members to achieve these ends - to members of the communities to facilitate their participation in province-wide programs delivered by LDCs

Green text represents new programs in 2011

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Part 4: Consultation Comments

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IPSP 2011 Aboriginal Consultation: Transmission Planning

XX, 2011

Presentation Summary

1. Transmission planning overview
2. Supply Mix Directive and priority projects
3. Transmission planning for Remote Communities
4. East West Tie enhancement – Next Steps

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TRANSMISSION PLANNING OVERVIEW

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Transmission Planning Overview

- Transmission lines and stations are needed to integrate and deliver electricity from generation sites to customers in a safe, reliable, cost-effective and environmentally responsible manner
- Transmission contributes to meeting other goals:
  - Grid access for generation
  - Environmental goals such as off-coal regulation
  - End-use electrification and smart grid developments
  - Grid access for remote customers

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Transmission Plan Horizons for the IPSP

Near Term

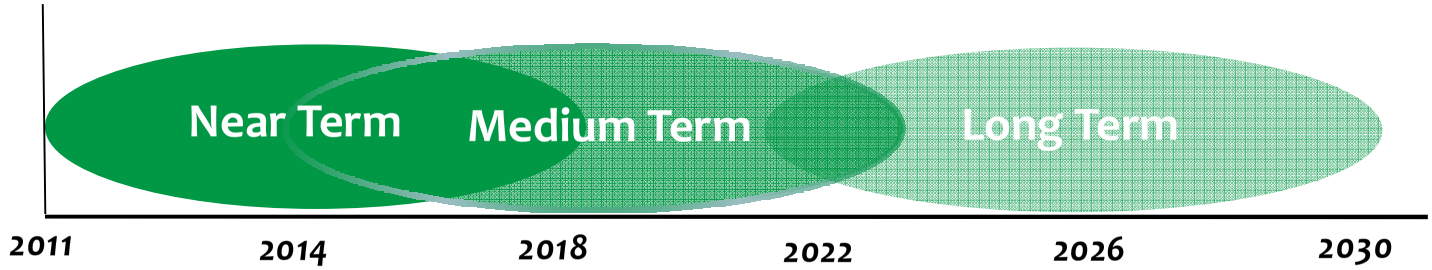
- The period out to 2018, coinciding with the government's date for achieving installed renewable generation targets

Medium Term

- The period where transmission requirements will be driven primarily by the retirement and refurbishment of nuclear units

Long Term

- The period for which transmission needs are not clearly defined at this time; options will be presented, but do not have to be initiated at this time



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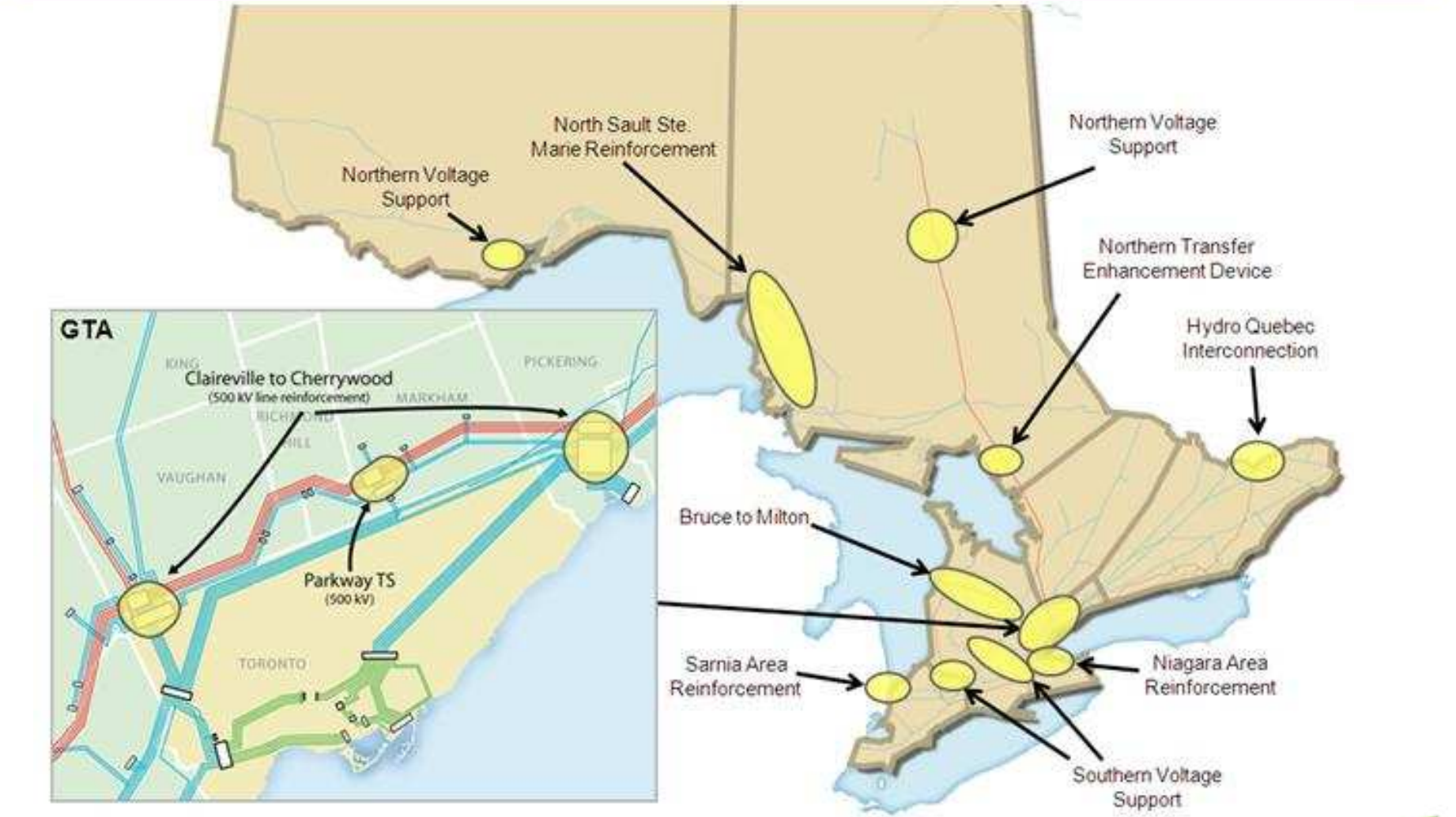
Recent Transmission Investments Meet Several Objectives

- In recent years, a number of investments in transmission infrastructure have been required to meet the following objectives:
  - Enable the elimination of coal-fired generation
  - Improve reliability
  - Enhance interconnections with neighbouring jurisdictions
  - Connect renewable generation

Recent Transmission Investments



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Recent Transmission Investments (continued)

Investment	Driver			
	Off-Coal Policy	Reliability	Interconnections	Renewable Generation
Bruce to Milton Transmission Project	✓			✓
Northern Ontario Voltage Support and Transfer Enhancement Facilities	✓			✓
Southwestern Ontario Voltage Support Facilities	✓			
Sarnia Area Transmission Reinforcement	✓			
Parkway TS – Transformer Addition	✓	✓		
North Sault Ste. Marie Transmission Reinforcement – Third Line TS to Wawa TS		✓		✓
Additional 500 kV Circuits Between Claireville TS and Cherrywood TS, and Claireville TS Station Improvements		✓		
Local Generation: Portlands Energy Centre, Halton Hills GS, Goreway GS	✓	✓		
Hydro Quebec HVDC Interconnection			✓	
Niagara Area Transmission Reinforcement		✓	✓	✓

SUPPLY MIX DIRECTIVE AND PRIORITY PROJECTS

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Directive Requirements for Transmission

- The Supply Mix Directive requires the OPA to assume and include five priority transmission projects for system reliability, serving new load, and renewables incorporation out to 2018
  - Three projects are for the purpose of connecting renewable generation
  - Two are needed for reliability, load supply and renewables
- The Directive also establishes specific supply objectives (e.g., renewables targets, new and refurbished nuclear)
  - The OPA must consider what, if any, transmission solutions are required to enable these objectives
- The Directive requires the OPA to develop a plan for remote community connections beyond Pickle Lake

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Directive Requirements for Transmission (continued)

- Finally, as noted in the Directive, ongoing transmission planning processes are carried out by the OPA, transmitters, distributors
- These processes, which are outside the IPSP, include:
  - Ongoing regional supply and reliability planning
  - Distribution planning
  - The Feed-in-Tariff Program for renewable procurement, including station upgrades to facilitate connection of small-scale renewable generation
  - Other resource procurement processes
  - Transmission projects already committed and/or underway
  - Transmission sustainment activities and end-of-life refurbishments

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The IPSP Will Focus on Bulk Transmission Planning

- Local and regional needs will be addressed through joint regional planning studies with local distribution companies (LDCs), transmitters and the IESO
  - The timing and ongoing nature of these studies does not align with the IPSP schedule
- The IPSP transmission plan will address bulk transmission system needs to fulfill policy objectives and ensure reliability on a province-wide basis
- Regional planning projects that are currently active include:
  - Kitchener-Waterloo-Cambridge-Guelph (KWCG) area
  - Toronto
  - York Region
  - Windsor-Essex
  - Ottawa

Scope of Transmission Planning in the IPSP

- Transmission planning in the IPSP will:
  - Describe and make recommendations about the scope and timing of the five priority transmission projects on the basis of their rationale
  - Identify transmission solutions necessary to meet supply mix goals set out in the Directive
  - Develop a plan for remote community connections beyond Pickle Lake
    - Including the possibility of interim solutions that reduce consumption of diesel fuel

Categories of Transmission Projects in the IPSP

Existing Transmission System

- Facilities that are in-service today

Committed Transmission Facilities

- Facilities that are not yet in service, but which are currently under construction or have been approved
  - The Bruce x Milton transmission line is an example of a Committed facility

Directed Transmission Facilities

- Facilities that the government has directed the OPA to include in the IPSP and to assume will proceed
  - The five priority transmission investment projects are examples of Directed facilities

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Near-Term Transmission Planning

- In the near term, the principal driver of transmission planning is the need to meet the Directive's renewable generation targets
  - "The Plan shall provide for installed hydroelectric capacity to reach 9,000 MW by 2018"
  - "…the OPA shall plan for 10,700 MW of renewable energy capacity, excluding hydroelectric, by 2018"
- The near-term plan also describes the five priority transmission projects which the Directive requires be included to address renewable incorporation and regional supply and reliability

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Meeting the Directive's Hydroelectric Generation Target

- Existing and Committed transmission facilities are expected to be sufficient to enable 9,000 MW of hydroelectric resources by 2018
- Some recent transmission reinforcements will assist in facilitating this target
  - Northern Ontario voltage support and transfer enhancement facilities
    - Series compensation of the Sudbury-to-Toronto transmission line at a new station near Parry Sound
    - Installation of static-var compensators (SVCs) at existing stations in Kirkland Lake and near Timmins
    - Installation of shunt capacitors at existing stations near Timmins, Sudbury and Barrie

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Meeting the Directive's Non-Hydroelectric Renewable Generation Target

- Existing, Committed and Directed transmission facilities are expected to be sufficient to enable 10,700 MW of non-hydroelectric renewable resources by 2018
  - The existing transmission system accommodates over 7,000 MW of non-hydroelectric renewable generation
  - The major committed transmission project is the Bruce x Milton line, which will enable new non-hydroelectric renewable generation in the Bruce and west of London areas
  - Existing and Directed transmission facilities will enable additional non-hydroelectric renewable generation by 2018

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Directed Transmission Facilities to Enable Non-Hydroelectric Renewable Generation

- The Directive identifies three priority transmission projects to enable renewable generation in southwestern Ontario
  - Two upgrade projects that enable renewable generation in advance of a new line being built
    - Reactive compensation device(s) (such as series compensation or static var compensation) to enhance transfer capability in Bruce Area
    - Upgrading of existing line(s) west of London
  - A new line west of London
- The OPA is working with Hydro One on the development of these three projects as well as on the identification of up to 15 stations for improvements to enable small-scale renewable generation connection
- Additionally, consistent with a Directive to the Ontario Energy Board, the OPA has worked in co-operation with Hydro One to identify up to 15 stations for improvements to enable small-scale renewable generation connections

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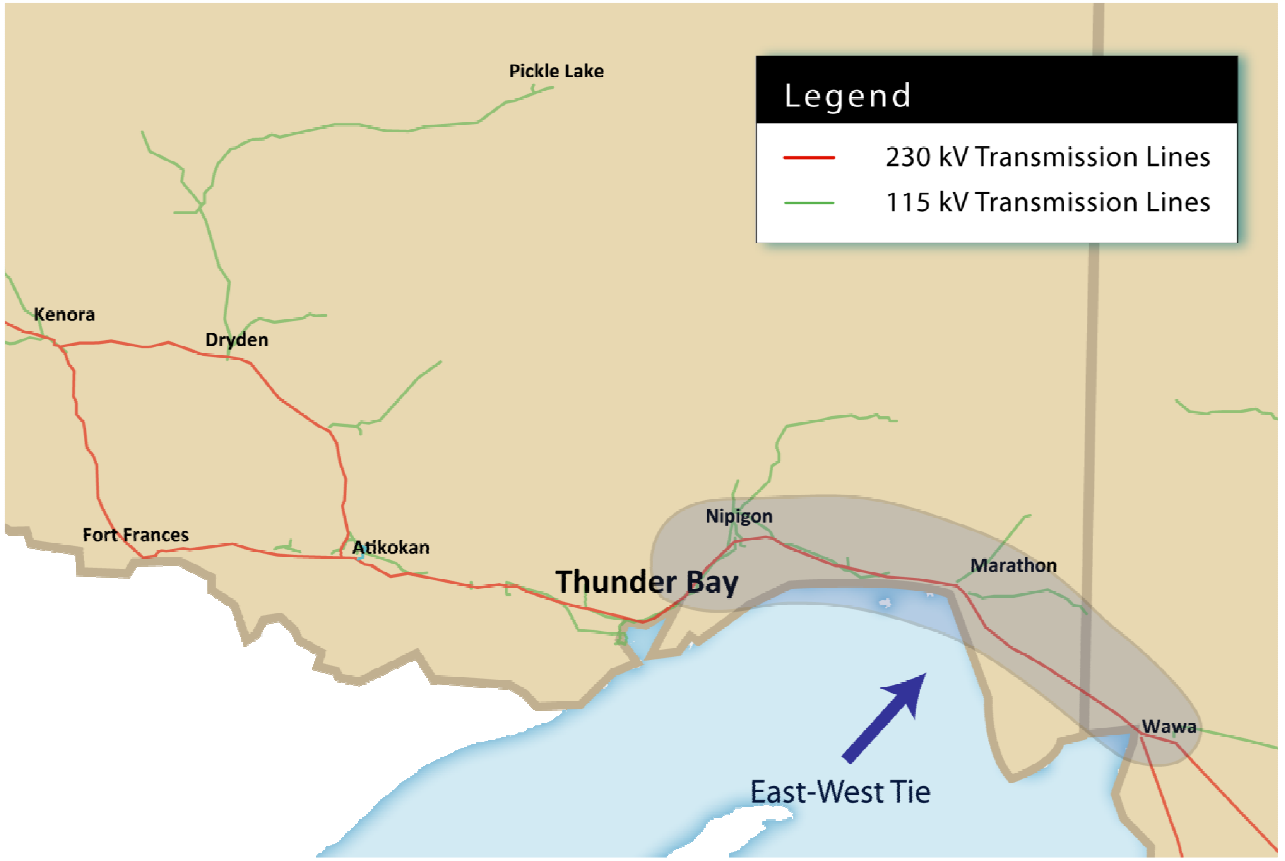
Regional Supply and Reliability Projects in the Supply Mix Directive

- The Directive identifies two priority projects that address regional supply and reliability
  - An enhanced East-West Tie
  - A new line to Pickle Lake

An Enhanced East-West Tie

- The East-West Tie connects Wawa to Thunder Bay
- Because of limited capacity it is frequently constrained
- Does not meet current reliability standards



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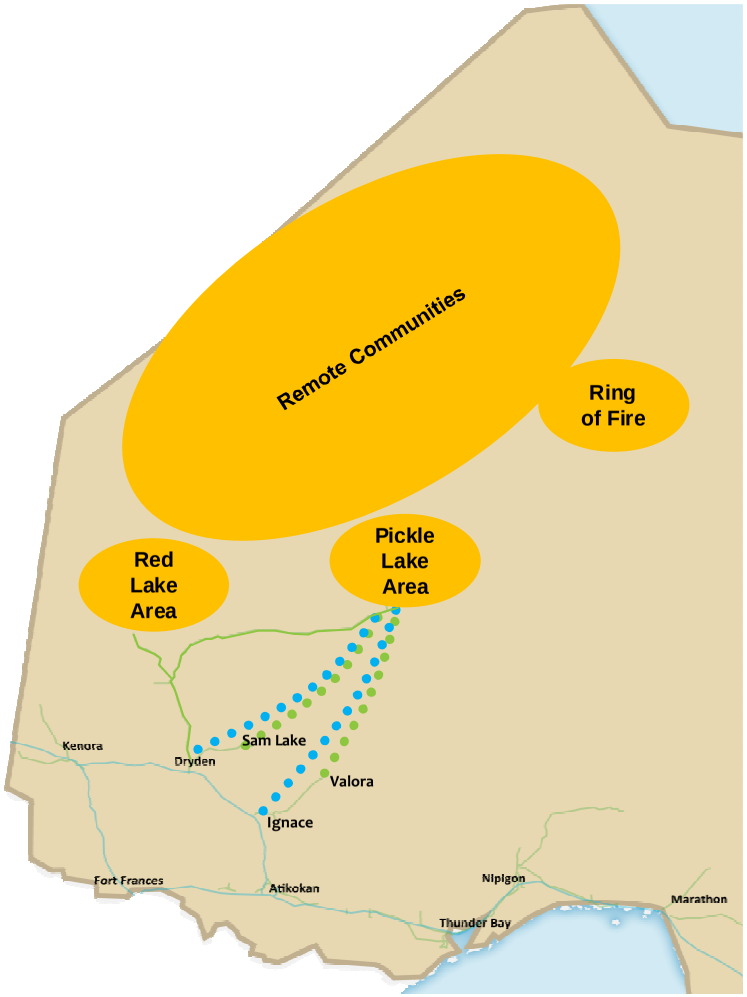
A New Line to Pickle Lake

- The OPA is evaluating options for a new line to Pickle Lake
- Alternatives being considered
  - 115 kV from Valora or Sam Lake
    - Supplying future load growth with this option will require additional upgrades to the existing 115 kV lines in the area
    - Not capable of supplying Red Lake and the Ring of Fire
  - 230 kV from Ignace or Dryden
    - Capable of meeting needs at Pickle Lake, Musselwhite, Red Lake, Remote Communities and Ring of Fire



Medium-Term Transmission Planning

- Transmission planning over the middle years of the plan is primarily driven by nuclear retirement (Pickering) and nuclear refurbishment schedules (Bruce and Darlington)
- These changes impact the transmission system in two ways:
  - Contribute to stressing the major supply points to the GTA
  - There may be transmission implications to enable future generation choices in the 2015-2025 period
    - E.g., coal to gas conversions, non-utility generator contracts, or purchases from neighbouring jurisdictions

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Transmission Options to Enable Future Generation Choices: 2015-2025

- Future supply options being considered in the 2015-2025 period could have transmission implications
  - Conversion of coal-fired facilities to gas-fired operation
  - Renegotiation of non-utility generator (NUG) contracts which are set to expire by 2030
  - Purchases from neighbouring jurisdictions

Long-Term Transmission Planning

- In the longer term (2023 onwards), transmission needs are uncertain and will depend on several factors, including:
  - Government decisions regarding new nuclear facilities
  - Changes in demand
  - Changes in energy policy
  - Status of the supply mix
  - Advancements in technologies and standards

OPA's Approach to Long-Term Transmission Planning in the Current IPSP

- Additional transmission facilities may be required to address potential long-term supply mix needs; these facilities would not need to be in service before 2023
  - Well beyond the lead time of five to seven years required for major transmission projects
- Given the long timeframe to make decisions for this period, the OPA is not recommending specific transmission projects at this time
  - The OPA will monitor system developments and carry out long-term studies as part of ongoing planning activities

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Anticipated Long-Term Transmission Needs

- The OPA anticipates that long-term transmission needs are likely to be driven primarily by two factors:
  - The addition of new nuclear generating capacity at Darlington GS
    - Identified in the Directive
  - The emergence of a longer-term supply gap
    - A high demand growth scenario, or other factors, could result in a need for more supply resources beyond 2020

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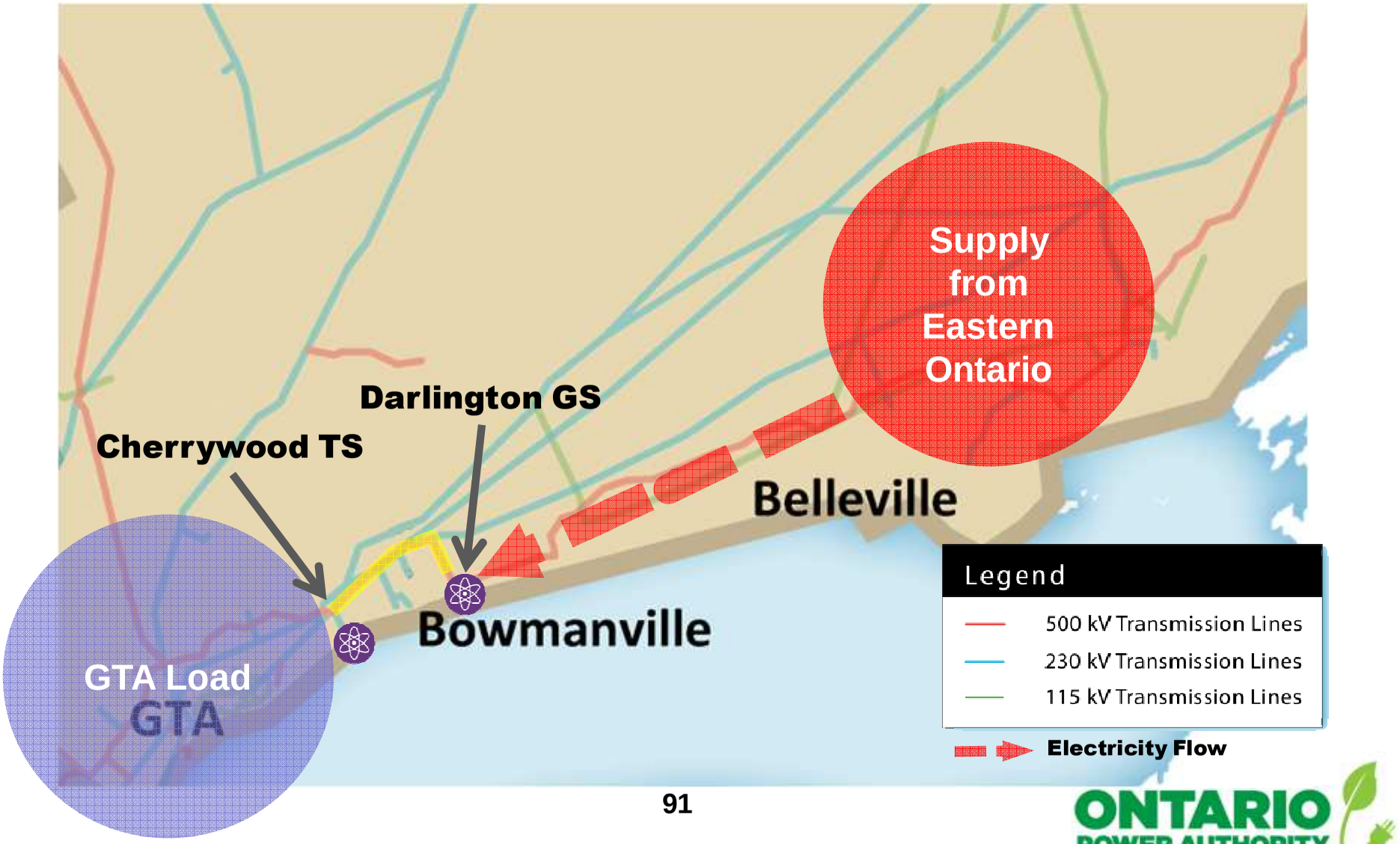
New and Refurbished Darlington Nuclear



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Options to Meet a Longer-Term Supply Gap

- In the long term, higher demand growth, changes in policy or changes in the supply mix could trigger the need for additional supply resources
- The IPSP will identify high-level transmission needs associated with resource options to fill a longer-term supply gap, on a regional basis
- Transmission required to enable additional supply resources will be factored into resource decision-making in the long term
  - Including estimated costs and timing considerations
  - The addition of further renewable capacity after 2018 requires consideration of the cost-effectiveness for Ontario ratepayers, including cost of related transmission requirements

