

***Growing the Margins:
Energy Conservation & Generation for
Farms and Food Processors***

***Connection Impact Assessment & its
Challenges under SOP***

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Presentation Focus:

- Hydro One Experience
- Distribution Generation Connection Process Overview
- What is a Connection Impact Assessment (CIA) and why is it so important?
- Challenges: Technical, Procedural (including Queuing), Regulatory & Other
- Dealing with Challenges
- What is new for small projects up to 500 kW?

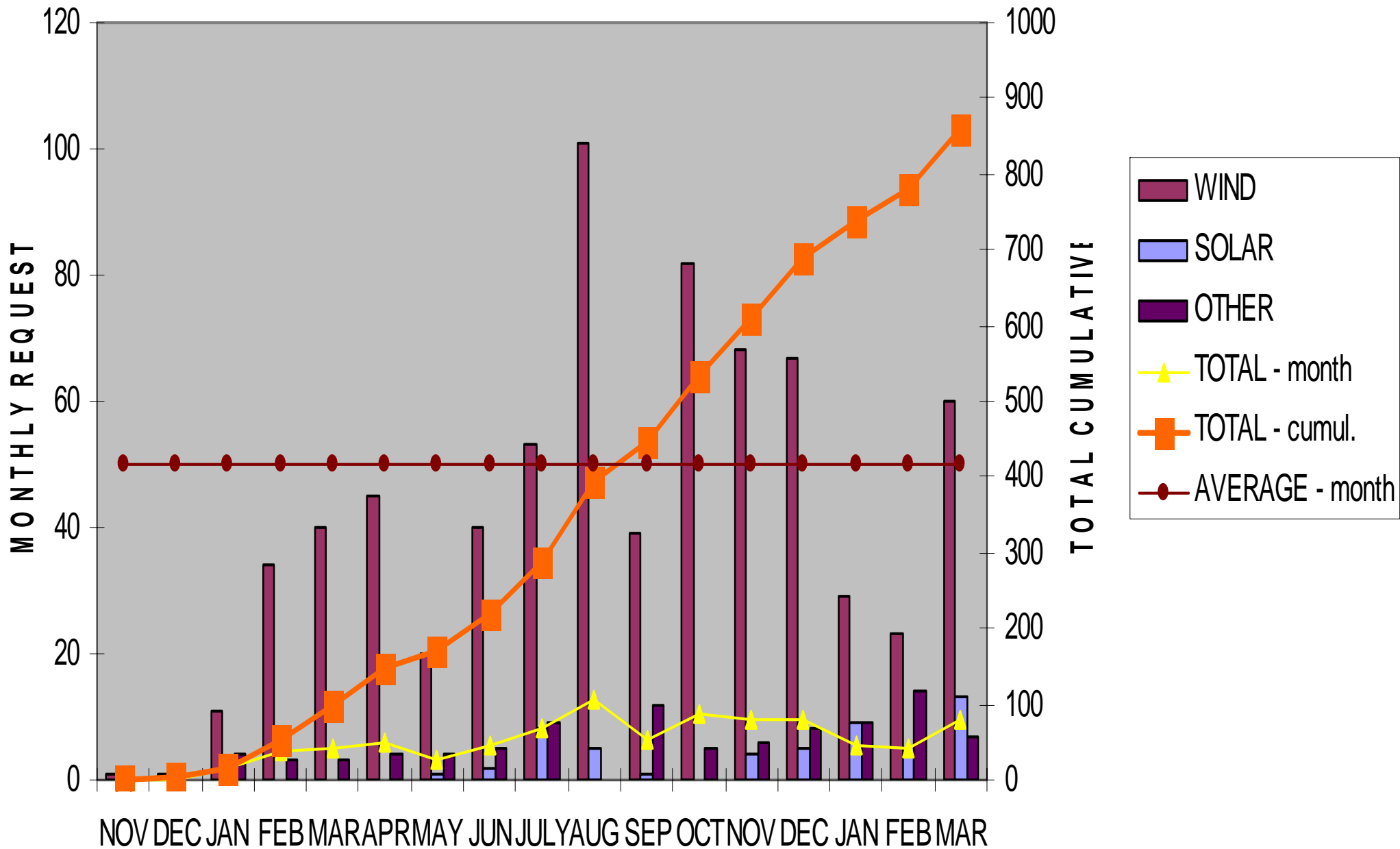


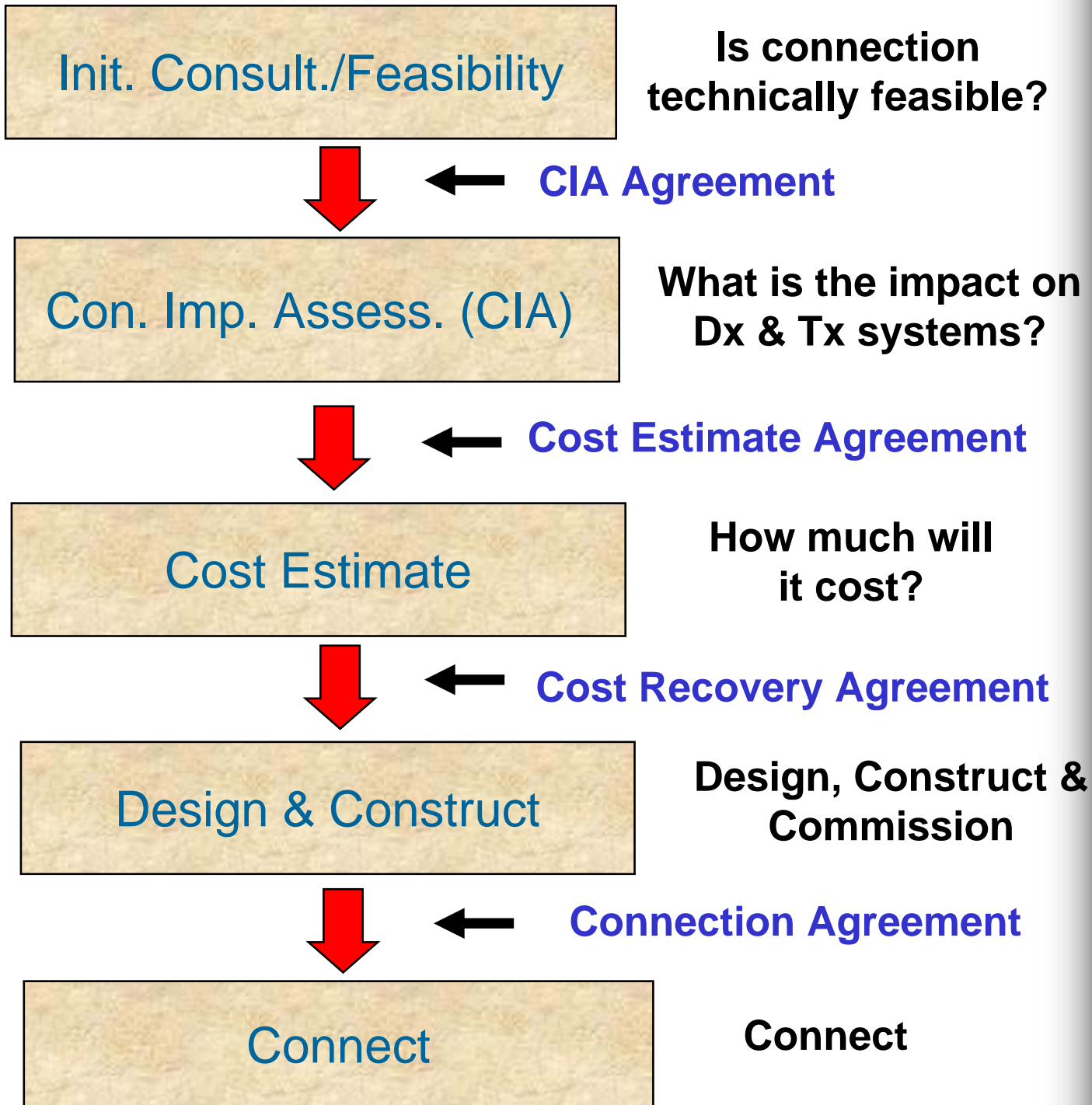
Hydro One's Distribution Generation Connection Experience

