

Ontario Energy Sector Facts:

- In July 2012, Ontario's population was approximately 13.5 million
- Ontario's electricity sector is a \$15 billion annual industry.
- Energy accounts for eight per cent of Canada's GDP.
- Ontario uses an average 141.5 TWh of electricity annually
- Some 95,000 Ontarians are currently directly and indirectly employed in the energy sector.
- More than \$10 billion has been invested in Ontario in new clean energy projects that are online or under construction.
- Ontario has attracted more than \$16 billion in private sector investments in the energy sector in the past year.
- Key players in Ontario's electricity sector include:
 - Ministry of Energy - sets energy policy and objectives
 - Ontario Energy Board - Regulator
 - Independent Electricity System Operator - Operates wholesale market and ensures supply to meet demand
 - Ontario Power Authority - coordinate province-wide conservation efforts, plan the electricity system for the long term, and contract for clean electricity resources
 - Hydro One - Transmission & Distribution company, government is shareholder
 - ~50 generators - Ontario Power Generation (provincially owned) plus private generators
 - ~80 local distributors (mostly municipally owned)
 - ~4.7 million residential and small business consumers
 - ~500,000 commercial and industrial consumers
 - ~135 wholesale customers

Select Ontario Energy Initiatives:

- Smart Meter and Time-of-Use rollout: 4.7 million smart meters deployed in the province and close to 4.4 million customers now on time-of-use rates.
- \$50 Million Smart Grid Fund focusing on advancing smart grid and creating economic development opportunities for the province: <http://www.energy.gov.on.ca/en/smart-grid-fund/>
- Hydro One Advanced Distribution System Project: focused on the modernization of the company's distribution system as well as laying the foundation for smart grid which will safely integrate renewable generation, enhance system reliability, provide up-to-the-minute information, on rates, and ultimately transform the Company's relationships with customers.
- Ontario's Information and Privacy Commissioner has brought international recognition to Ontario utilities for using "Privacy by Design" principles to ensure smart grid implementations keep customer data safe.

India Energy Sector Facts

- Indian power system is the 4th largest in the world – installed capacity: 210GW. Almost doubled in last 10 yrs; and will continue to grow at 8-10%/year for several decades
- Largely dominated by government owned utilities (central and states – 29 states and 7 union territories) – most of them have own generation, transmission and distribution utilities
- Central Electricity Regulatory Commission (CERC) and State Regulatory Commissions (SERCs) in most states – some small states few have gone for Joint SERCs.
- Transmission Grid in India is one of the largest in the world:
 - 765kV/400kV lines: ~1,03,000 ckms; 220kV lines: ~132,000 ckms
 - HVDC Bipole (± 500 kV): 7,500 ckms – 3 nos; HVDC Back-to-back: 7 nos (3000MW)
 - Now building 1200 kV AC and 800kV HVDC networks
 - Most modern control centers – 5 regional control centers , 1 national control center, 1 back-up national control center
- Distribution sector:
 - Very high T&D losses – about 30% (>50% in several states!)
 - 400 million+ people have no access to power
 - Large parts of the country experiences power cuts for several hours every day – customers keep storage (invertors)/ auto generation facilities
 - Power quality being poor, consumers require voltage stabilizers, UPS etc