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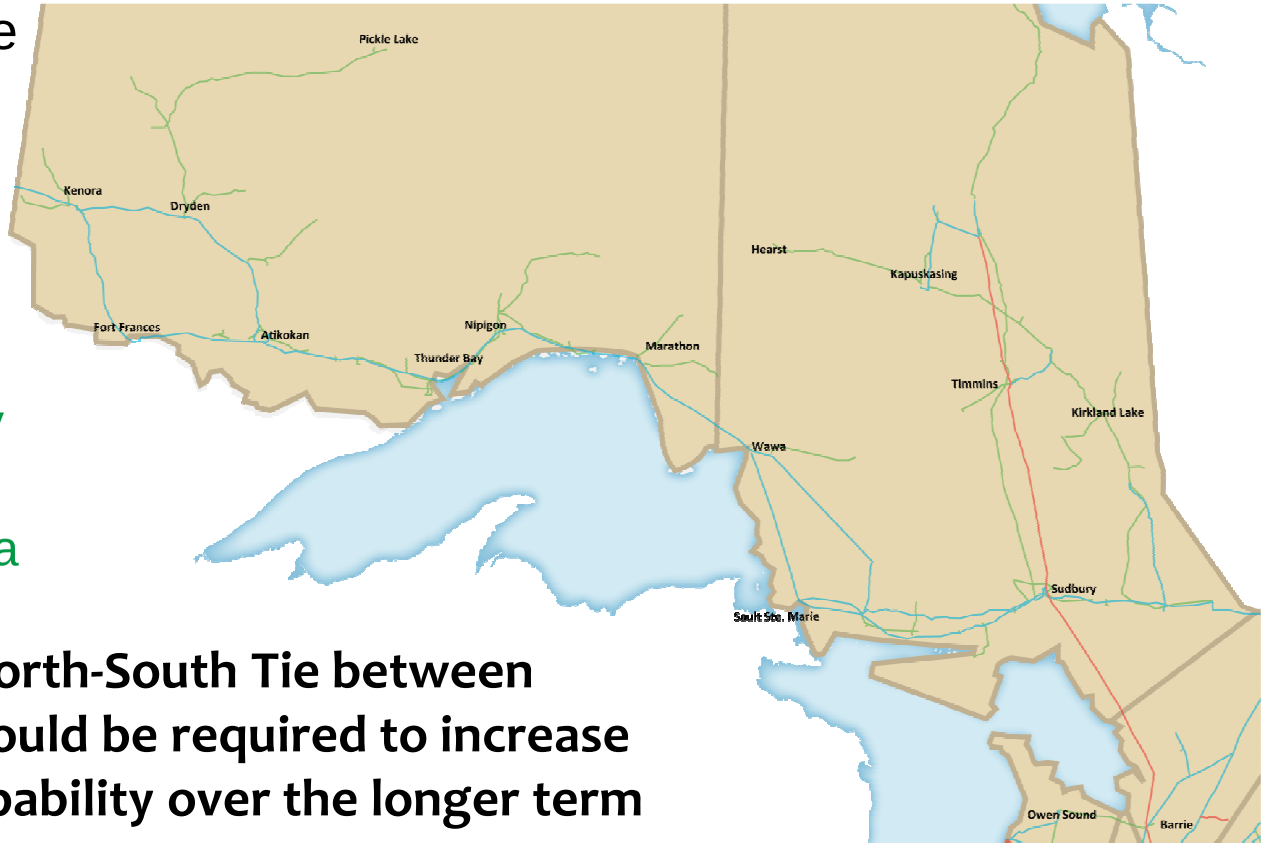
Enabling Resource Development in the North

- Additional cost-effective resources may be identified in northern Ontario, including:
  - Hydro or non-hydro renewables
  - Large-scale electricity storage
  - Imports from Manitoba or Minnesota



- **Reinforcement of the North-South Tie between Sudbury and the GTA would be required to increase north-south transfer capability over the longer term**
  - **Seven years of lead time required for development work, approvals and construction**

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Enabling Resources in the Northwest

- In addition to the North-South Tie, transmission reinforcement may be required in specific regions of the northwest where resources are located
  - Between Wawa and Sudbury
  - West of Thunder Bay, towards Kenora

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Enabling Resources in the Northeast

- In addition to the North-South Tie, transmission reinforcement may be required in specific regions of the northeast where resources are located
  - North of Sudbury, towards Kapuskasing and/or Hearst
  - East of Sudbury, towards North Bay
  - West of Sudbury

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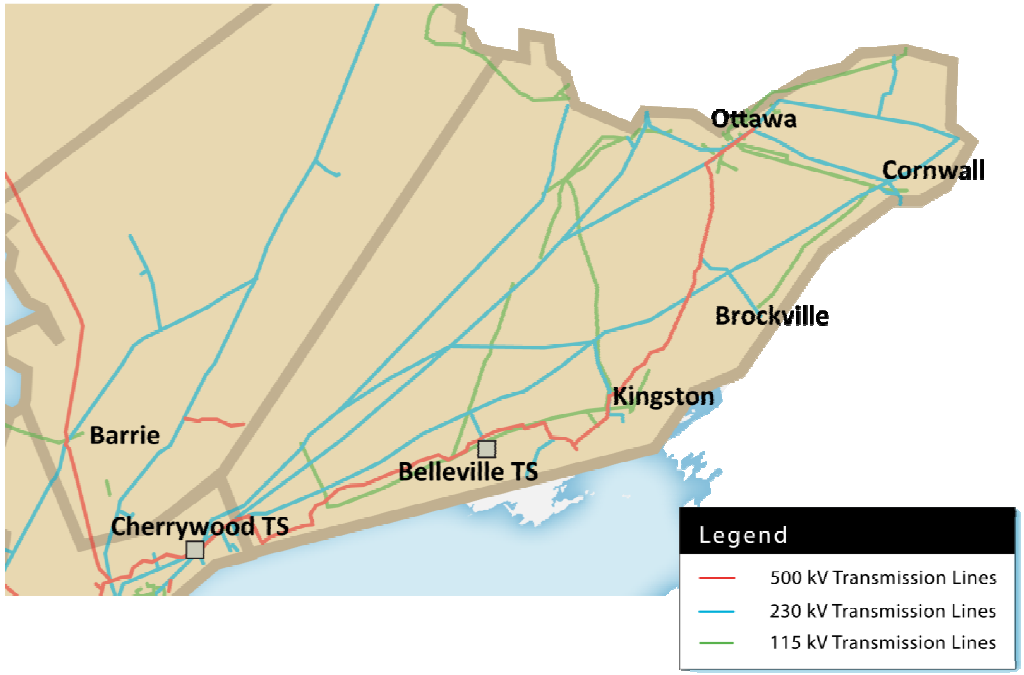
Enabling Resource Development in Eastern Ontario

- The development of additional large supply resources in eastern Ontario or the contracting for firm imports from Eastern Canada could trigger the need for transmission reinforcement
- **Transmission needs will depend on the size and location of resource development**
  - Imports into the Ottawa area would require reinforcement of the 230 kV network in the vicinity
  - Resource development along the Lake Ontario/St. Lawrence shoreline in eastern Ontario could trigger the need for reinforcement



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Longer-Term Transmission Considerations in Southwestern Ontario

- In the long-term, additional resource development in southwestern Ontario could trigger the need for new transmission lines or other facilities
- The location and characteristics of resources, as well as demand trends in southern Ontario, would influence specific requirements

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PLAN FOR REMOTE COMMUNITIES

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Transmission Planning for Remote Communities

- Twenty-one remote First Nation communities lie north of Pickle Lake and Red Lake
  - Characterized by a lack of electricity infrastructure connecting them to the provincial grid
  - All power needs are supplied by local diesel generation systems
  - Fuel costs are high due to the lack of transportation infrastructure
- Peak demand was approximately 15 MW in 2010
  - Demand is projected to grow to approximately 30 MW in the next 20 years
- Community growth and economic opportunities are constrained by insufficient electricity capacity

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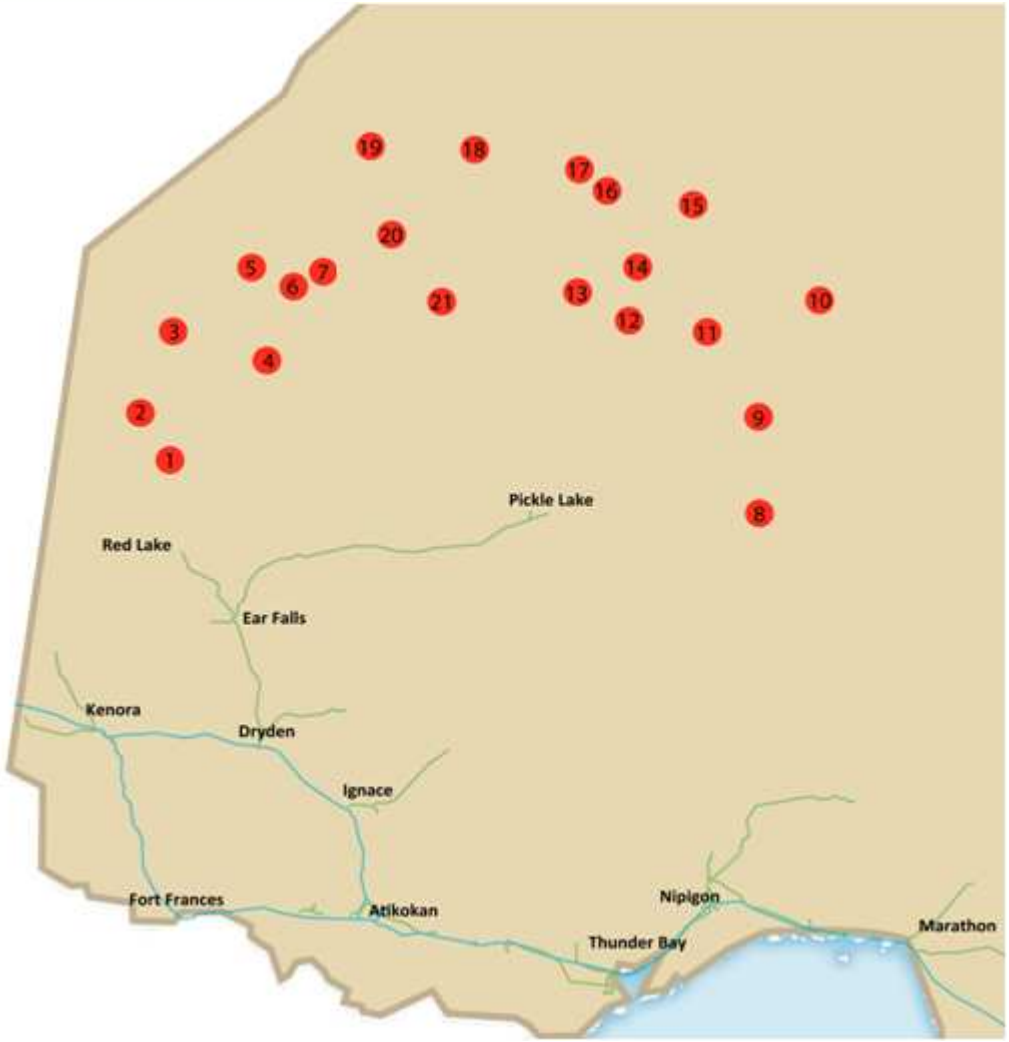
Remote Northwest First Nations Communities



North West Ontario Remote First Nation Communities	
1	Pikangikum
2	Poplar Hill
3	Deer Lake
4	North Spirit Lake
5	Sandy Lake
6	Kee-Way-Win
7	Koocheching
8	Eabametoong (Fort Hope)
9	Neskantaga (Lansdowne House)
10	Webequie
11	Nibinamik (Summer Beaver)
12	Wunnumin Lake
13	Kingfisher Lake
14	Wawakapewin (Long Dog)
15	Kasabonika Lake
16	Wapekeka
17	Kitchenuhmaykoosib Inninuwug (Big Trout Lake)
18	Bearskin Lake
19	Sachigo Lake
20	Muskrat Dam
21	North Caribou Lake

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Diesel Generating System Characteristics

- Cost of generating and delivering power in remote communities is 3 to 10 times the average cost in Ontario
- Ontario ratepayers subsidize 2/3 of the cost of service for Hydro One Remote Communities Inc. ($28 million in 2009)
  - These subsidies increased 33% between 2005 and 2009
- Diesel consumption in the 21 communities was estimated to be 24 million litres in 2010
- Fuel spills and leakage are costly to remediate

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Community Engagement in Planning

- Northwest Ontario First Nations Transmission Planning Committee was established in late 2009
  - First Nation community representatives are participating in identifying needs, assessing options
  - Collaborating on the development of a regulatory quality business case for connecting their communities
- In 2010, research workers visited participating communities to gather information and communicate the work of the committee
- The committee plans to publish a final report, including a business case, in mid-2011

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Rationale for Connecting Remote Communities

- Rate of growth in remote First Nations communities is significantly above the Ontario average
- Forecasted costs for continued reliance on diesel are expected to be higher than the costs of transmission connections and supply from the grid
- Use of diesel fuel has a substantial local environmental impact
  - This is inconsistent with Ontario's carbon reduction goals
- Ontario ratepayer subsidies to remote communities are increasing at about 8% annually
  - Growth in subsidies is driven by rising fuel costs, transportation costs, community growth
- Solutions will involve consideration of relevant cost contributions from benefiting parties, including the federal government

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Scope and Timing for Connecting Remote Communities

- Project involves construction one or more 115 kV lines, step-down stations and distribution feeders
  - Depending on the configuration, distance of new lines could range from 900-1,300 km of 115 kV and 300-600 km of low-voltage lines
  - Ongoing discussions on project specifics involve the communities and other stakeholders
- The cost of diesel consumed in these communities over the next 25 years is expected to be more than $1B
- Timeline for development work, approvals and construction is 7 to 10 years
- Planning and development activities should commence as soon as possible

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EAST-WEST TIE REINFORCEMENT – NEXT STEPS

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Background on Northwestern Ontario Supply

- The economy of northwestern Ontario is resource based
  - Industrial demand accounts for over half of the energy consumption in the northwest
  - Demand is highly variable and difficult to forecast
  - In the past decade, peak demand has fluctuated between 700 and 1,200 MW
- Currently, the region's installed generation capacity consists primarily of hydroelectric and coal-fired facilities
  - Hydroelectric: over 50%
  - Coal: about 30%
  - Remainder: gas, biomass and demand response
- The region is connected to the rest of Ontario through a 230kV transmission line known as the East-West Tie
  - Augments energy supply to the northwest
  - Delivers surplus energy to the rest of Ontario
- The Northwest is interconnected with Manitoba and Minnesota

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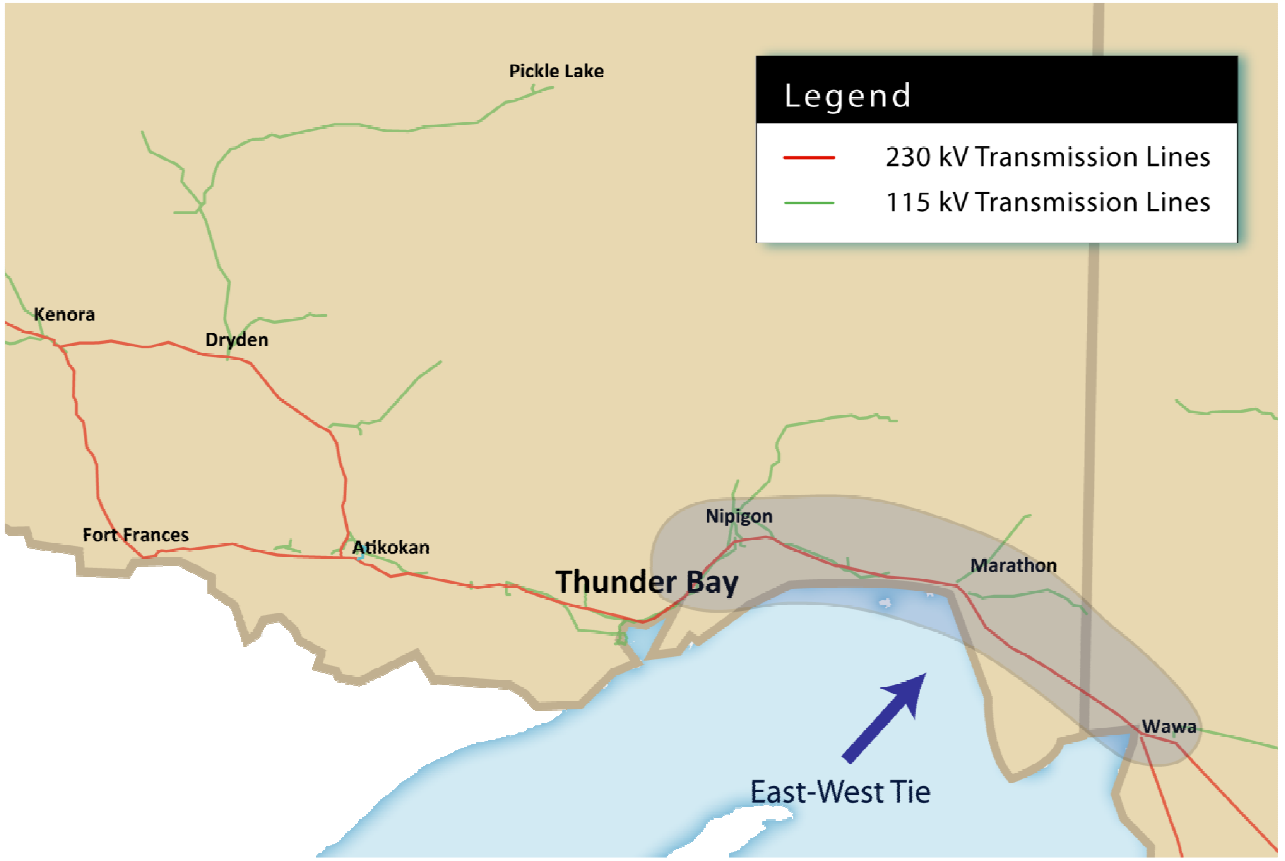
Background on Northwest Transmission

- The East-West Tie connects Wawa to Thunder Bay
- Because of limited capacity it is frequently constrained
- Does not meet current reliability standards



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Timing and Rationale for Enhancing the East-West Tie

- Coal-fired generation will be shut down by the end of 2014 and replacement capacity will be required
- The Directed conversion of Atikokan GS to biomass and Thunder Bay GS to natural gas are components of the solution
  - Availability of cost-effective biomass fuel may limit production
  - Thunder Bay GS is best suited for peaking operation
- A longer-term solution should consider cost-effectiveness, security of supply and other benefits
- An enhanced East-West Tie will:
  - Provide a cost-effective and reliable long-term supply to the Northwest
  - Facilitate meeting current reliability standards in the Northwest
  - Reduce losses and congestion along the East-West Tie
  - Enhance operational flexibility
  - Provide delivery capacity for connecting new resources in the Northwest

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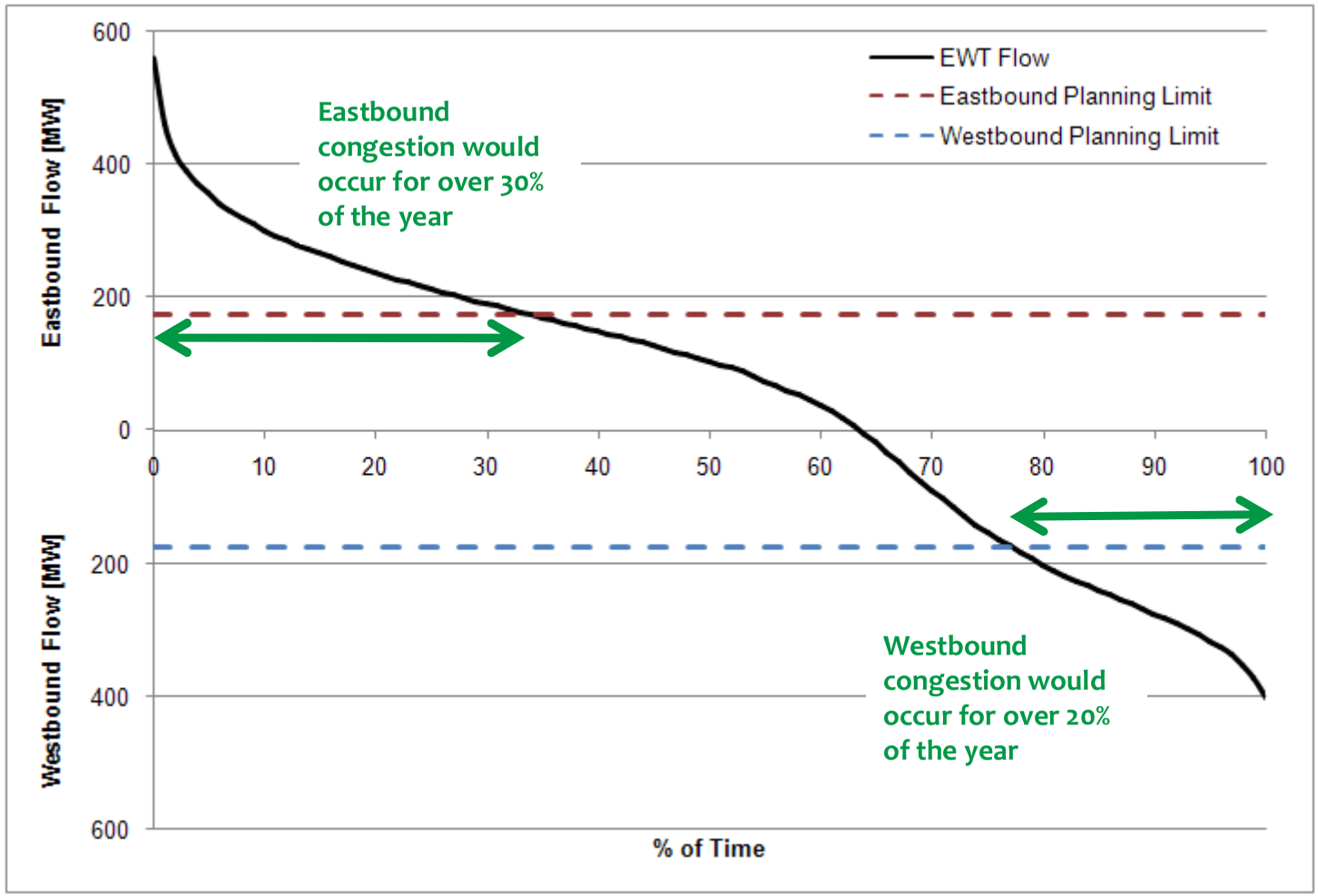
The East-West Tie is Frequently Constrained



Based on planning assumptions for the year 2020

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East-West Tie Project: Scope and Timing

- Construct a 400 km, 230 kV double-circuit transmission line running from Wawa to Thunder Bay
  - The enhanced East-West Tie will have a total transfer capability of 650 MW
- Target in-service date is 2016/17
- Estimated capital cost of $600 million
- The government's Long-Term Energy Plan indicates that this project will be subject to the Ontario Energy Board's transmitter designation process
  - The OPA will be providing planning analysis to the Board to support initiation of this process
- This project will also be subject to the Ontario Energy Board's Leave to Construct approval process

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East-West Tie Project Process

- The East-West Tie process is moving ahead of the IPSP process
- Ministry has expressed interest that the OEB's Transmission Project Designation Process be applied
  - Selects the transmission company to develop the project
- The OPA will submit a report to the OEB at the end of June outlining the preliminary assessment for the line
- The report will include:
  - Line connection points and routing requirements
  - Technical requirement, including line capacity
  - Available information regarding ratepayer benefits

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Ontario Energy Board Process

- OPA identifies preliminary need for a transmission project based on an informed, effective plan e.g. IPSP or ECT.
- OEB invites licensed transmitters to file project plans by a specific date.
  - According to the Filing Requirements in docket G-2010-0059
  - Includes the opportunity for information sessions with OPA regarding project specifics
- Board issues a Notice of Hearing to designate a transmitter for development work.
  - Includes provisions for intervenors, discovery and the hearing
- Board issues an Order for the designated transmitter to develop the plan for the project and bring in an application for leave to construct.
  - Is conditioned on the transmitter meeting milestones.
  - Includes reporting commitments so that the Board can track progress.

Board policy on decision criteria

- Financial and Technical Capability
  - Organization and Experience of the team
    - Participation by First Nations and Métis groups should be noted where applicable
  - Technical Capability of the team
  - Financing
- Project plan
  - Schedule and Costs
    - Development and construction
    - Timing (with milestones)
    - Consultation with land Owners, First Nations and Métis and other relevant parties
- Economic Efficiency of Overall Plan

Additional Information

- The OEB policy, filing requirements for transmitters, and the associated documentation can be found on the Board's website by reference to the docket (EB-2010-0059) or directly at:

  http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Policy+Initiatives+and+Consultations/Transmission+Project+Development+Planning

- Further details are expected to be available following the Board's review of the OPA's report, requested by June 30.

