



# Wind Power Development in Ontario



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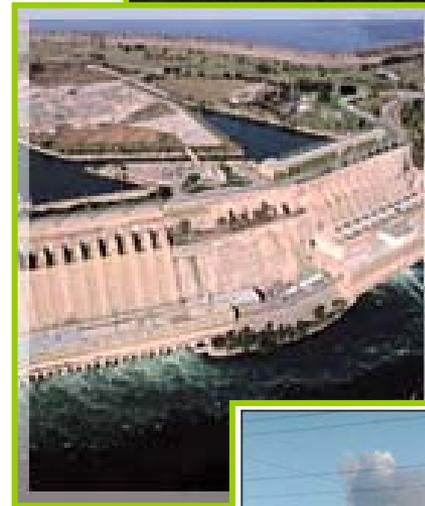
# Renewable Energy Section Mandate

## **“Facilitating development of renewable energy opportunities”**

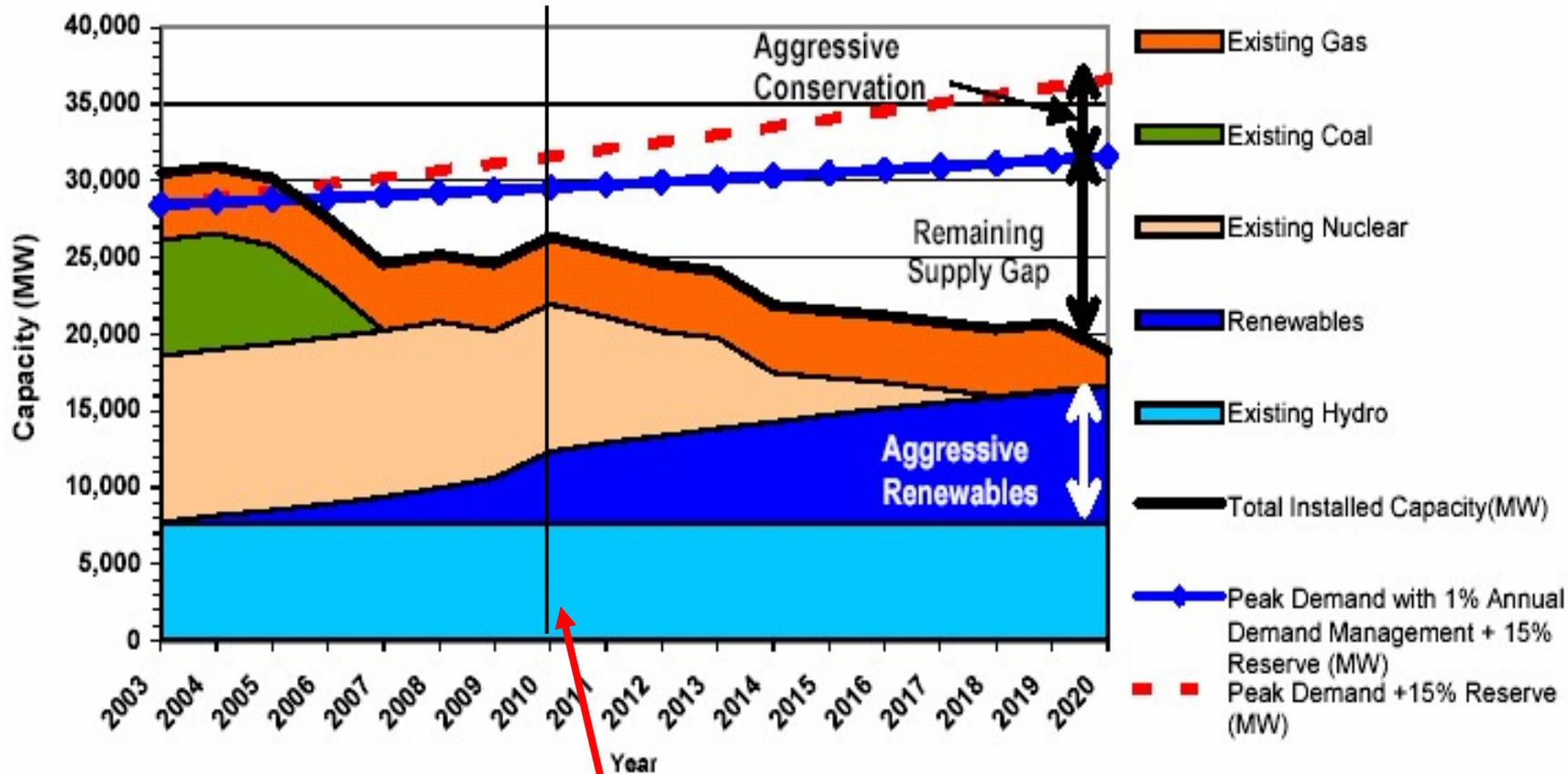
- Develop policies and programs in support of government targets
- Commitment to sustainable development, ecological sustainability, and conservation of biological diversity
- Provide opportunities on Crown land for wind power, water power and biomass
- Integrate across other government ministries and collaborate with stakeholders to promote development of new supply

