



ONTARIO POWER AUTHORITY

September 23, 2010



## **Update of Renewable Resource and Related Transmission Developments in Ontario**

**Presentation at the Wind Power Standing Committee Meeting, Toronto  
Bob Chow – Director , Transmission Integration, OPA**

## Presentation Outline

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- Update of renewable resource development, including the Feed-In Tariff (FIT) Program, in Ontario
- Available transmission capability and the Economic Connection Test (ECT) Process
- Near term transmission development initiatives
- Other planning and transmission development process considerations

## Update of Renewable Resource Development in Ontario

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- Government's policy goals are to:
  - Use electricity efficiently
  - Phase out coal-fired generation
  - Increase the contribution of renewable resources
- Since 2005, new renewable resources have been procured through a number of Government/OPA programs (RES I & II; CHP I; RESOP; HESA, etc)
- About 1,800 MW of renewable resources from these programs are now connected and in-service

# The FIT Program in Ontario

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- The cornerstone of the Green Energy and Economy Act is the FIT Program:
  - a “standard offer” type of procurement for renewable resources; uncapped; self-nominating
  - fixed prices; guaranteed long-term contracts with standard terms and conditions
  - A “right-to-connect” but subject to economic, technical and other requirements
  - The FIT rules and processes have been well stakeholdered and communicated; they are posted on the OPA website
- The FIT Program was launched on October 1, 2009

## Korean Consortium Agreement

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- An agreement between the Government of Ontario and the Korean Consortium for the development of 2,500 MW of wind and solar generation in Ontario over five phases
- 1<sup>st</sup> phase: 260 MW of wind generation in Essex County and 240 MW of wind and solar in Haldimand County; March 31, 2013 in-service date
- Remaining four phases – 500 MW each – are targeted for in-service by the end of 2013, 2014, 2015 and 2016
- Directives to OPA “to give priority to projects within the scope of this direction when assessing transmission availability with respect to the FIT Program”

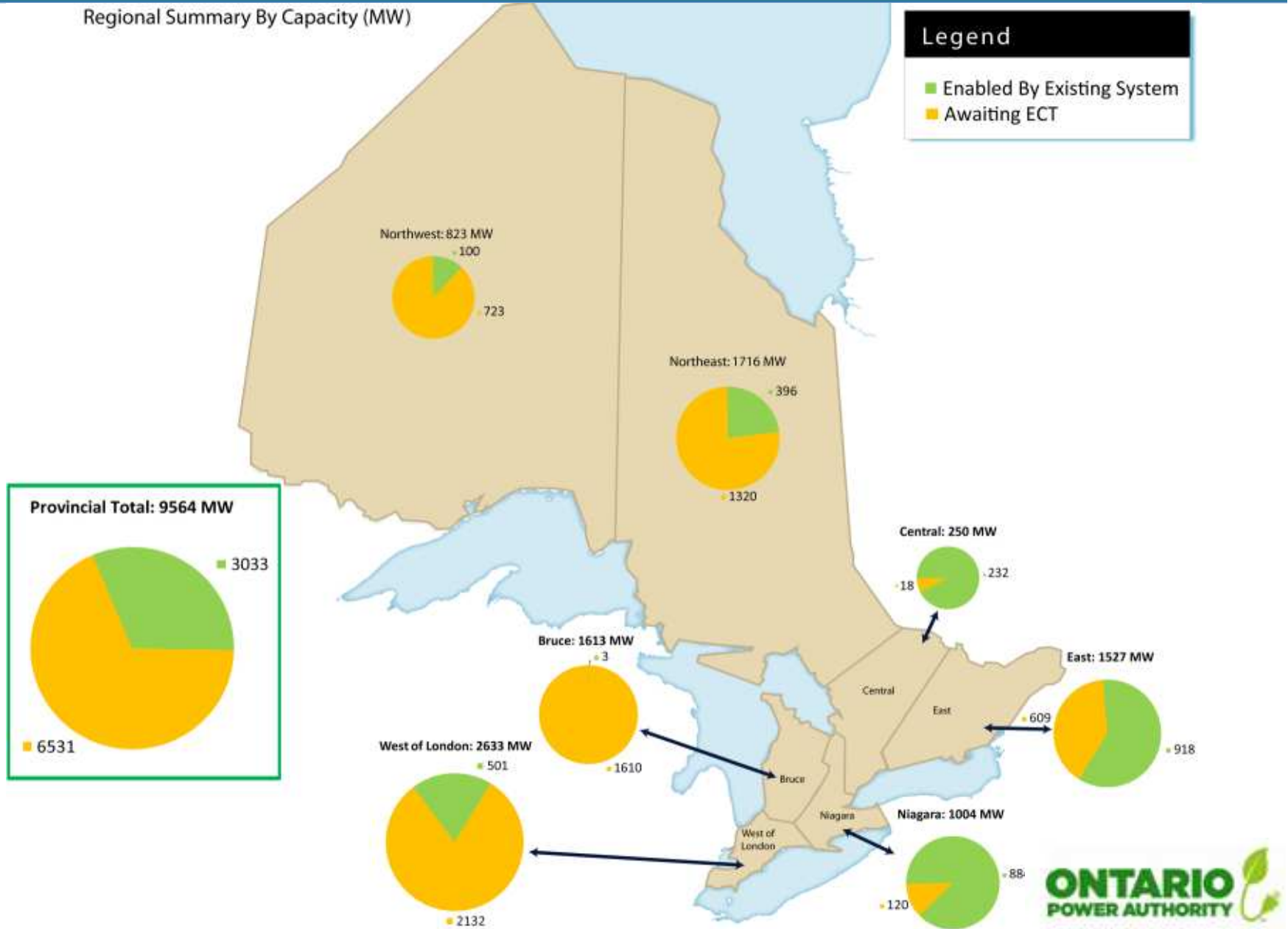
## High Level of Renewable Development Interest in Ontario

