

Results-based Plan Briefing Book 2011-12

Ministry of Energy

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Part I: Results-Based Plan 2011-12

Ministry of Energy

PART I: PUBLISHED RESULTS-BASED PLAN 2011-12

MINISTRY OVERVIEW

Vision

The Ministry of Energy is guided by a vision of a new clean energy economy that provides 21st century jobs and sustainable, liveable communities for all Ontarians and for generations to come.

Mission/Mandate

The Ministry of Energy's mandate includes the creation of an energy conservation culture while ensuring a reliable, sustainable, and diverse supply of energy at competitive prices, with minimal impact on the province's environment. The ministry is responsible for setting the legislative and policy framework for a clean, modern and reliable electricity system for all Ontarians.

The ministry develops solutions and advises on all aspects of energy policy for Ontario, including electricity, natural gas and oil. It oversees the Ontario Energy Board, Ontario Power Authority and Independent Electricity System Operator. The ministry also represents the shareholder in dealings with Hydro One and Ontario Power Generation.

The Long-Term Energy Plan sets a 20-year course for Ontario's clean energy future. Continuing to develop a diverse supply mix, including more renewable energy sources, and fostering a culture of energy-efficiency are the cornerstones of Ontario's balanced plan to provide clean and reliable energy - while encouraging the development of a clean energy economy.

The Long-Term Energy Plan and the *Green Energy and Green Economy Act, 2009* (GEGEA) support the five-year Open Ontario Plan to strengthen the economy by building a clean, modern and reliable energy system that meets the needs of Ontario families and businesses. It encourages the development of renewable sources of energy such as wind, solar, hydro and bio-energy. The GEGEA created the framework for the launch of the Feed-in Tariff (FIT) program which provides a stable price for clean energy producers and encourages them to invest in Ontario, creating new industries that did not exist a few years ago. Since the GEGEA was passed, more than 30 companies have announced plans to build or expand solar and wind turbine manufacturing facilities in Ontario. By the end of 2010, 13,000 direct and indirect jobs were created, and by the end of 2012 an estimated 50,000 direct or indirect jobs will be created.

The Ministry of Energy works with many partners inside and outside government to develop and maintain the electricity generation, transmission and distribution infrastructure that powers our economy, and ensures that Ontario remains one of the best places in the world to live, work, invest and raise a family.

Priorities and Results

The ministry play a critical role in supporting the government's long-term priorities of economic prosperity, environmental stewardship and sustainable communities.

To meet these priorities, the ministry is focused on three key deliverables:

- To ensure a clean, reliable and competitively priced energy system.
- To build a culture of conservation in Ontario.
- To build Ontario's clean energy economy.

A Clean, Reliable and Competitively Priced Energy System

A top strategic objective for the ministry is transitioning to a modern, clean and reliable electricity system that is competitively priced and will meet Ontario's electricity needs now and in the future. By continuing to make the necessary investments to modernize our system, we are ensuring that our system remains reliable, efficient and cost-effective. By reducing carbon emissions and other pollution, a clean energy supply will also help ensure a cleaner future for Ontarians.

The ministry is achieving this objective through the creation of a legislative and policy framework that promotes:

- Investments in clean, renewable energy.
- Upgrades, refurbishments and expansions of Ontario's energy infrastructure.
- Building a culture of conservation.
- A commitment to completely phase out coal-fired generation by the end of 2014.

The ministry also takes action in other sectors:

- The ministry monitors oil and gas markets, including surveying the retail price of gasoline and other transportation fuels in several Ontario cities weekly and publishing the results on its website.
- The ministry represents the interests of Ontario natural gas consumers before the National Energy Board and in associated forums.
- The ministry is responsible for the regulatory framework governing natural gas delivery.

Ontario is transitioning to a modern and reliable energy system by modernizing our transmission and distribution grids, upgrading and refurbishing existing generation assets, and adding more renewable sources to the system for a balanced mix of clean power sources.

In 2009, the government passed the *Green Energy and Green Economy Act, 2009* (GEGEA), which boosted growth in renewable sources of energy such as wind, solar, hydro, and bio-energy, by making it easier to bring such projects to life. Under the GEGEA, Ontario created the framework for the first comprehensive Feed-in Tariff (FIT) program in North America, which guarantees specific rates for energy generated from certain renewable sources. The FIT program makes it easier for homeowners, small businesses, farmers, not-for-profit groups, community groups and large commercial developers, to take part in renewable energy projects.

Building on the success of the GEGEA, in November 2010, the government released Ontario's Long-Term Energy Plan, investing in our energy system to ensure the power needs of Ontario are met for the next 20 years. The Long-Term Energy Plan will increase Ontario's mix of renewable energy sources to 10,700 megawatts by 2018, increasing Ontario's clean energy mix to 13 percent, or the equivalent average electricity requirement of two million homes. This plan builds on the GEGEA to transform the province's electricity system into a clean energy powerhouse.

Since October 2003, the government and its agencies signed more than 20,000 small and large-scale renewable energy supply contracts from wind, water, solar and bio-energy sources, totalling more than 5,000 megawatts. Of these, more than 2,000 megawatts of renewable energy capacity has come online, bringing Ontario's renewable energy capacity to more than 10,000 megawatts.

Building and implementing a "smart" power grid to support the development and integration of these renewable energy projects and other new technologies into the electricity system is also a key part of the Long-Term Energy Plan. The Smart Grid is an advanced electricity delivery network that allows a two-way flow of electricity and information, improving the flexibility, security, reliability and efficiency of the electricity system. In addition, the ministry recently launched a Smart Grid Fund which will accelerate the growth of a smart grid industry in Ontario. The Smart Grid Fund will offer targeted financial support for Ontario-based projects that advance the commercialization of smart grid products and services, provide economic development opportunities and create new jobs.

Much of Ontario's infrastructure required to provide a stable and competitively priced electricity supply is aging. Over the next 20 years, the province plans to refurbish or replace about 80 percent of its electricity system. Estimated capital investments totalling \$87 billion from both public and private sectors will help ensure that Ontario has a clean, modern and reliable energy system. Substantial investments will be made to upgrade and expand the province's transmission system which is the backbone of Ontario's electricity system. A modern and reliable transmission system is crucial for supporting Ontario's reliability and evolving generation mix.

Ontario's Long-Term Energy Plan makes updating the following key areas of energy infrastructure a priority.

- Phasing out dirty, coal-fired electricity by the end of 2014.
- Improving transmission through five priority projects to be completed in the next seven years.