- Connected 20 Generators with a total capacity of 35 MW
- Connected 77 Net Metering generators under 2000 kW since May 2006
- Completed over 300 studies and assessments since January 2006
- Worked with other LDCs as host LDC
- About 800 applications for Standard Offer Program (SOP)



New Generation Connection Assessment Requests

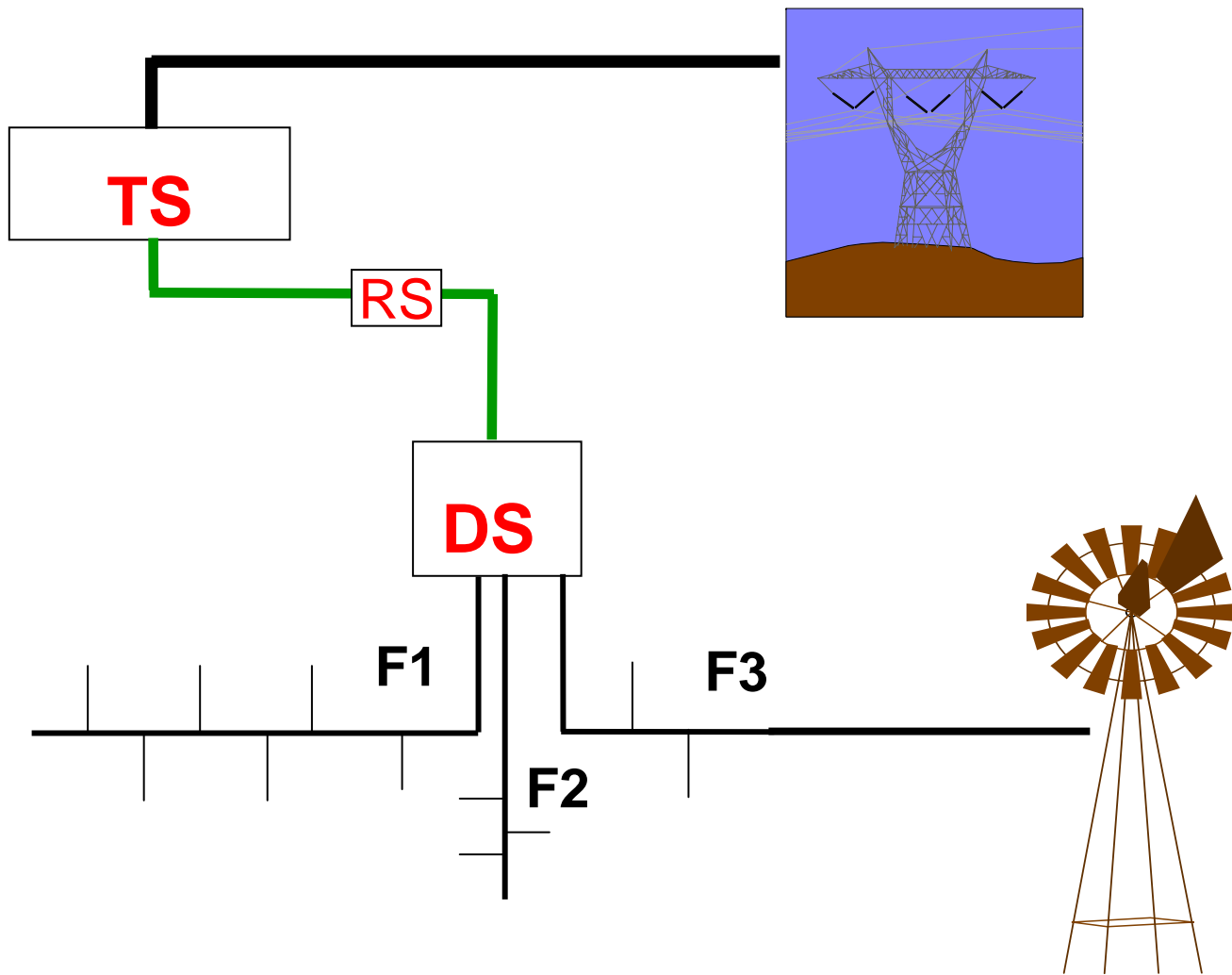




**Distribution
Generation
Connection
Process -
*Simplified***



What is a Connection Impact Assessment (CIA)?



Ensure:

- Safety of LDC workers
- Protection of LDC assets
- No negative impact on LDC system & its customers (Security, PQ)
- Customer Connection

LDC must be consistent in application of criteria/rules for CIAs

**Technical requirements ensure:
safety, reliability, power quality and system integrity**

Why is a CIA so important?

- CIA ensures distribution system remains reliable and other customers are not adversely affected
- Completion of a CIA means a queue position !

Technical Challenges

- Distribution systems in Ontario (and across North America) not designed to connect multiple generators
- Evolving technology, models, criteria, transmission & distribution interaction, etc.
- Reverse flow limit at supply stations, tap changer
- Unknowns: transmission limits, wind penetration limits, etc.

How are we handling these?

- Engaged both transmission and distribution technical experts to address issues
- Engaged external consultants & universities
- Working with IESO on transmission impact where reverse flow exceeds 10 MW



Regulatory Challenges

- The Transmission System Code (TSC) and Distribution System Code (DSC) do not address mutual impact scenarios
- Lack of clarity on cost allocation for multiple connections to same upgraded facility
- Standard timelines in DSC not designed for SOP
- ***How are we handling these?***
- Highlight local transmission impact in CIAs
- Developed cost allocation rules (plan to seek OEB concurrence on these)
