



**APPRO**

ASSOCIATION OF  
POWER PRODUCERS  
OF ONTARIO

# The Advantages of Generation to York Region

APPRO Presentation to the York Region Working Group  
July 28, 2005

# Overview

- About APPrO
- APPrO's Objective
- The problem
- Generation – a viable solution
- Summary

# APPRO – Who we are

- Non profit association representing most power producers in Ontario
- 150 members, more than 95% of Ontario's electricity
- Members include generators, service suppliers, equipment suppliers and consultants involved in gas, hydro-electric, wind, coal, nuclear, biomass, etc
- Continuously engaged in policy review and comment, regulatory proceedings and stakeholder consultations
- More information at [www.appro.org](http://www.appro.org)

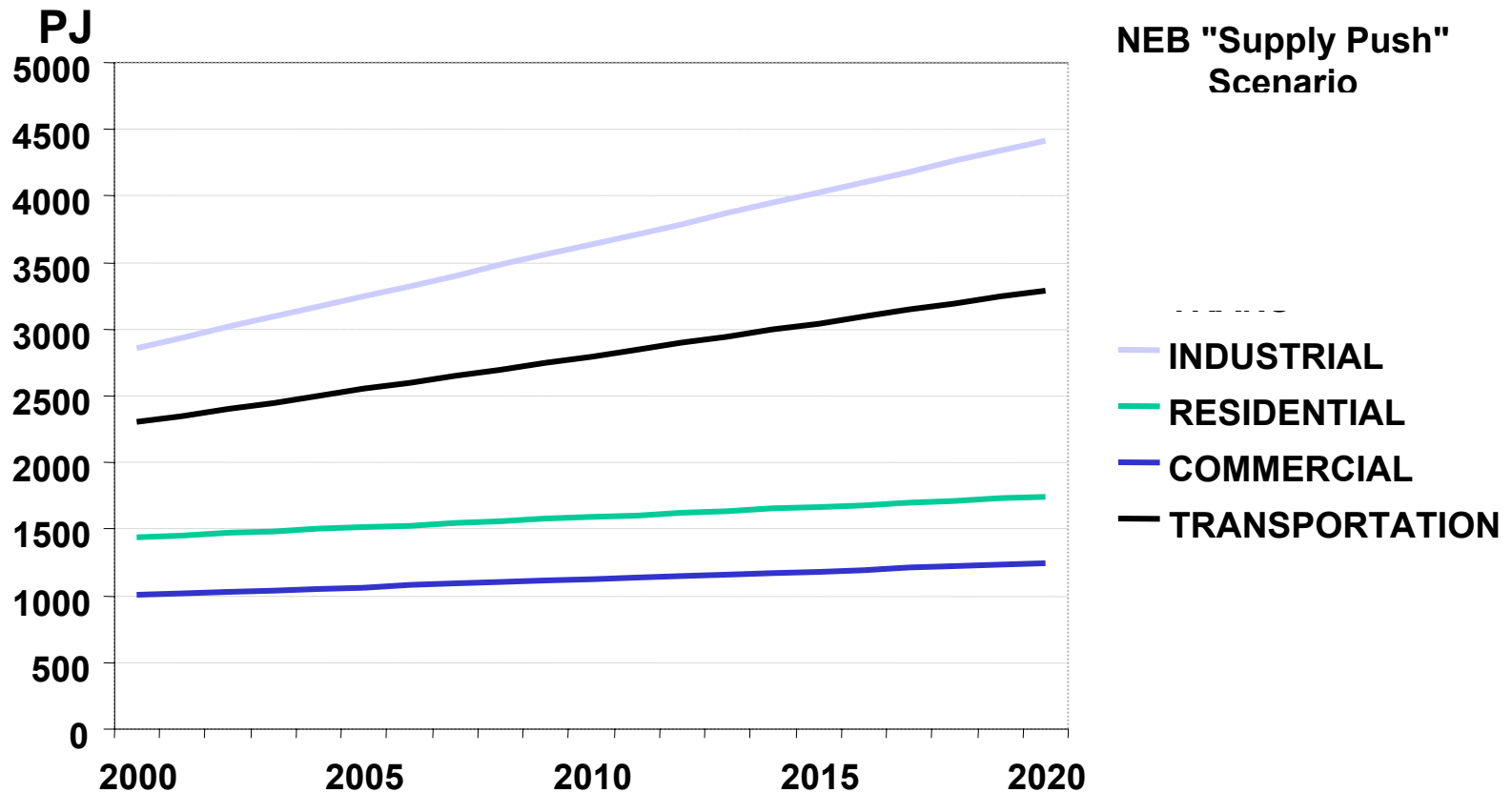
# APPRO's Goal

- APPRO's goal is an open and competitive electricity industry in Ontario with multiple sellers and buyers which:
  - Incentivizes safe, reliable and economically sound supply,
  - Supports investment
  - Allocates risk appropriately, and
  - Provides a healthy, equitable and environmentally sound business environment
  - Leads to a sustainable energy infrastructure in Ontario
- This presentation is intended to ensure that the working group is as well-informed as possible on generation options
- It is not an endorsement of any particular project, and is not an APPRO official position

# The Problem - Ontario

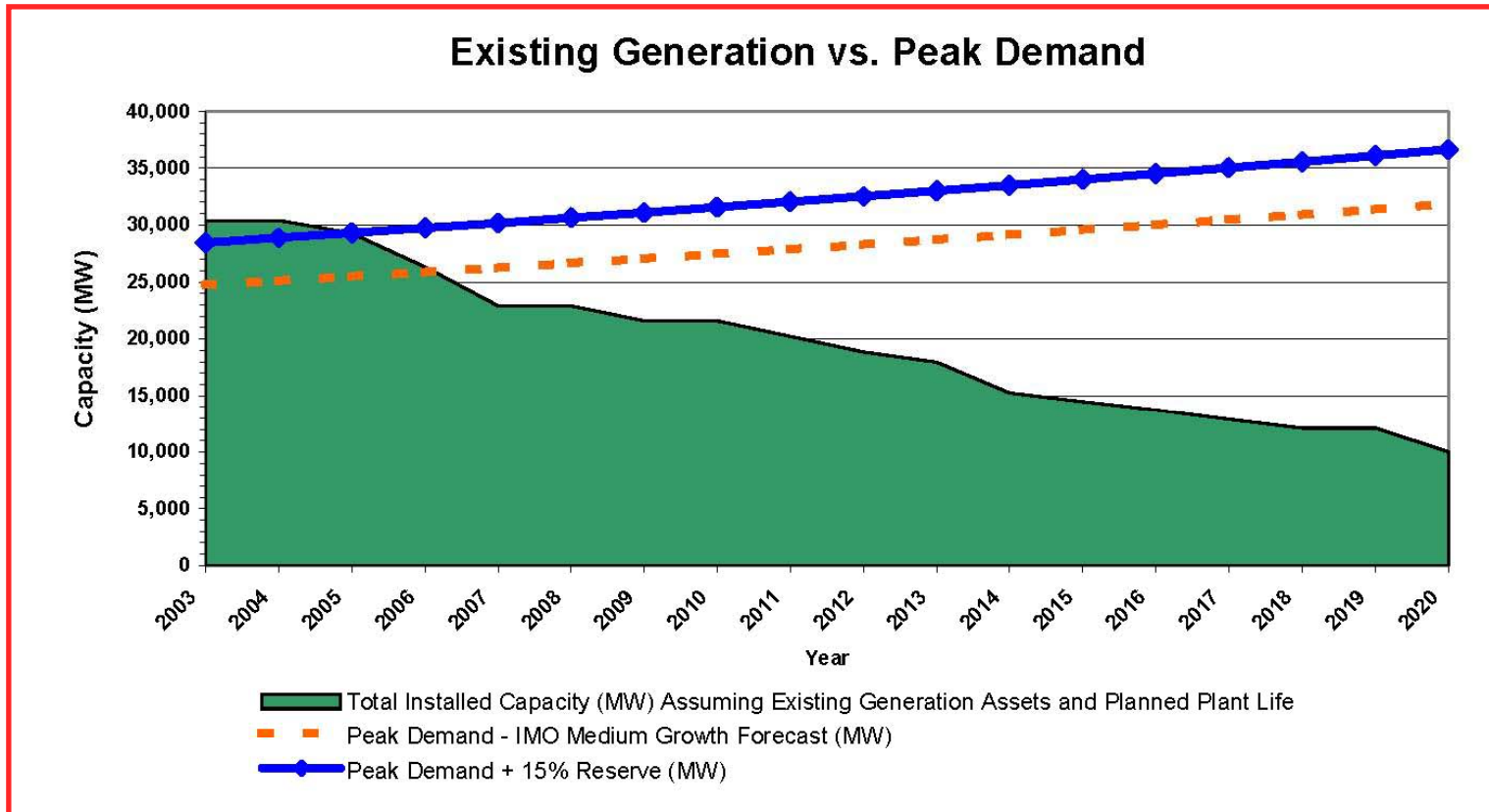
- Ontario is in a tight supply situation overall, frequently using more expensive imports (much coal fired) to meet peak loads
  - Load has been growing, efficiency isn't fully offsetting this growth (i.e. population growth)
  - Very little new generation has been built in the last ten years
  - Retirement of existing plants coming soon – \$25 to \$40 billion will be required to keep the lights on over the next 15 years
  - Off-coal policy puts significant pressure on existing resources and need for new generation in the transition through 2009
    - Certain localized areas are even tighter (e.g. York Region)
- The government is encouraging private sector investment in Ontario's electricity system to minimize the burden on the public purse and to ensure that risk is allocated where it can be best managed