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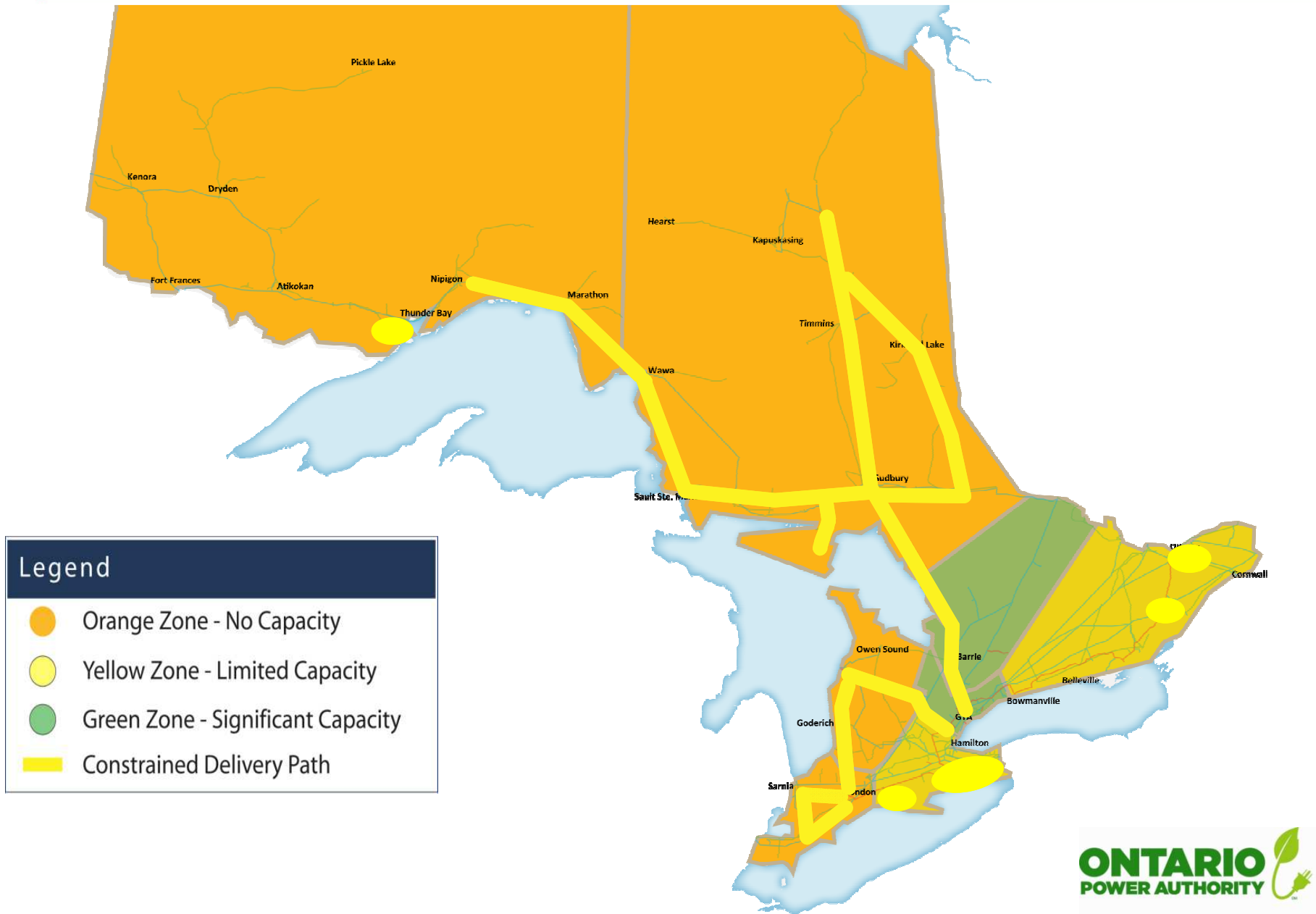
- Successful launch of the FIT Program; over 9,000 MW of applications received in the Launch Period (Oct 1 – Nov 30 2009)
- ~3,000 MW of renewable generation was accommodated on the existing transmission system – including 2,500 MW of FIT projects and 500 MW of the Korean Consortium Phase 1 projects
- ~6,500 MW of Launch Period applications in the FIT Reserve awaiting assessment in the ECT and an additional 2,000 MW of wind and solar development remains to be connected for Korean Consortium
- In addition, large number of applications were received after the Launch Period and we are currently reviewing them and they will be assessed through the FIT process