Commitment to Shut Down Coal-Fired Generation by 2014

As part of the government's commitment to a clean energy future and fighting climate change, Ontario is committed to eliminating coal-fired electricity generation by the end of 2014. On October 1, 2010, the province shut down four coal-fired power units – two at Nanticoke Generating Station and two at Lambton Generation Station – four years ahead of schedule. Ontario will shut down two additional units at Nanticoke Generation Station by the end of 2011.

Since 2003, eight units have been shut down and once the coal phase-out is complete, 19 coal units at five Ontario Power Generation plants will cease to burn coal as a fuel.

Eliminating coal-fired electricity generation will reduce our annual carbon dioxide emissions by as much as 30 megatonnes (Mt) per year. To replace coal, Ontario will rely on a mix of energy efficiency, nuclear refurbishment, renewable energy and natural gas.

Currently, Ontario is studying the feasibility of converting some of its remaining 11 units to burn other forms of fuel such as natural gas and/or biomass, a renewable fuel source. The government recently directed the Ontario Power Authority (OPA) to negotiate a power purchase agreement with Ontario Power Generation (OPG) for biomass-fuelled electricity at the Atikokan Generating Station. The project is expected to take up to three years to complete.

As part of the Long-Term Energy Plan, the Thunder Bay Generating Station will be converted from coal to natural gas, cutting carbon dioxide emissions from the plant in half. Once converted, the plant is expected to generate as much as 150 million kilowatt-hours of electricity per year, enough electricity each year to power 15,000 homes. This project, along with the conversion of the Atikokan Generating Station to biomass fuel, will make northern Ontario the first region of the province with existing coal plants to become coal-free. Continued use of the Thunder Bay facility is more cost-effective than building a new plant, and will ensure that this important asset continues to supply power for the people of Ontario.

Investing in Upgrades and Expansions of the Province's Transmission System

The transmission and distribution component of the Long-Term Energy Plan incorporates and builds on a number of recent planning initiatives, ongoing priorities and new procurement mechanisms that have been introduced in recent years.

The Long-Term Energy Plan announced the government's commitment to move forward with five cost-effective priority transmission projects based on advice from the Ontario Power Authority. These projects will ultimately accommodate renewable generation, support reliability and serve new demand. These priority projects are:

- Device(s) to enhance transfer capability in Southwestern Ontario
- Upgrading existing power line(s) west of London
- A new transmission line west of London;
- Enhancing the East-West tie along the east shore of Lake Superior through a new transmission line
- A new line to Pickle Lake to better serve industry needs and help future remote community connections north of Pickle Lake.

Two of the priority projects (East-West Tie and Supply to Pickle Lake) were identified to serve the unique needs of Northern Ontario. These significant investments will allow expansion of the system to meet reliability needs, serve new demand arising from economic activity and accommodate new renewable generation over time.

The Long-Term Energy Plan also includes the commitment to instruct the Ontario Power Authority to develop a plan for connecting remote First Nation communities in Northwestern Ontario to the provincial electricity grids. These communities currently rely on costly and polluting diesel generation for the supply of electricity. The Ontario Power Authority's plan is to include consideration for the relevant cost contributions from benefiting parties, such as the federal government.

In recognition of the tremendous response to the Ontario Power Authority's small FIT and microFIT programs, the Long-Term Energy Plan sets out that the province continue to invest in upgrades to the electricity grid in order to enable connection of small-scale renewable projects.

Transmission planning will also continue on the regional level, using an approach that considers conservation, demand management, distributed generation and transmission. Regional plans will assess needs based on a region's unique resource mix and community priorities. Ontario will continue to plan and study additional transmission projects as demand and changes to supply require.

Building a Culture of Conservation

Energy efficiency is a cornerstone of the province's Long-Term Energy Plan, and an important element of Ontario's climate change strategy. As a result of the government's energy efficiency efforts, Ontario has saved more than 1,700 megawatts of electricity since 2005, equivalent to more than half a million homes being taken off the grid. Under the Long-Term Energy Plan, Ontario has set one of the most ambitious energy efficiency goals in North America: 7,100 megawatts by 2030, the equivalent of taking more than 2.4 million homes "off the grid".

Promoting energy efficiency is key to ensuring both adequate energy supply and price competitiveness into the future. The ministry is setting long-term and immediate targets and ensuring that local distribution companies across Ontario create energy efficiency programs for residential, commercial and industrial customers across the province, as well as rolling out smart electricity meters.

Smart Meters

More than 4.6 million smart meters have been deployed across Ontario. These meters will provide precise readings of energy consumption instead of estimates. Smart meters are helping electric utilities pin-point and respond more quickly to power outages, and can support demand response programs to help Ontarians better control their electricity use.

Smart meters have also enabled time-of-use (TOU) pricing – the price we pay for electricity now better reflects the cost of producing it at peak and off-peak times. That means that in the evenings and on weekends, power is less expensive, and we have the choice to shift our usage to different times of the day or between days.

The TOU rate structure is designed to reduce peak demand by encouraging load shifting which will reduce system costs over the long-term, drive environmental benefits by using less peaking forms of generation, and reward consumers who shift their consumption away from times when electricity is most costly to produce. Over 2 million customers are currently on TOU pricing and more are coming on every day.

Helping Protect Energy Consumers

Protecting Ontario's energy consumers remains a top priority. In January 2011, new rules under the *Energy Consumer Protection Act, 2010* came into effect. This legislation helps ensure that consumers throughout the province are aware of their rights and are treated fairly. In addition to enhancing consumer protection for customers of energy retailers, the legislation sets out a framework for enabling suite metering in multi-unit buildings, including ensuring informed consent for tenants.

Over the next 20 years, the cost of electricity is estimated to increase by about 3.5 percent a year on average. To help consumers through this period of transition, a number of initiatives are currently in place:

- The **Ontario Clean Energy Benefit**, effective January 1, 2011, is automatically taking 10 percent off electricity bills for each billing period for the next five years.
- The permanent **Northern Ontario Energy Credit** will continue to help eligible low-to middle-income northern residents manage energy costs.
- The enhanced **Energy and Property Tax Credit** provides support of up to \$900 for families and up to \$1,205 for seniors.

For industrial consumers:

- The three-year **Northern Industrial Electricity Rate Program**, launched in March 2010, makes available \$150 million annually to qualifying large industrial facilities to reduce their electricity prices by an average of about 25 percent.
- The **Industrial Conservation Initiative** encourages the largest industrial energy users to shift consumption and reduce bills.
- The **Industrial Accelerator Program** provides financial incentives to help fast-track investments in major energy efficiency and generation projects.