# Electricity Sector Drivers

- ❑ Demand for electricity increasing at 1% annually
- ❑ 25,000 MW needs to be replaced in next 15 yrs; \$25 B to \$40 B
- ❑ Transmission and grid capacity issues
- ❑ Government commitment to phase out coal
- ❑ Energy-related GHG emissions account for virtually all of the increase in Canadian GHG emissions (1990-2001)



# Generation versus Peak Demand, with Renewables



**RPS target of 10% increase in renewables**



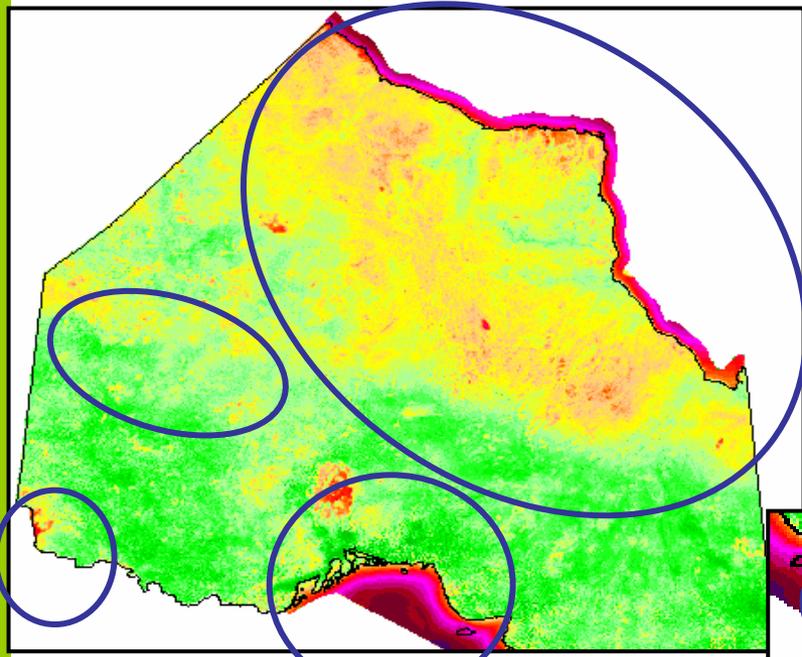


# Wind Power Policy Enablers

- Provincial movement toward simplifying policy that enables renewable energy development
  - Amendments to Provincial Planning Act
  - EA Reforms
  - Standard Offer
  - Renewable Portfolio Standards (10% by 2010)
    - Request for Proposals (RFP I & II)
  - Net Metering