# Map of Launch Period and Korean Consortium Phase 1 Renewables by Region

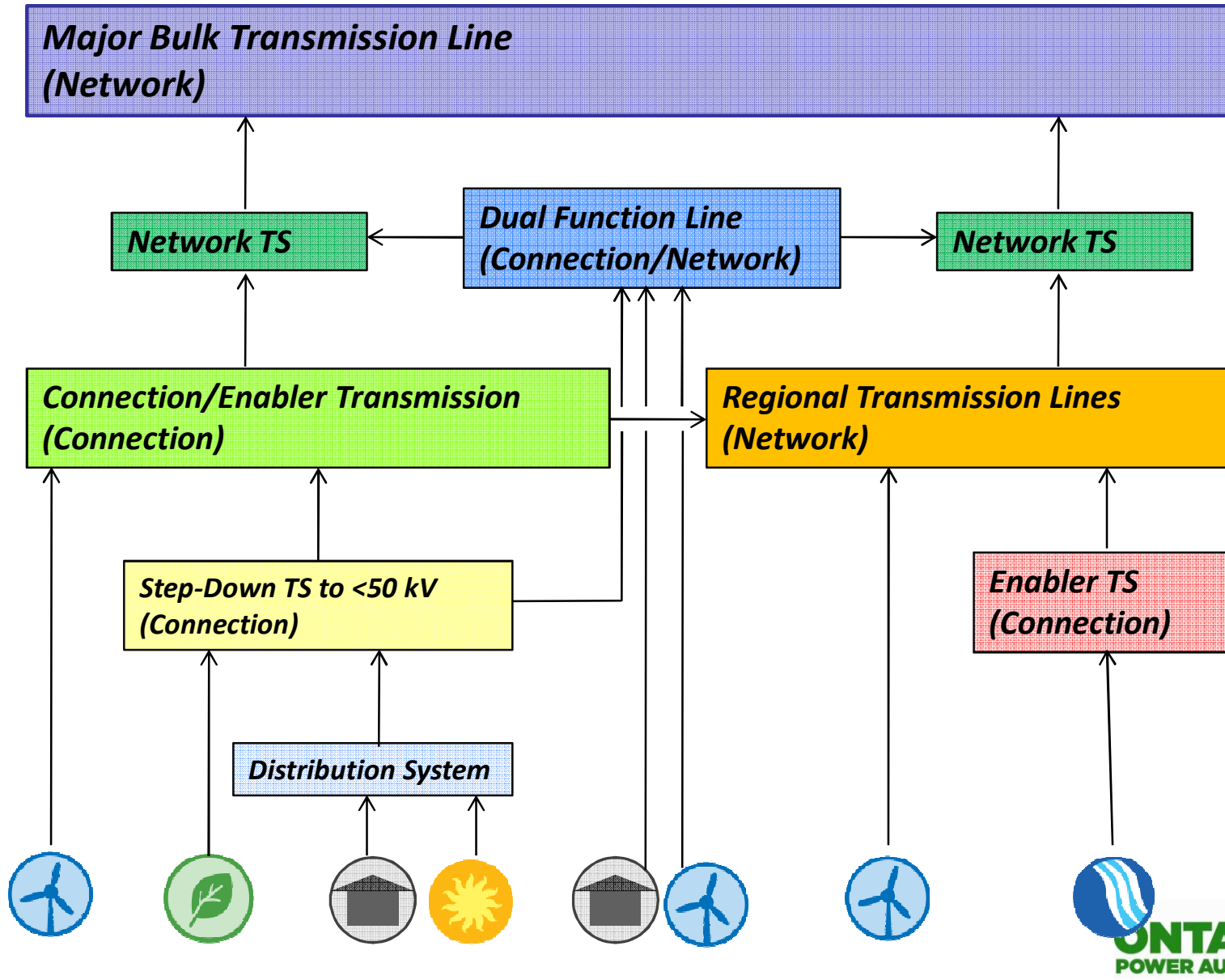
Regional Summary By Capacity (MW)