Agenda for Aboriginal Consultation
Regional Sessions
Ontario Power Authority
Thunder Bay, Ontario
June 22nd, 2011

1.	**Introduction –**	**9:00 – 9:30**
	Opening Prayer Welcome – OPA: Michael Lyle, VP Legal, Aboriginal and Regulatory Affairs Ron Jamieson, Member of the Board of Directors Duty to Consult – Kaili Sermat-Harding (Ministry of Energy) IPSP: Intro – Chuck Farmer, OPA, Power System Planning	
2.	**Supply and Demand for Electricity -**	**9:45 – 10:45**
	Chuck Farmer – OPA, Power System Planning	
	- - - - Break - - - -	**10:45-11:00**
3.	**Conservation of Electricity**	**11:00-12:00**
	Chuck Farmer – OPA, Conservation	
	- - - - Lunch - - - -	**12:00 – 1:00**
4.	**Transmission**	**1:00 – 3:00**
	IPSP Directive Requirement Remote Communities	
	- - - Break - - - -	**3:00 – 3:15**
	East-West Tie: Next Steps –	**3:15 – 3:45**
	Joe Toneguzzo-OPA, Power System Planning Ceiran Bishop - Ministry of Energy	
5.	**Questions and Answer**	**3:45 – 4:30**
6.	**Closing Prayer**	**4:30**

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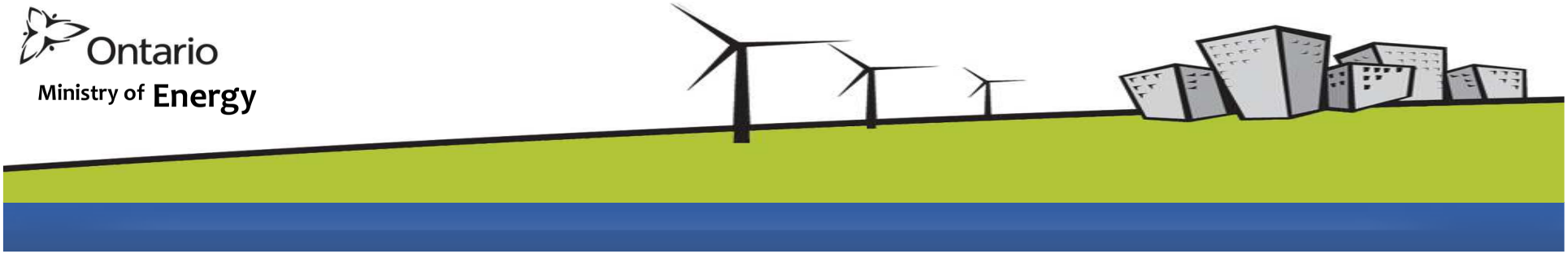
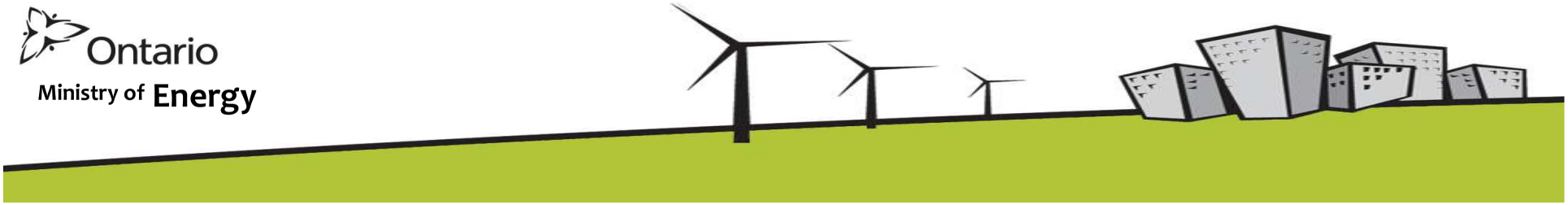


The Duty to Consult and the Integrated Power System Plan

Ministry of Energy

June, 2011

Ontario
Ministry of Energy



Background

- On February 17, 2011 the Minister of Energy issued a Supply Mix Directive to the Ontario Power Authority (OPA) to prepare the Integrated Power System Plan (Plan) to meet government goals and objectives.
- The directive acknowledges the important role that Aboriginal communities play in the development of Ontario's electricity system.
- It also states that the Government "expects the OPA to carry out the procedural aspects of any Crown duty to consult First Nation and Métis communities in developing the Plan."

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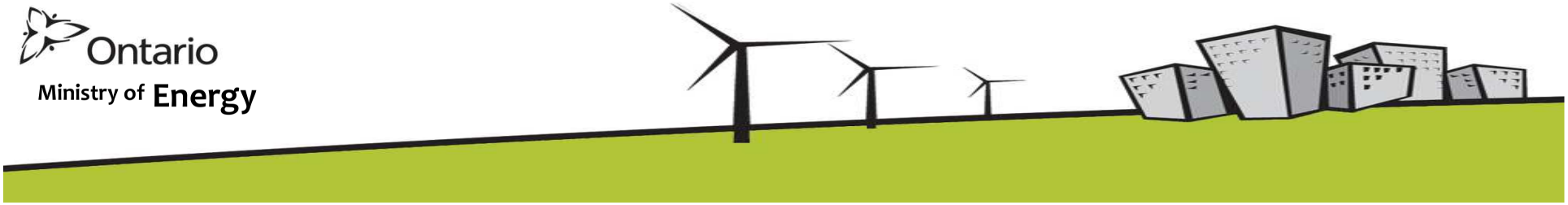

Roles of Crown and OPA

- The Crown has a duty to consult and, where appropriate, accommodate Aboriginal peoples where their rights may be adversely affected by a Crown action or decision.
- The Ministry of Energy takes the duty to consult very seriously and is committed to meeting its consultation obligations when energy initiatives have the potential to impact Aboriginal or treaty rights.
- The Ontario Power Authority has been delegated procedural aspects of any Crown duty to consult in respect of the IPSP.

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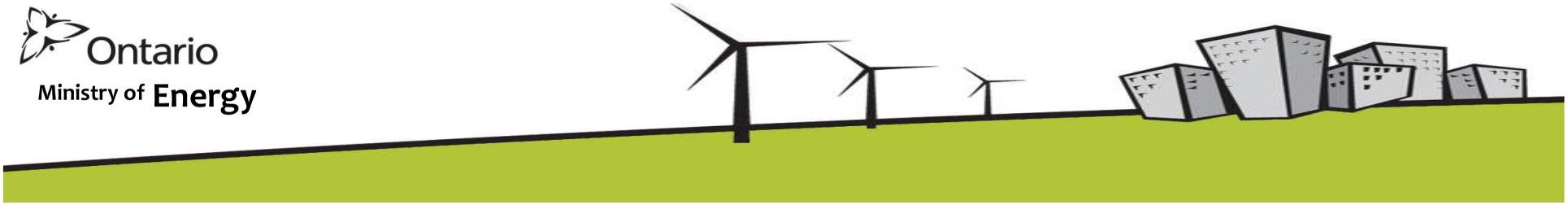
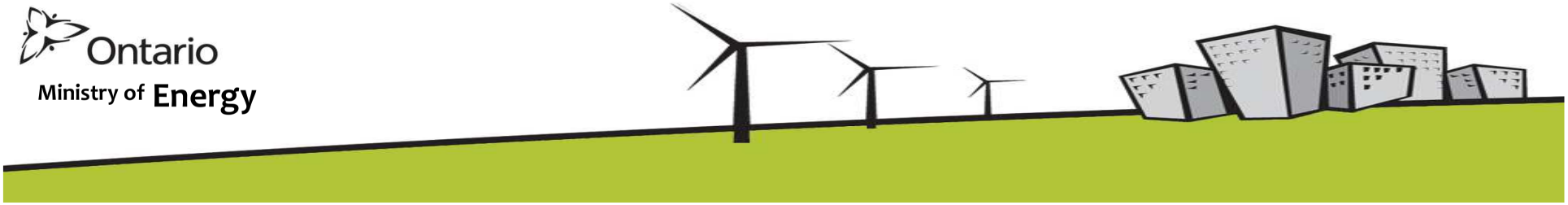


Context for Consultations

- The OPA is undertaking the work on a province-wide, strategic level Plan.
- The Plan has a 20-year horizon and requires updating every 3 years to consider new information and circumstances.
- The Plan is developed to meet the government's goals as set out in the February 17, 2011 Supply Mix directive.
- Projects identified in the Plan are required to undergo regulatory approvals prior to development occurring. This allows Aboriginal communities to identify adverse impacts of the project, prior to approvals.
- The views and interests of Aboriginal communities will help the OPA develop a Plan that will meet the government's objectives for a clean, modern and reliable electricity system for Ontario.

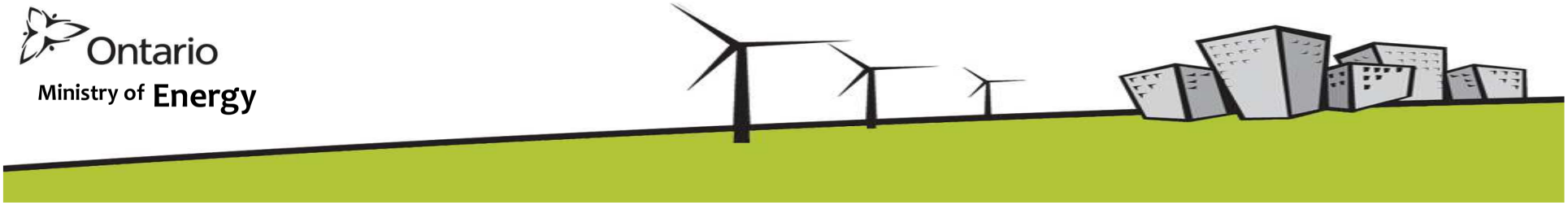
Ontario
Ministry of Energy



Consultation Process

- The OPA is undertaking a series of regional sessions with First Nation and Métis communities.
- The OPA will also offer community meetings with each First Nation.
- The OPA will write a report that will be shared with all Aboriginal participants, the Ministry of Energy, and the Ontario Energy Board for consideration.

Ontario
Ministry of Energy



Next Steps and Opportunities for Further Input

- Anticipated Timelines:
  - Summer 2011 – Consultation with Aboriginal communities (regional sessions and community meetings)
  - 2011 – IPSP submitted to the Ontario Energy Board
  - 2011/12 – OEB hearings and decision on IPSP
  - Post 2012 – Ongoing work with communities
  - 2014 – Next IPSP update

Developing IPSP II

June, 2011

Overview

- Outline the process of developing and reviewing the Integrated Power System Plan (IPSP)
- Define the key challenges to be addressed in the development of the IPSP

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OPA's Role in Integrated Electricity System Planning

- The Ontario Power Authority (OPA) plans for a reliable, sustainable and cost-effective electricity system
- The OPA delivers on that mandate by developing integrated plans, providing advice to government and participating in regulatory proceedings for electricity projects
- The development and maintenance of an integrated long-term plan is central to that mandate.

ONTARIO POWER AUTHORITY

The Long Term Energy Plan and the Supply Mix Directive are the Foundations of the IPSP

- Long Term Energy Plan
  - The government consulted with key agencies and stakeholders as it developed its Long Term Energy Plan
  - Issued in Fall of 2010
- Supply Mix Directive
  - Posted for public comment on Ontario's Environmental Registry
  - Issued to the OPA on February 17, 2011
  - Replaces the previous Supply Mix Directive issued June, 2006 and September, 2008
  - Establishes the mandatory requirements that the OPA must comply with in developing the IPSP

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Review of the IPSP

- Integrated Power System Plan (IPSP)
  - Incorporates the mandatory requirements of the Supply Mix Directive and identifies potential additional requirements
- Ontario Energy Board (OEB) reviews plan to ensure that it:
  - Complies with Minister's directives and government regulations (O.Reg. 424/04)
  - Is economically prudent and cost effective
- OEB can approve plan or refer it back to OPA for further consideration and resubmission to OEB
- OEB required to facilitate implementation of approved IPSP

ONTARIO POWER AUTHORITY

Ontario Regulation 424/04 (IPSP Regulation)

- In development of an IPSP, the OPA shall comply with the regulation
  - Comply with directives issued by the Minister
  - Consult with stakeholders
  - Identify and develop innovative strategies to accelerate CDM
  - Identify opportunities to use natural gas in high efficiency/value applications in electricity generation
  - Identify and develop strategies to encourage/facilitate cost-effective measures for meeting system needs; consider competitive options when identifying and developing these strategies
  - Consider safety, environmental protection and environmental sustainability
  - Provide analysis for each project recommended in the plan

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The IPSP will comply with the mandatory requirements and address several issues

- how does the IPSP meet the mandatory resource requirements in the Supply Mix Directive?
- how can challenges to meeting those requirements be addressed?
- what incremental capacity, energy and ramping requirements remain after the mandatory requirements and other committed and directed resources have been accounted for?
- how does the IPSP address whether the achievement of the Supply Mix Directive's CDM targets may be exceeded and accelerated?
- how and when will alternative/additional resources (ex. conservation, supply, imports, storage, and transmission) need to be considered?

Areas to be Addressed (continued)

- what are the IPSP's recommendations about the scope and timing of the five priority transmission projects?
- what other cost-effective transmission and distribution solutions are addressed through the IPSP and other decision processes?
- how will current assumptions respecting drivers for demand, project timelines, technology and energy policy framework be evaluated so that they are kept current and realistic in future IPSPs?
- what is the plan for remote community connections?
- how does the IPSP give consideration to smart grid developments?

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Supply and Demand for Electricity

Chuck Farmer

Presentation Outline

- Status of electricity service
- The integrated plan development process
- Demand overview
- Supply overview

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Factors that Guide the Development of IPSP II

- Ontario's electricity system is well-positioned to meet demand forecasts in the mid-term
- Mandatory requirements in the Supply Mix Directive meet most of the needs for the mid-term
- Focus of this Plan is on implementing the directive
- Significant coordination among agencies and LDCs required to achieve short and longer-term conservation goals
- Small capacity gap exists between 2015-2022, however, it can easily be filled with available short lead-time options:
  - Non-Utility Generators: contracts could be renegotiated according to a directive received November 23, 2010 (up to 1,500 MW by 2030)
  - coal-fired units: could be converted to natural gas as a result of a decision to be made by government in 2012 (up to 3,300 MW by 2030)
  - additional and/or acceleration of CDM resources
- Uncertainty emerges late in the Plan
  - high-growth scenario creates need for flexibility, but we have time to decide course

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Electricity Service Improvements Make this Planning Cycle Different From IPSP I

- A few years ago, we faced a tough electricity supply situation, but conditions have changed since the first IPSP was filed in August 2007:
  - Demand in Ontario has declined since reaching a peak in 2005, due partly to both economic restructuring and conservation
  - A significant amount of new supply has been added:
    - renewable energy
    - natural gas
    - refurbished nuclear
    - demand response
  - Major investments in new transmission infrastructure have been made
  - Green Energy Act
  - Long-Term Energy Plan
- These developments become the starting point for the next plan

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Government's Supply Mix Directive Addresses Electricity Supply and Demand Components

- Conservation and Demand
- Phase-out of coal-fired generation
- Non-Hydroelectric renewable generation (wind, solar, bio-energy)
- Hydroelectric generation
- Natural gas-fired generation
- Nuclear generation
- Transmission
- Smart grid

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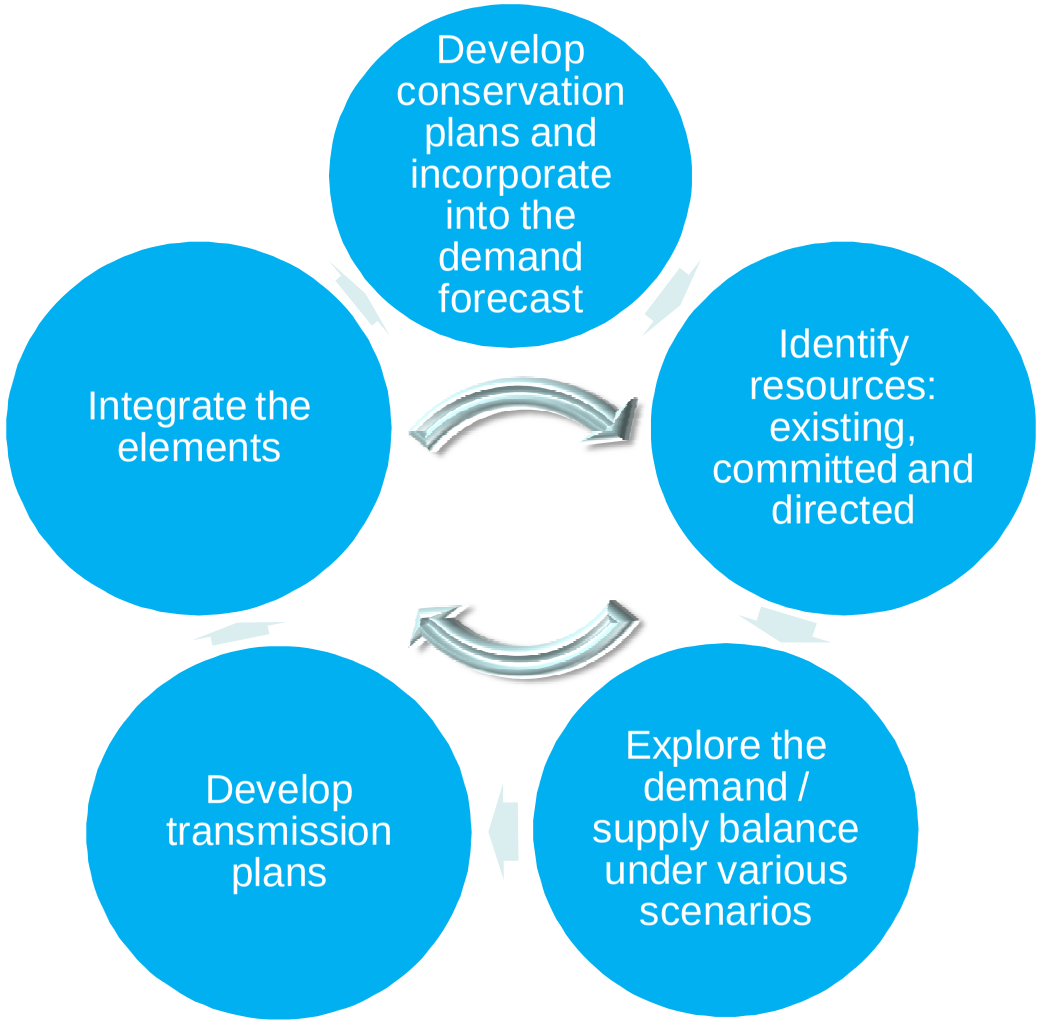
Integrated Nature of Planning



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Ongoing Planning Activities

- Project specific regulatory reviews
- Regional planning initiatives
- Demand and Supply Forecasting
- Conservation programs
- Procurement contracting

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Demand Forecasting

May 25, 2011

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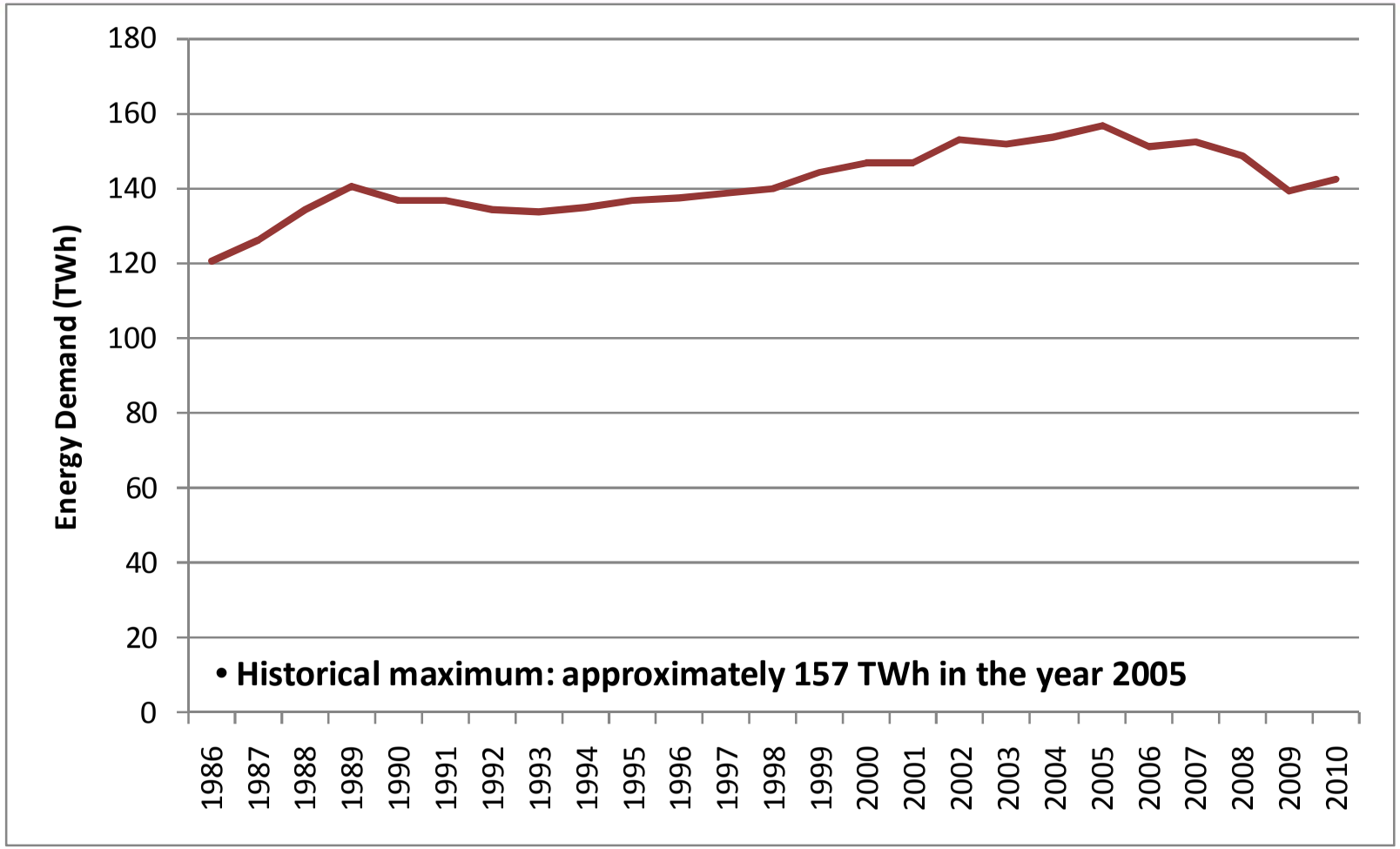
Historical Energy Demand: 1986 – 2010 (TWh)



- **Ontario's electricity demand was approximately 22 TWh higher in 2010 than in 1986**

Note: Data are not weather normalized.