# Demand growth is constant



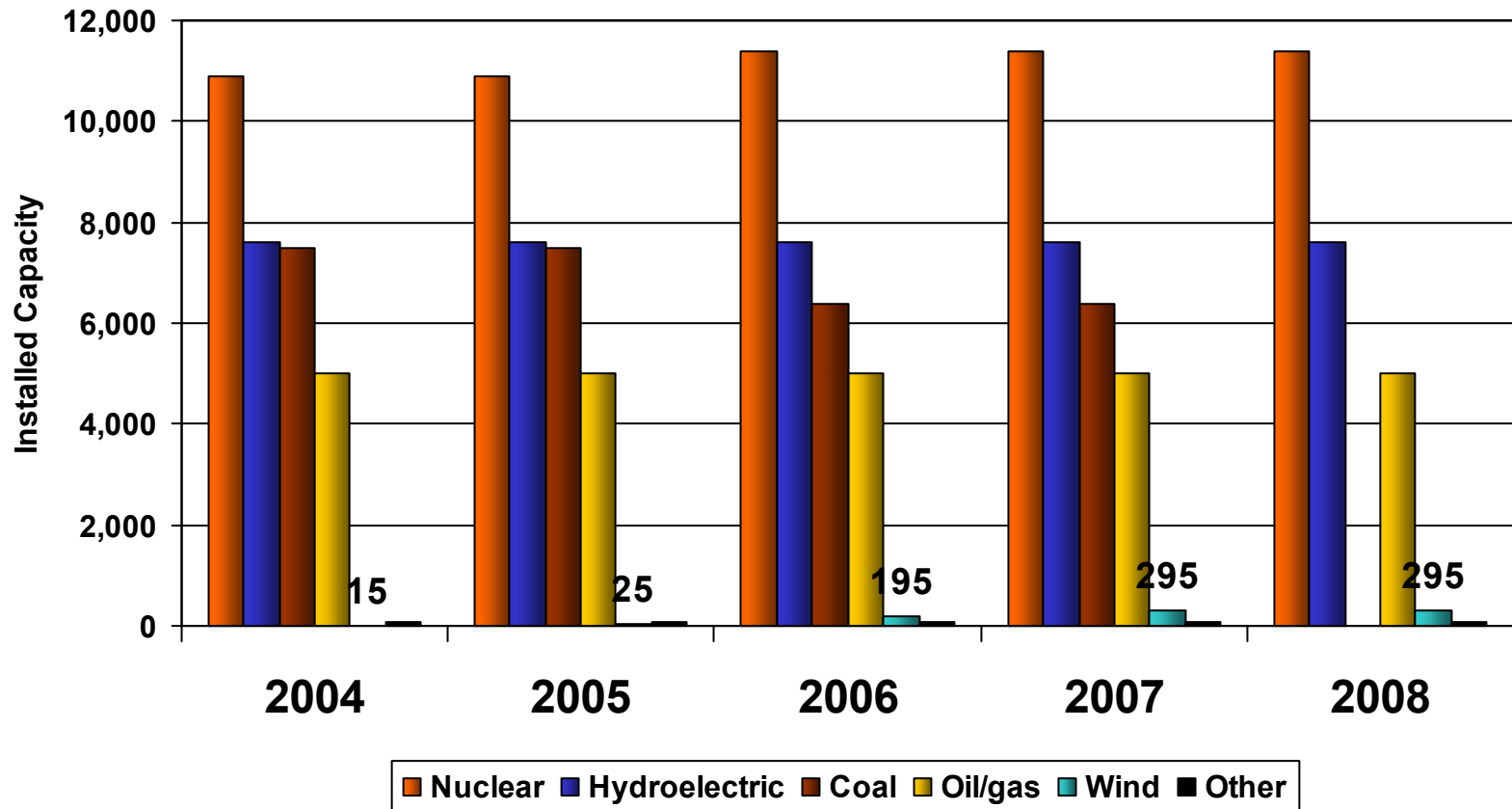


# Supply Gap



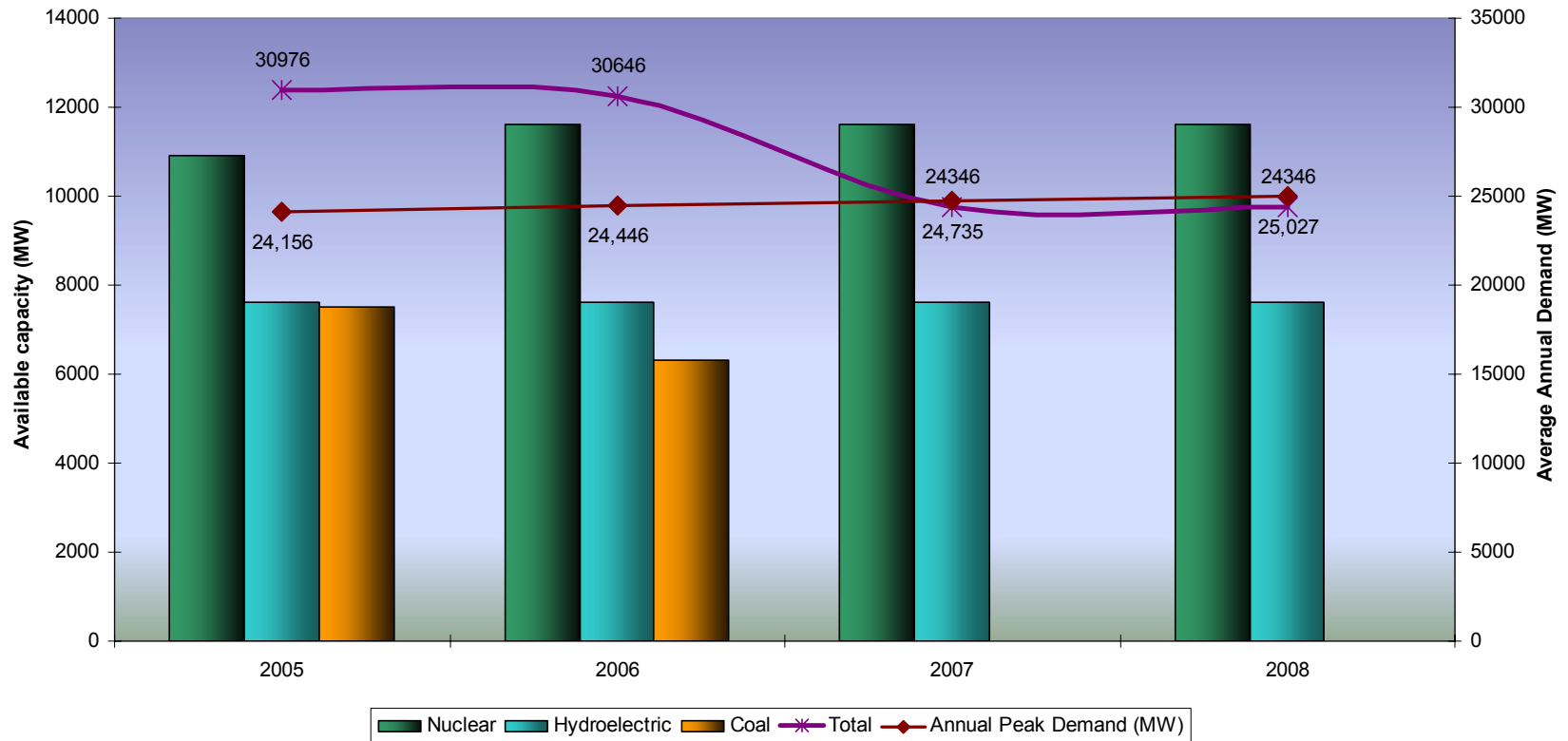


# The Off-Coal challenge...



# The capacity-demand gap

Capacity vs. Demand 2005-2008



# Generation: Horses for Courses

- Diversity of fuel sources is vital (for reliability and risk management reasons)
  - Work horses: Base load (runs for more than 60% of the hours in a year, e.g., nuclear, large hydro)
  - Quarter Horses: Intermediate (15 to 60%, e.g., coal, large CCGT)
  - Racing Horses: Peaking (less than 15%, e.g., single cycle gas, some hydro)
  - Relief Riders: (for economic or environmental benefits or other special purposes; intermittent renewables, other sources)

# The Problem – York Region

- Analyses conducted in 2003 and 2004 indicated that the growing power demand in northern York Region could not be met with the current transmission infrastructure.
- Subsequent to these studies, Hydro One recommended upgrades to the existing transmission corridor to increase the size and capacity of transmission lines between Markham and Newmarket and to add a new transformer station
- Hydro One's plan for new transmission lines was opposed by affected municipalities, residents, and regional school boards.
- The IESO – responsible for reliability – has said a solution is needed in 2006-7
- To solve the power supply problem in northern York Region, the power must be injected into the power lines close to Armitage T.S.

# York Region Reliability Solutions

- There are only a few options:
  - Status quo (do nothing = reliability risk)
  - Transmission upgrade = unpopular....
  - 100% CDM (questionable – needs policy and financial incentives)
  - CDM plus local generation
  - CDM plus new transmission, plus generation outside the region
- There is no magic bullet – the issue is which solution is most widely acceptable at the best cost. All solutions have advantages and disadvantages.
- Realistically, only solutions which include gas fired plants can provide a reliable and cost-effective alternative to the transmission problem in northern York Region
- Generation should be located in the "right" places
  - Peaking generation is best suited in areas where there are local congestion issues (e.g., transmission bottlenecks).

