

ONTARIO'S LONG-TERM ENERGY PLAN

Building Our Clean Energy Future

IESO

March 2, 2011

PROCESS AND TIMELINES

LONG-TERM ENERGY PLAN

- Comprehensive overview of government's direction for electricity in Ontario
- Based on public consultations and stakeholder meetings

SUPPLY MIX DIRECTIVE

- Posted for 45 days on Environmental Registry
- Directive issued to Ontario Power Authority on February 17

INTEGRATED POWER SYSTEM PLAN (IPSP)

- OPA will prepare the IPSP
- Ontario Energy Board will hold public hearings

PROGRESS MADE: CLEANER, MORE RELIABLE SYSTEM

- Previous Plan focused on restoring reliability, filling supply gap with clean energy and strengthening transmission

CLEAN ENERGY

- More than 8,400 MW of cleaner electricity added – enough supply to power Ottawa and Toronto for a year
- Signed more than 16,000 renewable energy contracts
- Green Energy Investment Agreement – \$7 billion investment, 4 manufacturing plants, 16,000 jobs
- Shut down 8 coal units – reliance on coal down by 70% (from 2003)
- Generation from emissions-free sources up by 22%

CONSERVATION

- Reduced system, customer costs by conserving more than 1,700 MW
 - Equivalent to taking more than 500,000 homes off the grid

PROGRESS MADE: CLEANER, MORE RELIABLE SYSTEM (CONT'D)

RELIABILITY

- Invested \$7 billion to improve approximately 5,000 km of transmission and distribution lines

PRICE STABILITY

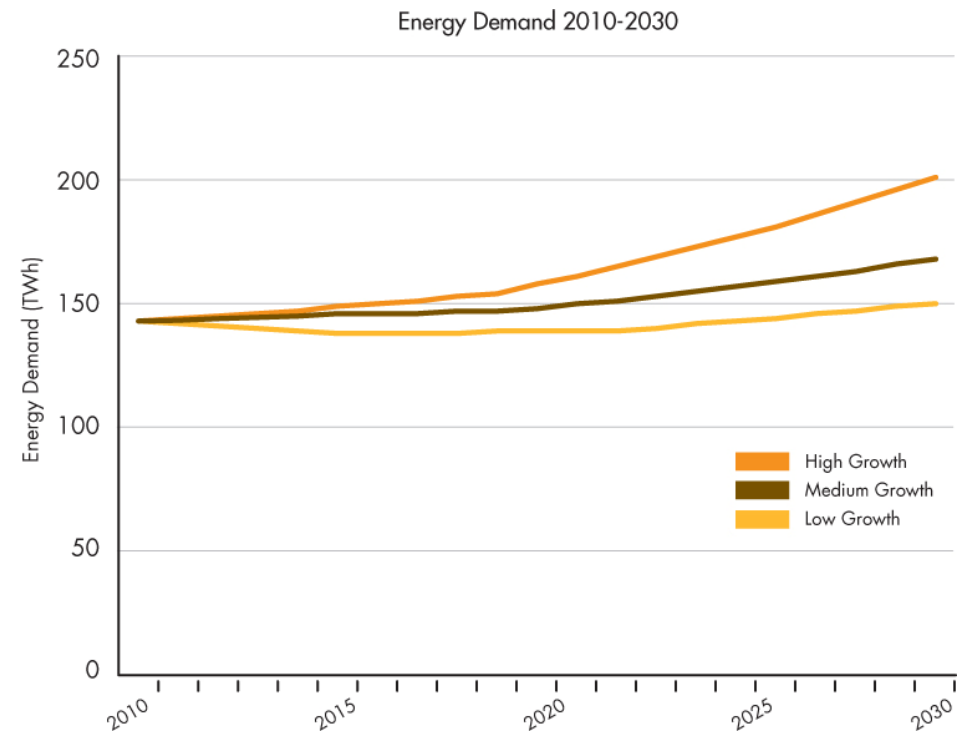
- Decreased stranded debt by \$5.7 billion
- Regulated Price Plan introduced - provides predictability

CLEAN ECONOMY

- Attracted more than \$16 billion in private sector investment
- Green Energy Act initiatives to support more than 50,000 clean jobs

THE PLAN: ELECTRICITY DEMAND

- Demand recovering slowly in 2010 after global recession
- Future demand will depend: economic recovery, population/household growth, electronics use, potential electrification of transit/vehicles and conservation
- Examined 3 scenarios: Low growth; Medium growth; High growth
- Government planning for medium growth, with flexibility for higher growth.