Building Ontario's Clean Energy Economy

Ontario's commitment to clean energy is making the province a global leader in renewable energy development and one of the top destinations for investment in that sector. The *Green Energy and Green Economy Act, 2009* and Feed-in Tariff (FIT) program have prompted businesses from Ontario and across the globe to invest in the province.

Since the FIT program was first launched, more than 30 companies have publicly announced plans to set up or expand operations in Ontario and 13,000 jobs were created by the end of 2010. The highly successful FIT program includes domestic content provisions that are helping build a clean energy economy in Ontario while welcoming investment from outside the province. The ministry continues to actively pursue investment in new manufacturing and service infrastructure while investigating ways to support the training and skills development needed for the clean energy jobs being created by this emerging industry. Ontario is well-positioned to take advantage of the growing commitment to clean energy development throughout North America

In 2011 and 2012, the ministry will continue to support programs and policies to advance the implementation of Ontario's Long-Term Energy Plan and transform Ontario into North America's clean energy leader.

Ministry Contribution to Key Priorities and Results

The ministry manages government policy and initiatives leading to a clean, reliable energy system and revitalized energy infrastructure that enhances economic competitiveness, protects the environment and builds sustainable communities.

Priorities	Economic prosperity	Environmental stewardship	Sustainable Communities
Results	- Competitive business environment - New clean economy and jobs - Reliable energy supply	- Climate protection - Cleaner air - Preservation of natural resources	- Strong, vibrant and prosperous communities for generations to come - High standard of living for citizens
Strategies	- Ensure a competitively priced and sustainable energy system - Reduce electricity demand, especially peak use - Increase renewable energy - Protect and empower consumers - Invest in energy infrastructure and initiatives that will increase economic output, maximize job creation, and spur economic development	- Transition to a modern and reliable energy system by upgrading our transmission and distribution systems and adding more renewable sources to the system for a balanced mix of clean energy sources - Phase out coal by the end of 2014 and explore renewable fuel sources as possible replacements	- Revitalize energy infrastructure - Empower communities to participate in clean energy projects
Deliverables	- A clean, reliable and competitively priced energy system - A culture of conservation in Ontario - A clean energy economy		
Key Initiatives	- Energy conservation and efficiency - Renewable energy - Coal phase out replacement - Nuclear refurbishment and new build - Smart grid and smart meters - Energy consumer protection		
Measures	- Reduce projected peak demand by 7,100 MW by 2030 - Phase out coal by the end of 2014, reducing carbon emissions by up to 30 megatonnes (Mt) per year		

Highlights of Achievements

In 2010-11, the ministry focused on the implementation of the *Green Energy and Economy Act* and on putting in place and beginning to implement Ontario's Long-Term Energy Plan. The Ministry of Energy continued to create and deliver key initiatives in support of the government's long-term priorities including:

1. Maintaining a reliable energy supply system and encouraging conservation
2. Protecting energy consumers and keeping energy costs affordable
3. Transforming Ontario's energy supply mix

Maintaining a Reliable Energy Supply System and Encouraging Conservation

Transmission and Distribution

Transmission is the backbone of Ontario's electricity system. A modern and reliable transmission system is crucial for supporting Ontario's evolving generation mix, including the decommissioning of coal-fired generation by the end of 2014 and the further expansion of our clean energy portfolio.

Since 2003, Hydro One has invested more than \$7 billion in its transmission and distribution systems. In 2010 alone, Hydro One invested more than \$1.5 billion into upgrades and the expansion of its power systems. Ontario's average annual investment in Hydro One's transmission and distribution systems from 2004 through 2010 was more than double the average annual investment over the preceding eight years (1996-2003).

Maintaining system reliability is the government's top electricity priority. Ontario continues to take a leadership role within Canada in working with other provinces, the federal government, and the United States to ensure electricity system reliability. Ontario's Independent Electricity System Operator (IESO) is responsible for maintaining reliable operation of the Ontario's bulk power system including adherence to mandatory North American electric reliability standards throughout Ontario.

Since the filing of the 2007 Integrated Power System Plan (IPSP), Ontario has moved forward on transmission projects to enable a total of 5,000 megawatts of clean, emissions-free electricity, including renewables, import potential and refurbished nuclear generation. Since 2010, there have been a number of developments, including an unprecedented response to the FIT program and an agreement with a Korean Consortium to develop 2,500 megawatts of renewable energy projects and bring wind and solar manufacturing jobs to Ontario. These new and ongoing developments were accounted for in the development of the province's Long-Term Energy Plan.

Conservation

Conservation is a cornerstone of Ontario's Long-Term Energy Plan, and an important element of the province's climate change strategy. Creating a culture of conservation across the province is critical to ensuring a sustainable energy system. The ministry continues to emphasize energy conservation, setting tough intermediate and long term conservation targets.

In its Long-Term Energy Plan, Ontario set one of the most ambitious energy efficiency goals in North America. As a leader in energy efficiency, the government has increased and broadened its targets to 7,100 megawatts in electricity savings and a reduction in overall demand by 28 terawatt-hours by 2030. Building on work begun in 2010-11, the ministry's energy efficiency efforts will continue to focus on empowering consumers through tools, information and incentives, and building an institutional and regulatory framework for energy efficiency.

On November 12, 2010, the Ontario Energy Board assigned local utilities mandatory conservation targets for 2011 to 2014. Local utilities will meet these targets through a host of new conservation initiatives, with rollout beginning in early 2011. These initiatives will help protect our climate and will create jobs.

As of April 2011, all residential, commercial and industrial energy efficiency programs have been redesigned, streamlined and offered province-wide. New low-income and Aboriginal energy efficiency programs will be launched by summer 2011. The design and management of these programs has been made possible by all local distribution companies (LDCs) and the Ontario Power Authority and will run from 2011 to 2014. Consumers will recognize these province-wide programs through the saveONenergy brand and the Cleaner Ontario mark. LDCs are expected to meet the bulk of their energy efficiency targets through these programs.

Protecting Energy Consumers and Keeping Energy Costs Affordable

In April 2010, the Ontario Legislature passed the *Energy Consumer Protection Act, 2010*. This legislation enhances protection of consumers in their dealings with energy retailers. The Act ensures that consumers will have the information they need to make the right decisions about energy contracts, and confidence that they are protected by fair business practices.

The Electricity Price Mitigation program assists consumers with the transition to a reliable and cleaner electricity system and complements existing tax-related mitigation benefits.