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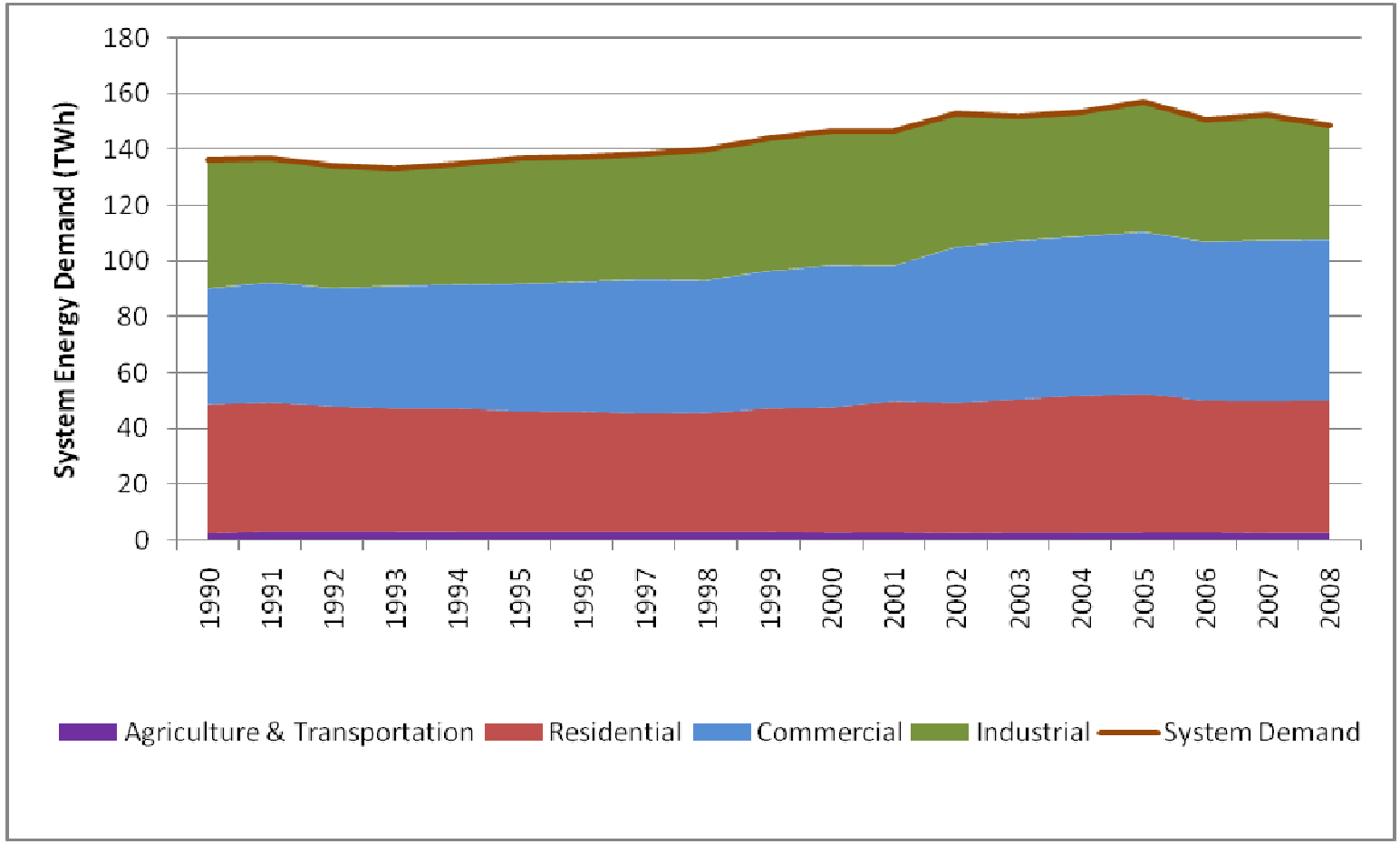
Contribution by Sector (TWh)



- **The commercial sector's share of total electricity demand in Ontario has been rising**

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Electricity Demand: Supply Mix Directive and Long-Term Energy Plan

- In developing the Plan, the OPA must use "a medium electricity demand growth scenario" that "balances the expected growth in residential and commercial sectors with modest, post-recession growth in the industrial sector"

- **Under this scenario, "Ontario's demand would grow moderately (approximately 15 percent) between 2010 and 2030, based on the projected increase in population and conservation as well as shifts in industrial and commercial needs"**

- **The IPSP must have enough flexibility to accommodate the potential for "a higher growth outcome" driven by technological changes such as the adoption of electric vehicles and the potential electrification of public transit**

- **Three electricity demand growth scenarios are described in the government's Long-Term Energy Plan (LTEP) released in November 2010: high growth, medium growth and low growth**

- **The IPSP will incorporate the three electricity demand scenarios described in the LTEP**

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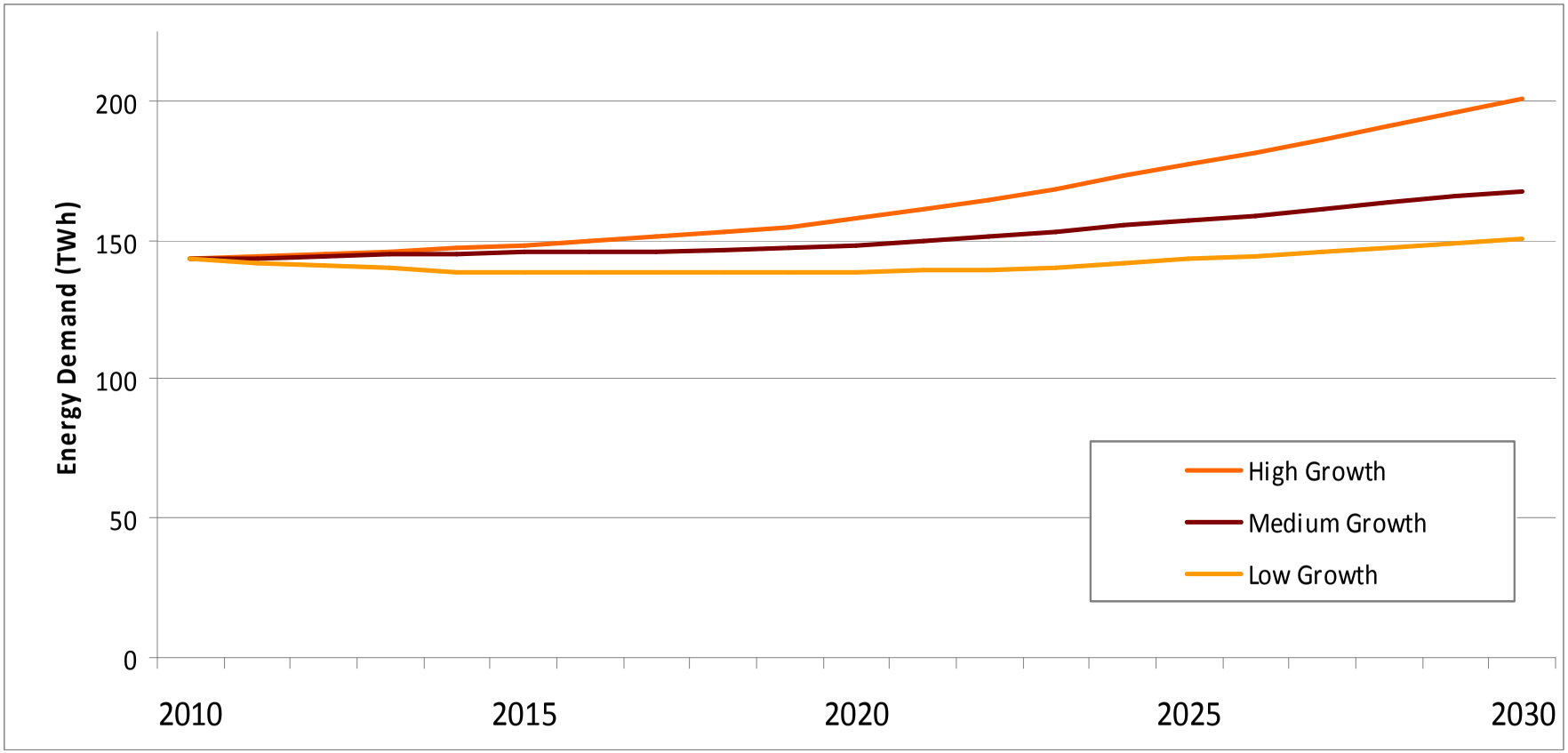
Demand Outlook 2010-2030



- Demand is net of conservation targets

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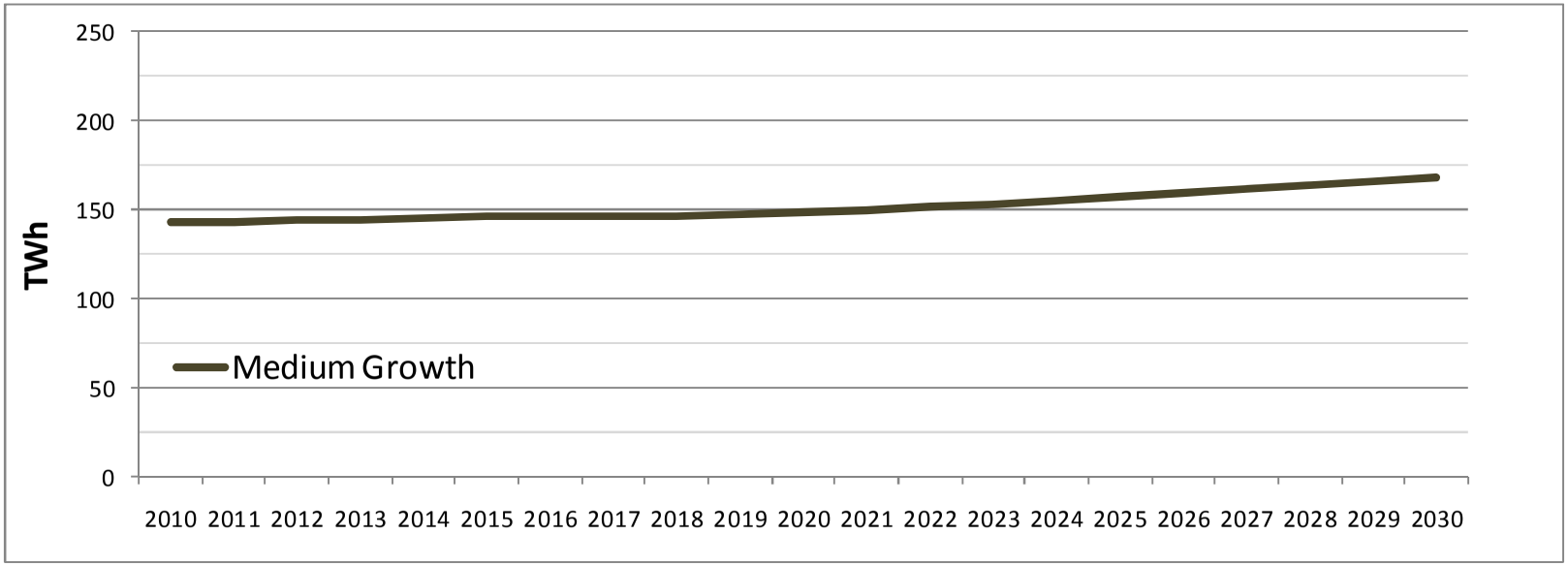
Medium-Growth Demand Scenario

- Recovery of most of Ontario's industrial sector electricity demand from the recent lows, but to levels that are below those experienced in 2005
- Continued growth in the residential, commercial and transportation sectors
- Overall growth rates and trends returning to levels observed before the recent economic slowdown
- Existing conservation targets are met



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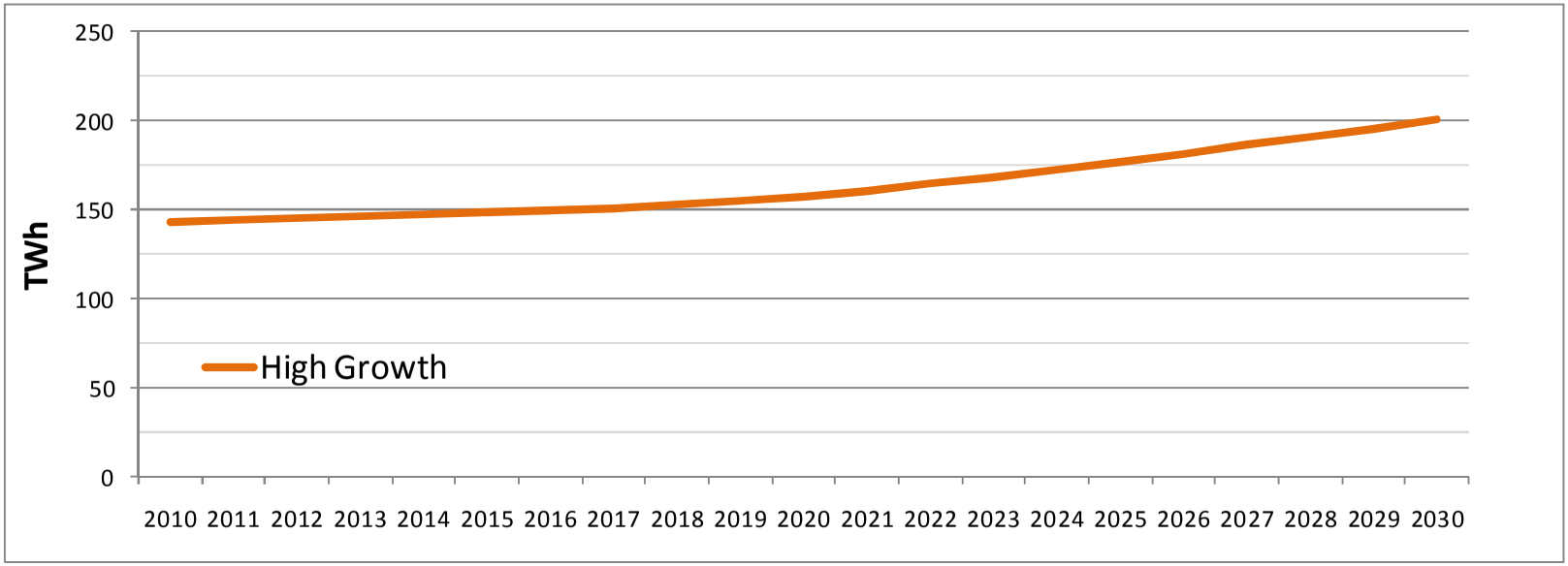
High-Growth Demand Scenario

- Efforts are made to reduce carbon emissions, through application of aggressive North American greenhouse gas ("GHG") regulation

- Changes **in customer** preferences for energy sources could drive electrification in residential and commercial markets and lead to faster adoption of electric vehicles



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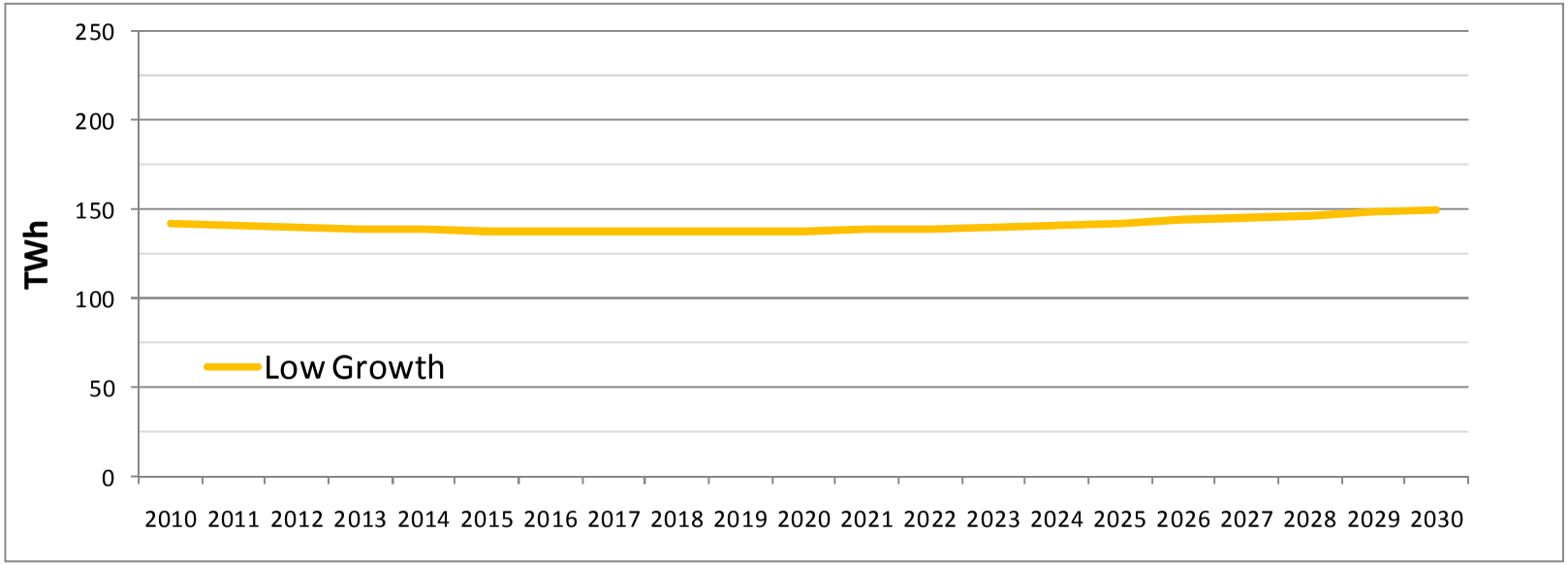
Low-Growth Demand Scenario

- Ontario industrial demand continues to grow modestly, continuing with the current trend
- Reduced demand in the industrial sector is driven by a persistent move away from energy-intensive industry
- Accompanied by a reduction in the growth rate of the residential and commercial sectors as the number of industrial jobs and related services decline



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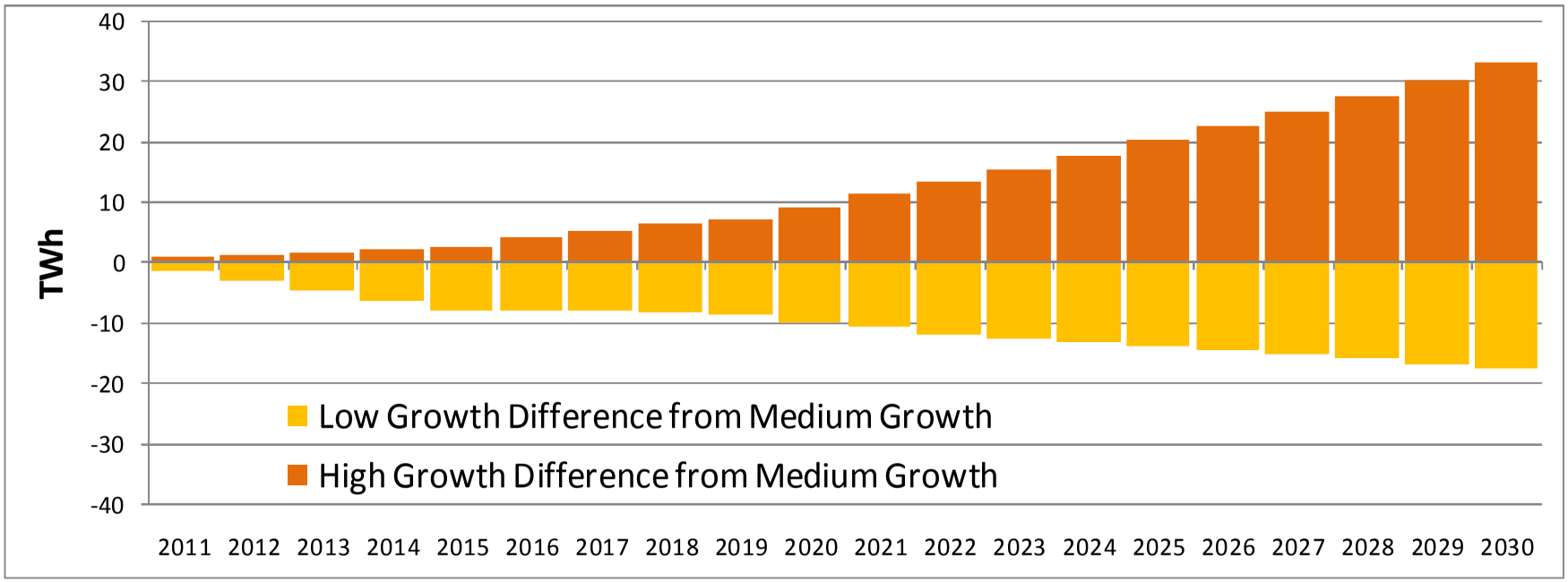
Comparison of Demand Growth Scenarios (TWh)

- Scenarios are comparable in the near-term
- Greater differences are seen in the long term as drivers have increasing impact



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Insights From Demand Scenarios

- Demand to 2015 similar under all three scenarios
- Monitoring signposts:
  - economy
  - conservation
  - sector trends and related end-uses (industrial, commercial and residential)
  - population
  - government policy
  - energy prices
  - technology developments
- Future plans will address longer term demand uncertainty

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Supply

May 25, 2011

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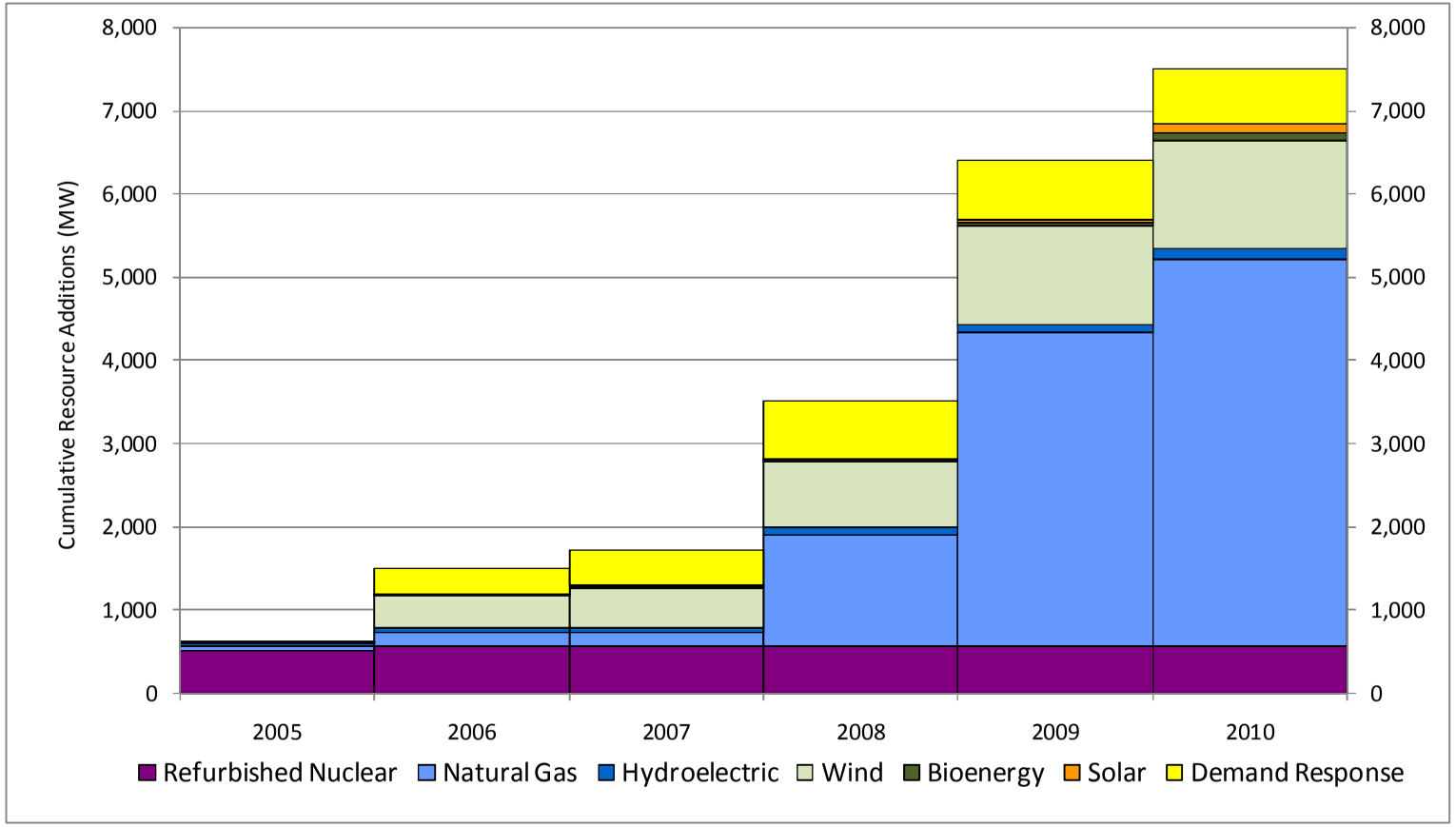
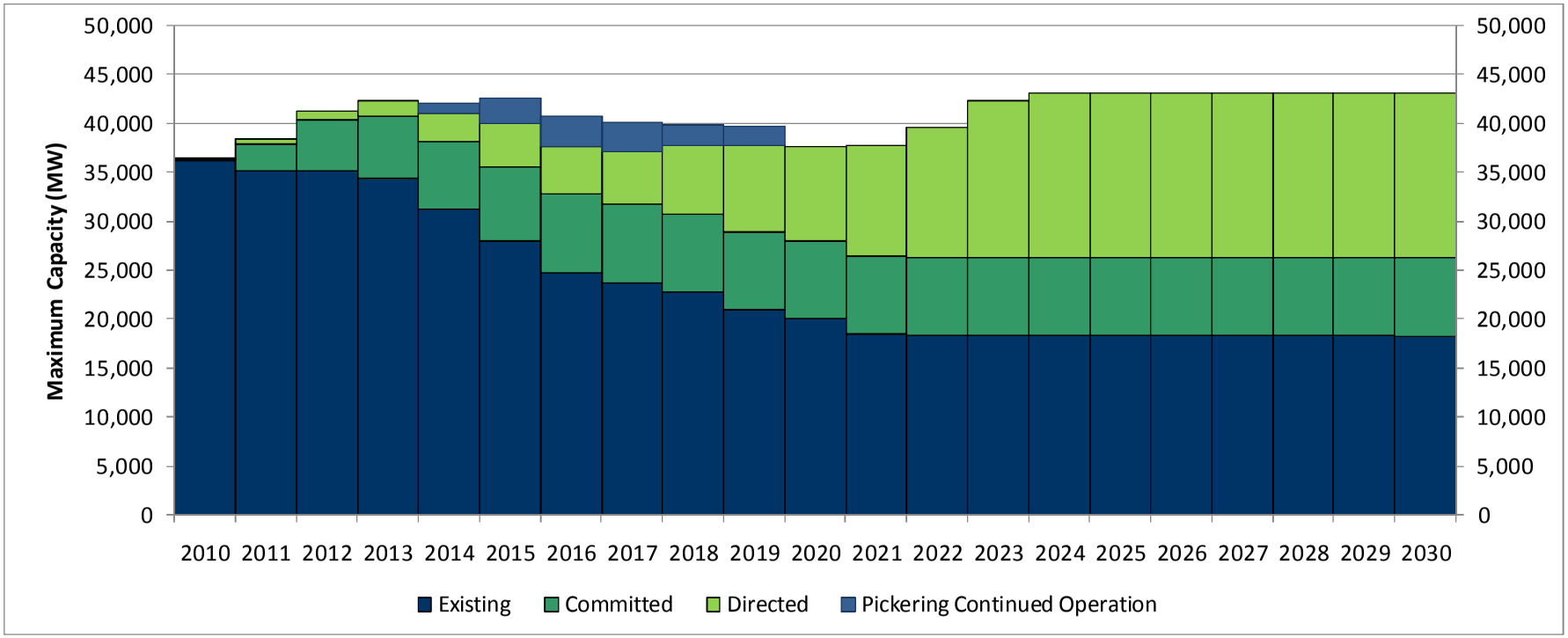
Recent Investments in Electricity Supply Have Been Significant

- Since 2005, about 7,700 MW of new supply has been added, eliminating the supply deficit and setting the stage for coal phase-out.