# Filling the Gap

- Need to recognize that generation and transmission are sometimes complementary, sometimes alternative solutions.
  - At one end of the spectrum - small scale distributed generation – but this requires many projects
  - The middle of the spectrum - larger scale projects connected to the transmission system close to load centres, which in some cases may provide alternatives to transmission upgrades
  - And at the other end of the spectrum - generation sited distant from load still depends on long distance transmission for market access.
- This means seeking the most economically efficient interaction between generation and transmission investment

# Tradeoffs between Generation and Transmission

- Generation is not a direct one-for-one substitute for transmission in all cases
- A number of strategically-sited generation units can reduce local need for transmission
- Using multiple units and high-reliability options improves the ability to substitute for transmission
- Having a dependable ability to produce during times of peak load is critical if generation is to substitute
- Many jurisdictions routinely call for generation proposals as a way to deal with transmission problems, and as a way of keeping costs down
- You need to strike a balance between transmission and generation in each locality
- You don't want to build large lines that are to be used only in rare instances, or to build expensive generation plants that are used only rarely
- Transmission cost over-runs are borne by the public, whereas generation cost over-runs are borne by the developer

# Advantages of Local Peaking Generation

- **Economics**
  - better to build local supply than supply elsewhere and local transmission
- **Public acceptance**
  - High Voltage transmission is not supported by communities
- **Increased system reliability (multiple units)**
- **Flexible**
  - can run different number of units depending on need and thereby reduce total emissions
- **Environmentally attractive**
- **Local economic benefits (jobs, tax revenues, etc.)**

# System Wide Benefits

- Significant cost savings, frequently in respect of future capital requirements
- Reduced losses throughout the wires system, as generation is located close to load
- Generation that tends to operate in closer coordination with load, which in aggregate tends to reduce see-saw demands on the distribution system.
- Opportunities for environmentally-friendly and innovative technology

# System Wide Benefits

- Should improve stability and security of local systems
- Makes it easier for new supply to come on board fast
- More equitable balance between large and small facilities
- More competition between generation and transmission, and between generation options
  - and more (e.g. <http://www.smallisprofitable.org/>)

## Peaking Generation vs. Transmission

- Every system needs a certain amount of peaking generation, preferably close to load
  - Ontario is currently under-supplied in that area
  - Multiple units make for better reliability
  - Peakers provide voltage and supply support
  - More flexible than transmission – only runs when needed, reducing emissions
  - Designed to start and stop quickly

# Environmental Characteristics of Natural Gas

- Generally speaking, natural gas is the cleanest of the economically available thermal fuels
  - The net impact of gas-fired power is cleaner air, because it displaces coal combustion
  - Technology is well-known and improving
  - Local impacts are minimal (we heat a lot of homes with gas)
  - Greenhouse gas emissions are less than the alternatives it would replace

# Environmental Characteristics of Natural Gas

- "Switching from ... coal to cleaner-burning natural gas for electricity generation reduces greenhouse gas emissions by 60%, nitrogen oxides emissions by more than 90%, sulphur dioxide emissions by 99.5% and mercury emissions by 100%."

– *Ontario Clean Air Alliance: AIR QUALITY ISSUES  
FACT SHEET #12*

# Local Impacts of Gas Generation

- Quiet, good neighbor
  - There are many examples of people living happily close to gas generation, even inside hospitals, schools and libraries, in Canada, US, and Europe
  - Often supports high-quality planned development such as in Markham, Sudbury, Hamilton or Cornwall

# What about Gas Supply?

- Adequate gas supply is not a problem
  - Natural gas is supplied through an increasingly efficient international market
  - Long-term contracts with binding legal guarantees are available
  - New supply is available from both Canadian and international sources
  - Prices are competitively-determined
  - Underutilized pipeline capacity exists
  - New supply tends to become available reasonably quickly in response to price increases

# Conclusion

- All solutions entail benefits and risks which must be weighed
- Timing is critical
- Generation, if properly implemented, can deliver more benefits to the region and to the province, than transmission
- Generation in York Region is a viable and attractive option
- Can address York's transmission problem, while also helping to meet broader system needs, environmental and economic objectives
- Preferable to building transmission here, plus generation somewhere else

APPrO is a non-profit organization representing more than 100 companies involved in the generation of electricity in Ontario, including generators and suppliers of services, equipment and consulting services. APPrO members produce power from co-generation, hydro-electric, gas, coal, nuclear, wind energy, waste wood and other sources. APPrO's members currently produce over 95% of the electricity made in Ontario.

[www.appro.org](http://www.appro.org)

416 322-6549