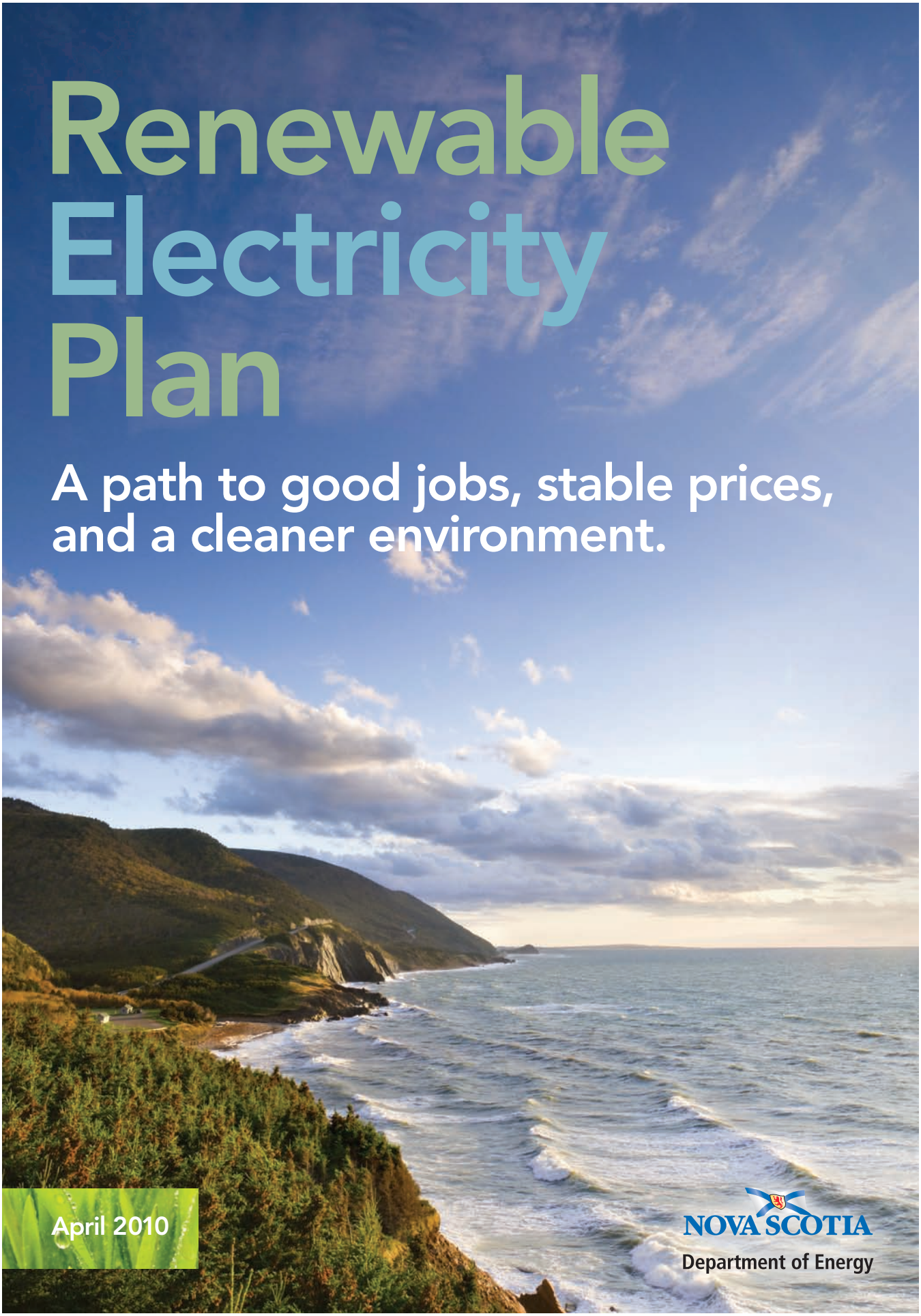
Renewable Electricity Plan

A path to good jobs, stable prices, and a cleaner environment.



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NOVA SCOTIA
Department of Energy

This document is available on the Internet at: www.gov.ns.ca/energy. For further information about Nova Scotia's Renewable Electricity Plan, please contact Nova Scotia Department of Energy, 400-5151 George Street, PO Box 2664, Halifax, Nova Scotia B3J 3P7.
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Executive Summary

This Renewable Electricity Plan sets out a detailed program to move Nova Scotia away from carbon-based electricity towards greener, more local sources.

The motivation for this plan is simple: nearly 90 percent of the province's electricity supply comes from fossil fuels—most of it coal. Coal made more sense when it was mined here in Nova Scotia, but now we buy it from others. This over-reliance on a single fuel source weakens our energy security, binds us to the volatile and upward trend of international prices, and drains wealth away from the province. Equally important, it has a negative impact on both our health and our environment.

The province is committed to making a change—and to keeping its commitment to make life better for Nova Scotia families.

The Commitment: 25% Renewable Electricity by 2015.
This plan commits the 2015 target of 25 percent renewable electricity to law. By that date, Nova Scotia's total renewable electricity content will have more than doubled from 2009 levels—and the equivalent of more than 300,000 homes will be powered by clean, local sources.

The New Goal: 40% Renewable Electricity by 2020.
The 2020 goal places Nova Scotia in a position of global leadership. It may require expanded grid connections with our neighbours, and may include a greatly expanded role for tidal energy as we learn more. By 2020, this goal means Nova Scotia will have the equivalent of more than 500,000 homes running on renewable power—more than enough energy for every residential customer in the province.

The Plan

In addition to energy conservation and efficiency programs, the province will make an orderly transition to new, local, renewable energy sources. This plan uses several different mechanisms to achieve that transition. It creates a role for everyone from Nova Scotia Power (who will continue their regulated obligations) and large independent producers, to community organizations and committed citizens.

Larger Projects: Regulation + Competition
Large and medium-sized renewable electricity projects will be split evenly between Nova Scotia Power (NSPI) and Independent Power Producers (IPPs). The Utility and Review Board (UARB) will evaluate and approve NSPI-sponsored projects in the traditional way. Independent producers will compete for projects in a bidding process managed by a new authority, the *Renewable Electricity Administrator*.

Community Projects: Fixed Price
To encourage a range of projects widely dispersed throughout the province, this plan establishes a community-based feed-in tariff (COMFIT) for an expected 100 megawatts of renewable electricity projects connected to the grid at the distribution level. The plan also introduces a variety of programs to assist community groups in the technical, financial, and regulatory work needed to develop these projects.

Individuals: Enhanced Net Metering
To give individuals and small businesses the opportunity to participate in green energy projects, the plan expands and enhances the current net metering program available to consumers through NSPI. Projects up to one megawatt, and connected to multiple meters within a

single distribution zone, will be eligible to use two-way meters, and participants will receive payment at retail rates for any excess power they produce over a year.

Biomass: Proceed with Caution

Government will approach the development of biomass for electricity production with caution. Electricity produced from co-firing biomass will play a role in meeting the 2015 target, but will undergo review for post-2015 use. To ensure sustainability, pending release of the Natural Resources Strategy, this plan caps new electricity generation from forest biomass at 500,000 dry tonnes (~600-700 GWh) above current uses. Co-firing in thermal plants is capped at 150,000 dry tonnes (150 GWh).

Tidal: Safe Development

The province will continue to invest in tidal energy research and development in the hopes that our unique tidal resource can eventually make a significant contribution to our energy needs. To encourage this development, this plan establishes a community-based feed-in tariff (COMFIT) for distribution connected tidal projects, as well as a special FIT covering direct incremental costs related to device deployment for developmental tidal arrays connected to the grid at the transmission level.

Solar: Heat + Water Focus

Solar will qualify as a renewable resource under the enhanced net metering program. Today, solar is used more economically for air and water heating rather than electricity generation. Its role may expand as the cost of solar technology changes in the future.