More Generation is Committed and Directed



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Supply Mix Directive Requirements Related to Nuclear

- **Nuclear**
  - Nuclear generation to account for about 50 percent of total Ontario electricity generation:
    - Refurbishment of Bruce and Darlington
      - coordinated refurbishment schedule
    - Plan to assume government's procurement of two nuclear units (approximately 2,000 MW) at Darlington

Supply Mix Directive Requirements Related to Coal

- **Coal phase-out and potential conversion**
  - All coal units to be phased out by the end of 2014 or sooner
  - Coal Conversions:
    - Atikokan GS to biomass
    - Thunder Bay GS to natural gas
  - OPA to assess the conversion of some or all of the remaining units at Lambton GS and Nanticoke GS to natural gas
    - decision to convert these units will be made by government after 2012 once better information on nuclear capacity is available

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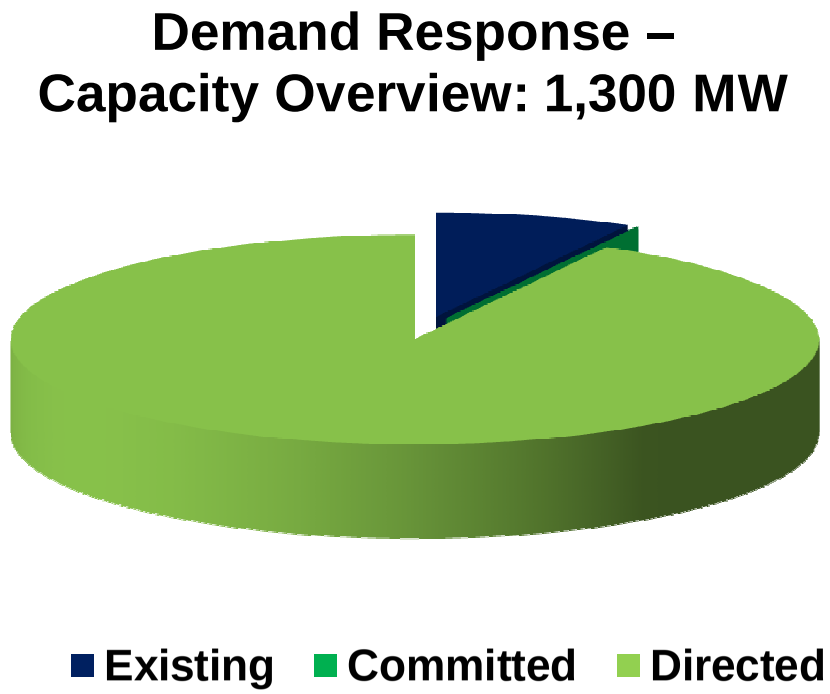
Role of Demand Response

- Load reductions from demand response contribute to meeting Conservation targets



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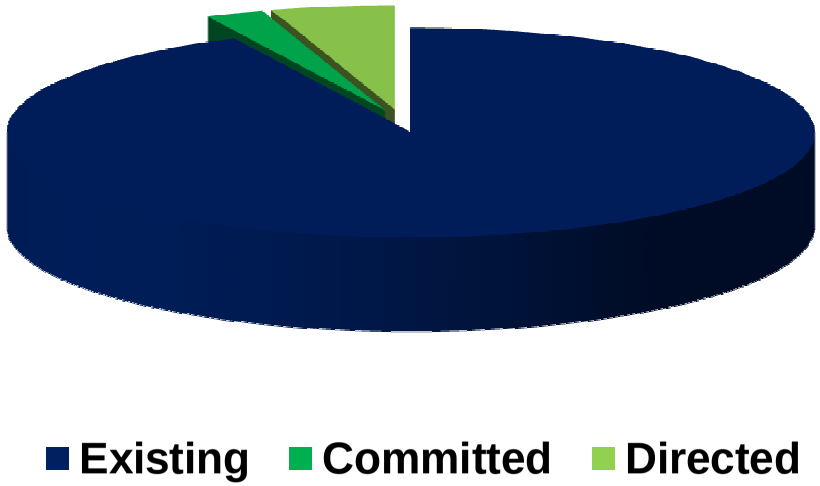
Supply Mix Directive Requirements Related to Hydroelectric

- Plan for installed hydroelectric capacity to reach 9,000 MW by 2018
- OPA will continue to explore cost-effective opportunities for further hydro development

Hydroelectric – Capacity Overview: 9,000 MW



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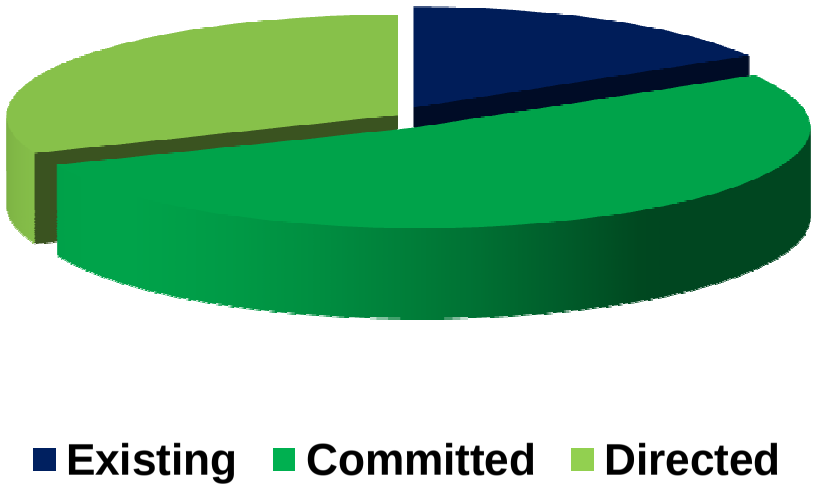
Supply Mix Directive Requirements Related to Non-Hydroelectric Renewables (wind, solar and bio-energy)

- Plan for 10,700 MW of non-hydroelectric renewable capacity by 2018
- To date, approximately 7,000 MW of non-hydroelectric generation is existing and has been committed through various programs
- The government will continue to look for opportunities to increase renewable capacity taking into consideration cost-effectiveness, transmission and demand

Non-Hydroelectric Renewables – Capacity Overview: 10,700 MW



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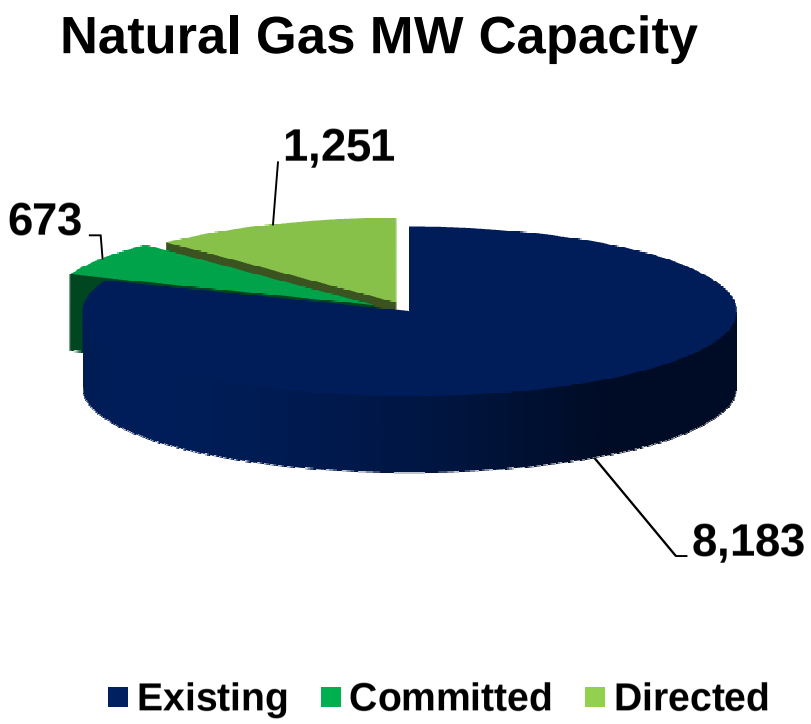
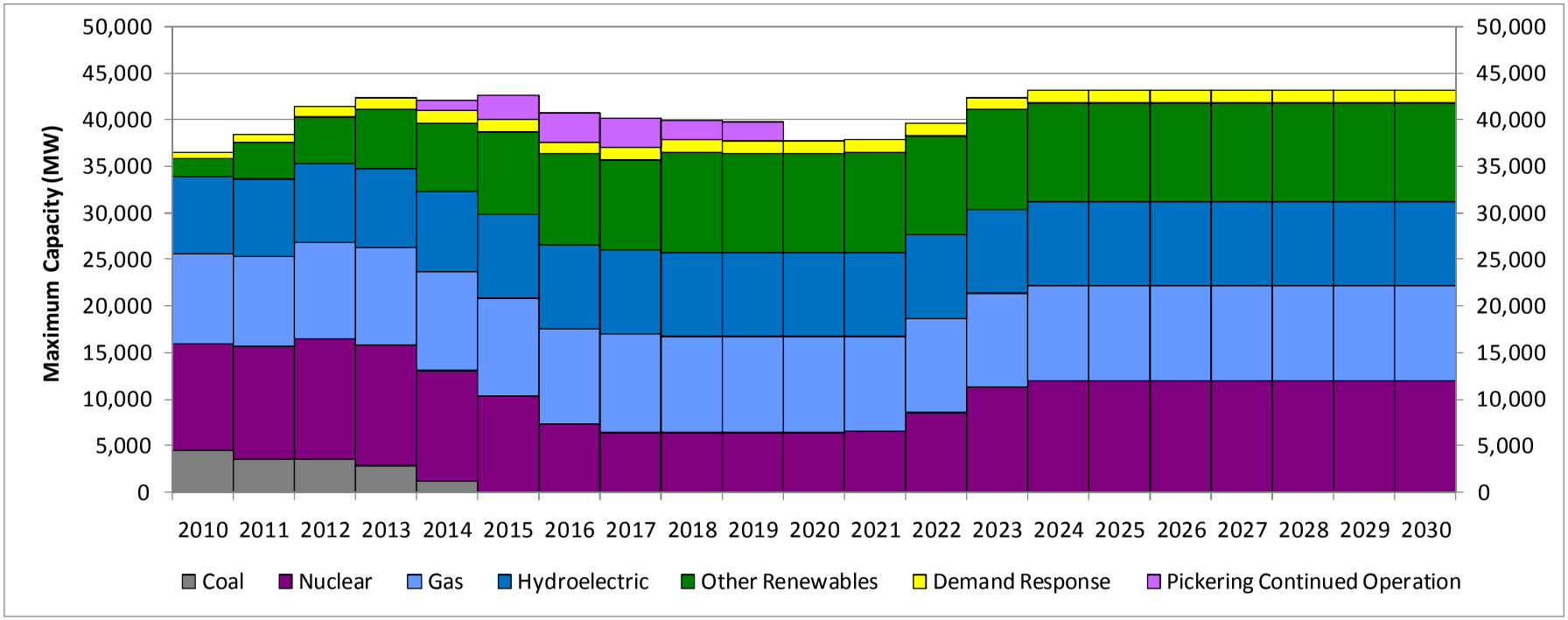
Supply Mix Directive Requirements Related to Natural Gas

- **Natural gas**
  - natural gas to continue to play a strategic role in Ontario's supply mix by complementing intermittent supply, meeting local and system requirements, and ensuring that adequate capacity is available as nuclear plants are modernized
  - meet adequate regional electricity supply in the Kitchener-Waterloo-Cambridge area



Installed Capacity – Pickering Continued Operations



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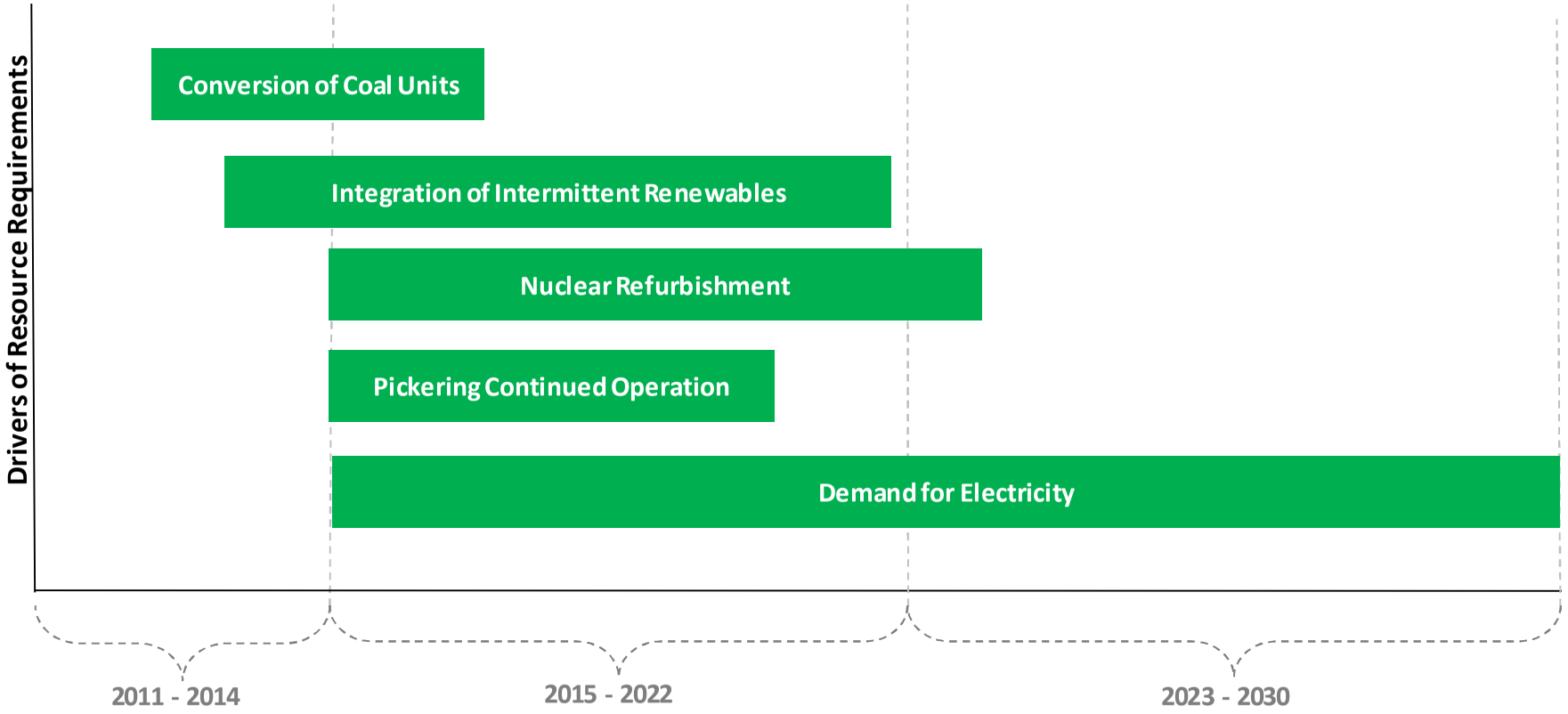
Capacity Outlook Will be Impacted by the Following Factors



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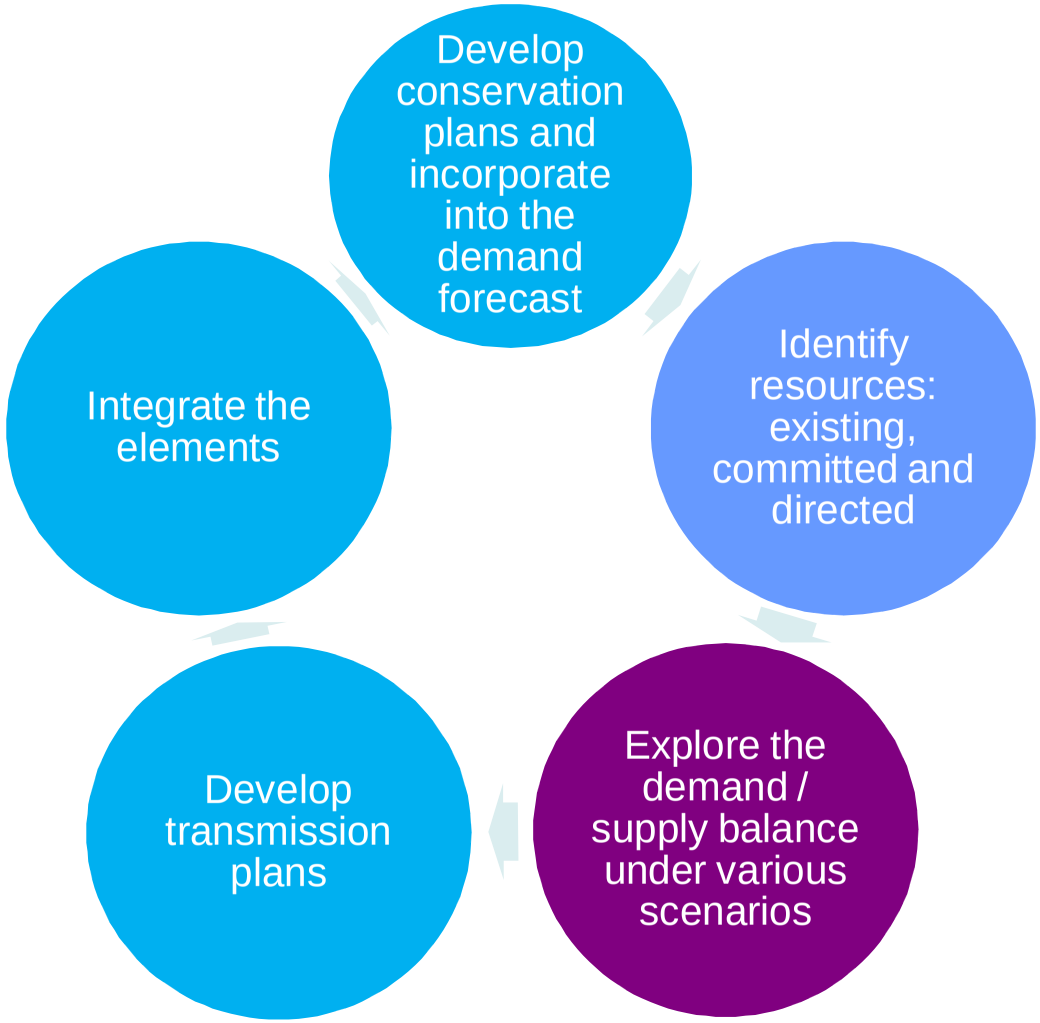
Explore Demand Supply Balance



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Four Steps to Compare Requirements to Supply

- First, account for conservation and energy efficiency in the demand forecast
- Second, add reliability reserve margins to demand to come up with required resources, this accounts for reliability of nuclear and gas
- Third, account for supply scenarios: e.g., Pickering continued operations
- Fourth, adjust installed capacity of resources to their contribution at time of peak. This applies mostly to renewables

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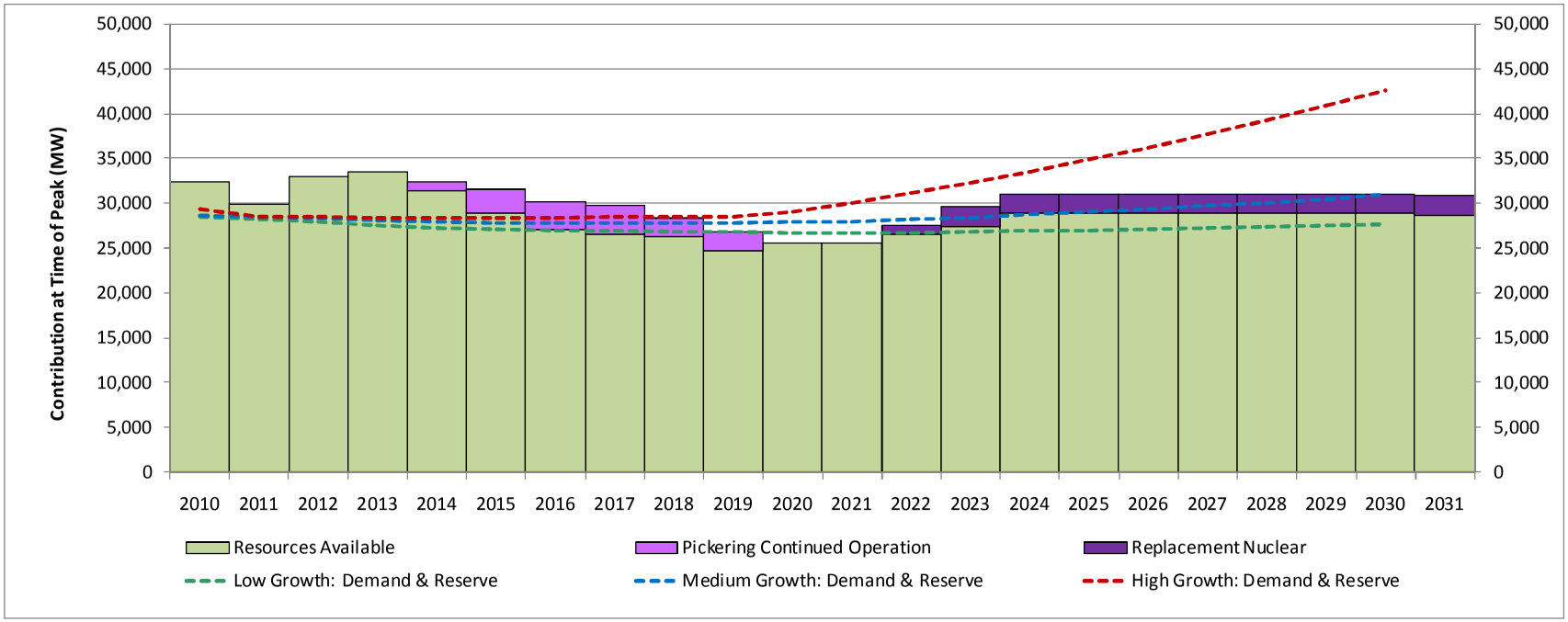
Ontario is in Good Shape Until 2018



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Ontario Has Options to Meet Potential Future Requirements

- Additional and/or acceleration of CDM resources
- Non-Utility Generators: contracts to be renegotiated according to a directive received November 23, 2010
- Lambton GS and Nanticoke GS: could be converted to natural gas as a result of a decision to be made by government in 2012 (up to 3,000 MW).
- Additional renewable supply
- Energy storage
- Imports
- Other gas-fired generation

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IPSP 2011 First Nations & Metis Stakeholder Consultation: Conservation

June, 2011

Session Goals

- To give Aboriginal Communities an understanding of the proposed Conservation and Demand Management (CDM) components of the IPSP; and

- To seek input from Aboriginal Communities on the proposed IPSP, including the following topics:

  1. Implementation of a market transformation strategy
  2. Other progressive and reasonable CDM initiatives
  3. Priority areas for innovation investment
  4. Risk mitigation
  5. Accelerating and exceeding CDM targets