The Ontario Clean Energy Benefit provides direct relief to eligible electricity consumers, taking 10 percent off the total cost of electricity on their electricity bills, including electricity costs, regulatory charges, the debt retirement charge and taxes, for five years effective January 1, 2011. Eligible consumers include residential, farm, small business, and other

small users who use less than 250,000 kilowatt-hours (kWh) per year or have a demand of 50 kilowatts (kW) or less.

Greening Ontario's Energy Supply Mix

Ontario is committed to reducing the environmental footprint of electricity generation across the province. New supply will enable the province to eliminate coal-fired capacity from Ontario's supply mix by the end of 2014, accounting for the majority of the government's greenhouse gas reduction target.

Since 2003, approximately 8,900 megawatts of new energy supply have come online, including a mix of cleaner gas-fired generation, nuclear power and renewable energy. This new supply includes more than 2,000 megawatts of renewable energy supply from wind, hydro, solar and bio-energy sources through government procurement contracts.

In 2009, the GEGEA enabled implementation of the first comprehensive FIT program which guaranteed specific rates for energy generated from renewable sources. As a result, Ontario now has more than 1,500 megawatts of wind power online generated by more than 800 wind turbines. This represents a 100-fold increase in wind-power capacity from 2003, when there were only 15 megawatts of wind power generated by 10 turbines.

The province now has more than 200 megawatts of solar photovoltaic (PV) capacity online, more than any other jurisdiction in Canada. Ontario has the largest operational solar PV farm in the world.

More than 200 megawatts of capacity from bio-energy has been brought online. Of this, more than 50 megawatts is new and from government procurements. More than 100 megawatts of additional bio-energy projects are currently under contract.

New renewable energy supply that is online or under construction totals more than 2,800 MW of large and small-scale projects across Ontario. This represents more than \$11 billion of investment.

In 2009, the GEGEA enabled implementation of the most comprehensive FIT program which guaranteed specific rates for energy generated from renewable sources. As a result, more than 3,300 MW of contracts have been awarded.

Water Power

Ontario's abundant and reliable hydro power will continue to play a key role in developing a clean and reliable provincial energy supply.

New and redeveloped hydroelectric stations provide valuable peaking generation, which allows them to operate in a similar fashion to a gas plant, but with much lower emissions. Ontario currently has more than 8,000 megawatts of installed water power capacity, including about 7,800 megawatts from projects before 2003. Water power from clean hydroelectric sources such as the facilities at Niagara Falls accounted for approximately 20 percent of the electricity generated in the province in 2010. Ontario now has more than 700 megawatts of new waterpower under contract, with more than 100 megawatts already online.

Ontario will continue to grow its hydroelectric capacity with a target of 9,000 megawatts by 2018. This will be achieved through new facilities and through significant investments to maximize the use of Ontario's existing facilities. As part of this commitment, the government is moving forward with its plans to increase power generation in the Niagara region through the Niagara Tunnel project.

The tunnel will increase the amount of water available for power generation at the Sir Adam Beck Generating Station, effectively increasing its output by the equivalent of 200 megawatts. Once completed, the project will produce an additional 1.6 billion kilowatt hours of clean, renewable electricity per year, which is enough to meet the annual needs of about 160,000 homes.

In June 2010, construction began on the Lower Mattagami project in Kapuskasing, representing not only the largest hydroelectric generation construction project in Ontario in 40 years, but also the largest renewable energy project in the province. By redeveloping four existing Ontario Power Generation sites, Lower Mattagami will add almost 440 megawatts of clean, renewable hydro electricity to the grid while providing \$2.6 billion of investment in the North. It is also the biggest electricity partnership with a First Nation in Ontario's history. Ontario Power Generation's partner in the project is the Moose Cree First Nation, which will have up to a 25 percent equity share in the project.

Gas-fired Generation

New gas-fired plants perform two major roles within Ontario's electricity system: to address local reliability requirements while supporting the government's commitment to develop new clean energy and eliminate coal-fired generation by the end of 2014. New gas-fired generation facilities such as Goreway Station, Halton Hills, the Portlands Energy Centre, St. Clair Energy Centre and York Energy Centre will meet the need for clean, reliable power in areas of rapid growth. In 2011, Ontario Power Generation's Thunder Bay Generating Station will begin the conversion to natural gas. Once converted, the plant is expected to generate as much as 150 million kilowatt-hours of electricity annually.

By ensuring the reliability of the electricity system during periods of peak demand, these facilities will provide communities with an increased security of supply while complementing the province's nuclear and hydro facilities, which provide base load power. In total, natural gas projects in Ontario provide more than 9,500 megawatts of clean energy capacity to the

province. Under the Long-Term Energy Plan, Ontario will maintain natural gas-fired generation at its current level.

Combined Heat and Power

Ontario has identified Combined Heat and Power (CHP) as a clean, efficient way to generate electricity and heat for nearby users. In November 2010, the ministry directed the OPA to procure a total of 1,000 megawatts of CHP projects, a target identified by Ontario's Long-Term Energy Plan.