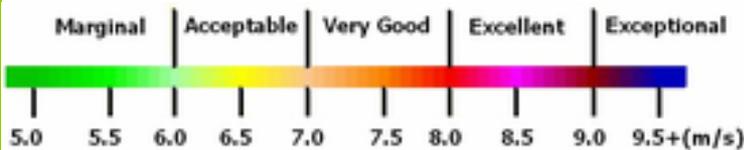
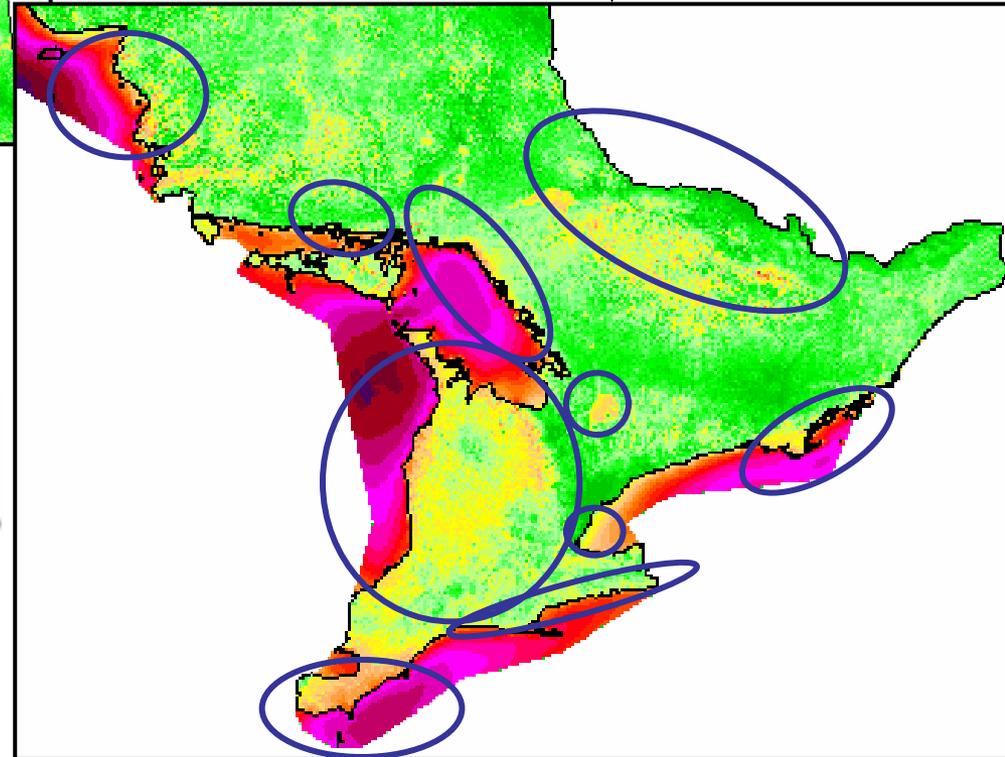


# Wind Potential in Ontario



← Northern Ontario

Southern Ontario





# Procurement & Development in Ontario

- Crown land
  - 'Window of Opportunity' open until Dec 2006 for applications to pursue wind opportunities
  - 2-stage process available (testing of wind power potential opportunity)
  - Policy encourages wind power in diesel-reliant remote communities
  
- Municipal and Private lands
  - Developer must acquire lease hold agreements
  - Requires permits and approvals
  - Specific requirements vary at municipal level, but generally include zoning, building permits, road and right of way agreements



# Crown Land Development Process

- Public Lands Act
  - MNR authority: management, sale & disposition of public lands
  - Disposition decision based on:
    - identification of environmental effects
    - development of sufficient mitigation measures
    - comments received by proponents during consultation with public, stakeholders, agencies & Aboriginal communities
    - confirmation that MNR and other government agencies' legal requirements have been addressed
  - Requires plans, drawings, specifications, schedules for work permits and for confirmation by Regional Engineer that project meets Ontario Engineering Standards
- Coordinated Environmental Approval Process
  - MNR commitment: use of information collected during EA to support disposition decisions



# MNR's Role in Private Land Development Process

- Participates as a commenting agency
- Provides data and information on:
  - natural resource values
  - expertise on the interpretation of natural resource information
  - Provides advice on values under MNR's mandate
    - Endangered Species Act applies on both Crown and private land
- Specific responsibilities in municipal planning matters to confirm status of:
  - significant wetlands
  - significant portions of habitat of threatened and endangered species
  - Significant 'Areas of Natural and Scientific Interest'

# Environmental Assessment



- EA for Electricity Projects (O. Reg 116/01)
  - First-time Ontario EA Act extended to private sector
  - Crown or private land
  - Proponent-driven, self-assessed, MNR participates as a commenting agency
  - Wind power projects > 2 MW
  
- MNR's Class Environmental Assessment
  - Wind power projects < 2 MW and wind testing activities on Crown land, only