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Agenda

1. Why Conservation
2. Conservation Success to 2009
3. Overview of proposed CDM plan in IPSP
4. Aboriginal Community Input

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Part 1: Why Conservation

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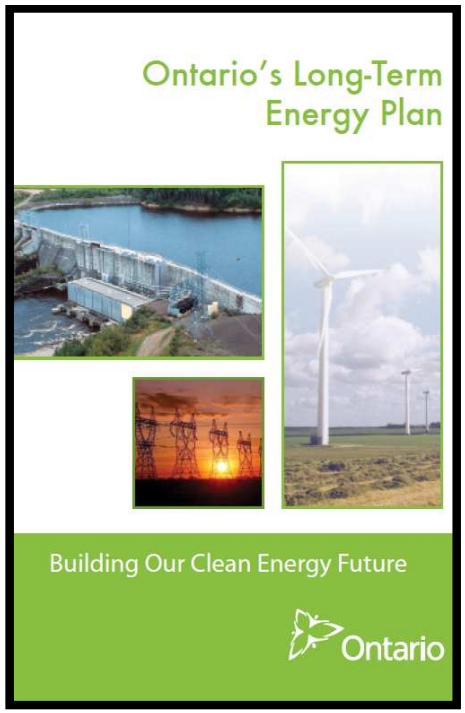
Conservation in the Long Term Energy Plan

- Conservation is environmentally friendly and a least cost resource
- The government set a target for conservation of 7,100 MW in peak demand savings and 28 TWh reduction in consumption by 2030
  - Over this timeframe, conservation is projected to save Ontario ratepayers $27 billion on an investment of $12 billion



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Supply Mix Directive

- The OPA is responsible for developing a plan to achieve the government's long-term CDM targets as prescribed in the Supply Mix Directive
  - The plan will look for feasible and cost-effective opportunities to exceed and/or accelerate the achievement of targets
  - Shall include forecasted savings from codes, standards, regulations and other initiatives that are progressive and reasonable based on OPA analysis

Date	2015	2020	2025	2030
MW Target	4,550	5,840	6,700	7,100
TWh Target	13	21	25	28

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CDM Benefits

- CDM also has economic, social and environmental benefits

Economic	Social	Environmental
• It is a least cost resource • Creates green jobs to stimulate economy • Provides opportunities for productivity gains and competitive advantage for industry and business	• Provides the education tools to empower consumers to use electricity wisely	• Reduces green house gas emissions ("GHGs") • Reduces other emissions that cause smog, acid rain and other health hazards

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Part 2: Conservation Success to 2009

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Conserve the Light Achievement

- Energy Efficiency and Conservation measures for Aboriginal Communities ("EECAC"):
  - 2 province wide conference on energy conservation, May 2007 and September 2009
  - 23 schools received conservation education curriculum
  - 226 home audits in 5 communities
  - 22,000 conservation kits distributed to households

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CDM Program Participation - Examples

- **Thousands of Ontario households and businesses have contributed to Ontario's CDM achievements by participating in CDM programs. Select examples below:**

Select OPA Programs (2006-2009)	Activity (2006-2009)*
Every Kilowatt Counts	**17.7 million** energy efficient products purchased
Cool Savings Rebate	**467,000** HVAC system upgrades
Electricity Retrofit Incentive Program	**2,400** commercial and institutional retrofit projects
Power Savings Blitz	**77,000** small businesses receiving free audits and direct installation of energy efficient products

*** 2010 results have not been included because undergoing verification.**

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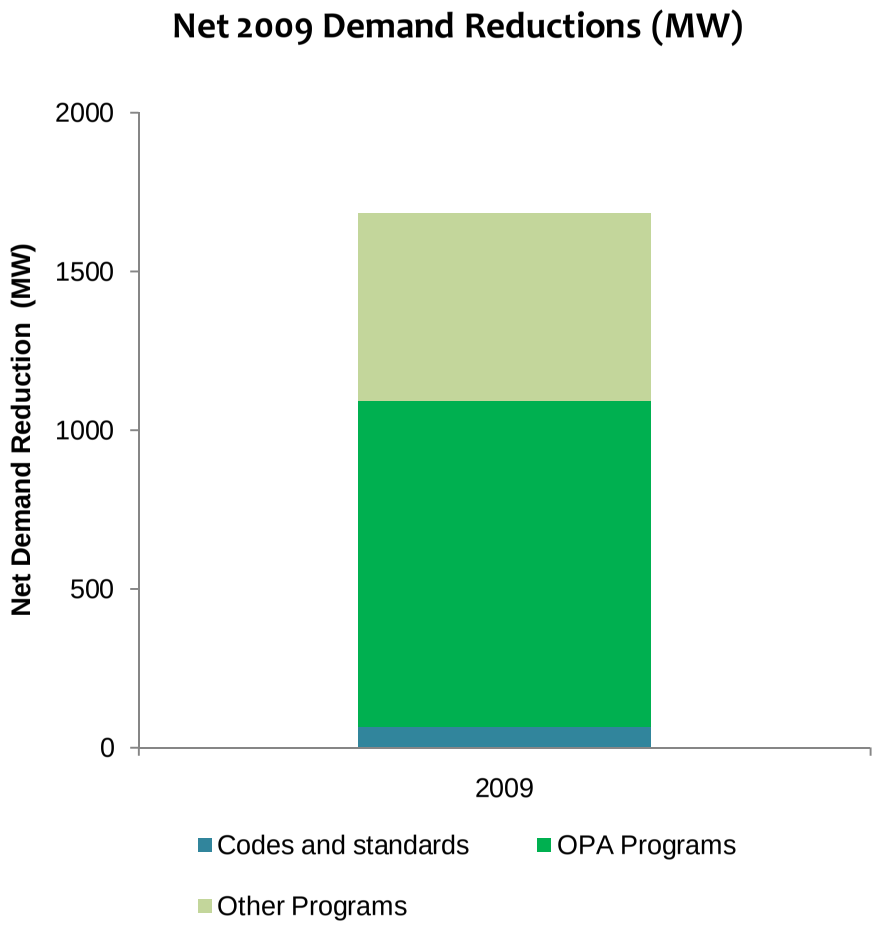
CDM Achievements to Date are Significant

- ~ 1,700 MW of CDM savings from activities implemented 2006-2009
- This is the equivalent of taking 500,000 homes off the grid
- CDM has assisted in restoring the reliability of the electricity system and has laid the foundation for the elimination of coal-fired generation by 2014



Part 3: Overview of CDM Plan in IPSP

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Areas to be Considered in the IPSP

- How does the IPSP meet the mandatory CDM requirements set out in the Supply Mix Directive?
- How can challenges to meeting those requirements be addressed?
- How does the IPSP address whether the achievement of the IPSP Directive's CDM goals may be exceeded and accelerated?

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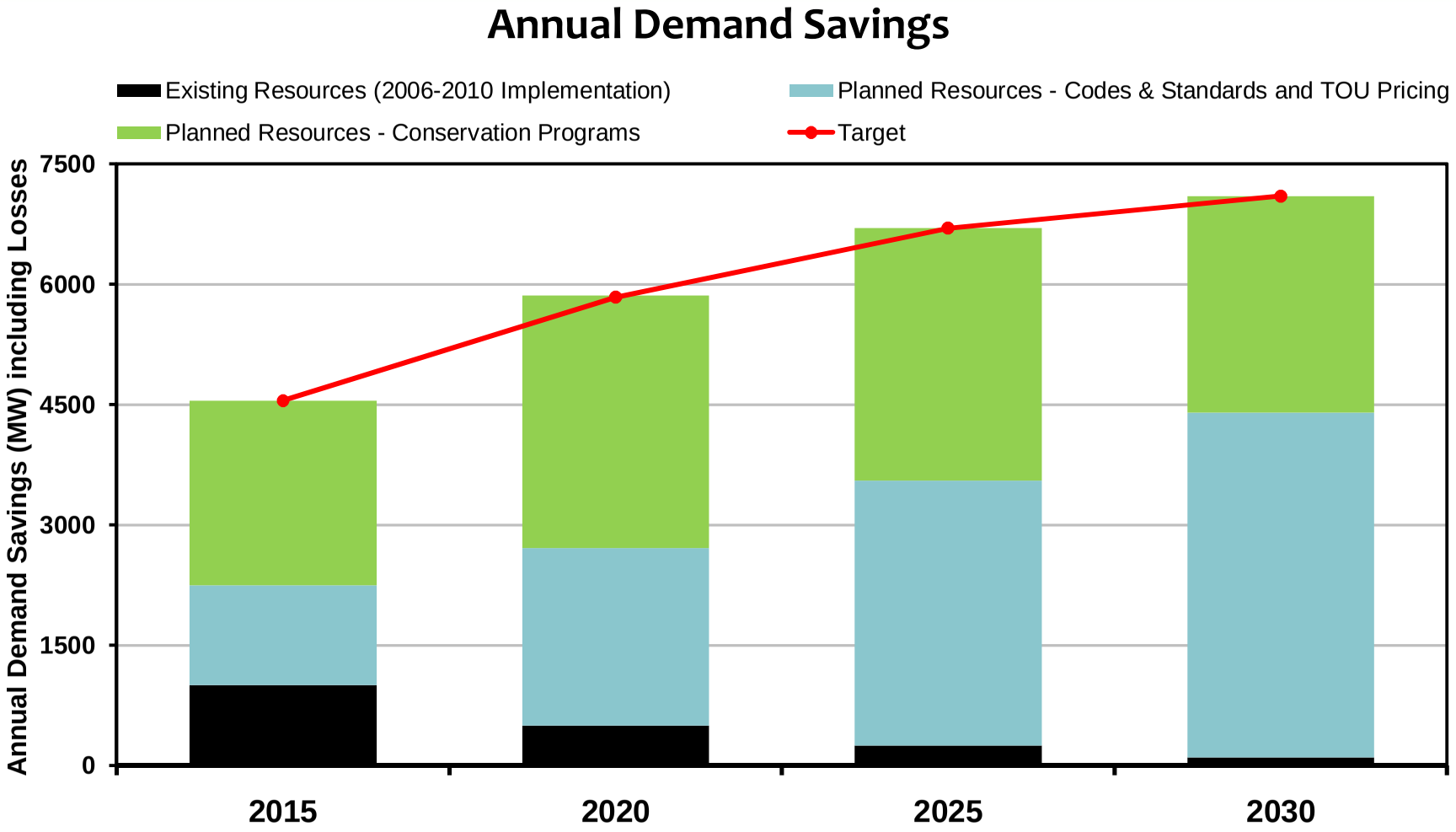
Forecasted Contribution of Each Tool Within the Plan



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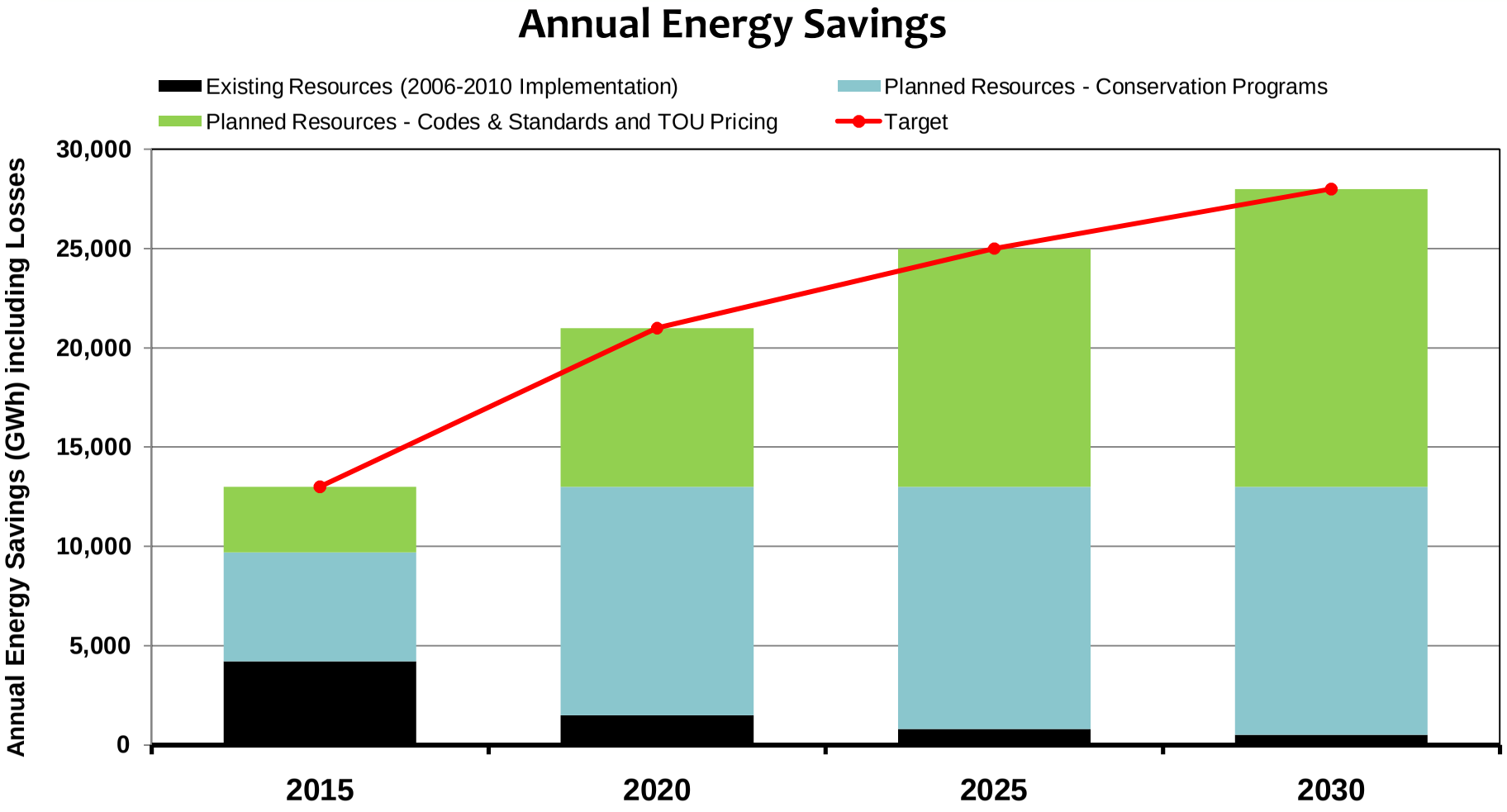
Forecasted Contribution of Each Tool Within the Plan



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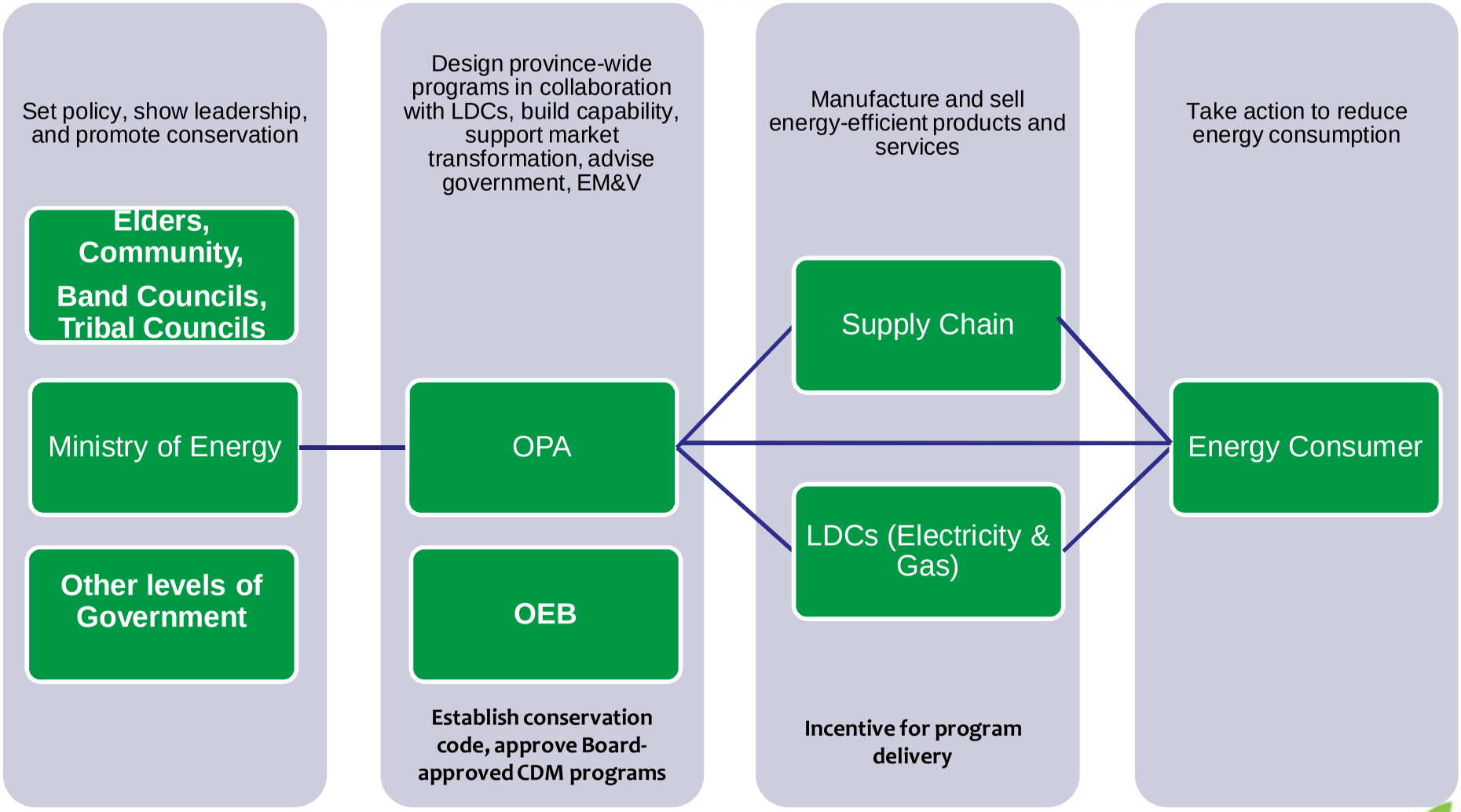
Many Players Contribute to CDM Success



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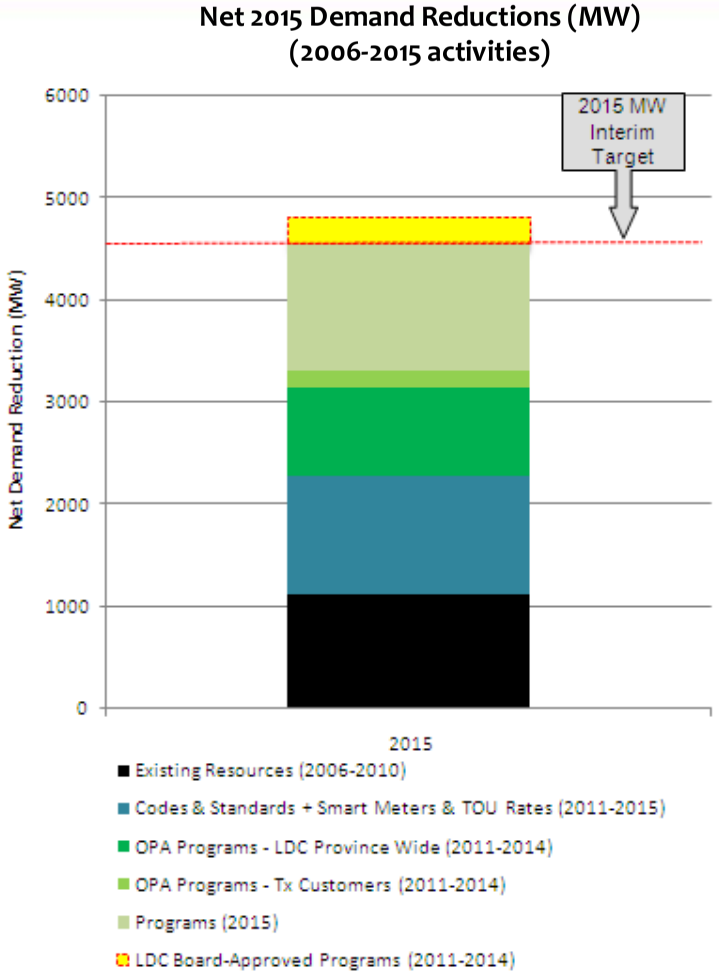
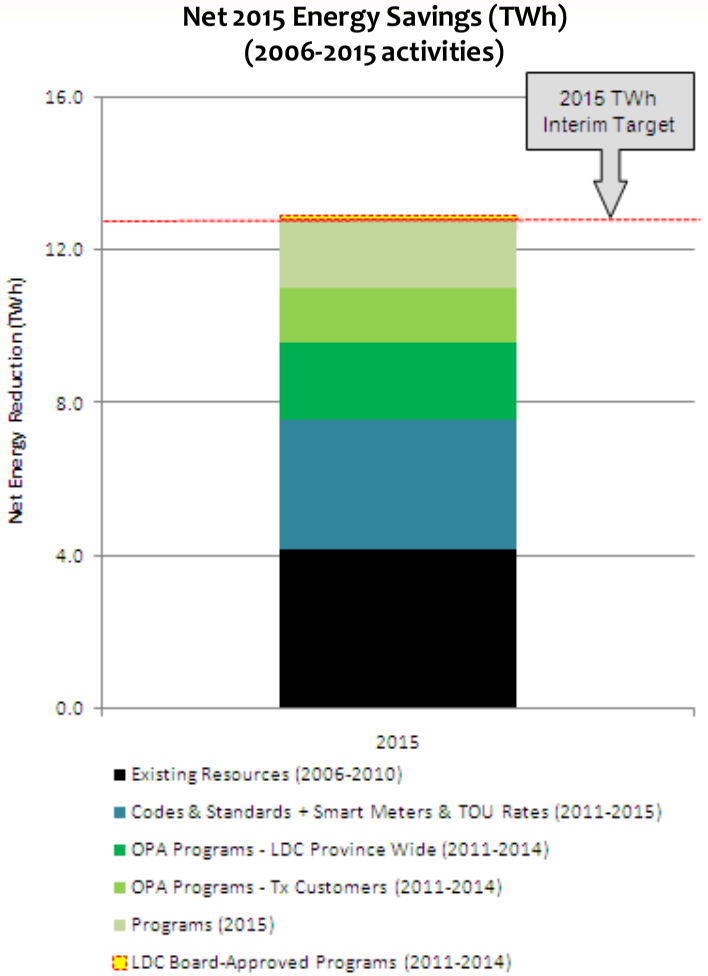
Meeting the 2015 Interim Milestones - Forecast





*Forecast may be adjusted by the time IPSP has been filed

*There is planning uncertainty with all conservation tools – codes, rate structures and programs

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Aboriginal CDM Program

- **Program Objectives:**
  - **To achieve energy savings and demand reductions through improved energy efficiency of the Aboriginal-owned/occupied building stock; and**
  - **To facilitate the adoption of CDM behaviours by building occupants and organizations responsible for these structures.**

	Participants	Program Elements
Aboriginal CDM Program	• First Nation Communities	• Four CDM initiatives, modeled on the new province-wide CDM programs will be delivered directly to First Nation communities and adapted to meet the needs of communities. Initiatives include: ▪ Residential Direct Install Initiative (RDII) (modeled on Province-Wide Low Income Program) ▪ Equipment Replacement Incentive Initiative (ERII) ▪ Small Commercial Direct Install (SCDI) ▪ Non-Residential New Construction (NRNC) • Communities will be prioritized for participation based on factors such as completion of a community energy plan and community commitment to participate in program
	• Métis Communities and Urban Aboriginal Communities	• Communities are dispersed across the province and are eligible for the province-wide CDM programs delivered by the LDCs; program will leverage existing delivery infrastructure established by LDCs • Program will provide specific outreach, promotion and application support - including events for community members to achieve these ends - to members of the communities to facilitate their participation in province-wide programs delivered by LDCs

Green text represents new programs in 2011

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Plan for Accelerating and Exceeding Conservation Targets

- The IPSP will:
  - Set out a plan for meeting the Supply Mix Directive CDM targets
  - Commit to pursuing additional conservation resources where feasible and cost-effective
  - Establish a process to identify feasible and cost-effective additional conservation resources on an ongoing basis. This process is expected to involve OPA staff, conservation stakeholders and government staff.

- The OPA will also undertake a study on the potential for additional DR to be available between 2016 – 2022 when there is a capacity gap.