Grid: Cleaner and Stronger

To increase the grid's capacity to absorb intermittent energy from wind and tidal sources, the province will continue to encourage the use of locally-produced natural gas—a cleaner, quick-responding fuel that is ideal for balancing intermittent supplies. New studies will lay the groundwork for upgrading our own grid, and our modest interconnection to the North American grid.

Benefits + Costs

In the process of transitioning to a system that is cleaner, more diverse, more domestic, and more secure, this plan will support as much as $1.5 billion in green investment—creating good jobs and growing the economy. Specifically, the plan will create jobs in construction, supply, manufacturing and maintenance, generating an estimated 5,000 to 7,500 person-years inside the province, with opportunities in both urban and rural areas. There are costs associated with moving in this direction—especially upfront. Adding renewables may add an average of one to two percent per year on electricity bills in the short term.

But in the long run Nova Scotia will be far better off. Renewable electricity prices don't go up over time in the same way that carbon-based fuels will. Controlling our own supplies of energy gives us significant energy security. Moving towards local renewable sources will help stabilize fuel prices in the future—protecting consumers from both the volatility of fossil fuel pricing and the future costs of carbon.

This plan takes a balanced approach to the challenging task of transforming our electricity system—a direction critical to the province's economic and environmental future—with opportunities for all Nova Scotians to participate.

Where We Are Now

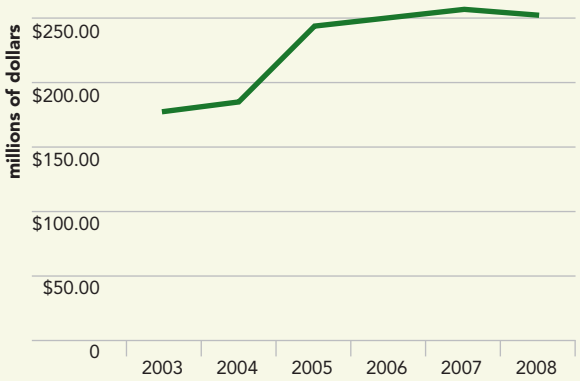
A generation ago, Nova Scotia made a deliberate decision to produce electricity from coal. The price was low and stable, and the supply was secure. It was mined right here—so investing in coal-fired generation seemed like a smart way to ensure jobs and affordable electricity for Nova Scotians.

That reality is changing. Rising costs and increasing international competition forced our mines to close. Today, the coal burned in Nova Scotia comes from distant shores.

Today, almost 80 percent of the electricity consumed here comes from imported coal, petroleum-coke, or fuel oil. The rest comes from natural gas—a cleaner, locally produced fuel—and from renewable sources like hydro, wind, and tidal.

Every time you turn on a light switch, money flows from your pocket out of the country to places where the coal we burn originates. Not only does this drain wealth from the province, it puts Nova Scotians at the mercy of political turmoil and natural disasters in faraway lands.

Estimated Cost of Imported Coal Used to Produce Electricity in Nova Scotia



Please note that prices are based on blended prices from multiple suppliers dependent on BTU value, world price, sulphur contents, FX rates.

Source: NSPI

Although coal prices fluctuate, the general trend continues to climb upward.

Reliance on imported coal also shackles Nova Scotia to the upward march of international fuel prices, driven by the developing world's insatiable appetite for energy. Each time prices careen upward and start to come back down, they always seem to settle at a level just a bit higher than where they started.

Coal is also a major source of pollution. Burning it produces nitrogen oxides, sulphur dioxide, mercury, and particulates requiring ever more expensive emission controls and cleaner mixes of fuels to protect public health and the environment.

Burning coal and oil generates greenhouse gases that contribute to climate change—a problem we have a responsibility to address as global citizens.

In short, Nova Scotia's economy has been exposed to insecure overseas supplies of an increasingly expensive, unhealthy, environmentally unfriendly fuel. We need to begin changing that, and this is the plan for doing so.

The Renewable Electricity Plan is focused on helping Nova Scotia address the challenges of the rapidly changing world energy environment—and making life more affordable in the long run. It incorporates the strategic direction of previous energy policy, and expands on it in a number of key areas.

This plan is part of a larger strategy on clean energy production and use to be released in the coming year. The strategy will encompass more than electricity generation. It will cover several aspects of energy policy, including:

- All sources of renewable energy (for electricity, space and water heating, and transportation),
- Energy efficiency (including conservation, efficiency, and managing demand),
- Locally-produced, cleaner fuels (encompassing natural gas supplies and markets), and
- Economic and environmental opportunities that emerge as Nova Scotia moves to a cleaner, more secure and sustainable energy future.

As part of the preparation for this Renewable Electricity Plan, a consulting team from Dalhousie University, led by Dr. David Wheeler, facilitated extensive public, multi-disciplinary consultations in the summer and fall of 2009. Those consultations confirmed that Nova Scotians are passionate about developing our renewable energy resources. The final report, dubbed the "Wheeler Report" included recommendations for implementing renewable energy in the short, medium, and long-term (beyond 2020). This plan draws on the advice of Dr. Wheeler, as well as a range of other information sources, to build a practical plan for our near and mid-term energy future.

Where We Need to Go

A Quick Guide to Electricity Units

We measure the ***rate*** at which electricity is generated or used in **watts**. A 25-watt bulb uses 25 watts of power.

We measure the ***amount*** of electricity generated or used in **watt-hours**. A 25 watt bulb that burns for an hour uses 25 watt-hours of electricity.

Because this plan often discusses large amounts of electricity, we use a series of prefixes to describe very large amounts.

1,000 watts = 1 kilowatt (kW), the power used by a typical home.

1000 kW = 1 megawatt (MW), the power used by about 1,000 homes.

1000 MW = 1 gigawatt (GW), the power used by about a million homes.

1 gigawatt-hour (GWh) = 1 million kilowatt-hours. Nova Scotia currently generates and consumes about 12,000 GWh of electricity per year.

Coal-fired electricity needs to be gradually replaced with fuel supplies that are local, cleaner, more secure, and more sustainable. It can't be done overnight. For one, because Nova Scotia's electrical utility has a huge investment in thermal generating stations that are only part way through their useful life. But we must begin the process of weaning ourselves off coal. This means practicing energy conservation to forestall growth in demand for electricity, and broadening the energy supply base to include a significantly larger local, renewable component.

Transforming our current electricity mix to one that is more local and green is important to our future energy security.

The Government of Nova Scotia has set ambitious targets for generating more electricity from renewable sources, as well as setting the first and only hard caps on greenhouse gas emissions in North America, in support of the *Environmental Goals and Sustainable Prosperity Act (EGSPA)*. The province is well on its way to meeting the targets for 2011 and 2013 established under the Renewable Energy Standard. This Renewable Electricity Plan focuses on where to go from there.

Last July, the province's new government made a commitment that 25 percent of our electricity would come from renewable sources by 2015. This Renewable Electricity Plan details the steps by which we will meet that target.

It also establishes an even more ambitious goal for 2020: by that date, the plan is to have 40 percent of electricity produced from renewable sources. Achieving that goal will cut the province's coal consumption in half in just 10 years.

Nova Scotia currently consumes just over 12,000 GWh of electricity per year. That total needs to be kept from growing, or the percentage-based targets for renewable electricity will be that much harder to achieve. Energy conservation and efficiency, therefore, are critical not only to keeping energy bills under control, but for achieving renewable energy targets too. In fact, conservation is by far the single biggest step that can be taken—either as a society or as individuals—to safeguard our energy future.

In the fall of 2009, the province created Efficiency Nova Scotia, an arms-length non-profit corporation, to better manage use of electricity. Efficiency Nova Scotia will independently oversee the electricity demand side management (DSM) program now operated by Nova Scotia Power (NSPI) and contract with government to deliver programs that will reduce demand for non-electric energy use. DSM is an industry term for programs that encourage utility customers to use less electricity, especially at times of peak use, when supplies are strained and generating costs soar.