THE PLAN: CONSERVATION

- Target of 7,100 MW and 28 TWh reduction by 2030
 - Interim targets:
 - 4,550 MW and 13 TWh by the end of 2015
 - 5,840 MW and 21 TWh by the end of 2020
 - 6,700 MW and 25 TWh by the end of 2025
- Commercial sector will contribute 50% of conservation target; residential sector – 30% and industrial sector 20%
- Conservation targets among most aggressive in North America
- Next year, Ontario and LDCs will launch a number of new programs to help achieve target
- Mandated conservation targets for LDCs

THE PLAN: CLEANER SUPPLY MIX

NUCLEAR

- Continue to supply approximately 50% of Ontario's energy supply
- Represents capacity of 12,000 MW, includes:
 - Modernization of 10,000 MW of capacity at Bruce and Darlington
 - Proceeding with 2 new units at Darlington on cost-effective basis

COAL

- All coal-fired generation will cease by 2014
 - Fast-tracking closure of 2 Nanticoke units (2011)
 - Convert Atikokan to biomass (2013)
 - Convert Thunder Bay to natural gas with possible biomass (2013/2014)
 - Eliminating coal equivalent to taking 7 million cars off the road
- Explore acceleration of closure of remaining coal-fired units
- Decision on conversion of remaining units can be made in 2012 when better information on nuclear capacity available

THE PLAN: CLEANER SUPPLY MIX (CONT'D)

RENEWABLES - HYDROELECTRIC RESOURCES

- Capacity target of 9,000 MW by 2018
- Projects already underway include Niagara Tunnel and Lower Mattagami – represents largest hydroelectric expansion in 40 years
- Continue to explore cost-effective opportunities for further hydro projects

RENEWABLES - WIND, SOLAR, BIO-ENERGY

- Targeting of 10,700 MW from wind, solar, bioenergy by 2018
- Forecast based on planned transmission, overall demand and ability to integrate clean energy
- Bruce to Milton line and priority transmission projects will enable 4,000 MW of new clean projects

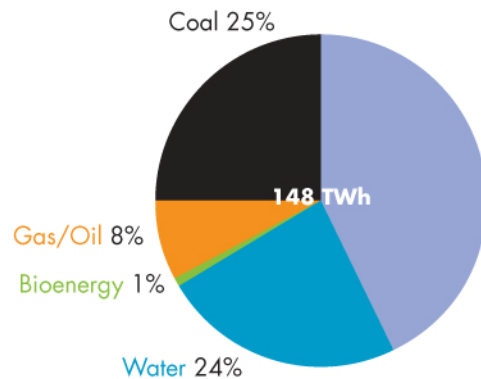
THE PLAN: CLEANER SUPPLY MIX (CONT'D)

- After 2018, depending on changes in demand, Ontario will look for opportunities to further expand renewables
- Supply from wind, solar and bioenergy will increase to 13% by 2018, up from 3% today

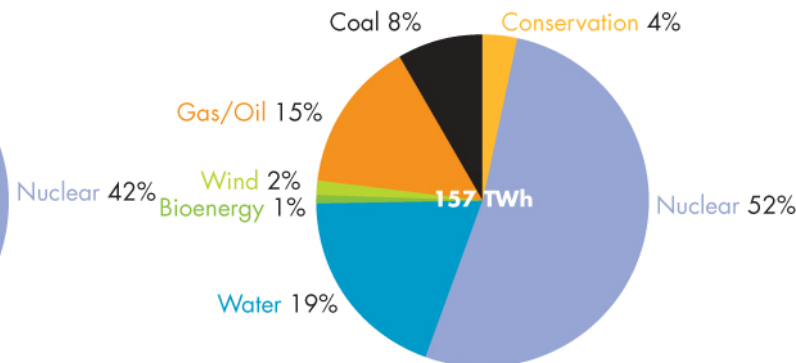
NATURAL GAS

- Will continue to play strategic role - complement intermittent supply, support nuclear modernization