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Part 4: Stakeholder Consultation Comments

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Consultation Questions

- The OPA is seeking input on five key areas to assist with the development of the CDM plan:
  1. Implementation of a market transformation strategy
  2. Other progressive and reasonable CDM initiatives
  3. Priority areas for innovation investment
  4. Risk mitigation
  5. Accelerating and exceeding CDM targets

IPSP 2011 Aboriginal Consultation: Transmission Planning

June, 2011

Presentation Summary

1. Transmission planning overview
2. Supply Mix Directive and priority projects
3. Transmission planning for Remote Communities
4. East West Tie enhancement – Next Steps

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TRANSMISSION PLANNING OVERVIEW

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Transmission Planning Overview

- Transmission lines and stations are needed to integrate and deliver electricity from generation sites to customers in a safe, reliable, cost-effective and environmentally responsible manner
- Transmission contributes to meeting other goals:
  - Grid access for generation
  - Environmental goals such as off-coal regulation
  - End-use electrification and smart grid developments
  - Grid access for remote customers

Transmission Plan Horizons for the IPSP

Near Term

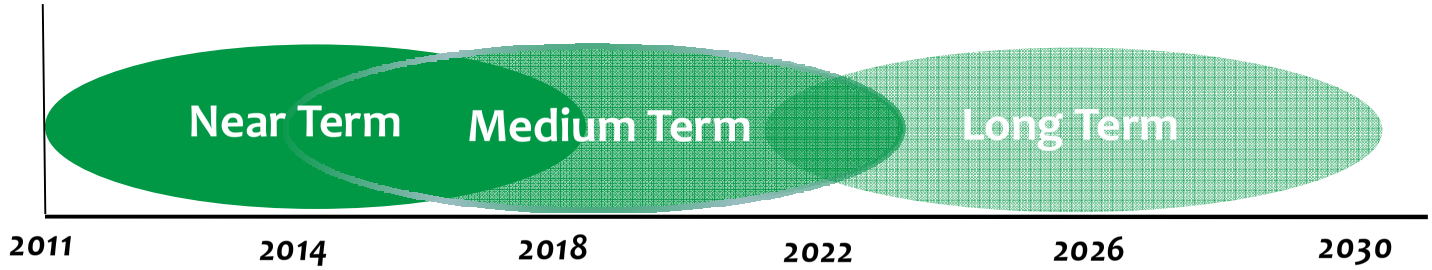
- The period out to 2018, coinciding with the government's date for achieving installed renewable generation targets

Medium Term

- The period where transmission requirements will be driven primarily by the retirement and refurbishment of nuclear units

Long Term

- The period for which transmission needs are not clearly defined at this time; options will be presented, but do not have to be initiated at this time



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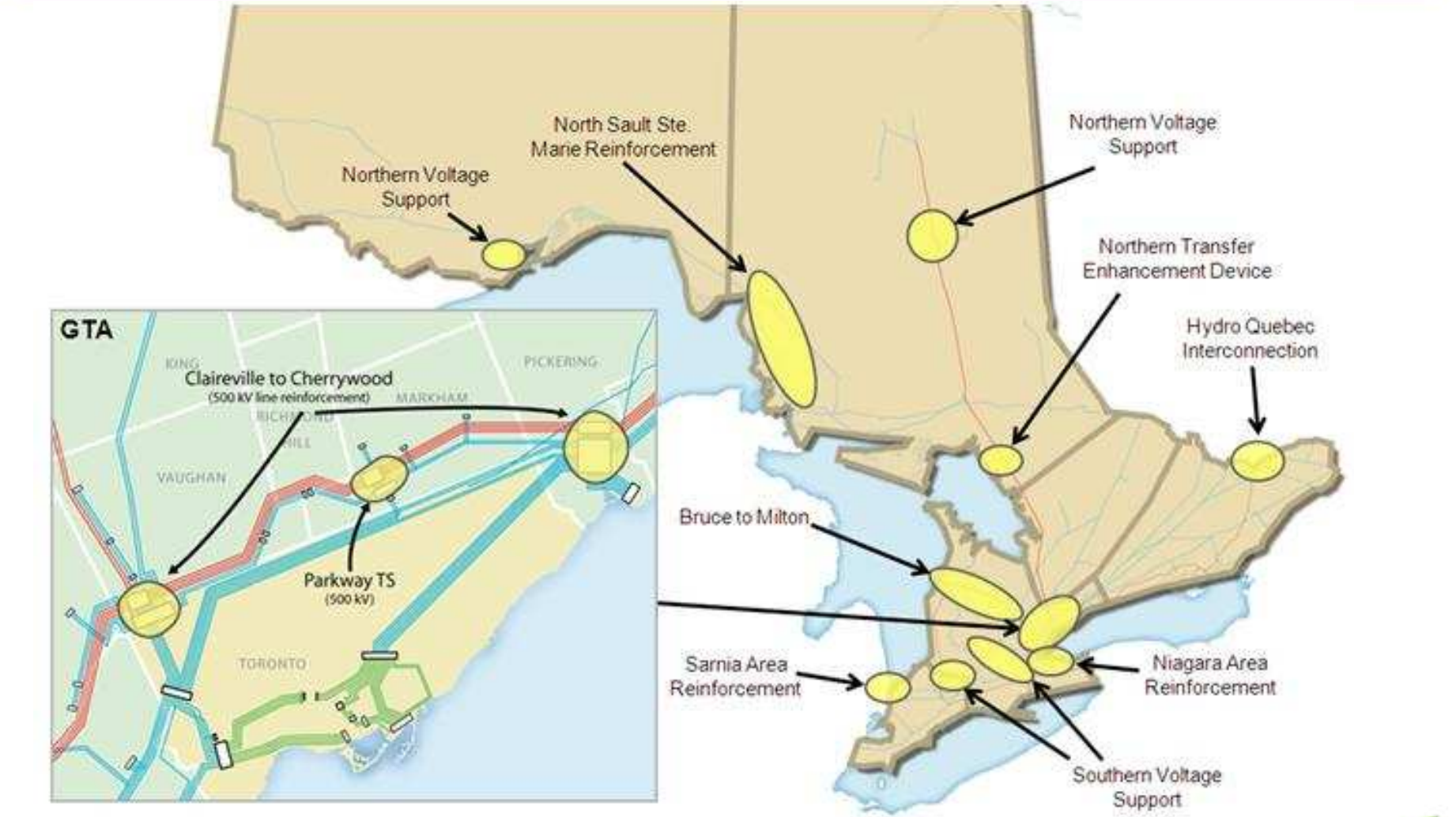
Recent Transmission Investments Meet Several Objectives

- In recent years, a number of investments in transmission infrastructure have been required to meet the following objectives:
  - Enable the elimination of coal-fired generation
  - Improve reliability
  - Enhance interconnections with neighbouring jurisdictions
  - Connect renewable generation

Recent Transmission Investments



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Recent Transmission Investments (continued)

Investment	Driver			
	Off-Coal Policy	Reliability	Interconnections	Renewable Generation
Bruce to Milton Transmission Project	✓			✓
Northern Ontario Voltage Support and Transfer Enhancement Facilities	✓			✓
Southwestern Ontario Voltage Support Facilities	✓			
Sarnia Area Transmission Reinforcement	✓			
Parkway TS – Transformer Addition	✓	✓		
North Sault Ste. Marie Transmission Reinforcement – Third Line TS to Wawa TS		✓		✓
Additional 500 kV Circuits Between Claireville TS and Cherrywood TS, and Claireville TS Station Improvements		✓		
Local Generation: Portlands Energy Centre, Halton Hills GS, Goreway GS	✓	✓		
Hydro Quebec HVDC Interconnection			✓	
Niagara Area Transmission Reinforcement		✓	✓	✓

SUPPLY MIX DIRECTIVE AND PRIORITY PROJECTS

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Directive Requirements for Transmission

- The Supply Mix Directive requires the OPA to assume and include five priority transmission projects for system reliability, serving new load, and renewables incorporation out to 2018
  - Three projects are for the purpose of connecting renewable generation
  - Two are needed for reliability, load supply and renewables
- The Directive also establishes specific supply objectives (e.g., renewables targets, new and refurbished nuclear)
  - The OPA must consider what, if any, transmission solutions are required to enable these objectives
- The Directive requires the OPA to develop a plan for remote community connections beyond Pickle Lake

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Directive Requirements for Transmission (continued)

- Finally, as noted in the Directive, ongoing transmission planning processes are carried out by the OPA, transmitters, distributors
- These processes, which are outside the IPSP, include:
  - Ongoing regional supply and reliability planning
  - Distribution planning
  - The Feed-in-Tariff Program for renewable procurement, including station upgrades to facilitate connection of small-scale renewable generation
  - Other resource procurement processes
  - Transmission projects already committed and/or underway
  - Transmission sustainment activities and end-of-life refurbishments

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The IPSP Will Focus on Bulk Transmission Planning

- Local and regional needs will be addressed through joint regional planning studies with local distribution companies (LDCs), transmitters and the IESO
  - The timing and ongoing nature of these studies does not align with the IPSP schedule
- The IPSP transmission plan will address bulk transmission system needs to fulfill policy objectives and ensure reliability on a province-wide basis
- Regional planning projects that are currently active include:
  - Kitchener-Waterloo-Cambridge-Guelph (KWCG) area
  - Toronto
  - York Region
  - Windsor-Essex
  - Ottawa

Scope of Transmission Planning in the IPSP

- Transmission planning in the IPSP will:
  - Describe and make recommendations about the scope and timing of the five priority transmission projects on the basis of their rationale
  - Identify transmission solutions necessary to meet supply mix goals set out in the Directive
  - Develop a plan for remote community connections beyond Pickle Lake
    - Including the possibility of interim solutions that reduce consumption of diesel fuel

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Categories of Transmission Projects in the IPSP

Existing Transmission System

- Facilities that are in-service today

Committed Transmission Facilities

- Facilities that are not yet in service, but which are currently under construction or have been approved
  - The Bruce x Milton transmission line is an example of a Committed facility

Directed Transmission Facilities

- Facilities that the government has directed the OPA to include in the IPSP and to assume will proceed
  - The five priority transmission investment projects are examples of Directed facilities

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Near-Term Transmission Planning

- In the near term, the principal driver of transmission planning is the need to meet the Directive's renewable generation targets
  - "The Plan shall provide for installed hydroelectric capacity to reach 9,000 MW by 2018"
  - "…the OPA shall plan for 10,700 MW of renewable energy capacity, excluding hydroelectric, by 2018"
- The near-term plan also describes the five priority transmission projects which the Directive requires be included to address renewable incorporation and regional supply and reliability

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Meeting the Directive's Hydroelectric Generation Target

- Existing and Committed transmission facilities are expected to be sufficient to enable 9,000 MW of hydroelectric resources by 2018
- Some recent transmission reinforcements will assist in facilitating this target
  - Northern Ontario voltage support and transfer enhancement facilities
    - Series compensation of the Sudbury-to-Toronto transmission line at a new station near Parry Sound
    - Installation of static-var compensators (SVCs) at existing stations in Kirkland Lake and near Timmins
    - Installation of shunt capacitors at existing stations near Timmins, Sudbury and Barrie

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Meeting the Directive's Non-Hydroelectric Renewable Generation Target

- Existing, Committed and Directed transmission facilities are expected to be sufficient to enable 10,700 MW of non-hydroelectric renewable resources by 2018
  - The existing transmission system accommodates over 7,000 MW of non-hydroelectric renewable generation
  - The major committed transmission project is the Bruce x Milton line, which will enable new non-hydroelectric renewable generation in the Bruce and west of London areas
  - Existing and Directed transmission facilities will enable additional non-hydroelectric renewable generation by 2018

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Directed Transmission Facilities to Enable Non-Hydroelectric Renewable Generation

- The Directive identifies three priority transmission projects to enable renewable generation in southwestern Ontario
  - Two upgrade projects that enable renewable generation in advance of a new line being built
    - Reactive compensation device(s) (such as series compensation or static var compensation) to enhance transfer capability in Bruce Area
    - Upgrading of existing line(s) west of London
  - A new line west of London
- The OPA is working with Hydro One on the development of these three projects as well as on the identification of up to 15 stations for improvements to enable small-scale renewable generation connection
- Additionally, consistent with a Directive to the Ontario Energy Board, the OPA has worked in co-operation with Hydro One to identify up to 15 stations for improvements to enable small-scale renewable generation connections

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Regional Supply and Reliability Projects in the Supply Mix Directive

- The Directive identifies two priority projects that address regional supply and reliability
  - An enhanced East-West Tie
  - A new line to Pickle Lake

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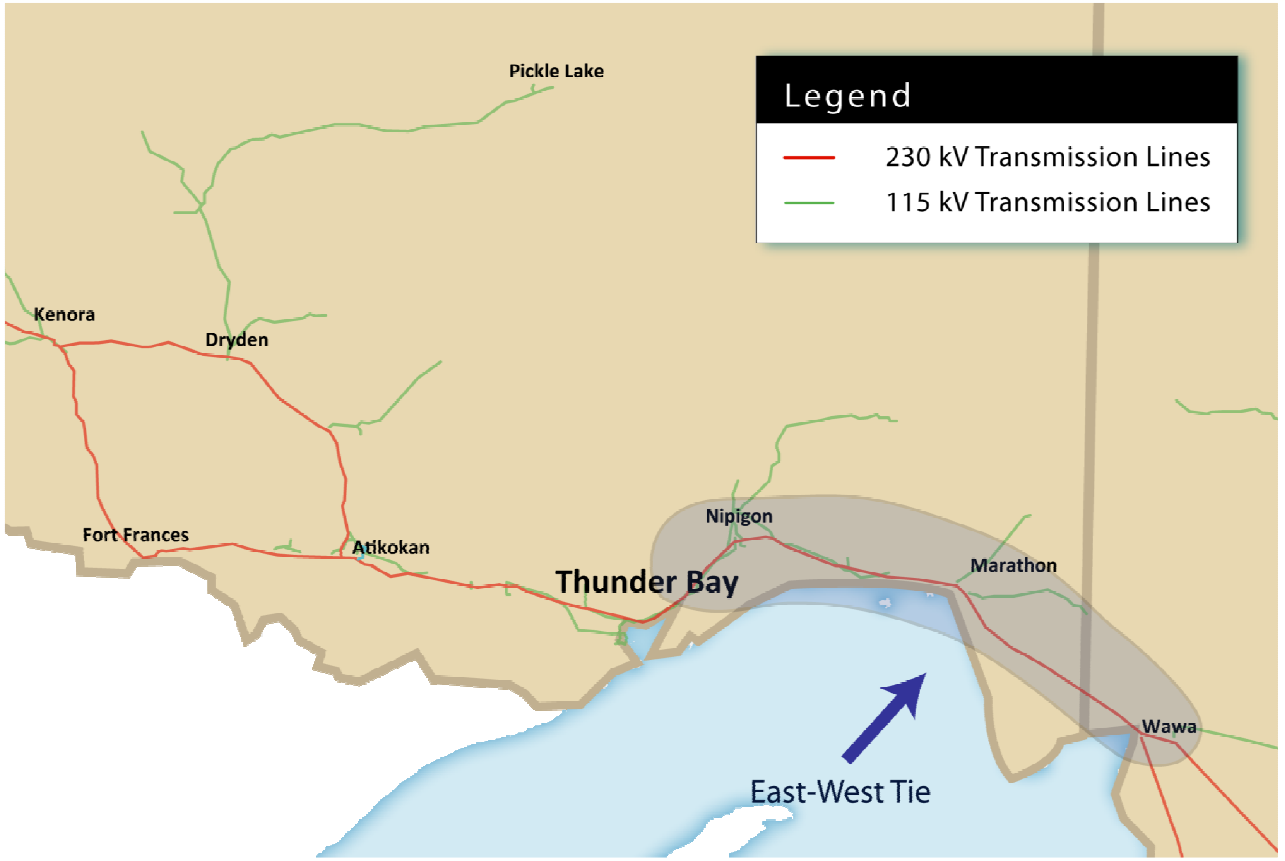
An Enhanced East-West Tie

- The East-West Tie connects Wawa to Thunder Bay
- Because of limited capacity it is frequently constrained
- Does not meet current reliability standards



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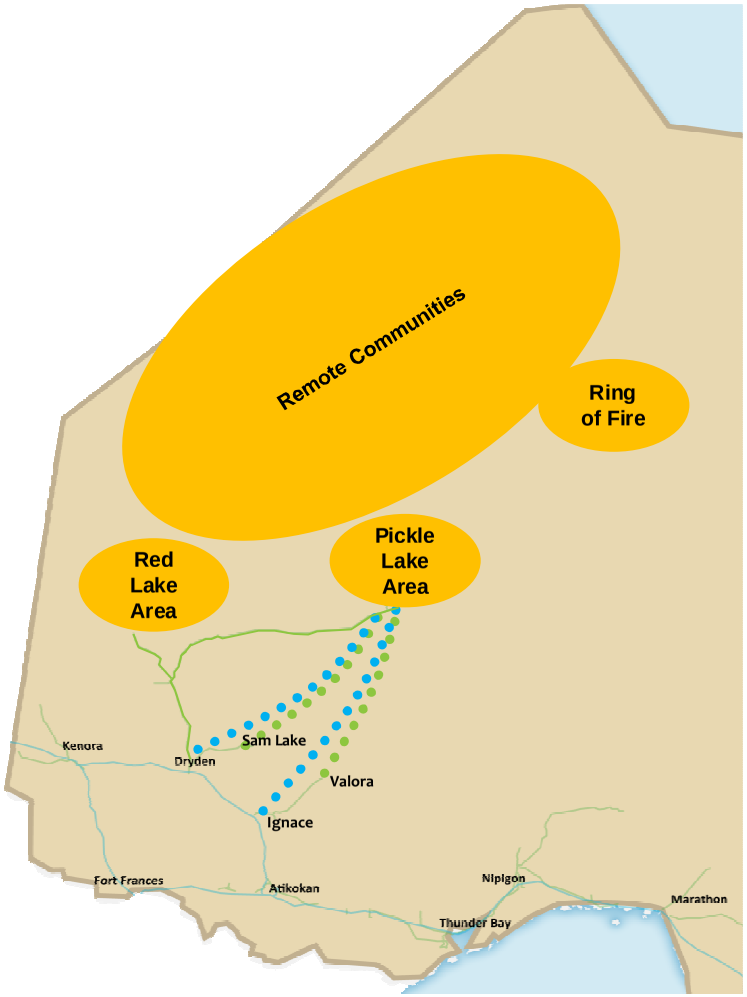
A New Line to Pickle Lake

- The OPA is evaluating options for a new line to Pickle Lake
- Alternatives being considered
  - 115 kV from Valora or Sam Lake
    - Supplying future load growth with this option will require additional upgrades to the existing 115 kV lines in the area
    - Not capable of supplying Red Lake and the Ring of Fire
  - 230 kV from Ignace or Dryden
    - Capable of meeting needs at Pickle Lake, Musselwhite, Red Lake, Remote Communities and Ring of Fire



Medium-Term Transmission Planning

- Transmission planning over the middle years of the plan is primarily driven by nuclear retirement (Pickering) and nuclear refurbishment schedules (Bruce and Darlington)
- These changes impact the transmission system in two ways:
  - Contribute to stressing the major supply points to the GTA
  - There may be transmission implications to enable future generation choices in the 2015-2025 period
    - E.g., coal to gas conversions, non-utility generator contracts, or purchases from neighbouring jurisdictions

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Transmission Options to Enable Future Generation Choices: 2015-2025

- Future supply options being considered in the 2015-2025 period could have transmission implications
  - Conversion of coal-fired facilities to gas-fired operation
  - Renegotiation of non-utility generator (NUG) contracts which are set to expire by 2030
  - Purchases from neighbouring jurisdictions

Long-Term Transmission Planning

- In the longer term (2023 onwards), transmission needs are uncertain and will depend on several factors, including:
  - Government decisions regarding new nuclear facilities
  - Changes in demand
  - Changes in energy policy
  - Status of the supply mix
  - Advancements in technologies and standards

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OPA's Approach to Long-Term Transmission Planning in the Current IPSP

- Additional transmission facilities may be required to address potential long-term supply mix needs; these facilities would not need to be in service before 2023
  - Well beyond the lead time of five to seven years required for major transmission projects
- Given the long timeframe to make decisions for this period, the OPA is not recommending specific transmission projects at this time
  - The OPA will monitor system developments and carry out long-term studies as part of ongoing planning activities

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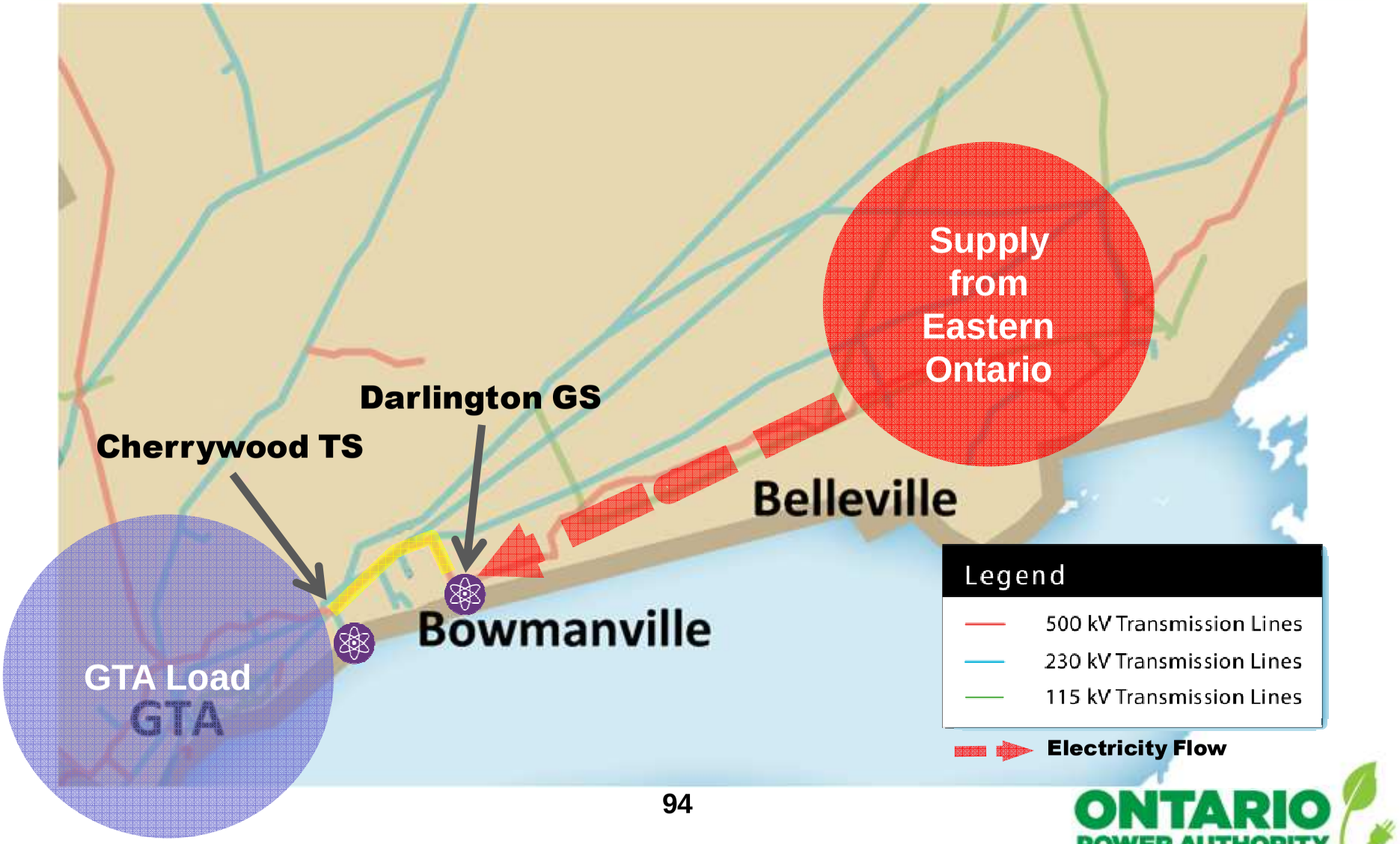
Anticipated Long-Term Transmission Needs

- The OPA anticipates that long-term transmission needs are likely to be driven primarily by two factors:
  - The addition of new nuclear generating capacity at Darlington GS
    - Identified in the Directive
  - The emergence of a longer-term supply gap
    - A high demand growth scenario, or other factors, could result in a need for more supply resources beyond 2020

New and Refurbished Darlington Nuclear



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Options to Meet a Longer-Term Supply Gap

- In the long term, higher demand growth, changes in policy or changes in the supply mix could trigger the need for additional supply resources
- The IPSP will identify high-level transmission needs associated with resource options to fill a longer-term supply gap, on a regional basis
- Transmission required to enable additional supply resources will be factored into resource decision-making in the long term
  - Including estimated costs and timing considerations
  - The addition of further renewable capacity after 2018 requires consideration of the cost-effectiveness for Ontario ratepayers, including cost of related transmission requirements