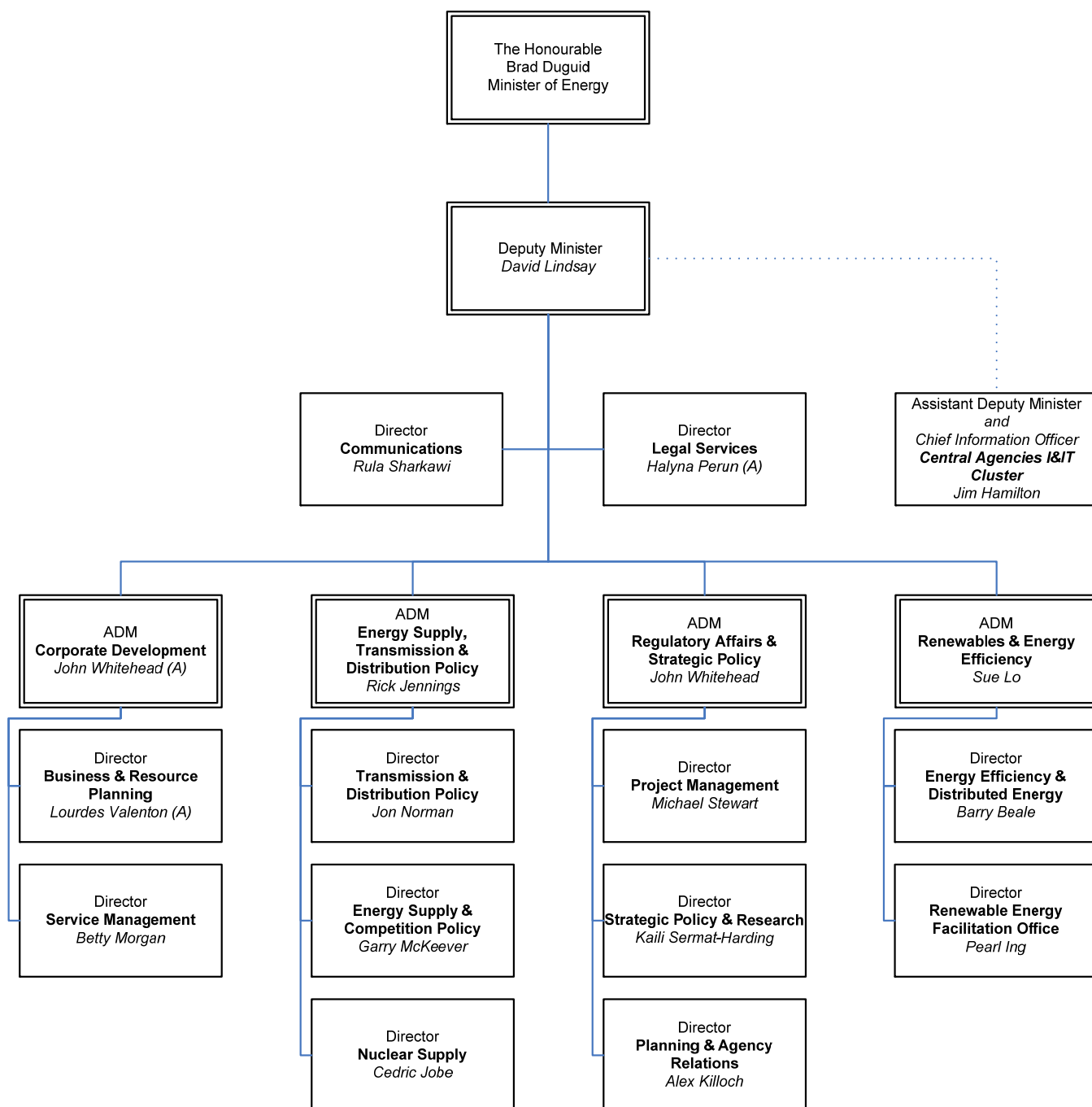
Nuclear Build and Refurbishment

Nuclear power remains a crucial aspect of Ontario's electricity supply mix, providing about half of the electricity used by Ontarians every day. As a clean source of energy, it is expected to continue to be the single-largest source for Ontario's electricity generation over the life of the LTEP. Ontario is committed to modernizing the province's aging fleet through a combination of new build at Darlington and refurbishment of existing units at the Darlington and Bruce Power sites.

In 2008, OPG's Darlington site was selected for construction of about 2,000 megawatts of new nuclear capacity. The procurement process has been affected significantly by the federal government's decision to place Atomic Energy of Canada Limited (AECL) up for sale in the middle of the process. The government remains committed to new nuclear at the Darlington site. Ontario Power Generation continues to move forward with the licensing process, including an environmental assessment conducted by a joint review panel established by the federal Minister of Environment in cooperation with the Canadian Nuclear Safety Commission (CNSC).

Ontario Power Generation announced a two-part investment strategy for its nuclear generation stations in Durham Region in February 2010. As a result of initial studies of plant condition and performance, OPG will proceed with a detailed planning phase for the mid-life refurbishment of the Darlington Nuclear Generating Station with refurbishment work expected to start in 2016. Ontario Power Generation will invest \$300 million to ensure the continuing safe and reliable operation of the Pickering station for approximately 10 years. Combined with planned refurbishment of generating facilities at Bruce Power, these measures will help ensure nuclear power will remain a crucial component in Ontario's electricity supply mix.

Ministry Organizational Chart



As of April 6, 2011

Legislation

The following is a list of legislation for which the Ministry of Energy has primary legislative or administrative responsibility.

Statutes Administered by ENERGY:

1. *Electricity Act, 1998, S.O. 1998, c. 15, Sched. A***
 - Except Part VIII and Part IX.1
2. *Energy Consumer Protection Act, 2010, S.O. 2010, c. 8***
3. *Green Energy Act, 2009, S.O. 2009, c. 12, Sched. A***
 - Except for section 10 and except for subsection 8 (2) which is shared with the Minister of Infrastructure
4. *Hydro One Inc. Directors and Officers Act, 2002, S.O. 2002, c. 3*
5. *Ministry of Energy and Infrastructure Act, R.S.O. 1990, c. M. 23**
 - In respect of energy matters, except for sections 8 and 9 insofar as the powers, duties, functions and responsibilities set out in those sections are required to develop and administer the Ontario Ethanol Growth Fund program, assigned to the Minister of Agriculture, Food and Rural Affairs
6. *Ontario Clean Energy Benefit Act, 2010, S.O. 2010, c. 26, Sched. 13*
 - This Act is administered by the Ministry of Energy but the intention is that at some point in the future the Ministry of Revenue would administer sections 7 – 11 of the Act
7. *Ontario Energy Board Act, 1998, S.O. 1998, c. 15, Sched. B***
8. *Power Corporation Act, R.S.O. 1990, c. P. 18*
9. *The Toronto District Heating Corporation Act, 1980, S.O. 1980, c. 73*
10. *Toronto District Heating Corporation Act, 1998, S.O. 1998, c. 15, Sched. C*
 - Except for section 4

*Note that there is currently a Bill before the Legislature that is proposing to repeal the *Ministry of Energy and Infrastructure Act* of the legislation and replace it with a *Ministry of Energy Act, 2011*.

**Note that there is currently a Bill before the Legislature that is proposing to amend this piece of legislation.

Agencies, Boards and Commissions (ABCs)

Entities that report to the Ministry of Energy and their financial data:

Ontario Energy Board

The Ontario Energy Board (OEB) is a quasi-judicial board that regulates the province's electricity and natural gas sectors in the public interest. Its mandate is determined by the provincial government, and is embodied in the *Ontario Energy Board Act, 1998* and its regulations.

\$	2011-12
Operating	33,710,100
Capital	1,060,900
Total	34,771,000

Government Organizations

The Ministry of Energy oversees two government organizations that are consolidated onto the ministry's financial records:

Independent Electricity System Operator

The Independent Electricity System Operator (IESO) is responsible for maintaining reliability of Ontario's bulk electricity system and operating the wholesale electricity market. It is also responsible for overseeing smart metering initiatives in the Province. The mandate of IESO is embodied in the *Electricity Act, 1998*.