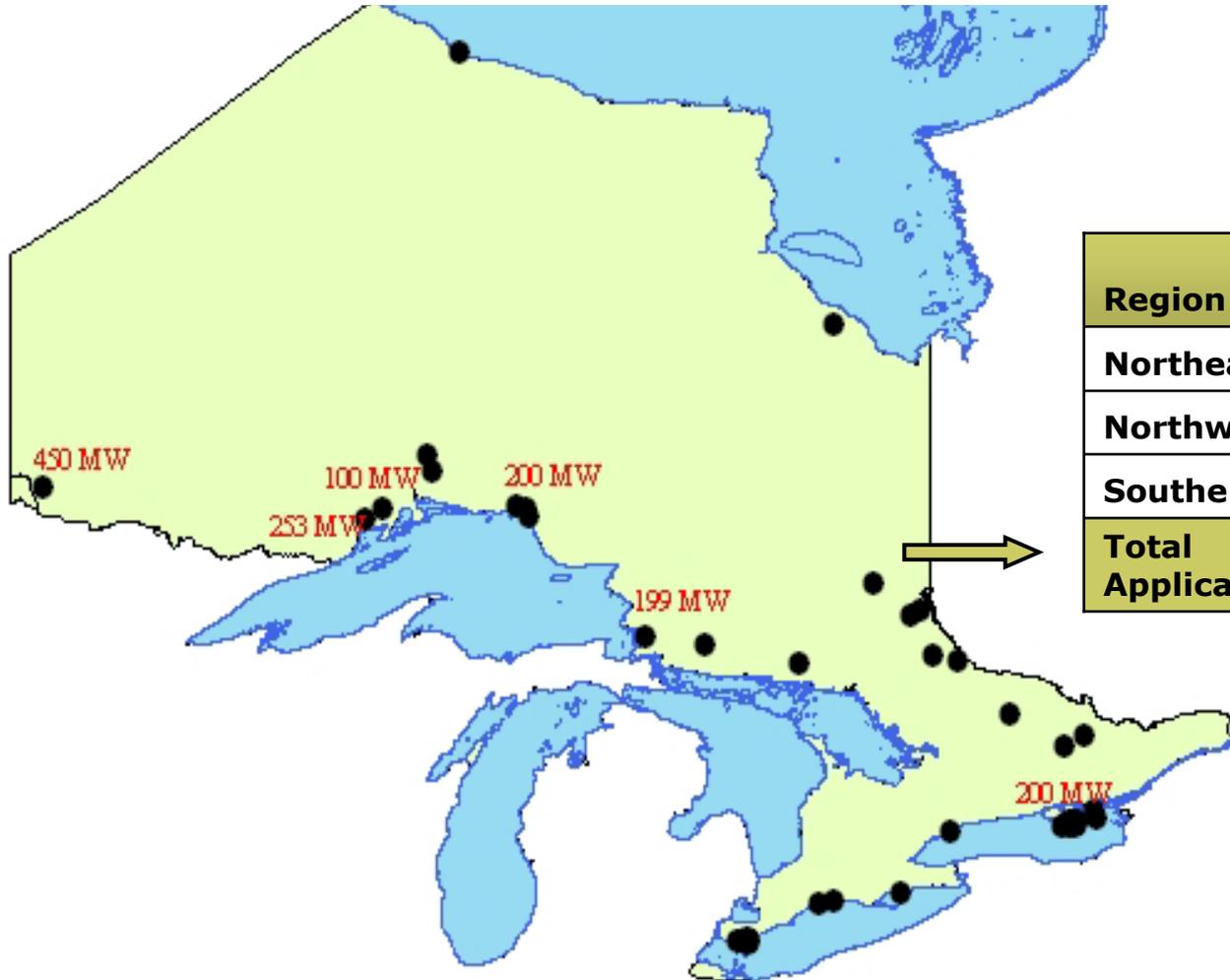


Canadian Environmental  
Assessment Agency

- Canadian Environmental Assessment Act (CEAA)
  - Typical triggers for wind power: Federal wind power incentive funding and/or impacts to fish and fish habitat (Fisheries Act)



# Windpower Applications on Crown Land



Region	# of Applications
Northeast	13
Northwest	11
Southern	19
<b>Total Applications</b>	<b>43</b>