# Transmission Availability following Launch Period FIT and Korean Consortium Phase 1 projects



# Illustration: Network vs. Connection Facility



## Incorporating Renewable Resources is the Primary Driver for Mid-Term Transmission Development

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- In many regions of Ontario, there is little or no transmission network capability remaining after incorporating the renewable generation from the earlier procurement programs, the recent FIT Program and the Korean Consortium Phase 1 development
- The new Bruce to Milton line will provide about 1200 MW of new capability in the Bruce area, and about 300 MW west of London
- In some region, specific reinforcements may be required at the local area transmission and distribution levels even if capability is available at he regional level
- Therefore, the primary driver for transmission development in the next 5-7 years is to facilitate the connection and delivery of renewable resources

## Purpose of the ECT Process

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- The ECT process will identify economic transmission expansion projects to enable additional renewable generation and will trigger development work to be carried-out by Transmitters under OEB oversight
- The ECT process intends to:
  - Balance the right-to-connect and the provincial ratepayer impact of transmission investment
  - Prioritize economic expansion projects
  - Coordinate transmission and distribution expansion plans
- The ECT is an ongoing process for assessing economic transmission system developments to connect FIT applications that could not be accommodated on the existing transmission system (i.e., those in the FIT Reserve)

## Guiding Principles for the Design of the ECT

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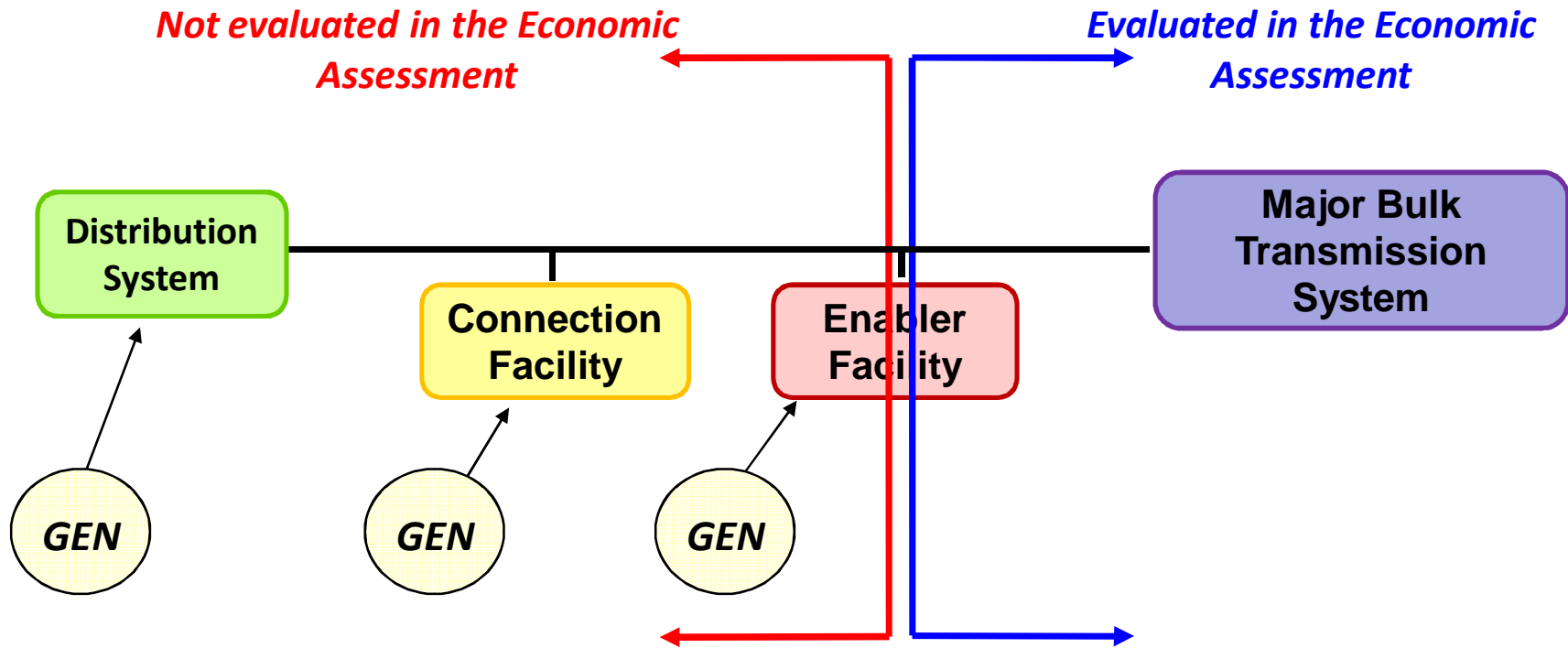
- OPA applied the following guiding principles in developing the ECT economic assessment methodology
  - **Consistency**—can it be applied equally across projects and locations
  - **Simplicity**—can it be manageably applied during the timeframe allotted for the ECT
  - **Transparency**—can it be easily understood by stakeholders
  - **Balancing policy objectives**—does it appropriately balance generators' right-to-connect and provincial ratepayer impact