\$	2011-12
Operating	128,110,000
Capital	16,963,500
Total	145,073,500

Ontario Power Authority

The Ontario Power Authority (OPA) is responsible for medium- and long-term system planning and engaging in activities to ensure adequate, reliable and secure electricity supply and resources for Ontario. The OPA also designs and coordinates conservation programs across the Province. Its mandate is embodied in the *Electricity Act, 1998*

\$	2011-12
Operating	73,884,000
Capital	2,525,000
Total	76,409,000

Government Business Enterprises

The ministry has oversight of the following government business enterprises. The Government of Ontario, through the Minister of Energy, is the sole shareholder of these corporations.

Hydro One

Hydro One Inc. (Hydro One), through its wholly-owned operating subsidiaries, owns and operates most of the province's electrical transmission system. It also serves as a local electricity distributor, mostly in rural communities in Ontario.

\$	2011-12
Projected Net Income	657,000,000

Ontario Power Generation

Ontario Power Generation (OPG) is in the business of generation and sale of electricity in Ontario. OPG generating assets include: 3 nuclear generating stations, 5 fossil generating stations, and 65 hydroelectric generating stations.

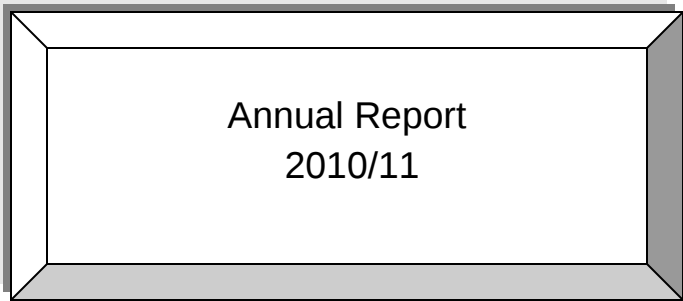
\$	2011-12
Projected Net Income	474,000,000

Ministry Financial Information

Ministry Planned Expenditures 2011-12 (\$M)

Operating	1,210.416
Capital	0.002
TOTAL	1,210.418

Note: Totals do not include consolidated adjustments of \$256.254M



Annual Report
2010/11

APPENDIX: 2010-11 ANNUAL REPORT

2010-11 Annual Report

In 2010-11, the Ministry of Energy supported the government's long-term priorities of economic prosperity, environmental stewardship and sustainable communities by focusing on three key deliverables:

- To ensure a clean, reliable and competitively priced energy system.
- To build a culture of conservation in Ontario.
- To build Ontario's clean energy economy.

Key to this focus was the implementation of the *Green Energy and Green Economy Act, 2009* (GEGEA) and the development of Ontario's Long -Term Energy Plan.

The Long-Term Energy Plan was released in November 2010 after extensive stakeholder and on-line public consultations. It updated the province's earlier energy plan, and set clear direction for Ontario's energy system, building on earlier achievements and plans for a clean, reliable energy system and a conservation culture.

Major Accomplishments

Clean, Reliable and Competitively Priced Energy System

Ontario continues to lead the transition to a cleaner energy system. The Renewable Energy Facilitation Office, mandated through the GEGEA, played a key role in 2010-11 by helping create a transparent and welcoming environment for the development of new renewable energy projects.

FIT and microFIT Projects

The province continues to encourage Ontarians to become active participants in clean energy generation, benefiting the environment, the energy system, the renewable energy sector, and ultimately the economy.

In October 2009, the province launched the largest, most comprehensive clean energy initiative of its kind in North America. The GEGEA's Feed-in Tariff (FIT) program is sparking the development of renewable energy projects by offering guaranteed incentives to developers of wind, water, solar, biomass and biogas sourced power. Under the FIT program, 184 new contracts for big, clean energy projects were announced in April 2010. These projects could generate more than 2400 megawatts, enough electricity to power 600,000 homes.

The FIT program delivers significant benefits to project developers - including communities and Aboriginal communities - as well as equipment suppliers and installers, consumers and the overall provincial economy. By encouraging further investment in generation,

transmission and distribution, even more renewable energy sources are being incorporated into Ontario's electricity system.

On February 24, 2011, the Ontario Power Authority (OPA) announced an additional 40 new large scale renewable energy projects under the FIT program. These projects total 872 megawatts of clean renewable power and enough electricity to power more than 200,000 homes.

Overall, Ontario now has more than 1500 megawatts of wind power already online, generated by more than 800 wind turbines – a 100-fold increase from 2003.

Currently, more than 4800 small scale solar projects are also feeding electricity into Ontario's grid, and the province has more than 200 megawatts of solar capacity online, more than any other jurisdiction in Canada.

Clean Water Power

Ontario's abundant and reliable hydro power continues to play a key role in ensuring a clean and reliable power supply. Over 8000 megawatts of power is currently on-line – with plans to grow this to 9000 megawatts by 2018.

Construction of the 10.2 kilometre Niagara Tunnel Project continued to progress steadily in 2010. The drilling of this tunnel has attracted international attention, and tunnelling activity is expected to be complete early in the 2011-12 year. It is the single biggest construction project in the Niagara region in over 55 years and the largest tunnelling project under construction in Ontario. Once fully operational at the end of 2013, the tunnel will increase the amount of water available for power generation at the Sir Adam Beck Generating Station, effectively increasing its capacity by the equivalent of 200 megawatts. It is expected to operate for up to 100 years with little maintenance required.

In this past year, Ontario Power Generation (OPG) projects including Healey Falls (15.7 megawatts) and Hound Chute (9 megawatts) reached commercial operation. The larger stations making up the Upper Mattagami project also reached commercial operation, with 34 megawatts capacity. As well, work commenced on the Lower Mattagami, which will see 440 megawatts of capacity added to the grid – a \$2.6 billion investment and the largest partnership with a First Nation in the Province's history. This partnership will generate jobs for Northern Ontario and allow local communities to benefit from the province's growing clean energy economy.

Coal Phase-out and Conversion to Biomass

As part of the Long-Term Energy Plan, Ontario announced in November that the Thunder Bay generating station will begin converting two generating units to natural gas. Work progressed on converting the Atikokan generating station to bio-mass by 2012. These initiatives will ensure the North is the first region to replace all of its coal generating

capacity. Coal generation also continued to be phased out in the rest of the province, with the government continuing its commitment to end coal-fired generation by the end of 2014. In October 2010, the province shut down four coal-fired power units – two at the Nanticoke Generating Station and two at the Lambton Generating Station – four years ahead of schedule. Ontario's commitment to phase out coal-fired electricity by the end of 2014 remains the single largest climate change initiative in North America.