! Windpower Application Block

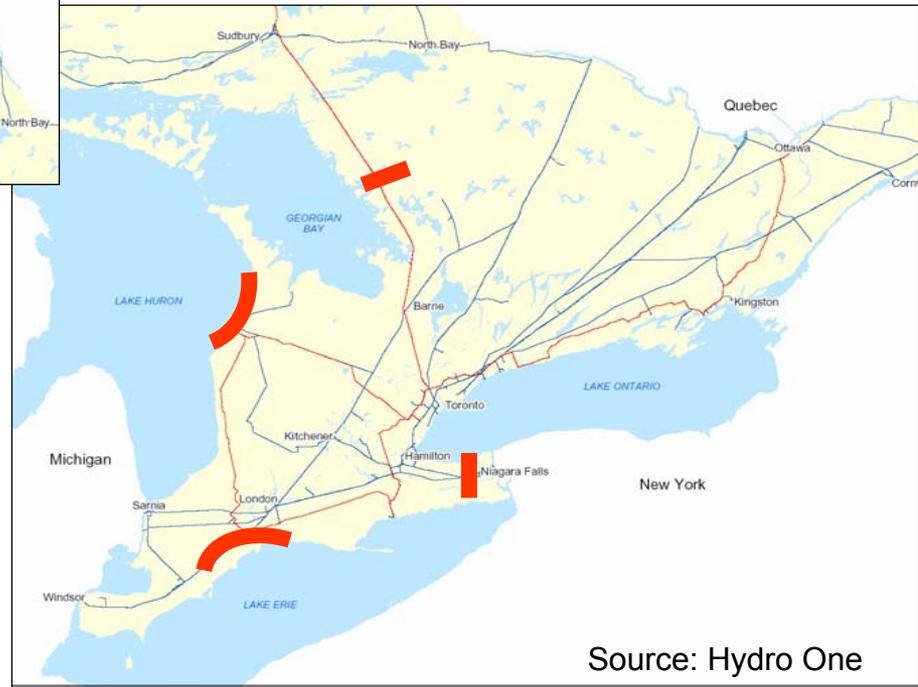


# Transmission Bottlenecks



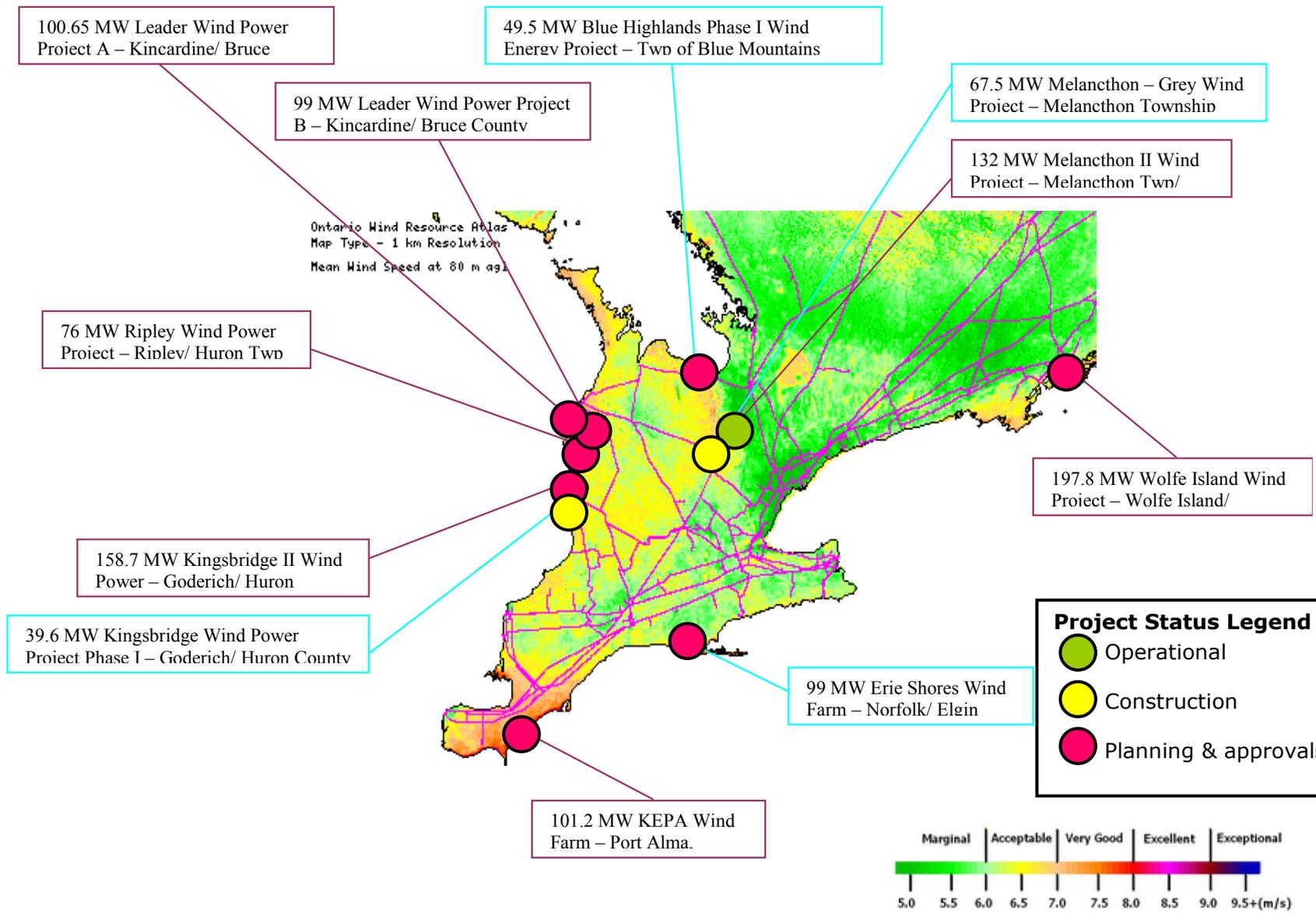
- Upgrades and expansion of transmission grid is critical for developing economically viable renewable energy sites