Beyond conservation, the clearest path to stable, secure, sustainable electricity supplies lies with maximizing the use of renewable energy.

Renewable energy is sustainable because it comes from sources that nature replenishes: rivers, tides, wind, sunshine, plants, and forests. Nova Scotia is blessed with abundant supplies of these resources to help us meet our 2015 commitment and our 2020 goal. We have substantial wind supplies. The energy unleashed every six hours in the Bay of Fundy represents one of the greatest tidal resources on the planet. We have a plentiful source of biomass. Solar technologies for electricity are emerging and will likely play a larger role as prices decline, and the technology for using energy from the sun for heating is becoming established in Nova Scotia and may be even more promising post-2015.

Of the 12,000 GWh of electricity the province consumes each year, only about 11 percent comes from renewable sources. Assuming conservation programs and demand management keep overall electricity consumption from rising, another 1,700 GWh of renewable electricity (new or under construction) is needed by 2015 to meet the commitment. Section 4 of this plan details the policies and programs government will use to achieve that 2015 commitment.

The new goal of 40 percent renewable electricity supplies by 2020 does not yet have the force of regulation. However, it shows the direction and pace government wants to maintain in the quest for a secure, sustainable energy supply. To achieve that goal, a further 1800 GWh per year of renewable energy needs to be harnessed by 2020—ten short years from now. Section 5 of this plan lays out the path for reaching this goal.

Total Amount of Renewable Electricity Supply

Pre-2001	End 2009	2011	2013	2015	2020
1100 GWh/yr	1300 GWh/yr	1700 GWh/yr	2300 GWh/yr	3000 GWh/yr	4800 GWh/yr
9%	11%	14%	19%	25%	40%

*2011 and future amounts forecast based on 12,000 GWh/yr of total provincial electricity sales.

Between 2009 and 2015, Nova Scotia will more than double its renewable electricity supply, growing nearly 8 times faster than the period between 2001 and 2009.

Underlying Principles

Several principles guided the development of this Renewable Electricity Plan:

Managing Costs for Ratepayers

The current electricity path leaves Nova Scotia dependent on rising international coal and oil prices. This plan seeks to make life more affordable by stabilizing electricity rates over the medium and long-terms. It establishes a path to manageable and predictable energy bills for Nova Scotia families and businesses.

Strengthening Security Through Diversity

Basing almost 80 percent of our electricity on imported coal and oil puts Nova Scotia at the mercy of international markets over which we have no influence. This plan seeks to ensure a more secure, stable, reliable supply of energy. A key to achieving that goal is to diversify into more localized energy sources, spread more widely around the province.

Building Economic Opportunities in Rural Nova Scotia

By focusing on renewable energy sources like wind and tidal, which are naturally abundant in Nova Scotia, this plan enhances opportunities to create good jobs and grow the economy in every region of Nova Scotia. Traditional rural industries like forestry and agriculture can build wealth and add jobs by developing the sustainable renewable energy sources they manage already. And capitalizing on Nova Scotia's unparalleled tidal potential can build an industry here at home with opportunities around the world.

Protecting Our Environment and Ensuring Sustainability

Nova Scotia is the only jurisdiction in North America with absolute caps on greenhouse gas (GHG) emissions from the electricity sector. There are also increasingly stringent limits on harmful air pollutants. This plan builds on that leadership role and will ensure a cleaner, more sustainable future—keeping the province's commitment to make life better for all Nova Scotians.

Maximizing Community Involvement and Social Benefits

The plan offers opportunities for everyone – from community groups to First Nations, local not-for-profit organizations, businesses and individuals to actively participate in the development of renewable energy resources. Working together, we can all share in the benefits.

Holding Ourselves Accountable

This plan establishes some of the strongest renewable electricity goals in North America, and sets out a path for meeting those goals. This plan is about taking leadership—and ensuring that we live more within our own energy means.

Meeting the 2015 Commitment

Meeting the 2015 commitment for 25% renewable electricity supply, will be challenging, but it is achievable. We will use the following tools and mechanisms to get us there:

- Large-scale, community-based, and small-scale renewable electricity projects
- Changes to electricity regulation
- Requirements for biomass.

Because large projects produce the lowest-cost renewable electricity, NSPI will undertake some of its own large renewable energy projects subject to approval by the Utility and Review Board (UARB). Independent power producers will have an equal allocation of these projects, subject to competitive bids.

Cost control is not the only principle underlying the transition to renewable energy. To ensure even broader participation, small community-based power projects will be eligible for a Feed-In Tariff (FIT).

The FIT guarantees qualified participants a fixed price for the renewable electricity they produce over a fixed period of time. The price typically reflects the cost of generating the electricity, plus a reasonable return for the producer.

Finally, businesses and homeowners who produce renewable electricity will be eligible to participate in an enhanced net metering program (ten times the limit of the current net metering program) that credits them for excess power they feed into the grid against the cost of any power they consume.

In short, there's a role and opportunity for everyone: homeowners, First Nations, municipalities, community groups, farmers, businesses, developers, and NSPI.

Here's how the three new mechanisms for buying renewable electricity will work.

1. Medium and Large-Scale Projects

Most of the new renewable energy needed to meet 2015 and 2020 goals will come from industrial-scale projects. The Renewable Electricity Plan calls for a minimum of 600 GWh of new medium to large-scale renewable electricity, produced in equal parts by NSPI and independent power producers.

The UARB will evaluate, approve, and regulate projects proposed by NSPI in the traditional manner.

Independent producers will compete for projects under their allocation. To promote fairness and efficiency, projects will be secured through competitive bidding in response to requests for proposals (RFPs).

Most of the new renewable energy projects now under development or in operation resulted from competitive RFPs issued in 2007. Financing problems stalled several of these projects, but it's clear that some of the troubles stemmed from the world financial crisis rather than a shortcoming of the RFP model itself.

Using the two methods—UARB regulation and competitive bidding—in parallel will help determine which model gives the best value for ratepayers for future policy development.

The process for developing these medium and large projects will include the following features:

- NSPI will continue to follow the current process for developing its share of renewable energy projects, seeking approval from the UARB to recover costs from ratepayers.
- A competitive bidding process for independent power producers will be open to all qualified producers except NSPI.
- A new independent authority, the Renewable Electricity Administrator (REA), will manage the competitive bidding processes and select winning projects. (The role of the Renewable Electricity Administrator is described more fully in Section 7 of the plan.)
- Independent power producers can form partnerships with NSPI, but NSPI can have no more than 49% ownership or operating authority of such projects.
- Government retains the discretion to call for bids for renewable electricity projects, including specific technologies such as tidal.
- The bidding process for renewable electricity projects involving forest products must ensure that the management and use of the resource conforms to sustainability standards and regulations.

2. Community-Based Feed-In Tariff

Small-scale producers typically cannot compete successfully against much larger developers in a competitive bidding process. More than 45 jurisdictions around the world, including Spain, Germany, Ontario, and Vermont, have established feed-in tariffs (FITs) that support and encourage small-scale and community ownership. These programs let newcomers participate in the renewable electricity industry, and encourage the development of multiple projects over widely-dispersed rural areas.

This plan introduces a Community-Based Feed-In Tariff (COMFIT) to encourage the development of local renewable energy projects by municipalities, First Nations, co-operatives, and non-profit groups. Most communities are not directly transmission connected, but are served through local distribution substations that are designed to accommodate the electricity needs of the specific community. Projects will be connected to the grid at the distribution level. Due to distribution level capacity, projects will typically be less than 2 MW, but potentially up to 5 or 6 MW depending on location. The size of the projects that are distribution-connected will require technical study on a case by case basis, and will be limited by area operating constraints.