# Summary of Economic Assessment in the ECT

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- ECT is a screening process to identify transmission projects that are likely economic
  - Initiates development work
  - Project need assessed in detail in *Leave to Construct* or transmission rate applications
- Economic assessment in ECT examines ratepayer impact only
  - Generator-funded facilities are not considered
- Balances congestion against the potential to overbuild infrastructure
  - Congestion design metric of **5% of time or less**
- Balances ratepayer impact against generators' right to connect
  - Transmission projects must pass a threshold of **\$500/kW**

# Costs Considered in the ECT



## The OPA's Role in Carrying Out the ECT

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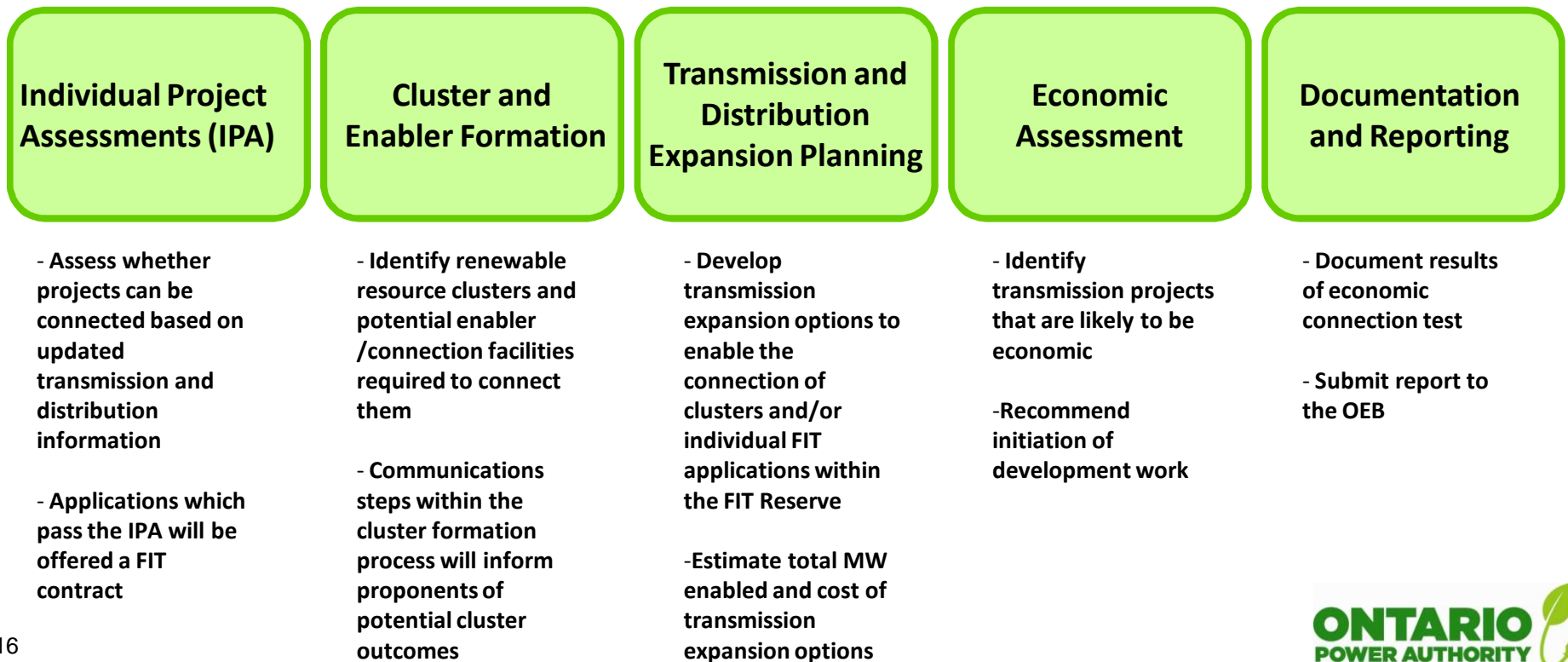
- **Identify** transmission upgrades required to accommodate applications in the FIT Reserve
  - In order for a FIT application to move forward, capacity must be available at all levels of the system
- **Plan** network facilities and enabler facilities
- **Facilitate** connection facility upgrades
- **Integrate** distributor and transmitter planning information to update FIT application status