- Unique challenges to wind power include short-term variability of power and long-term capacity of transmission

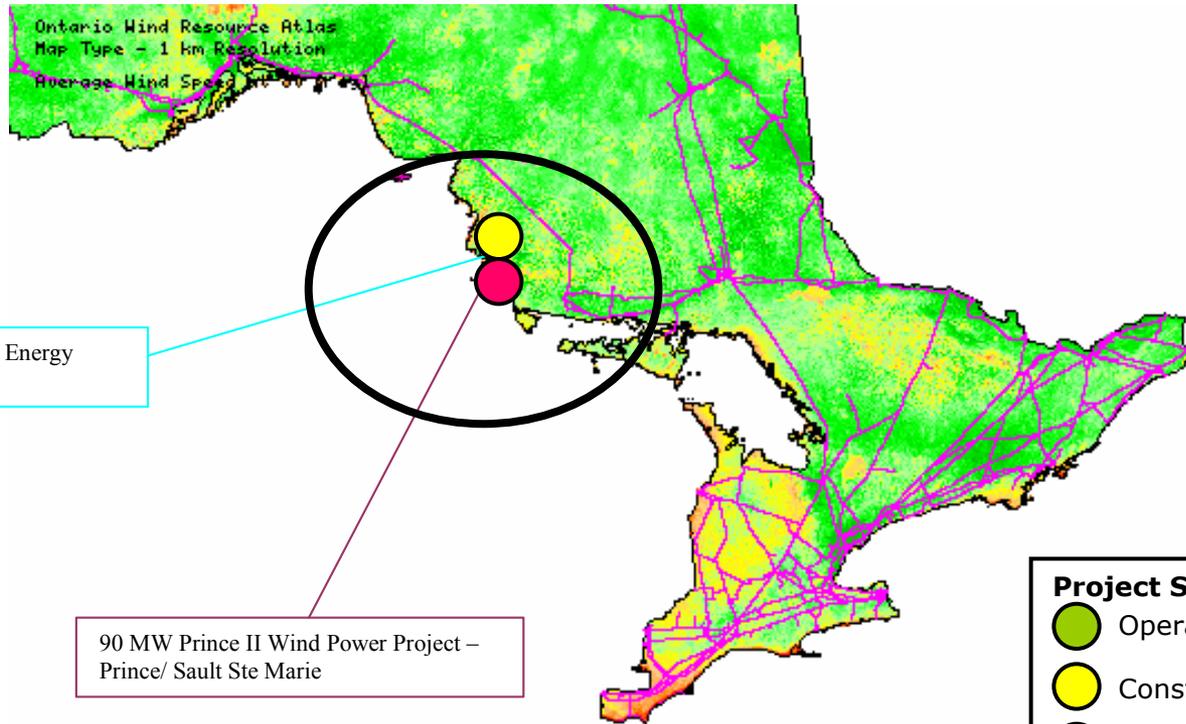


Source: Hydro One

# Status of Large Wind Development: Southern Ontario

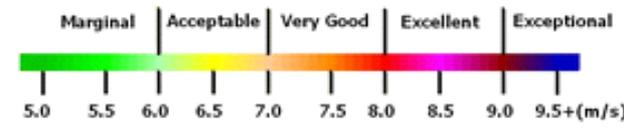


# Status of Large Wind Development: Northern Ontario



**Project Status Legend**

- Operational
- Construction
- Planning & approvals



# Issues and Unknowns

- Birds and bats impacts
  - Lack of Ontario bat research and data
  - Using Federal government guidelines for birds
    - Identification and assessment of potential impacts
    - Mitigation and Monitoring
  - Currently developing provincial guidelines and monitoring framework
    - Species at risk, bats, birds, fisheries and wetlands
- Offshore development
  - Science needs
    - Unknown potential impacts on inland fresh-water lakes
    - Unique challenges with collecting offshore impacts data
    - Preliminary 'far' offshore technology developing in Europe
  - International issues
  - Engineering challenges
- Siting, noise, aesthetics
  - Spectrum of reactions
    - NIMBY
    - Public uptake, risk sharing (e.g. Windshare)
  - Currently developing education and awareness strategy