This approach manages costs and gives us experience with the introduction of intermittent power sources at the distribution level. Renewable electricity from large-scale commercial projects will continue to be procured through the competitive bidding process, because this offers the best value for ratepayers. At this time, a FIT for large-scale projects would likely have a significant impact on electricity rates. Government will review, and if appropriate adjust, the COMFIT program in 2012, to ensure that we learn from our experience and ensure that the objective of supplying 100 MW through community/small-scale renewable electricity projects is met.

Government is proceeding in this manner because Nova Scotia's electricity system doesn't readily lend itself to intermittent energy connected at the distribution level. The challenges are similar to those involved in planning a highway system. The transmission system functions like a major 100-series highway, while the distribution system operates more like a network of small, local roads. Just as a sudden influx of unexpected traffic onto local roads can produce gridlock, the introduction of intermittent electricity at many different points around the province could overwhelm the distribution system. Any changes in the overall system require careful planning, just like changes to roads and highways.

Nova Scotia's COMFIT will include the following features:

- Municipalities, First Nations, co-operatives, local non-profits, as well as small businesses operating through Community Economic Development Investment Funds (CEDIFs), will be eligible to receive the COMFIT.
- The purpose of limiting access to community-based participants is to ensure that projects are rooted in the community and investment returns remain there. Regulations will establish the precise definition of community following consultation.
- Electricity produced from wind, biomass, tidal, wave, in-stream hydro as well as combined heat and power projects will be eligible for COMFIT rates that reflect basic cost-recovery, including the cost of capital.
- COMFIT-eligible projects will connect to the grid at the distribution level (i.e. below a substation). (Note: see tidal section, p. 18, regarding a special FIT for tidal arrays at the transmission level.)
- The UARB will set the COMFIT rate according to government-set criteria.
- In 2012, government will review the program and, if appropriate, adjust the COMFIT program to ensure that we learn from our experience and ensure that the objective of supporting community/small-scale renewable electricity projects is met.

The community-based FIT will increase geographical distribution of renewable electricity sources, thereby contributing to our energy diversity and security. It should also promote greater public understanding and acceptance of renewable resources. And it will provide rural economic activity associated with the construction and operation of renewable energy projects—helping create good jobs and grow the economy.

(Section 7 contains more detail on tools to support community-based renewable energy projects.)

3. Enhanced Net Metering

Net metering is a program that lets a consumer connect a small renewable electricity source to the grid through a special meter that measures electricity flows in two directions. For any electricity fed into the grid, the consumer gets a credit to offset the cost of electricity drawn from the grid. This mechanism helps homeowners and businesses offset the cost of their commitment to sustainability.

NSPI's current net metering program will be enhanced under this plan. In the existing program, the amount of power generated cannot exceed 100 kW. Projects are limited to a single meter. There is no payment for any overall surplus fed into the grid, only a credit up to the value of power consumed. The new, enhanced program introduced by this plan eases those restrictions. It will:

- Be available to everyone
- Cover all renewable resources
- Increase power limits from 100 kW to 1 MW
- Let customers supply electricity to multiple meters under one account within a single distribution zone up to an overall limit of 1 MW, and
- Provide payment to customers at their retail class rate for any overall surplus electricity produced on an annual basis.

NSPI will work with the Department of Energy to create a new on-line enhanced net metering guide and application form to make the process easier.

4. Forest Products Associated Biomass

Government will approach the development of biomass for electricity production with caution. Electricity produced from co-firing biomass will play a role in meeting the 2015 commitment, but will undergo review for post-2015 use.

Forest harvesting practices are a contentious issue in Nova Scotia, subject to wide debate. Government is currently developing a Natural Resources Strategy[1] that will likely recommend enhanced or new guidelines and regulations for all uses of biomass. Long-term planning for generating electricity from forest biomass will have to await that strategy. Prudent interim decisions are possible now however.

Although forest biomass is a plentiful resource here, using wood solely for the purpose of generating electricity through co-firing is inefficient. Far more energy is extracted from biomass used to heat water or living spaces. A long-term strategy for cleaner energy supplies will recognize wood's greater value as a heat source, or as a combined source of heat and electricity. However, using biomass to generate electricity in the short and medium-term can help develop the supply chain that will eventually serve these more efficient and valuable uses.

[1] The Department of Natural Resources commissioned a panel chaired by former Chief Justice Constance Glube to prepare a report and recommendations that is focused on four elements—forests, parks, minerals, and biodiversity—that will inform the development of a Natural Resources Strategy. It will likely recommend enhanced or new rules, regulations, and guidelines for the harvesting of wood. The strategy will also consider the use of biomass for energy.

Managed and regulated responsibly, forest biomass harvesting is sustainable, and can contribute to the province's short-term renewable electricity targets.

Biomass use in Nova Scotia is already a reality, including firewood in over 100,000 homes, a 22 MW biomass electrical co-generation facility in Brooklyn, a sawmill producing heat and power, pulp and paper plants, two pellet manufacturing plants, numerous greenhouse operations, sawmill lumber drying kilns and wood-related industries that power their facilities with production waste. Institutional users include the Nova Scotia Agricultural College and South Shore and Annapolis Valley Regional Hospitals.

Field inventories and supply models constructed by the Department of Natural Resources found that 750,000 dry tonnes of new forest biomass could be sustainably harvested and used to generate electricity for the 2015 commitment. Dr. David Wheeler's stakeholder advisory process arrived at a comparable, if slightly larger, number. However, the number could be reduced if the forthcoming Natural Resources Strategy introduces changes to current harvest management practices.

Assessment of the immediate demand for forest biomass generation suggests that an amount below 750,000 dry tonnes could be prudently adopted. The use of forest biomass for electricity production helps diversify our electricity supply, makes cost-effective use of existing infrastructure, and helps support the forest sector. But in the longer term, forest biomass is certain to find more valuable uses than as a simple substitute for coal in Nova Scotia thermal power plants (where heat energy may be lost). Therefore, the plan implements the following interim requirements and plans for biomass, pending release of the Natural Resources Strategy:

- To ensure sustainability, pending release of the Natural Resources Strategy, this plan caps new generation from forest biomass at a conservative 500,000 dry tonnes (600-700 GWh) above current uses for electricity generation. This cap will accommodate foreseeable biomass projects, including modest amounts of co-firing in NSPI thermal plants, projects developed by forest products companies, and a limited amount of community forest biomass generation.
- Co-firing in thermal plants will be capped at 150,000 dry tonnes (150 GWh) and will count toward the renewable energy needs for 2015. However, co-firing will be considered a balancing fuel source that helps NSPI maintain compliance. Projects approved under the COMFIT will take precedence, and if there is no room under the cap, co-firing will yield.
- Operating approvals for thermal power stations co-fired with biomass will need to be revised to control emissions.
- The province will also review the use of biomass for co-firing once the Natural Resources Strategy is released. After 2015, government will assess the continued applicability of co-firing to meet the 2020 goal.
- In order to qualify as renewable energy, forest biomass must be harvested using sustainable practices, in a manner consistent with license requirements for Crown Land established for NewPage Port Hawkesbury.