Gas

Ontario is achieving the end of coal-fired generation through renewables, conservation, and the strategic use of natural gas. Natural gas-fired “peaking” plants ensure the reliability of the electricity system during periods of peak demand. They complement Ontario's nuclear and hydro facilities, which provide baseload power, and allow the province to develop new, clean energy.

In September 2010, TransCanada's Halton Hills generating station, with 641.5 megawatts capacity reached commercial operation. Other new gas-fired generation facilities such as Goreway Station, the Portlands Energy Centre, St. Clair Energy Centre and York Energy Centre will help meet the need for new, clean, reliable power in areas of rapid growth.

Nuclear

Ontario also moved forward in 2010-11 with its plans to replace several older nuclear units, and refurbish others.

In February of 2010, OPG announced it would proceed with a detailed planning phase for refurbishing generating units at Darlington, and with investments to ensure the continued safe and reliable operation of units at Pickering for the next ten years.

Plans continue to move forward to build up to 2000 MW of new nuclear plant at Darlington. While the procurement process has been affected by uncertainties around the future of Atomic Energy of Canada Limited, other critical elements continued to move forward. These include an environmental assessment conducted by a joint review panel established jointly by the Federal Minister of the Environment and the Canadian Nuclear Safety Commission (CNSC), which commenced at the end of the 2010-11 fiscal year.

Combined with a planned refurbishment of the generating facilities at Bruce, these measures will help ensure emission-free nuclear power will continue to be a crucial component of Ontario's electricity supply mix.

Transmission: Enabling a Changing Supply Mix

A modern and reliable transmission system is crucial for supporting Ontario's evolving generation mix, including the decommissioning of coal-fired generation in 2014 and further expansion of the clean energy portfolio.

The transmission component of the Long-Term Energy Plan (LTEP) incorporates and builds on a number of recent planning initiatives, ongoing projects and new procurement mechanisms that have been introduced in recent years. The Plan lays out an investment of approximately \$2 billion in five priority transmission projects to be completed in the next 7 years. These projects will enable renewables, ensure reliability and serve new demand.

Northern Industrial Electricity Rate Program

In March 2010, the three-year Northern Industrial Electricity Rate Program was launched. This program will make \$150 million available annually to qualifying large industrial facilities to reduce their electricity prices by an average of about 25 percent. The program will help large industries in Northern Ontario improve their energy efficiency and sustainability. The program will also help northern industries build and maintain a globally competitive advantage and, in turn, help protect and create jobs.

Building a Culture of Conservation

Encouraging conservation was a key component in the *Green Energy and Green Economy Act, 2009* and is a cornerstone of Ontario's Long-Term Energy Plan.

In November 2010, the Ontario Energy Board assigned local utilities mandatory conservation targets for the period 2011 through 2014. The Ontario Power Authority (OPA), working with utilities developed a suite of new conservation initiatives, which were rolled out in 2011.

Also in 2011, the retrofit component of the Ontario Home Energy Savings Program (HESP), ended as planned. Ontario continued its support of home energy retrofits for a full year beyond the federal government's decision to end its retrofit incentives. Ontario will continue to assist consumers with the cost of energy audits, also part of the HESP initiative. Since April 2007, Ontario has provided \$64.3 million to help over 428,000 Ontario homeowners (11.1% of eligible homeowners) complete home energy audits. The Province has also provided \$507.9 million to help over 382,000 Ontarians (9.9% of eligible homeowners) complete energy efficiency retrofits in their homes. This four-year program greatly exceeded its targets, achieving important savings for Ontario. Homeowners reduced their energy consumption, on average, by over 20%. More than \$4.5 billion in lifetime energy saving are expected based on the retrofits. Participants also contributed to Ontario's climate change targets, achieving greenhouse gas (GHG) reductions of nearly 600,000 tonnes per year, which is equivalent to taking over 124,000 cars off the road.

The four-year Ontario Solar Thermal Heating Initiative (OSTHI) also concluded successfully in March 2011. The \$14.4 million program was designed to encourage Ontario's industrial, commercial and institutional customers to install qualifying solar thermal heating equipment. As of April 2011, \$11.7 million has been committed to help them install 594 solar water and air projects.

Shifting energy use from periods of high demand to periods of lower demand can reduce both energy costs and strain on the electricity system. To help reduce the peaks in Ontario's energy demand, the ministry has continued to make steady progress implementing the province's smart meters and time-of-use-pricing.

Over 4.6 million smart meters have now been installed across Ontario. These meters will provide more precise hourly readings of energy consumption. Smart meters have also enabled time-of-use (TOU) pricing, so the price we pay for electricity now better reflects the cost of producing it at peak and off-peak times. Ontario's electric utilities have prudently been moving customers over to TOU pricing. As of April 2011, there were over 2 million customers on TOU pricing.

Building on the successful rollout of the smart meter infrastructure, and the objectives laid out in the GEA, the ministry developed a policy framework for smart grid implementation in Ontario. This framework outlined a set of principles and objectives for Ontario's smart grid and was sent as a Ministerial Directive to the Ontario Energy Board (OEB). The OEB, in consultation with a working group consisting of various sector participants, is currently using the Directive to develop a framework for LDCs to use for the smart grid implementations.

In 2010-11, Ontario also created the Southwest GTA Air Quality Task Force to help develop a plan to improve air quality in the Southwest Greater Toronto Area. Up to \$30 million over five years has been committed by the OPA to help the Southwest Greater Toronto Area reduce industrial electricity and gas consumption

In November 2010, the Long-Term Energy Plan reinforced Ontario's commitment to pursue aggressive conservation efforts, setting a new target of 7,100 megawatts and 28 terawatt hours by 2030. This would mean the equivalent of taking 2.4 million homes off the grid and a reduction in Ontario's greenhouse gas emissions by up to 11 megatonnes annually by 2030. These targets are among the most ambitious in North America.

Protecting Energy Consumers

Ontario has introduced a number of initiatives to help protect energy consumers and ease the transition to a cleaner, more reliable energy system.

The *Energy Consumer Protection Act, 2010*, which took effect in January 2011, helps ensure that energy consumers are aware of their rights and are treated fairly. This Act will help protect Ontarians by ensuring they receive accurate information from energy retailers before signing a contract.

The Ontario Clean Energy Benefit, which also took effect in January 2011, helps consumers manage energy costs by taking 10 percent off electricity bills for the next five years.