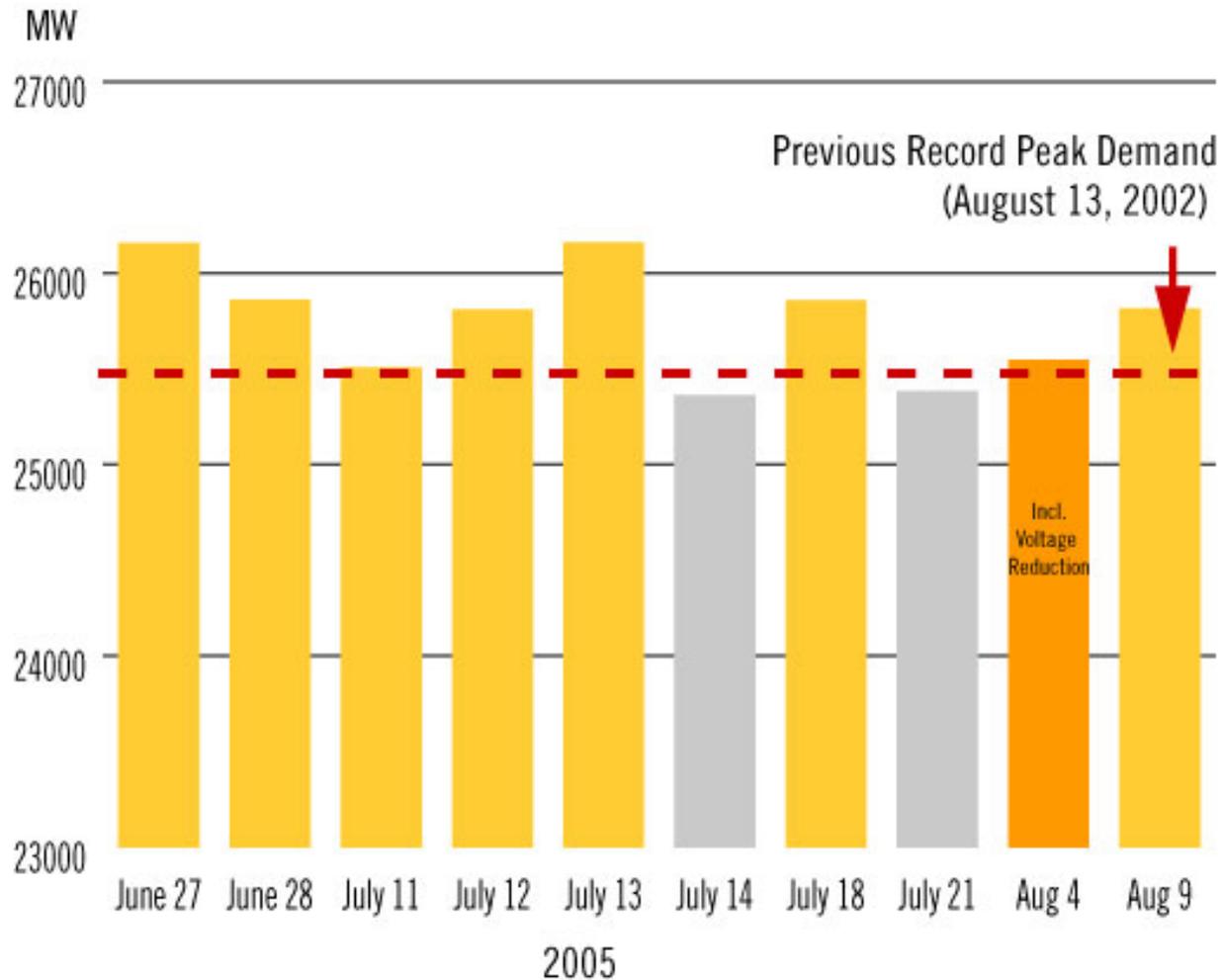
# Questions?