(*See following page for Forest Biomass used for Renewable Electricity Procurement Requirements.)*

Forest Biomass Used for Renewable Electricity
Procurement Requirements

Forest biomass used to generate renewable energy must comply with the following requirements:

1. Vendor (i.e. the power producer) must make maximum use of wood wastes available from other manufacturing processes.
2. Total regional harvest may not exceed province's estimate of the sustainable harvest.
3. Vendor must maintain/obtain Forest Stewardship Council's Maritime Standard forest certification on lands they own or control.
4. Vendor shall help and encourage private woodlot owners in its supply area to obtain FSC certification.
5. Vendor must be a registered buyer under the *Forests Act.*
6. All fuel from forest harvesting and silviculture must come only from stem boles. Vendors shall not harvest or acquire fuel from coarse or fine woody debris, tree crowns, tops, or stumps from forestry operations. Vendors may use fuel made from other tree parts only if it originates in a non-forestry operation, such as agricultural land clearing, highway right of way clearing, or commercial or residential construction.
7. Forest biomass used as fuel must come from low quality logs. Vendors must apply the best utilization practices to ensure diversion of higher quality stems to production of other manufactured wood products.
8. Vendors must seek Nova Scotia buyers able to use better quality logs and pulpwood.
9. The province encourages vendors to seek opportunities for members of First Nations communities in Nova Scotia to participate in these new activities in a mutually acceptable manner.

- Other bio-energy resources, such as agricultural biomass, may have potential for electricity generation and heating, but further analysis is needed to determine whether they can play a sustainable role. As outlined in the Climate Change Action Plan, government will develop a bio-resources strategy in 2011 to determine the best potential uses for bio-energy based fuels and the best policies to encourage their use. The strategy will take into account greenhouse gases and other air emissions produced through the life cycle of various bio-fuels.
- Large-scale biomass projects established by, or connected with, existing forest products manufacturers may be operated by the forest products company, an independent non-utility partner, or by NSPI.
- NSPI may call for bids on large-scale biomass projects and the Renewable Electricity Administrator will evaluate the merits of the bids and select the winning bidder.

5. Market Structure and Governance

Nova Scotia's electricity market consists of a vertically integrated utility—NSPI—and six smaller municipal electric utilities. As an integrated utility, NSPI has responsibility for electricity procurement, system operation, grid access, maintenance of the transmission and distribution systems, and meeting its renewable energy targets.

The Renewable Electricity Plan recognizes the cost-effectiveness of having an integrated utility, as well as the need for a central body that continues to have the following responsibilities:

- A mandate to serve Nova Scotians
- System planning and operations, including scheduling of medium- and large-scale renewable electricity supplies
- Accountability for meeting overall Renewable Energy Standard (RES) targets
- System reliability and compliance with international standards, including oversight of technical compliance for the transmission and distribution systems.

However, this plan introduces several changes to the way NSPI buys renewable electricity, as detailed in the sections above. The result will be a system of renewable energy development that ensures Nova Scotians benefit from a stable and reliable supply of clean electricity.

Changes established by this plan are meant to encourage production of renewable energy from varied sources at locations widely distributed across the province. This will provide greater energy security and diversity. The details can be adjusted as experience with renewable technology increases, and as technologies become more affordable. In some cases, a slightly higher amount will be paid for renewable energy supplies. But this will act as a hedge against the certainty of much higher coal prices and much higher environmental compliance costs in the years to come—ultimately making life more affordable for Nova Scotians.

Achieving the 2020 Goal

The 25 percent commitment established for 2015 will have the force of law, with penalties for any failure to meet it. The 40 percent target for 2020 is a goal we aspire to. It does not yet have the force of law, but it represents government's considered judgment about where we should be by that date. Rapid transition to renewable energy sources and cleaner local fuels represents a big undertaking for all participants in our energy economy. We expect to learn as we go along, and the current approach may be adjusted as young technologies mature and new technologies emerge. No one should underestimate government's determination to secure a stable, sustainable, cleaner, and more secure energy future for Nova Scotia.

Meeting the renewable electricity goals for 2020 will require development of our most abundant renewable energy resources, wind and tidal, and a complementary expansion in use of our local, cleaner fuel alternative, natural gas.

The Renewable Resource Mix After 2015

Wind will be the mainstay of our efforts to reach the 2015 renewable energy commitment, with support from limited amounts of biomass. Natural gas will serve mainly to balance wind power, and to help ensure compliance with greenhouse gas regulations and emission standards.

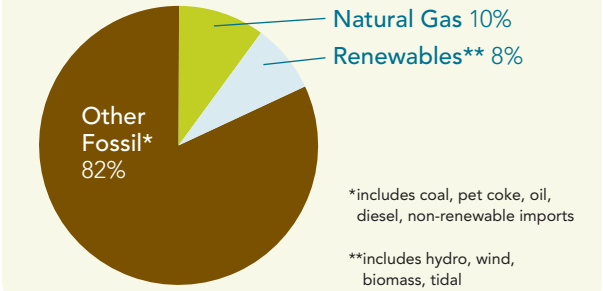
Beyond 2015, the province will consider several options to achieve a 40% renewable electricity supply by 2020:

- More intermittent renewable energy sources, such as wind and tidal, backed by natural gas
- More stable renewable energy sources such as biomass
- More clean energy imported from neighbouring provinces.

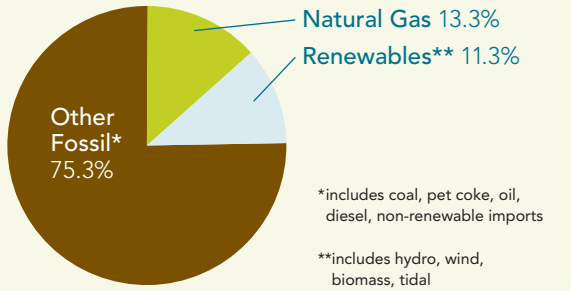
It seems likely that the largest portion of new renewable energy in 2020 will come from wind, with the rest coming from biomass and tidal, balanced by either natural gas or clean imports. There are many possible combinations, but each one represents a significant move away from where we are today.

Past

Energy Mix 2001



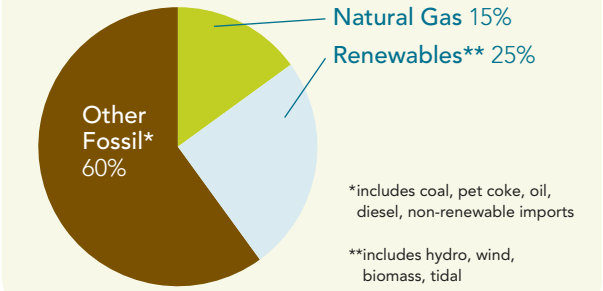
Energy Mix 2009



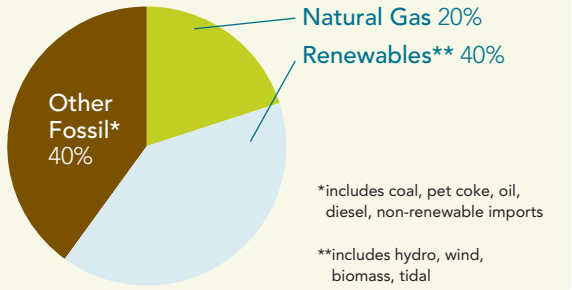
In the first decade, fossil fuels dominate but cleaner-burning natural gas begins to play a larger role.

Future

Potential Energy Mix 2015



Potential Energy Mix 2020



Coal and oil give way to increasing amounts of renewables (domestic and/or imported) and natural gas.

The Role of Tidal Energy

The sleeping giant amongst Nova Scotia's renewable energy sources is tidal power. Look up "tide" on Wikipedia, and you'll find a picture of the Bay of Fundy. Twice each day, 115 billion tonnes of water surge in and out of the Bay. The daily total exceeds all the water flowing down all the rivers in the world.

The US-based Electric Power Research Institute (EPRI) estimates that underwater turbines could safely extract 300 megawatts (MW) of energy from the Minas Channel alone. Some estimates place the total extractable energy potential of the Bay of Fundy as high as 2,000 MW.

But these are still early days. Many technical and economic challenges lie along the path to such an achievement. In-stream tidal technologies are in their infancy. Turbines operating in the Bay of Fundy must withstand currents moving at speeds up to 5 metres per second, or nearly 10 knots. The cost of installing them remains high. Many operational and environmental issues must be settled before commercial development can occur.