# Economic Connection Test Process

*ECT Start*

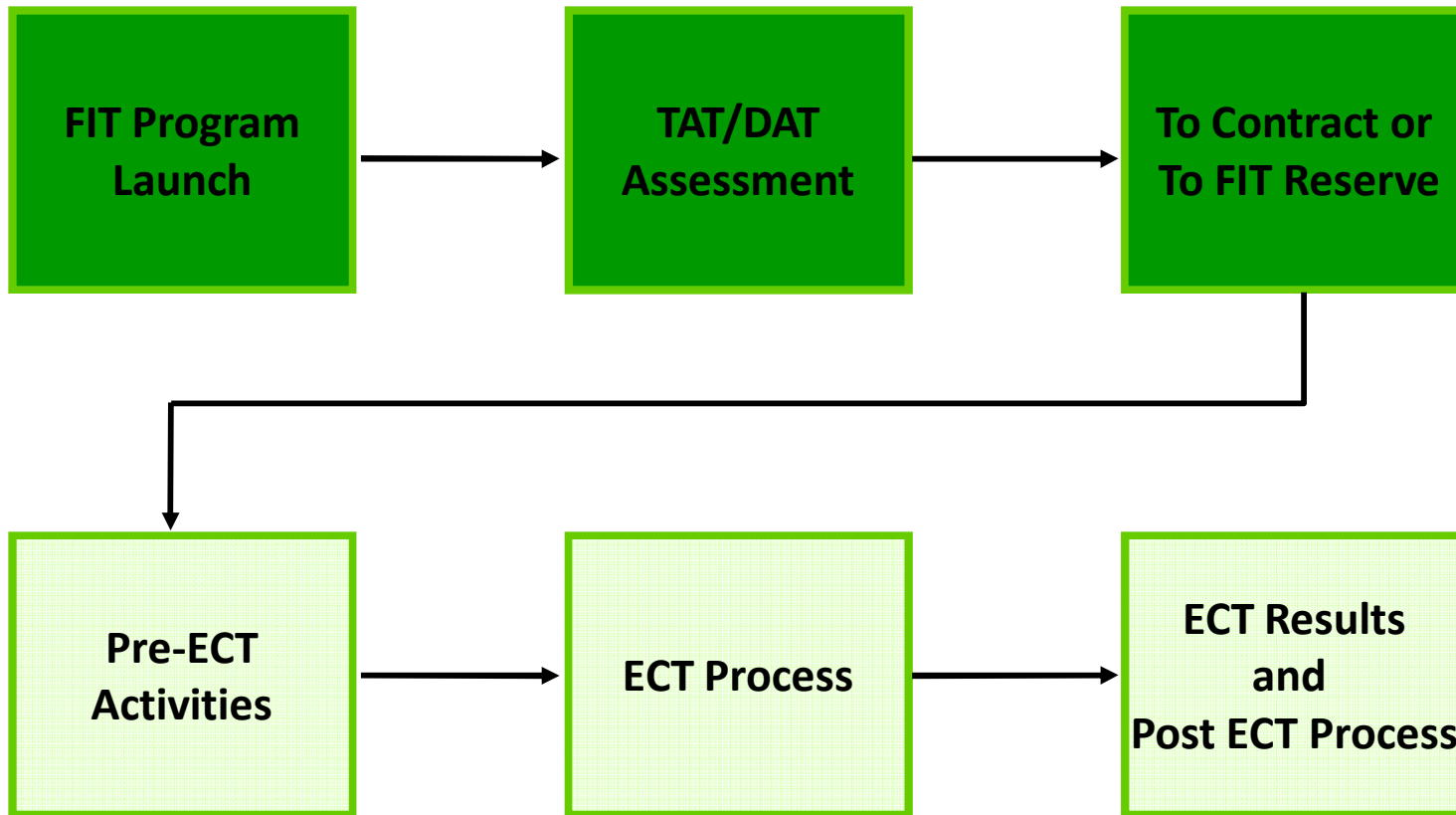
*ECT End*

*Approx.  
6 months*



# FIT Connection Assessment Process & Current Status

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## Transmission Options for FIT and the Korean Consortium

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- The Minister's September 2009 letter to Hydro One identified 20 possible transmission expansion projects for which development work activities should be undertaken in anticipation of FIT uptake and the Korean Consortium
- On May 7th, 2010 the Minister requested that the OPA develop an updated transmission expansion plan considering the sequencing necessary to meet the needs of the FIT Program and the Korean Consortium
- The OPA is working with the Government in finalizing the updated transmission expansion plan at this time