Becky Thorson, 2006

Ontario Ministry of Attorney General

# Increasing Energy Demand

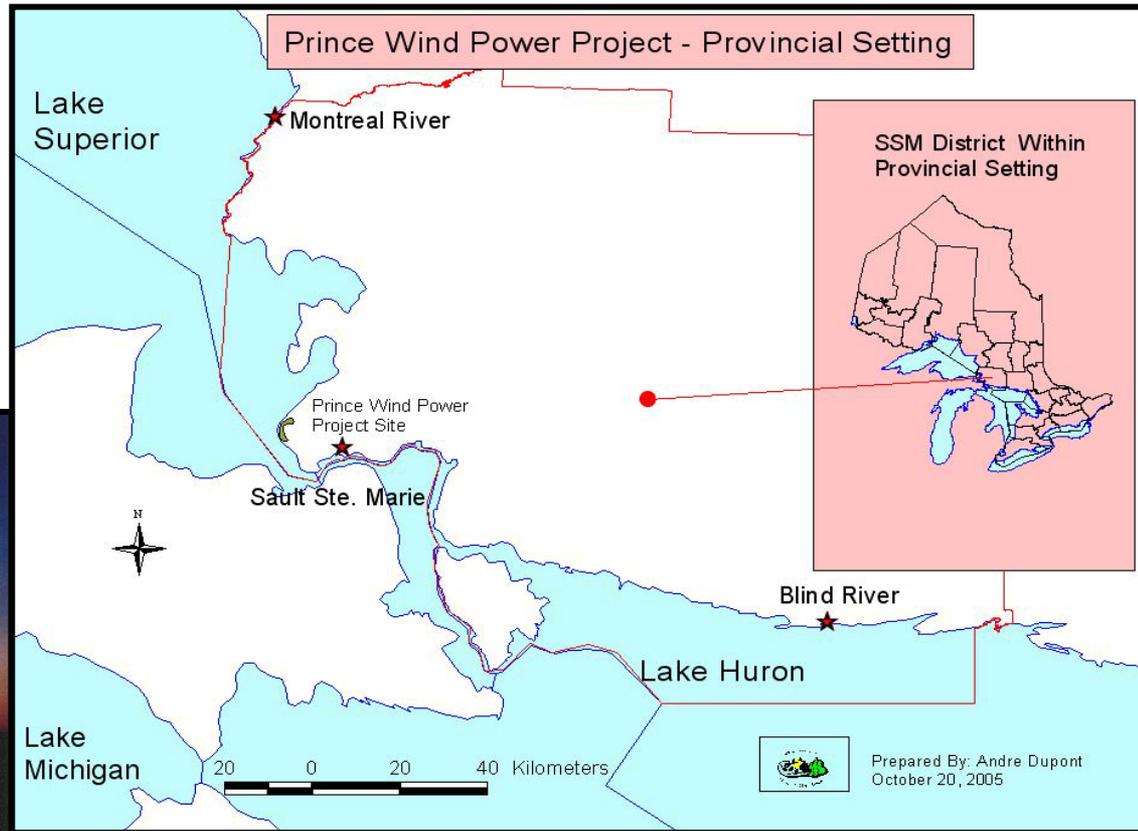
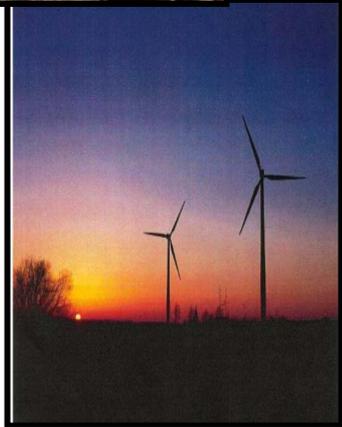


**Summer 2005: greater challenge to system reliability than record peak demand in 2002.** <sup>17</sup>



# Prince Wind Farm (on Crown Land)

- ❑ 99MW for Phase 1; additional 90MW for Phase 2
- ❑ Energy to supply approximately 38 000 homes (Phase 1)
- ❑ Currently in Phase 1 construction of project



# Melancthon Wind Project (on Private Land)

- ❑ 67.5 MW for Phase 1; additional 132 MW for Phase 2
- ❑ Energy to supply enough for approximately 20,000 homes (Phase 1).
- ❑ Phase 1: in commercial operation as Ontario's first utility-scale wind farm.





# Overview

- ❑ Electricity sector drivers & government targets
- ❑ Wind energy potential
- ❑ Policy enablers
- ❑ Ontario wind power procurement & development
- ❑ Environmental assessment & approvals
- ❑ Wind applications on crown land
- ❑ Status of large wind development in Ontario
  
- ❑ Case Studies
  - Crown land
  - Private land
  - Urban Cooperative
  
- ❑ Issues and unknowns

# Toronto Windshare: (Urban Cooperative)

- ❑ Bird Monitoring Study Program (2003)
  - 3 searches/week in spring and autumn
    - ❑ main migration seasons for small nocturnal migrants
    - ❑ greatest potential for avian mortality
  - 2 birds found dead during study
    - ❑ minimal impact on mortality
    - ❑ Adaptation of birds to presence of turbine