- High level timelines for project planning purposes at first; definite completion dates later
- Substantial additional resources brought in to expedite work; plan to bring in more



Procedural Challenges

- Repeating CIAs due to changes in turbine type, connection location or major equipment such as transformer
- Iterating CIAs due to projects proceeding in advance of those ahead in the queue
- Queue projects requesting increase in capacity results in repeating CIAs for them and those later in the queue and delays for those waiting to be assessed

How are we handling these?

- Engaged and informed OEB on the impact of CIA timelines
- Providing technical and non-technical specific information to project owners
- Updated queue information posted on Hydro One website

Procedural Challenges Cont'd

- Ensuring delivery on commitments and transparency for close to 800 requests

How are we handling these?

- Detailed project tracking & filing system to ensure accurate record keeping of applications received and delivery on commitments
- Completion dates renegotiated in advance if the original commitment cannot be met for reasons outlined on the previous slide

Activities Ongoing & Planned to Dealing with Challenges:

- Engaged external consultant in 2006 to further streamline our internal processes, results to be implemented in 2007
- Substantial additional resources will be brought in to further expedite work (on both technical & non-technical sides)
- Working with the OPA to ensure coordination with SOP
- Interfacing with the OEB on Code & Queue clarification matters



What is new for projects up to 500 kW?

- Enhanced process to further expedite assessments & cost estimating
- Working with project proponents to find low cost protection alternatives to reduce connection cost
- R&D initiatives involving universities, equipment manufactures and in-house experts to further reduce connection costs



THANK YOU!

ANY QUESTIONS?