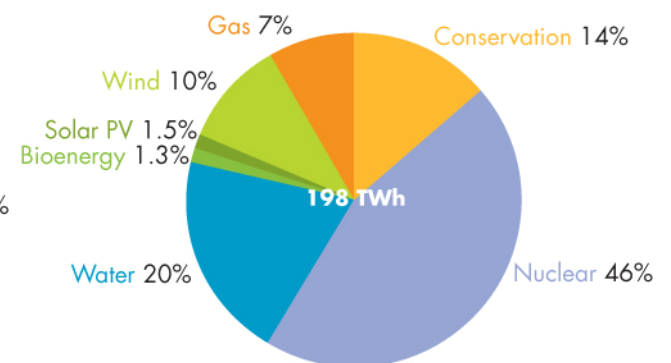
2003 Generation (TWh)



2010 Projected Generation (TWh)



2030 Projected Generation (TWh)



THE PLAN: RELIABLE TRANSMISSION & MODERN DISTRIBUTION

- Move forward immediately with 5 priority transmission projects - support reliability and clean energy:
 - Series compensation in southwestern Ontario;
 - Upgrading existing lines west of London;
 - New transmission line West of London;
 - Enhance the East West tie through a new line; and
 - New line to Pickle Lake
- Government has issued Smart Grid principles and objectives to the Ontario Energy Board; LDCs will develop Smart Grid plans
- Government will establish a Fund in 2011 to provide assistance to Smart Grid companies with strong Ontario presence
- Longer-term transmission and distribution solutions will be identified through future planning and economic tests

THE PLAN: ABORIGINAL COMMUNITIES

- Participation by First Nation and Métis communities will be important for many key energy projects
- Ontario will ensure that a wide range of opportunities are available for aboriginal participation in energy initiatives, recognizing diverse community needs and interests
- To ensure path forward is informed by regular dialogue, working with First Nation and Métis leadership, Ontario will look for opportunities to promote ongoing discussion
- Ontario will launch programs to support uptake of provincial conservation programs by aboriginal communities
- For new transmission lines crossing traditional territories of aboriginal communities, Ontario will expect opportunities to be explored to:
 - provide job training and skills upgrading
 - further aboriginal employment on the project; and

THE PLAN: ABORIGINAL COMMUNITIES (CONT'D)

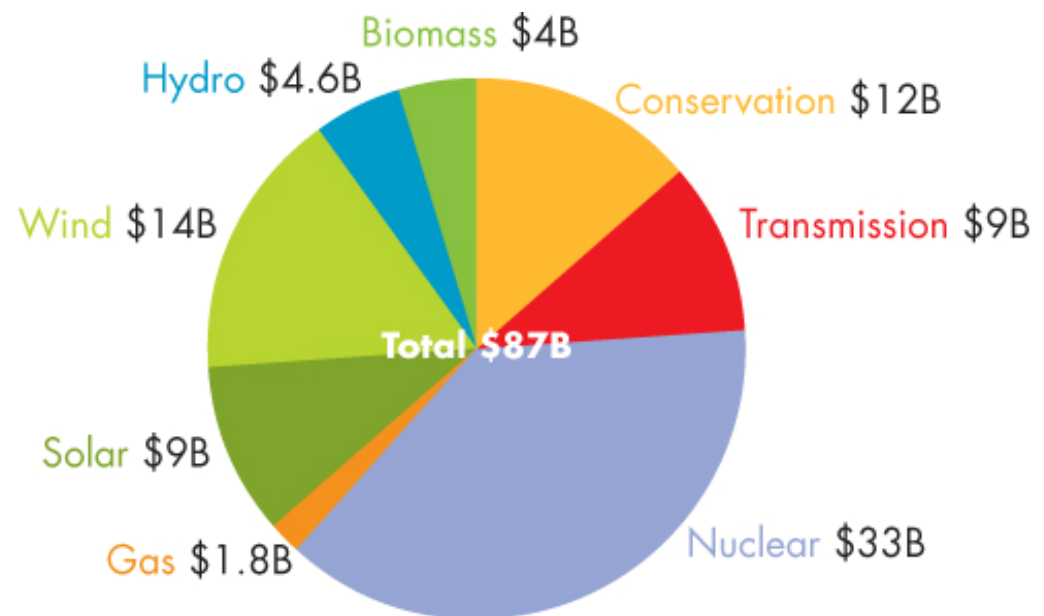
- enable aboriginal participation in procurement of supplies/services
- Ontario will also encourage transmission companies to enter into partnerships with aboriginal communities, where commercially feasible and where those communities have expressed interest
- New transmission supply to Pickle Lake is a crucial first step to connect remote communities in northwestern Ontario
- The OPA will develop a plan for remote community connections beyond Pickle Lake, including consideration of cost contributions from benefiting parties, e.g. the federal government.