## Aspects Considered with the Updated Transmission Plan

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- Based on the current information on FIT interest, the timing of the KC obligations and preliminary expansion cost estimates
- Development work be accelerated for some priority projects, because of their immediate importance to the system and the long lead-times associated with the projects
- The ECT process may identify additional projects which should proceed to development work based on FIT applications received subsequent to the Launch Period
- Additionally, future integrated power system plans (IPSP) will consider broader supply and reliability issues

# Planning Considerations for Transmission Development

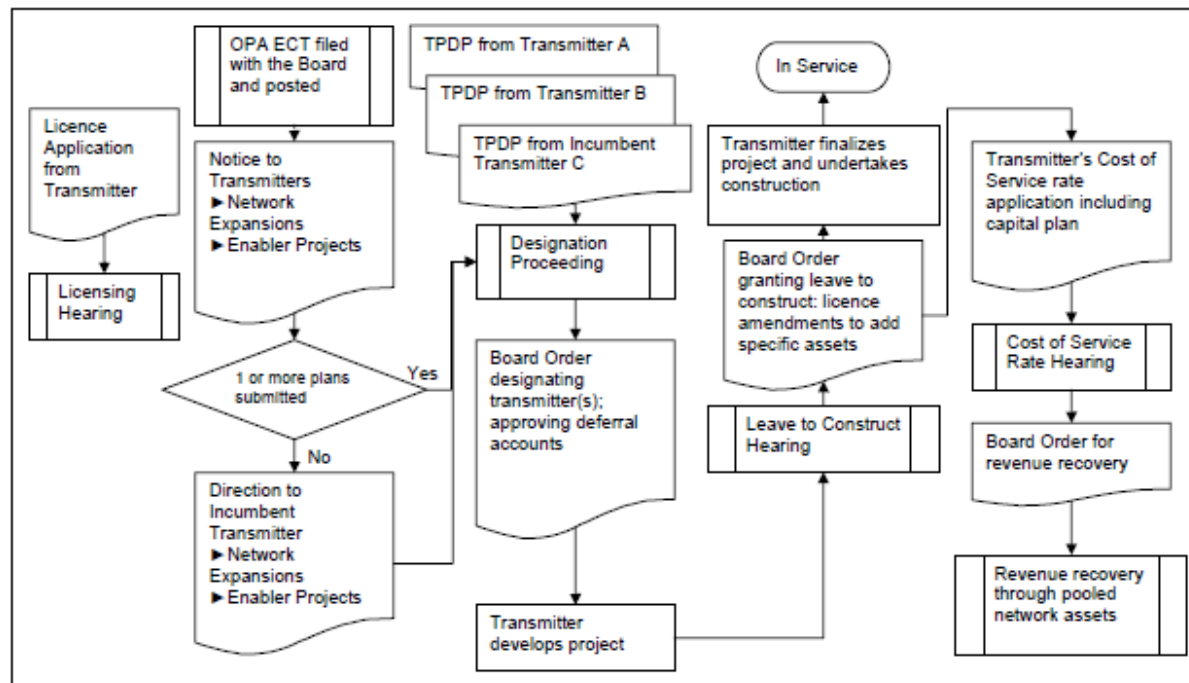
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## **Transmission planning/development must consider:**

