Historical Perspectives on Hydro Systems
1880s

• Factories, businesses have to generate their own electrical power, from steam
• Experimental electric street lighting systems set up in Toronto
• Steam generation, lots of smoke, largely for street lighting
c1900

• Major steam-powered electric generation in Toronto for street lighting, commercial buildings downtown, DC current
• Toronto’s streetcars electric 500V DC, from steam
• Most businesses steam generate their own power
• Electricity expensive, smoky
1910s

• Hydro power reaches Toronto from Niagara Falls c 1907
• Niagara power vulnerable to wind, storm
• Critical functions require steam generation backup
  • Water and sewage pumping
  • Street car system
• Steam backup systems equipped with battery banks
  • Run streetcar system for 15 minutes until steam generation reaches full power
• Downtown Toronto has two public electrical supplies: AC and DC
1920s-1940s

• Public take-over of private electrical companies
• 1921 clean-up deal creates TTC, Toronto Hydro, Ontario Hydro etc.,
• Niagara Falls expanded, power brought in from Ottawa River
• Southern Ontario goes over to full hydro-generation
• But capacity reached in 1940s
Post-War changes

• Post-war boom marred by severe hydro shortages in later 1940s, early 1950s
• Ontario Hydro plans to add hydro to the St Lawrence Seaway scheme
• Ontario Hydro creates new coal-fired plants to meet peak daily demand
  • Hearn Generating Station on Toronto waterfront
• These coal-fired stations become a mainstay of Ontario Hydro
Post-War changes

- Ontario Hydro becomes a manager of mega-projects in 1950s-1970s
- Huge hydro systems, distribution grid
- Networks of coal fired-stations
- Nuclear megaprojects in later 1960s, 1970s
Problems

- Coal-fired stations become major polluters
- Hearn generating station fouls Toronto’s air in 1950s-1960s
- Lakeview, Nanticoke become polluters
- Nuclear stations expensive, aging, waste cycle unsolved
- Ontario Hydro runs up a huge public debt
- Crisis in the 1990s
Hydro Systems

• Ernie Eaves conservative government had foundered after 2003 blackout
  • Old electrical infrastructure
  • Ontario too dependent on nuclear, delayed the grid re-start
• Smog, aided by coal-fired stations getting bad in summer
Hydro Systems

• Renewing hydro infrastructure proving costly
• McGuinty government embarked on a $39 scheme to renew nuclear capacity, decommission coal-fired stations, grow renewables, add gas-fired plants
Gas Fired Plants Scandal

• Semi-privatised Hydro system fails to perform public consultations on new gas-fired plants
  • Toronto gets the gas-fired Portlands Energy Centre
• Liberals forced to cancel projected plants in Oakville and Mississauga when they need to win an election
• Huge cancellation penalties, embarrassing cover-up
• Conservative critics who demanded the plants be cancelled then complain about the cost of cancellation.
Hydro Systems

• Ontario electricity costs rising
• Critics blame renewables, gas plant cancellations, but nuclear renewal is a big part of the increased costs
• Eaves and Wynne governments borrow money to subsidise electricity
• Ontarians not paying what their consumption habits truly cost
  • 42c/kWh in Germany
• Need to cut use, increased costs would help
Hydro Systems

• Renewables starting to change the possibilities
• Development of home electrical generation (wind, solar) with grid-tie
• Home battery storage systems, fleets of electric cars, utility battery systems allow public power storage
• May force re-think of grid systems: will we need big provincially-scaled electrical generation?