THE PLAN: CLEAN JOBS, CLEAN ECONOMY

- Over 95,000 Ontarians directly/indirectly employed by energy sector
- Investments creating and sustaining jobs:
 - Lower Mattagami project creating up to 800 construction jobs
 - Green Energy Act is creating/sustaining 50,000 jobs over next 3 years
 - 13,000 jobs created to date, most manufacturing jobs will be created in next 2 years
 - Five priority transmission projects will employ over 5,000 Ontarians at peak
- Green Energy Investment Agreement – producing 4 manufacturing plants
- More than 20 companies investing in Ontario’s new clean economy

THE PLAN: CAPITAL INVESTMENTS IN CLEAN SYSTEM

- Electricity sector is a \$15 billion annual industry
- System investments strengthen reliability, support jobs and economic opportunities
- The equivalent of 70% of our current supply will need to be replaced, refurbished or built over the next 20 years.
- Plan outlines essential capital expenditures
- Plan forecasts \$87 billion (2010 dollars) of public/private capital investment over life of Plan
- Cost estimates will be further refined by OPA through IPSP



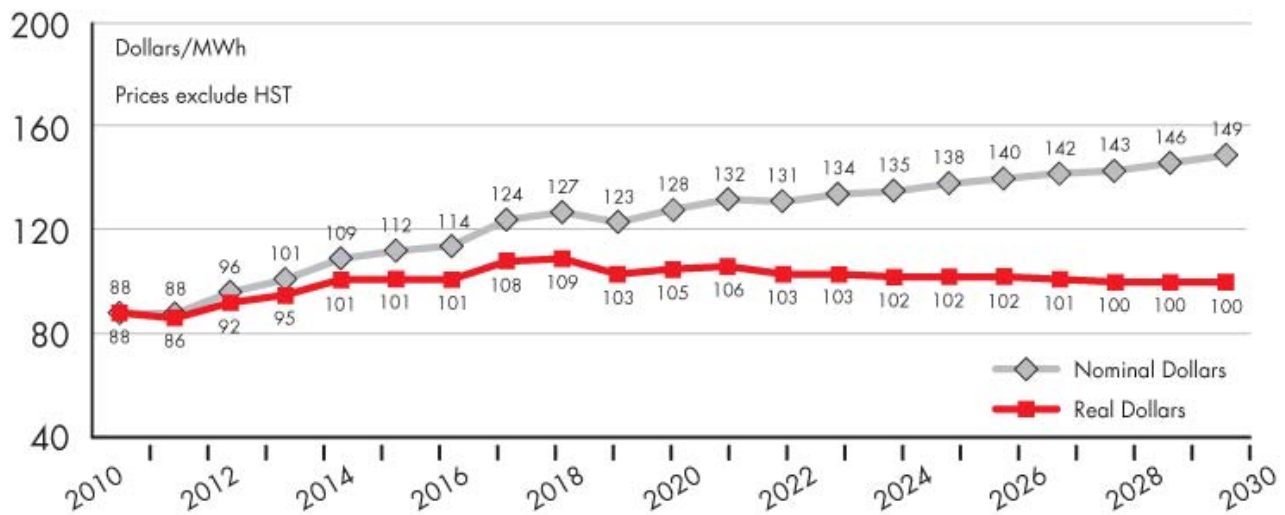
THE PLAN: ELECTRICITY PRICES

- Forecast stable electricity prices that will help pay for critical improvements to:
 - Build and bring online cleaner generation
 - Transmission and distribution
- Government has taken steps to keep costs down
 - Froze compensation for non-bargained public sector employees for 2 years – includes 5 energy agencies
 - Hydro One and OPG revise down 2010 rate applications to find savings
 - OPG reducing operations costs by more than \$600 million over next 4 years