- Integrated nature of transmission
  - Serves all functions (eg. connection, delivery, reliability) simultaneously
  - Uses are not easily separable
- Significant lead time required for expansion (5-7 years)
  - Many regulatory approvals required
  - Projects have major impacts on the public and environment
- Comes in few sizes and technologies
  - It is not always possible to size expansion to match the need
  - Future potential and scalability must also be considered
- Regulatory requirements
  - OEB Codes (TSC and DSC)
  - IESO Market Rules

# OEB's Transmission Project Development Plan

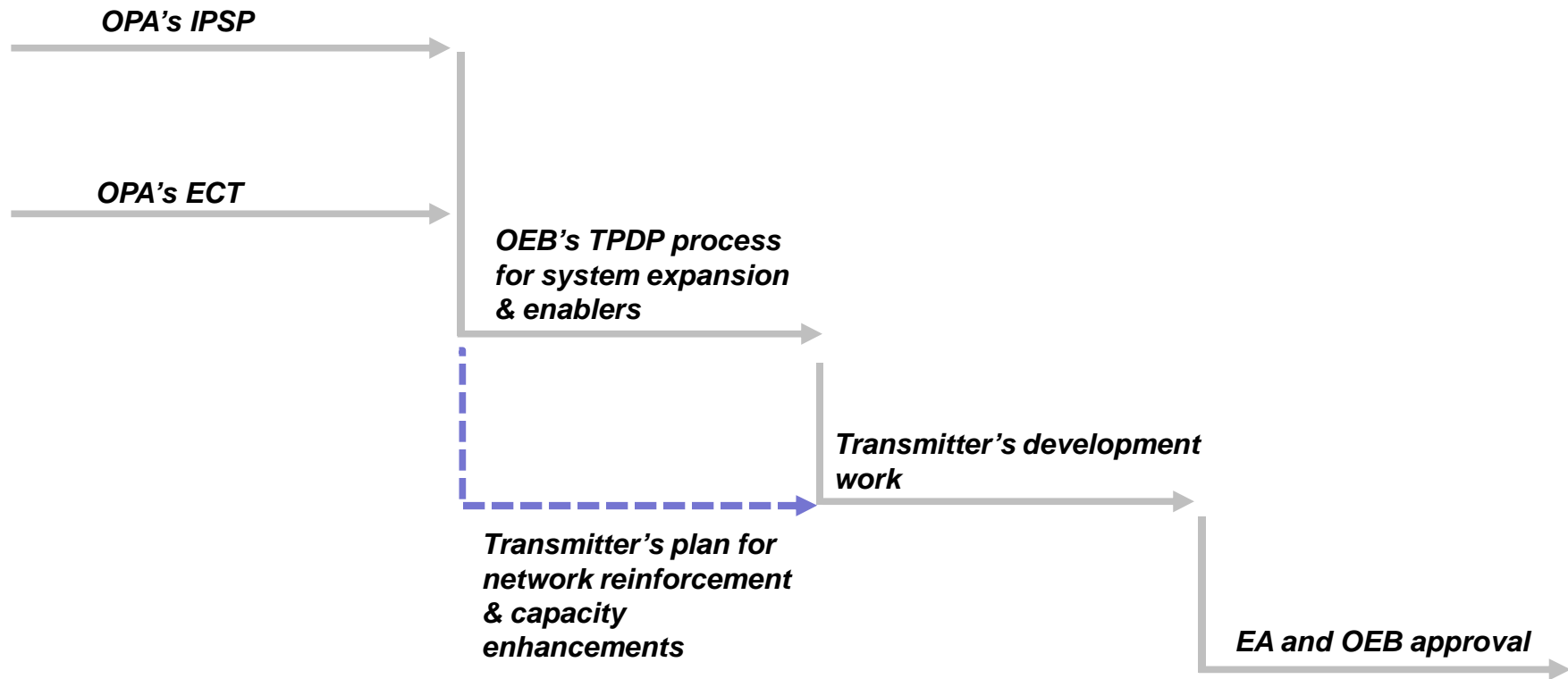
- Recently, the OEB issued a Board Policy on “ Framework for Transmission Project Development Plan (TPDP)”
- The paper proposed a parallel process to facilitate development work of major transmission projects that may be required to connect renewable generation



Source: OEB

Process for Transmitter Designation and Transmission Project Development Plan Approval

# Possible Transmission Development Process



## In Closing,

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- Significant advance has been made with the FIT Program a year later
- tremendous interest; over 3000 MW of new renewable resources were contracted for addition to the existing system
- Much work remains, especially with respect to the ECT portion of the FIT process and transmission and distribution expansion to further accommodate interested renewable projects
- Stay tune