However, the fact that tidal technology is just emerging and costs may drop significantly, combined with Nova Scotia's unique tidal resource and the research already underway here, gives the province a chance to lead the development of what could someday be a major world-wide energy industry.

Government has supported tidal energy through FORCE (Fundy Ocean Research Centre for Energy), a non-profit test centre that encourages public and private research on tidal energy. The Renewable Electricity Plan expands that support with the following commitments:

- ***A Marine Renewable Energy Task Force:*** An interdepartmental task force will be established, assisted by the private sector, to develop strategies for commercializing marine renewable energy (tidal, offshore wind, and wave resources), and the human resources needed to support them.

- ***A Tidal Feed-In Tariff:*** Tidal devices are still in the demonstration phase. The electricity they produce costs more than electricity from mature renewable sources. To support tidal development, the province will set a community-based feed-in tariff (COMFIT) for distribution connected tidal projects. In addition—given that research currently underway proves tidal to be both safe and feasible—the province will authorize a special FIT for developmental tidal arrays connected at the transmission level that reflects the cost of the turbines and their deployment.

- ***Identifying Potential Tidal Sites:***
  In 2005, the Electric Power Research Institute (EPRI) identified eight sites in Nova Scotia with tidal current velocities averaging at least 1.5 meters/second: Cumberland Basin, Minas Channel, Minas Passage, Cobequid Bay, Digby Gut, Petit Passage, Grand Passage, and Great Bras d'Or Channel. These sites have potential for tidal power development. There are probably many other places in the province with potential for small-scale tidal projects. As part of this plan, the province will identify and assess additional sites that have potential for these projects.

In response to the 2008 Bay of Fundy Strategic Environmental Assessment, the province committed to develop marine renewable energy legislation. This legislation will ensure that marine renewable energy projects have appropriate licensing procedures, environmental protection, worker and public safety, and resource conservation, built around recognition for other users and uses. Consultation on the marine renewable legislation will take place over spring and summer 2010 with the expectation of tabling new legislation in the legislature for the fall sitting.

The Role of Natural Gas

A key obstacle to the development of renewable energy is the fact that our best renewable sources—wind and tidal—are by their nature intermittent. Because they depend on natural forces that come and go, intermittent sources cannot provide a constant stream of electricity. In utility jargon, they are not *dispatchable*. They cannot be turned on (or off) whenever the power grid operator needs them. In order for them to play more than a minor role in our electrical system, intermittent supplies need to be balanced with other, fast-responding energy sources—preferably ones that are also clean and local.

Natural gas fits the bill nicely. Although it is a fossil fuel, natural gas burns far cleaner than coal or oil. It releases less carbon, much less sulphur dioxide, fewer nitrogen oxides, and virtually no ash or particulate matter. Unlike coal fired plants, gas turbines can start up and shut down quickly to match changes in the wind and tides. Nova Scotia has substantial deposits of natural gas both offshore and onshore; its use also benefits our economy.

Natural gas will play a larger role in our electricity generation as we move away from coal. The government will outline its plans for natural gas development as one part of the strategy on clean energy production to be released in the coming year.

New Roles and Responsibilities

The Renewable Electricity Plan introduces some significant changes to the roles and responsibilities of key players in our electricity system.

Renewable Electricity Administrator (REA)

The biggest change is the appointment of an independent administrator. Government will appoint the Renewable Electricity Administrator (REA) on the recommendation of the Minister of Energy after consultation with interested parties. The REA will conduct competitions for renewable electricity projects. NSPI will retain responsibility for electricity planning, but will no longer take a direct role in competitions. Instead, when a new medium or large-scale renewable electricity project is needed, NSPI will request issuance of an RFP. The REA will oversee the competition, evaluate the bids, and determine the winner. Government has made this change to ensure that the electricity system is fair and transparent. The REA will also ensure that successful bidders are accountable for delivering projects toward the achievement of provincial targets.

Nova Scotia Power Inc. (NSPI)

NSPI will continue to function as an integrated utility with an obligation to serve, legal responsibility to meet renewable energy targets, responsibility for system reliability compliance, and authority over projects connecting to the electrical grid. In a situation where NSPI needs to secure additional renewable electricity, the company will have the ability to make equity investments or purchase imported renewable energy as required, and at the lowest possible cost to customers.

Utility and Review Board (UARB)

The UARB already has responsibility for approving cost recovery for renewable energy projects through the setting of electricity rates. Under the Renewable Electricity Plan, it will take on responsibility for setting and periodically reviewing FIT rates, based on criteria established by government.

Province of Nova Scotia

The Province will continue to lead the development of renewable energy policy. It will consider criteria for setting FIT rates and the rules for awarding FIT contracts and competitive medium and large-scale projects. Under a one-window committee, the Province will coordinate the various approvals and permits a developer may need under provincial and federal legislation (see Section 7 for more detail on one-window committee). The Province will also provide technical, planning, and financial advice and training to facilitate renewable energy projects, especially for community-based participants and non-profit groups supporting community energy development.

The Role of Government

The Government of Nova Scotia recognizes that it has a large role to play in transforming Nova Scotia's electricity sector to one that is secure and sustainable. Government will provide guidance in project development, approvals and permitting, and access to financing.

Facilitation

We expect the Community-Based Feed-in Tariff (COMFIT) to attract participants who need support developing renewable energy projects. A sustainable energy planning group will be established by government to help develop community-based projects. The planning group will co-ordinate and support the efforts of various departments, regional development authorities, municipalities, regional sustainability offices, and non-governmental organizations. The group will assist with business plans, technical feasibility studies, grant applications, public outreach, regulatory approvals, and financing guidance.

Financing

Renewable energy projects usually require a large infusion of upfront capital, with the expectation of long-term, stable returns. Many of the organizations eligible for COMFITs lack experience acquiring this kind of financing. The province will work with other organizations to develop financing tools to support community-based renewable energy projects. Community Economic Development Investment Funds (CEDIFs) may be one such tool.

Coordinating Approvals

Renewable energy projects, whether large or small, require permits and approvals from various government departments and NSPI. A single entry point will assist citizens and developers. Government has successfully used a one-window steering committee to manage the responsibilities of several departments involved in tidal energy development. As part of the Renewable Electricity Plan, government will implement a single, public portal to help developers of other renewable energy projects, starting with approvals and permits.

Emissions Management

Some renewable fuels, such as biomass, release air pollutants when burned. Government will determine the steps needed to ensure that renewable energy contributes to improved air quality. Biomass comes with its own suite of emissions. Biomass burned in thermal electricity plants can interact with pollution control equipment designed for coal. Government will conduct an analysis to determine whether operating approvals must be amended to reflect the characteristics of biomass co-firing.

Local Government

Municipal governments will be on the front lines of the transformation to renewable electricity. Many renewable energy projects will be subject to municipal regulatory authority. For example, the *Municipal Government Act* gives municipalities authority to set minimum distances between wind turbines and residential buildings, businesses, and public buildings. The province and the Union of Nova Scotia Municipalities have worked together to develop model wind turbine bylaws. The province will continue to work with municipalities to ensure that renewable energy projects do not negatively impact the public, and municipal bylaws do not present unnecessary barriers to cleaner energy development.

Federal Government

In some cases, the provincial and federal governments have overlapping regulatory authority in renewable energy development. This crops up most often in renewable energy projects in the marine environment—those involving tidal, wave, and offshore wind energy. The province will continue to work with federal authorities to ensure timely permitting that protects the public interest.

First Nations

The Mi'kmaq have expressed interest in collaborating on the development of Nova Scotia's renewable energy sector. Continuing to build a positive relationship with the Mi'kmaq is a key priority for the province. Nova Scotia consults with the Mi'kmaq on all energy projects through the Mi'kmaq-Nova Scotia-Canada Consultation Terms of Reference. All the tools this plan provides—enhanced net metering, the COMFIT, the tidal array FIT and competitive bidding—are available to the Mi'kmaq. In addition, the province has committed to encouraging developers to engage directly with the Mi'kmaq at the early stages of project development.