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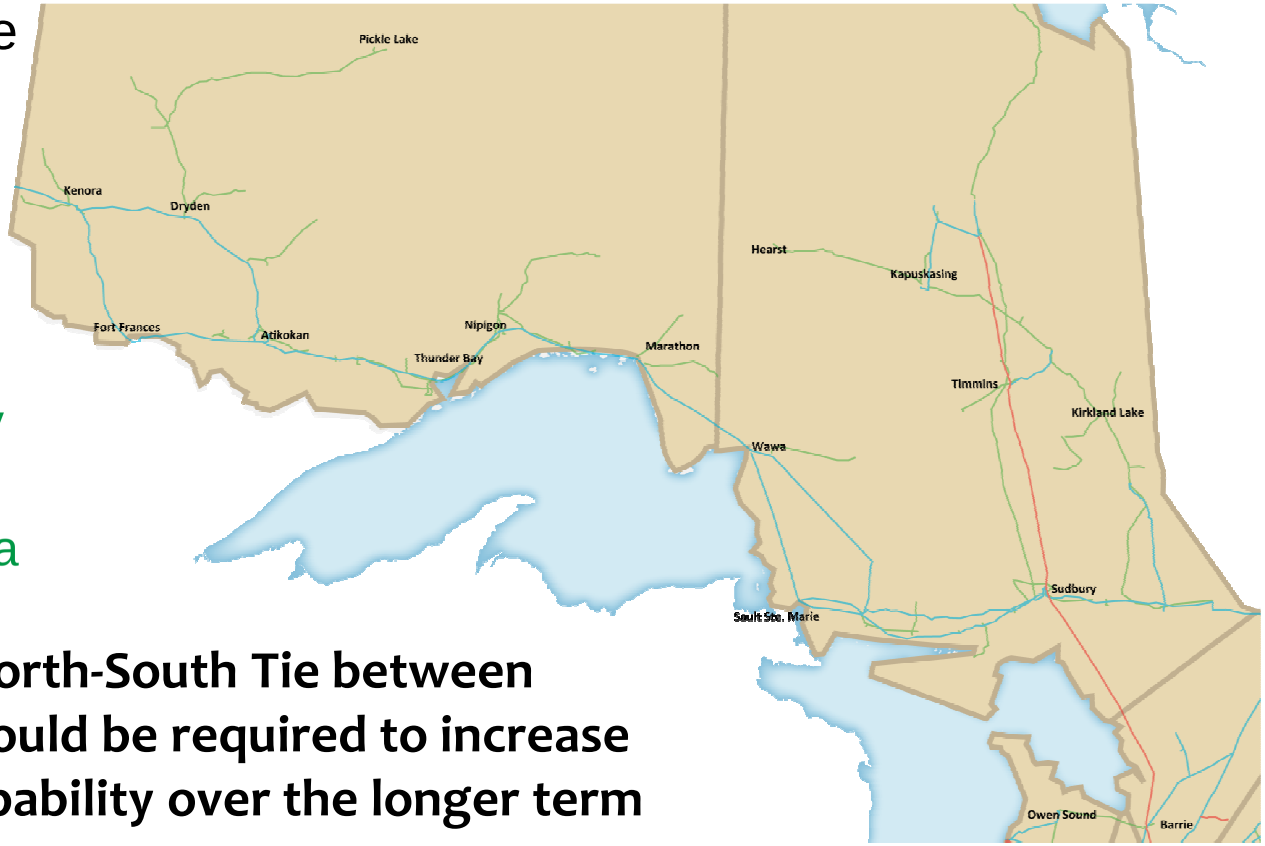
Enabling Resource Development in the North

- Additional cost-effective resources may be identified in northern Ontario, including:
  - Hydro or non-hydro renewables
  - Large-scale electricity storage
  - Imports from Manitoba or Minnesota



- **Reinforcement of the North-South Tie between Sudbury and the GTA would be required to increase north-south transfer capability over the longer term**
  - **Seven years of lead time required for development work, approvals and construction**

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Enabling Resources in the Northwest

- In addition to the North-South Tie, transmission reinforcement may be required in specific regions of the northwest where resources are located
  - Between Wawa and Sudbury
  - West of Thunder Bay, towards Kenora

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Enabling Resources in the Northeast

- In addition to the North-South Tie, transmission reinforcement may be required in specific regions of the northeast where resources are located
  - North of Sudbury, towards Kapuskasing and/or Hearst
  - East of Sudbury, towards North Bay
  - West of Sudbury

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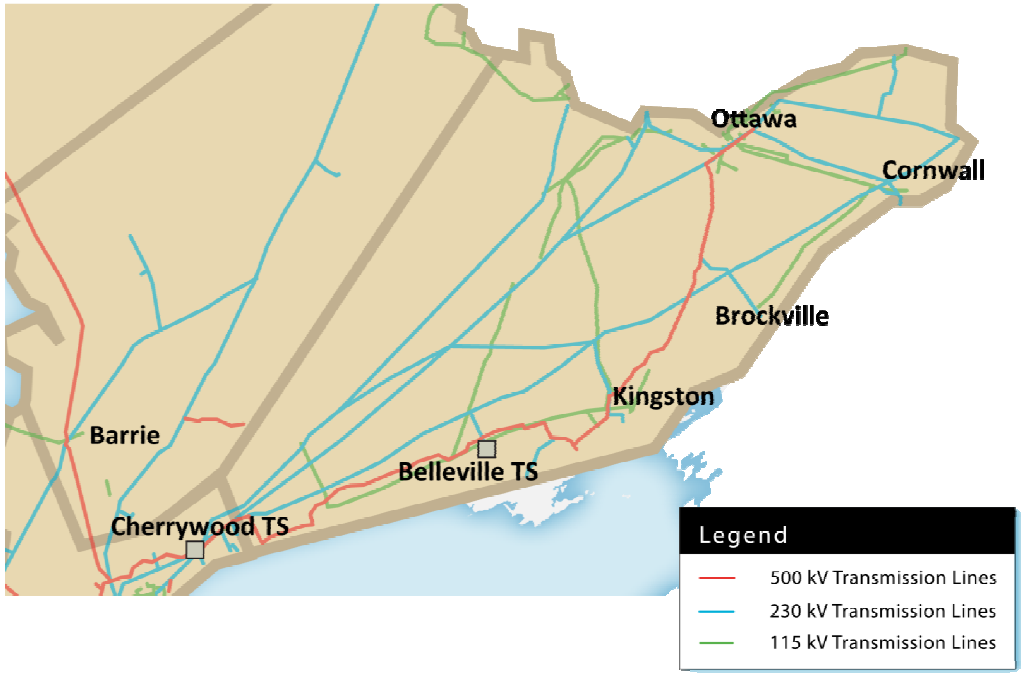
Enabling Resource Development in Eastern Ontario

- The development of additional large supply resources in eastern Ontario or the contracting for firm imports from Eastern Canada could trigger the need for transmission reinforcement
- **Transmission needs will depend on the size and location of resource development**
  - Imports into the Ottawa area would require reinforcement of the 230 kV network in the vicinity
  - Resource development along the Lake Ontario/St. Lawrence shoreline in eastern Ontario could trigger the need for reinforcement



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Longer-Term Transmission Considerations in Southwestern Ontario

- In the long-term, additional resource development in southwestern Ontario could trigger the need for new transmission lines or other facilities
- The location and characteristics of resources, as well as demand trends in southern Ontario, would influence specific requirements

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PLAN FOR REMOTE COMMUNITIES

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Transmission Planning for Remote Communities

- Twenty-one remote First Nation communities lie north of Pickle Lake and Red Lake
  - Characterized by a lack of electricity infrastructure connecting them to the provincial grid
  - All power needs are supplied by local diesel generation systems
  - Fuel costs are high due to the lack of transportation infrastructure
- Peak demand was approximately 15 MW in 2010
  - Demand is projected to grow to approximately 30 MW in the next 20 years
- Community growth and economic opportunities are constrained by insufficient electricity capacity

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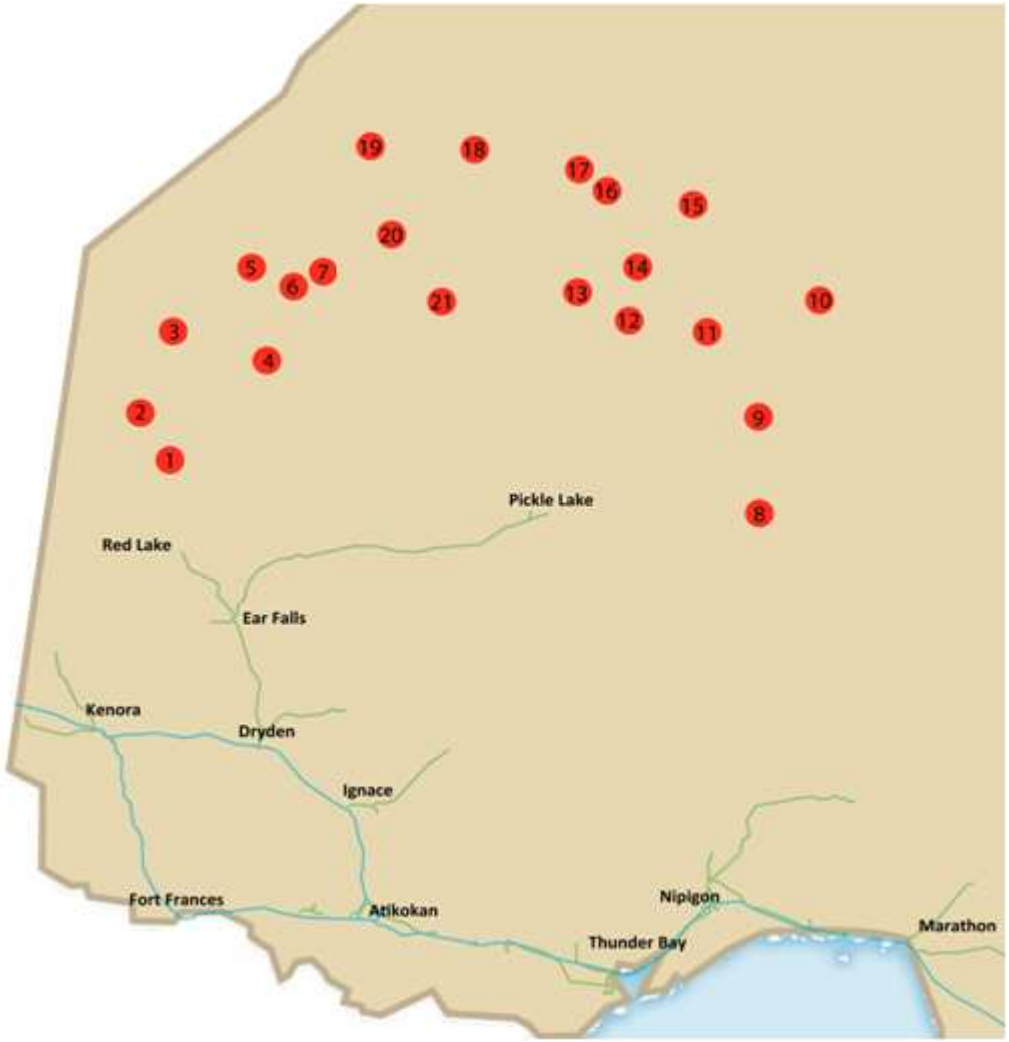
Remote Northwest First Nations Communities



North West Ontario Remote First Nation Communities	
1	Pikangikum
2	Poplar Hill
3	Deer Lake
4	North Spirit Lake
5	Sandy Lake
6	Kee-Way-Win
7	Koocheching
8	Eabametoong (Fort Hope)
9	Neskantaga (Lansdowne House)
10	Webequie
11	Nibinamik (Summer Beaver)
12	Wunnumin Lake
13	Kingfisher Lake
14	Wawakapewin (Long Dog)
15	Kasabonika Lake
16	Wapekeka
17	Kitchenuhmaykoosib Inninuwug (Big Trout Lake)
18	Bearskin Lake
19	Sachigo Lake
20	Muskrat Dam
21	North Caribou Lake

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Diesel Generating System Characteristics

- Cost of generating and delivering power in remote communities is 3 to 10 times the average cost in Ontario
- Ontario ratepayers subsidize 2/3 of the cost of service for Hydro One Remote Communities Inc. ($28 million in 2009)
  - These subsidies increased 33% between 2005 and 2009
- Diesel consumption in the 21 communities was estimated to be 24 million litres in 2010
- Fuel spills and leakage are costly to remediate

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Community Engagement in Planning

- Northwest Ontario First Nations Transmission Planning Committee was established in late 2009
  - First Nation community representatives are participating in identifying needs, assessing options
  - Collaborating on the development of a regulatory quality business case for connecting their communities
- In 2010, research workers visited participating communities to gather information and communicate the work of the committee
- The committee plans to publish a final report, including a business case, in mid-2011

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Rationale for Connecting Remote Communities

- Rate of growth in remote First Nations communities is significantly above the Ontario average
- Forecasted costs for continued reliance on diesel are expected to be higher than the costs of transmission connections and supply from the grid
- Use of diesel fuel has a substantial local environmental impact
  - This is inconsistent with Ontario's carbon reduction goals
- Ontario ratepayer subsidies to remote communities are increasing at about 8% annually
  - Growth in subsidies is driven by rising fuel costs, transportation costs, community growth
- Solutions will involve consideration of relevant cost contributions from benefiting parties, including the federal government

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Scope and Timing for Connecting Remote Communities

- Project involves construction one or more 115 kV lines, step-down stations and distribution feeders
  - Depending on the configuration, distance of new lines could range from 900-1,300 km of 115 kV and 300-600 km of low-voltage lines
  - Ongoing discussions on project specifics involve the communities and other stakeholders
- The cost of diesel consumed in these communities over the next 25 years is expected to be more than $1B
- Timeline for development work, approvals and construction is 7 to 10 years
- Planning and development activities should commence as soon as possible

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EAST-WEST TIE REINFORCEMENT – NEXT STEPS

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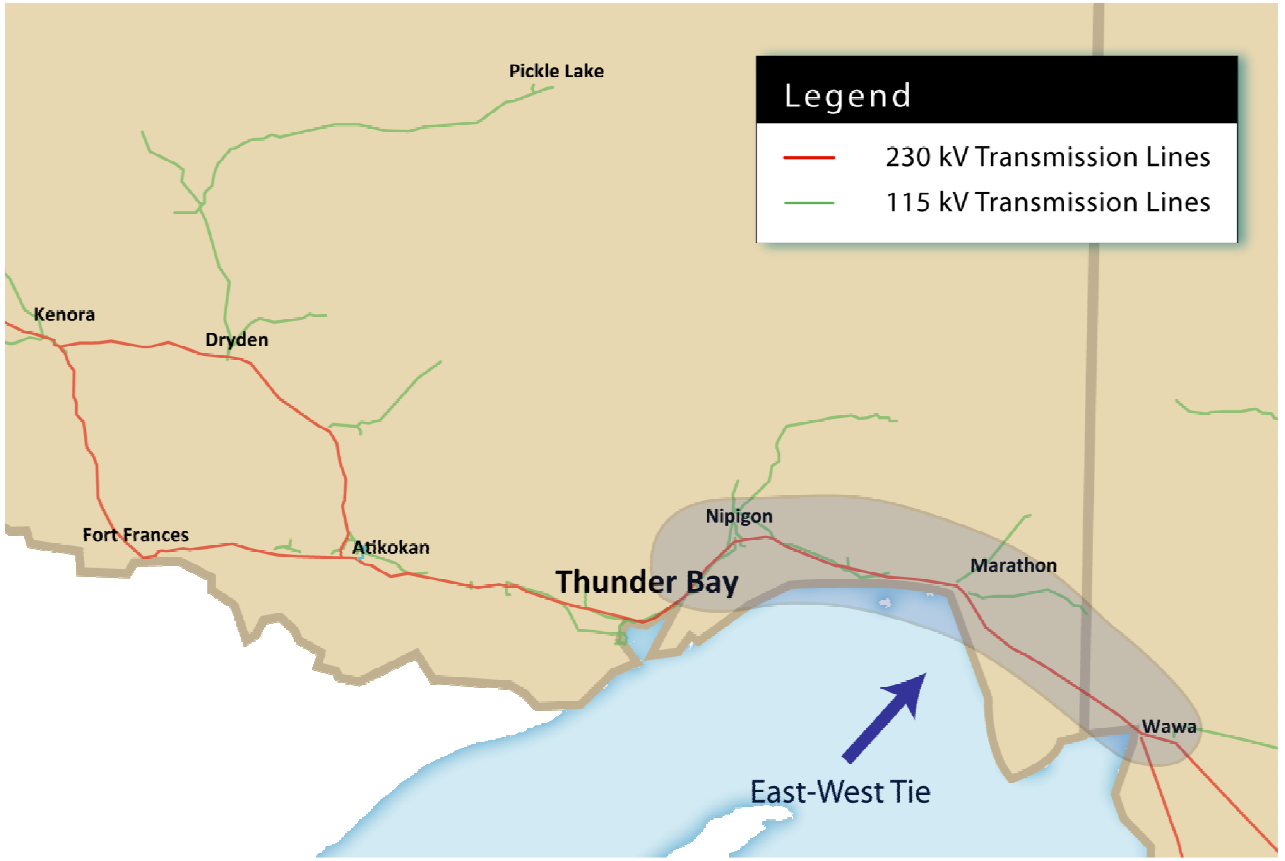
Background on Northwestern Ontario Supply

- The economy of northwestern Ontario is resource based
  - Industrial demand accounts for over half of the energy consumption in the northwest
  - Demand is highly variable and difficult to forecast
  - In the past decade, peak demand has fluctuated between 700 and 1,200 MW
- Currently, the region's installed generation capacity consists primarily of hydroelectric and coal-fired facilities
  - Hydroelectric: over 50%
  - Coal: about 30%
  - Remainder: gas, biomass and demand response
- The region is connected to the rest of Ontario through a 230kV transmission line known as the East-West Tie
  - Augments energy supply to the northwest
  - Delivers surplus energy to the rest of Ontario
- The Northwest is interconnected with Manitoba and Minnesota

Background on Northwest Transmission

- The East-West Tie connects Wawa to Thunder Bay
- Because of limited capacity it is frequently constrained
- Does not meet current reliability standards



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Timing and Rationale for Enhancing the East-West Tie

- Coal-fired generation will be shut down by the end of 2014 and replacement capacity will be required
- The Directed conversion of Atikokan GS to biomass and Thunder Bay GS to natural gas are components of the solution
  - Availability of cost-effective biomass fuel may limit production
  - Thunder Bay GS is best suited for peaking operation
- A longer-term solution should consider cost-effectiveness, security of supply and other benefits
- An enhanced East-West Tie will:
  - Provide a cost-effective and reliable long-term supply to the Northwest
  - Facilitate meeting current reliability standards in the Northwest
  - Reduce losses and congestion along the East-West Tie
  - Enhance operational flexibility
  - Provide delivery capacity for connecting new resources in the Northwest

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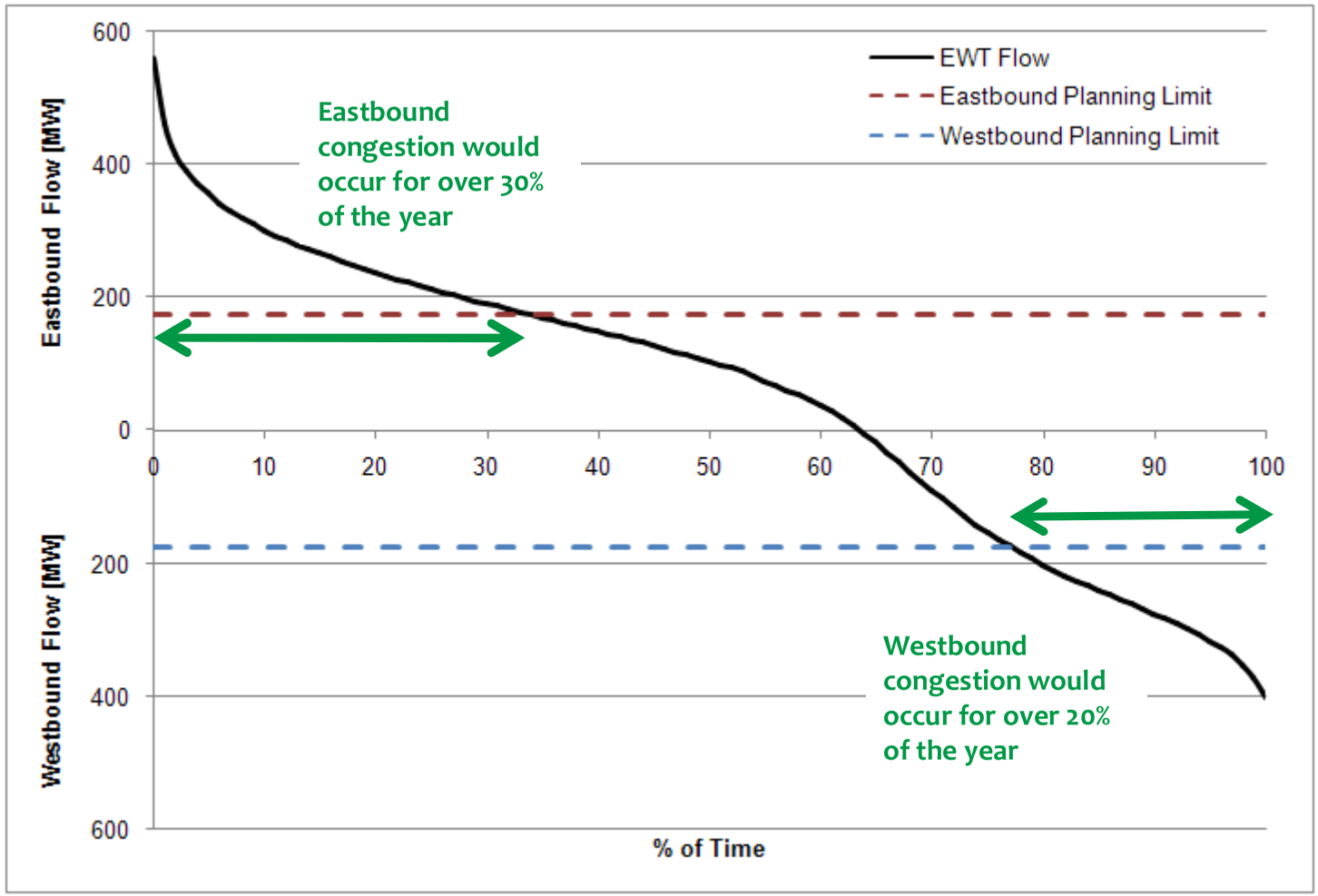
The East-West Tie is Frequently Constrained



Based on planning assumptions for the year 2020

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East-West Tie Project: Scope and Timing

- Construct a 400 km, 230 kV double-circuit transmission line running from Wawa to Thunder Bay
  - The enhanced East-West Tie will have a total transfer capability of 650 MW
- Target in-service date is 2016/17
- Estimated capital cost of $600 million
- The government's Long-Term Energy Plan indicates that this project will be subject to the Ontario Energy Board's transmitter designation process
  - The OPA will be providing planning analysis to the Board to support initiation of this process
- This project will also be subject to the Ontario Energy Board's Leave to Construct approval process

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East-West Tie Project Process

- The East-West Tie process is moving ahead of the IPSP process
- Ministry has expressed interest that the OEB's Transmission Project Designation Process be applied
  - Selects the transmission company to develop the project
- The OPA will submit a report to the OEB at the end of June outlining the preliminary assessment for the line
- The report will include:
  - Line connection points and routing requirements
  - Technical requirement, including line capacity
  - Available information regarding ratepayer benefits

Ontario Energy Board Process

- OPA identifies preliminary need for a transmission project based on an informed, effective plan e.g. IPSP or ECT.
- OEB invites licensed transmitters to file project plans by a specific date.
  - According to the Filing Requirements in docket G-2010-0059
  - Includes the opportunity for information sessions with OPA regarding project specifics
- Board issues a Notice of Hearing to designate a transmitter for development work.
  - Includes provisions for intervenors, discovery and the hearing
- Board issues an Order for the designated transmitter to develop the plan for the project and bring in an application for leave to construct.
  - Is conditioned on the transmitter meeting milestones.
  - Includes reporting commitments so that the Board can track progress.

Board policy on decision criteria

- Financial and Technical Capability
  - Organization and Experience of the team
    - Participation by First Nations and Métis groups should be noted where applicable
  - Technical Capability of the team
  - Financing
- Project plan
  - Schedule and Costs
    - Development and construction
    - Timing (with milestones)
    - Consultation with land Owners, First Nations and Métis and other relevant parties
- Economic Efficiency of Overall Plan

Additional Information

- The OEB policy, filing requirements for transmitters, and the associated documentation can be found on the Board's website by reference to the docket (EB-2010-0059) or directly at:

  http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Policy+Initiatives+and+Consultations/Transmission+Project+Development+Planning

- Further details are expected to be available following the Board's review of the OPA's report, requested by June 30.