Beginning in the 2010 tax year, the enhanced Energy and Property Tax Credits will provide low-to-middle-income Ontarians with additional relief for the sales tax on energy – up to \$900 for families and up to \$1,205 for seniors for the 2011 tax year. Similarly, the permanent Northern Ontario Energy Credit will continue to help eligible low-to-middle-income northern residents manage energy costs.

Clean Energy Economy

The GEGEA has stimulated a new, clean energy economy by creating a new generation of clean jobs while protecting our environment. Launched in 2009, the highly successful Feed-in Tariff (FIT) program has sparked the development of renewable energy projects in Ontario by offering guaranteed incentives to developers of wind, water, solar, biomass and biogas power.

Since the launch of the GEGEA, more than 30 companies have announced plans to set up or expand solar and wind manufacturing facilities in Ontario, supporting thousands of jobs and revitalizing our manufacturing sector. New renewable energy supply that is online or under construction totals more than 2,800 megawatts of large and small-scale projects across Ontario.

This represents more than \$11 billion in investment and more than 13,000 direct and indirect jobs. Since 2003, Ontario has signed more than 19,000 renewable energy supply contracts from wind, water, solar and bio-energy sources, totalling more than 5,000 megawatts.

Clean Energy Accomplishments:

- In April 2010, 184 FIT contracts were awarded by the OPA, representing more than 2,400 megawatts and \$9 billion of investment.
 - When combined with the medium-sized FIT projects that were offered contracts in March 2010, these large and medium FIT contract offers represent 20,000 direct and indirect jobs.
- In December 2010, Siemens Canada announced the construction of Ontario's first-ever wind blade manufacturing plant in Tillsonburg, bringing as many as 300 permanent clean energy jobs, and up to 600 additional construction and indirect service jobs to the region. In the same month, CS Wind chose to locate its wind tower manufacturing plant in Windsor, which will bring 300 new full-time jobs and up to 400 construction and indirect service jobs. Both plants are part of a \$7 billion investment in Ontario by Samsung and its partners, the largest single investment in renewable energy in provincial history.
- In February 2011, the OPA approved 40 new large-scale renewable energy projects, representing more than 872 megawatts of clean, renewable power. These projects

represent 7,000 direct and indirect jobs and will attract \$3 billion in private-sector investment in 31 communities across the province.

- In February 2011, the OPA introduced a new stream in the FIT Program for commercial aggregators, called the CFIT (commercial feed-in-tariff) Program, to accommodate the unique nature of commercial micro-generation projects.

Other companies that have announced plans to set up or expand solar and wind turbine manufacturing facilities in Ontario:

- On November 12, 2010 Scarborough-based Samco Machinery Ltd., in partnership with US-based SunEdison, announced the expansion of its auto parts business to manufacture solar energy components. Manufacturing of the racking equipment is now underway and this expansion is expected to create up to 60 jobs.
- ATS Automation Tooling Systems Inc. in Cambridge began manufacturing solar modules for residential, commercial and industrial customers. ATS has created 150 jobs through the manufacturing of modules and the provision of turnkey solar installation services.
- On November 9, 2010, JNE Consulting and Daqo Group Co. Ltd. announced the formation of a joint venture that will create up to 300 jobs at a solar panel assembly plant in Hamilton.
- Melitron Corporation will manufacture inverters in Guelph in partnership with Sustainable Energy Technologies of Calgary, which will result in 80 direct jobs and 300 indirect jobs.
- On August 11, 2010, Canadian Solar announced that Guelph would be the location of its first module facility in North America. The facility is currently in operation and is expected to create up to 500 jobs.
- Satcon Power Systems Canada Ltd. in Burlington has increased its workforce by 40 employees to help meet the demand for solar inverters in Ontario and abroad. Satcon now employs a total of 158 people.
- Celestica Inc. and Recurrent Energy, a subsidiary of Sharp Corporation, have partnered to manufacture solar modules at the Celestica facility in Toronto. This joint venture is expected to create up to 300 high-quality manufacturing jobs and up to 2,000 additional construction jobs while delivering over 200 megawatts of new solar generation.
- With the support of the province (Communities in Transition program from MEDT), Ontario Solar Manufacturing Corp. has established a solar module plant in Welland, which will create up to 60 new jobs by the end of 2011. The renovation of the facility also created 70 construction jobs.

Ministry Interim Actual Expenditures 2010-11*

	Ministry Interim Actual Expenditures (\$M) 2010-11
Operating	632.22
Capital	
Staff Strength (as of March 31, 2011)	205**

* Interim actuals reflect the numbers presented in the 2011 Ontario Budget

**The 2010-11 combined staff strength for the former Ministry of Energy and Infrastructure is 347.

MINISTRY/GOVERNMENT CONTACT INFORMATION AND WEB LINKS

MORE INFORMATION

More information on the programs and policies in this document can be found online at:

For more information on the Ministry of Energy:

<http://www.energy.gov.on.ca>

For more information on the Ontario Power Authority (OPA):

<http://www.powerauthority.on.ca/>

For more information on the Ontario Energy Board (OEB):

<http://www.ontarioenergyboard.ca/>

For more information on the Independent Electricity System Operator (IESO):

<http://www.ieso.ca/>

For more information on the Ontario Power Generation (OPG):

<http://www.opg.com/>

For more information on Hydro One:

<http://www.hydroone.com/>

GLOSSARY OF TERMS

AECL	Atomic Energy of Canada Ltd.
CHP	Combined Heat and Power
CNSC	Canadian Nuclear Safety Commission
CO ₂	Carbon Dioxide
EA	Environmental Assessment
FIT	Feed-in-Tariff
GEGEA	<i>Green Energy and Green Economy Act, 2009</i>
GTA	Greater Toronto Area
HESP	Home Energy Savings Program
IESO	Independent Electricity System Operator
IPSP	Integrated Power System Plan
kV	kilovolts
LDC	Local Distribution Company
LTEP	Long-Term Energy Plan
MEDT	Ministry of Economic Development and Trade
MGS	Ministry of Government Services
MOE	Ministry of Environment
MOF	Ministry of Finance
MOI	Ministry of Infrastructure
Mt	megatonnes
MW	megawatts
OEB	Ontario Energy Board
OPA	Ontario Power Authority
OPG	Ontario Power Generation
OPS	Ontario Public Service
OSTHI	Ontario Solar Thermal Heating Initiative
RFP	Request for Proposal
TOU	Time-of-Use
TWh	Terawatt hour