Legislation and Regulations

Measures like the creation of the Renewable Electricity Administrator and the implementation of feed-in tariffs require new legislation or amendments to existing laws.

- Amendments to the *Electricity Act* will give the UARB authority to set rates for Feed-In Tariffs, based on government policies and objectives. The UARB will continue to oversee and regulate NSPI's costs and rates.
- Other changes to the *Electricity Act* will delegate authority for managing competitive bids to the new Renewable Electricity Administrator. Government will retain the authority to require reporting and audits. NSPI will continue to manage technical compliance and commercial relationships with suppliers.
- Changes to the *Renewable Energy Standard Regulations* (to be renamed the *Renewable Electricity Standard Regulations*) will entrench the 2015 commitment as a legislated target, and detail accountability measures to ensure that it is met or exceeded.
- After analyzing policy options, new policies or other tools may need to be created to ensure air emissions from biomass-derived energy are properly controlled.
- Upon publication of the Natural Resources Strategy, and the establishment of a plan for biomass energy, the province may change requirements for sustainable harvesting.

Supply Chain Development

Many Nova Scotia suppliers and service companies have transferred skills from other industries to renewable energy. Nova Scotia has the largest concentration of companies specializing in ocean technologies of any province in Canada. Our offshore oil and gas, aquaculture, fishing, and national defense industries have created a cluster of more than 300 firms with specific expertise in ocean mapping, marine engineering, sub-sea fabrication and installation, remote monitoring, and safety and survival training in offshore environments.

Nova Scotia's emerging renewable energy sector, especially in the areas of tidal power and wind energy, will create opportunities for local companies to provide new goods and services. Potential business opportunities include assessment and permitting, civil construction and site preparation, manufacturing and fabrication, installation, testing, commissioning, inspection, and maintenance.

The province recently awarded a contract to identify and quantify renewable energy opportunities for fabricators and suppliers, with results expected later this spring.

Building a Secure, Reliable Network

Electricity Transmission and Distribution in Nova Scotia

Adding more renewable electricity to the transmission and distribution systems requires careful planning to maintain system reliability. This is particularly true because most of the new renewable sources available to us produce power intermittently. Meeting the 2013 Renewable Energy Standard may require additional load management techniques and modest investment in transmission infrastructure. Moving beyond the 2013 standard will require larger transmission investments in Nova Scotia's electrical grid. New lines will be needed to serve remote locations, increased capacity to deliver new renewable electricity generation and a system that can deal with the intermittent nature of much of our renewable energy.

Further analysis will determine whether there are strategic opportunities in parts of the province to expand the transmission system. This could create opportunities for more renewable energy development in rural Nova Scotia. An upgraded transmission system could also maximize opportunities for large-scale wind projects. NSPI will carry out this analysis under reliability compliance standards set by the North American Electric Reliability Corporation and the Federal Energy Regulatory Commission. The analysis will be open for comment and feedback from stakeholders.

The Role of Imports and Exports

Nova Scotia does not have abundant supplies of untapped hydro power, but nearby provinces do. One way to increase the renewable portion of our energy supply would be to import clean electricity from Newfoundland and Labrador, New Brunswick, or Quebec. While not quite local, such imports would be far cleaner and more secure than the coal and oil we currently use.

Although only enough renewable electricity is currently produced to meet Nova Scotia's needs, there may be potential to export electricity in the future. Electricity demand in Nova Scotia is highly seasonal. In late summer, demand drops as low as 850 MW (compared to a peak of 2,300 MW in winter). Without the ability to export excess power in periods of slack local demand, a significant amount of renewable energy may be wasted. As production of renewable electricity grows, the need for an interconnected regional transmission system to balance the supply and demand will become more urgent.

Unfortunately, at the moment, Nova Scotia is almost an island in terms of electricity. A single 345 kilovolt transmission line, plus two much smaller lines, connect Nova Scotia with the North American electrical grid. That's enough to ensure system reliability at times of high demand, but well short of what would be needed to import a major part of Nova Scotia's electricity needs. By contrast, New Brunswick has about five times that capacity in its interconnections with New England and central Canada. In the future, it will be necessary to expand our interconnection with New Brunswick.

A recent study by SNC Lavalin concluded that enhancing Nova Scotia's transmission grid, and adding a second interconnection with New Brunswick, would greatly improve Nova Scotia's opportunities to import and export renewable energy. It could also help solve the problem of how to back up intermittent energy sources like wind and tidal power. Expanding our interconnection with New Brunswick would require expensive upgrades on both sides of the border. Recent load growth in the Moncton area has further constrained Nova Scotia's interconnection with New Brunswick during system peaks.

The SNC Lavalin study identified a potential interconnection with New England via a submarine cable. At this time, this has significant cost implications and would require further feasibility studies and cooperation between Nova Scotia and New England.

In the other direction, the development of Lower Churchill Hydro in Labrador has the potential to provide clean, low-impact renewable energy imports to Nova Scotia—but that development is at least six years off. It would require new transmission lines, including undersea connections.

Government will continue to explore opportunities to expand and integrate the regional energy grid in order to share large hydro and enhanced renewable energy development with our neighbours.

Smart Technologies

A smart grid delivers electricity using digital technology to manage a customer's energy use. For example, a smart grid could turn on domestic hot water heaters only at night, when demand is slack and the cost of producing electricity is low. Smart meters can encourage consumers to adjust the time they heat water or use energy-gobbling home appliances—especially if doing so will save them money. These systems can save energy, reduce costs, and increase reliability. Experience from other jurisdictions has shown that smart meters are most effective when accompanied by time of use rates (price of electricity depends on the time it is used). Better management of the electricity system becomes even more important as more generation comes from intermittent sources.

NSPI will use its share of a multi-million dollar grant from the federal Clean Energy Fund to install software and management systems to start testing smart grid technologies in Nova Scotia. The project will focus on the integration between smart grid technologies, customer loads, and intermittent renewable resources. The project will help the company better understand the effect of smart grids on customer behavior, and the type of loads that can be controlled by real-time demand.

Things This Plan Does Not Do

Planning involves choices, and in developing this Renewable Electricity Plan, the government has chosen not to do several things.

The province has decided to maintain a regulated electricity marketplace and not open it to competition. Opening the system to private sales would pose major challenges for an electrical system that is not well-connected to the North American grid. Opening the market would raise difficult questions for those who stay behind: Who will carry out planning? Who will supply power when the wind speed drops? Even Ontario—a province with more energy options than Nova Scotia and access to lots of energy beyond its borders—has largely reversed deregulation. If Nova Scotia eventually moves to regional cooperation and regional system operation, these choices can be revisited.

Government has decided not to let independent power producers build all the medium and large-scale renewable energy projects. In essence, there are two competing models for selecting new power projects: UARB regulation of an integrated utility, and competitive bids by independent producers. However, Nova Scotia's lack of a robust connection to the North American grid limits competition. Without that element, competitive bids may not be the best model—that was the judgment in 2001. This plan allows the two models to operate in parallel. The results will allow government to determine the best way to balance the development projects in the future.

Government has chosen not to extend the COMFIT to larger projects. Just as a commercial farm can produce vegetables cheaper than a garden patch, an industrial-scale wind farm can produce electricity cheaper than a backyard turbine. There are many economies of scale in renewable power production. Nevertheless, a conscious decision has been made to encourage small as well as larger renewable electricity projects. This is partly to ensure widely dispersed energy sources, and partly to encourage rural community economic development. A FIT will result in somewhat more expensive electricity than open competitive bidding, but it gives these smaller projects a degree of market certainty.