THE PLAN: ELECTRICITY PRICES (CONT'D)

INDUSTRIAL SECTOR:

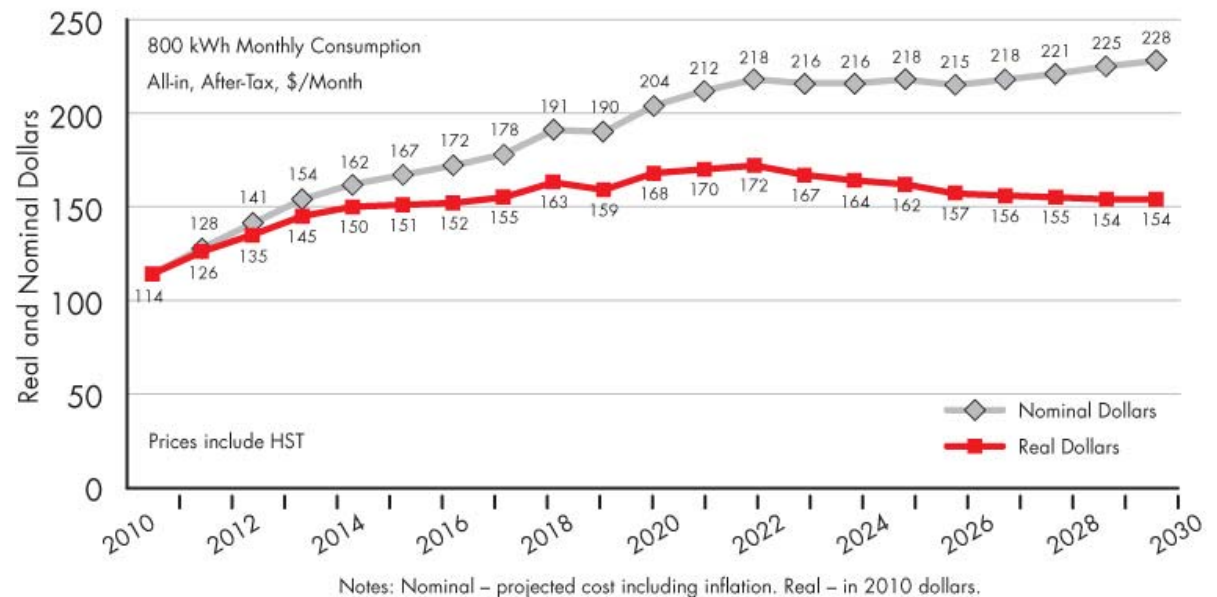
- Forecast industrial rate will increase by 2.7% annually over next 20 years
- Introduced initiatives to strengthen competitiveness of large industrials and protect jobs:
 - Industrial Conservation Initiative
 - OPA's Industrial Accelerator Program
 - Northern Industrial Energy Rate Program
- Plan provides assurance for industrial sector that Ontario will have reliable, clean power



THE PLAN: ELECTRICITY PRICES (CONT'D)

SMALL BUSINESSES AND FAMILIES:

- Forecast bills will increase by about 3.5% annually over next 20 years
- Established an Ontario Clean Energy Benefit to give families, farms and small businesses a 10% benefit on electricity bills for 5 years
- Committed to implementation of a Time-of-Use price structure
 - Will move off-peak period to 7 p.m. - change effective May 2011 (RPP update)



THE PLAN: SUMMARY

- Demand forecast to grow moderately between 2010 and 2030
- Coal-free by 2014
- Nuclear will supply approximately 50% of its power
- Hydroelectric capacity will grow to 9,000 MW target by 2018
- Forecast 10,700 MW of clean energy from wind, solar, bioenergy by 2018
- Natural gas will support increase in clean energy and nuclear modernization
- OPA will develop CHP standard offer program for projects under 20MW
- Ontario will proceed with 5 priority transmission projects
- Broaden conservation targets to 7,100 MW and reduce overall demand by 28TWh
- Approximately \$87 billion in capital investments over life of Plan – will help create, sustain clean energy jobs