At this time, there is no solar COMFIT. Although solar technologies are technically feasible, they still come at a high cost that could significantly affect electricity rates if supported by a feed-in tariff. However, Government recognizes the current value and potential of solar energy and has included it as a qualifying renewable resource under the enhanced net metering program. In several years, the cost of solar technology will change and solar will likely have a larger role in the renewable energy mix.

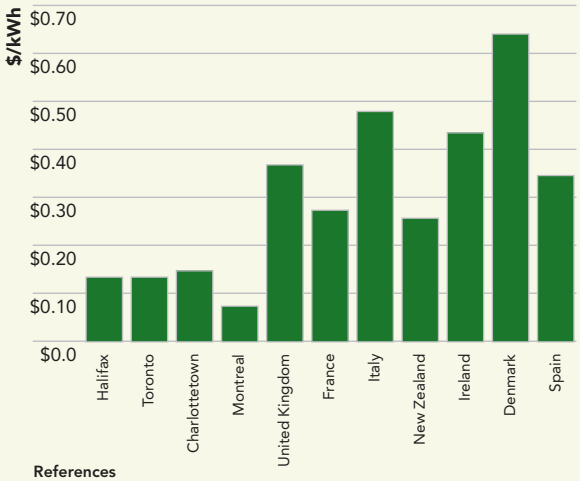
Renewable electricity produced from small local projects will be slightly higher priced than electricity from large-scale projects. But since the total amount of power from COMFIT projects will start out small, the overall impact on rates is low—estimated at less than one percent on a typical consumer's bill. Of course until the UARB sets the COMFIT rate, and we see how fully it is taken up, the precise impact can't be calculated with certainty.

Costs and Benefits

The transition from imported fuels to renewable electricity and cleaner local fuels will increase power bills in the short term, but offer lower and more stable rates in the long run. *Not* making this transition would shackle ratepayers to the wild price swings and the relentless upward march of international energy markets.

And in the long run, this plan is about making life more affordable—doing nothing would cost more. The share of NSPI's overall costs that go to fuel has been increasing. So has the cost of expensive equipment and supplies needed to control harmful emissions from coal-fired power plants. We can keep going down that path and doom consumers to an unsustainable future, or we can bite the bullet and make the necessary investments to have a secure, safe, affordable, and sustainable energy economy.

Electricity Prices for Selected Locations



References
All prices are for residential consumers in 2007. Prices for Canadian cities are from Hydro Quebec, *Comparison of Electricity Prices in Major North American Cities*. Rates in effect April 1 of each referenced year. Residential electricity prices for consumers using 1,000 kWh of electricity. Prices for International Cities are from International Energy Agency, *Key World Energy Statistics 2009*.

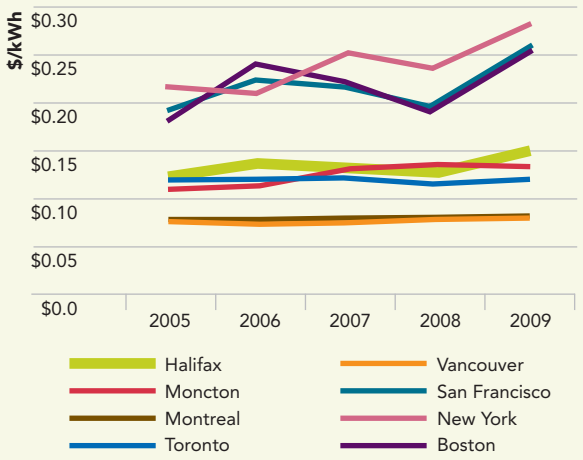
Nova Scotia's electricity rates compare with neighbouring jurisdictions, but are far more vulnerable to market volatility and future carbon regulation because of high coal content. Areas with high green content (e.g. large hydro: Montreal and Vancouver, at right) are likely to have greater price stability.

How hard is that bullet? Government estimates that measures in this plan will result in a 1-2% increase annually on electricity bills. To reach 2015, this would add an average of approximately $10-$20 annually to the average single family home electricity bill (closer to $20-$40 if electricity is used for heating).

NSPI's 2009 Integrated Resource Plan (IRP) also estimated the cost of adding more renewable electricity to the system to be about two percent per year over 2009 electricity rates. Both the 2007 and 2009 IRP studies confirm that energy efficiency and conservation, in combination with renewable energy, are the least cost options to meet energy demand and environmental objectives over the longer term for Nova Scotians.

In addition, cost increases are anticipated to be partially offset by reduced consumption as a result of the demand-side management (DSM) program currently operated by NSPI, and in future by Efficiency Nova Scotia.

Cost of Energy In North America



Reference
Hydro Quebec, *Comparison of Electricity Prices in Major North American Cities*. Rates in effect April 1 of each referenced year. Residential electricity prices for consumers using 1,000 kWh of electricity. All prices are measured in $/kWh.

Creating Jobs and Investment in the Industries of the Future

One goal of the Renewable Electricity Plan is to maximize the economic benefits of increased renewable energy generation—to create good jobs and grow the economy. The investment needed to meet the 2015 commitment of 25 percent renewable electricity could be as much as $1.5 billion. Much of this investment will be spent in Nova Scotia, creating jobs in construction, supply, and manufacturing—mainly involving wind energy projects. More of the investment will stay in the province if turbine blades and towers are also manufactured here. DSME's recent decision to manufacture wind towers and blades at the former Trenton Works plant increases our capacity for such manufacturing.

Depending upon the amount of work carried out locally, investment in renewable electricity to meet the 2015 commitment will produce estimated provincial government revenues of $30-45 million (through direct and spinoff effects), and employment of 5,000 to 7,500 person-years.

Competitive Advantage of a Cleaner Energy Mix

Nova Scotia's dependence on carbon fuels, especially coal and oil, threatens to become a significant impediment to trade and competitiveness as carbon tariffs and trade rules proliferate. By reaching and exceeding GHG reductions targets, and achieving a cleaner, more diversified supply of energy across all sectors, the province will be in the optimum position to maintain stable, competitive energy costs. That will help Nova Scotia businesses compete in world markets. And Nova Scotia goods and services will remain attractive for purchasers and consumers wanting to reduce their carbon footprint.

Reduced Greenhouse Gas Emissions and Improved Air Quality

Current methods of electricity generation produce 50 percent of Nova Scotia's greenhouse gas emissions, and the vast majority of our air pollutant emissions.

The 2008 Nova Scotia Wind Integration Study estimated that the addition of 311 MW of installed wind power capacity might avoid $8 to $9 million in GHG emission costs. With an increase to 581 MW of installed wind capacity, avoided GHG costs have the potential to impact electricity rates by 2-3%.[2]

This Renewable Electricity Plan displaces fuels like coal and oil with reduced-emission renewables and cleaner, locally-produced natural gas. The result: cleaner, healthier air, and reduced costs for everyone.

[2] Estimates are based on the assumptions made in Nova Scotia Power's 2007 Integrated Resource Plan that carbon would be subject to an additional price.

Implementation

The Renewable Electricity Plan introduces policies that are new to Nova Scotia. Some steps can be taken right away. Others will take time to implement. New programs and rules also require periodic review to ensure they meet policy objectives.

Steps to implement and monitor this plan include:

- The Minister of Energy will introduce legislation during the spring 2010 session of the legislature.
- Cabinet will implement regulations this summer, after consultation.
- The UARB will hold public hearings to set various FIT rates.
- After publication of the Natural Resources Strategy, the province will review the biomass standards established by this plan.
- Government will develop a strategy to maximize economic and environmental benefits from the transition to cleaner, more renewable and secure energy supplies. The strategy will provide a framework for plans involving energy conservation, efficiency, and demand management; space heating and water; transportation energy use; and natural gas.
- Government will review the COMFIT program in 2012.

A path to good jobs,
stable prices, and
a cleaner environment.

NOVA SCOTIA
Department of Energy