Energy Opportunities

Construction and Maintenance
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Why the future needs to be cleaner:
Global Energy Trends

Nova Scotia is not an energy island
- Imported oil is needed for transportation
- Imported coal continues to play a major role in electricity
- NS natural gas supplies linked to North American supplies

Energy prices matter
- Oil price for everyone set globally – and prices are rising
- Coal price set globally – and prices are rising
- Natural gas price set within North America – and prices have dropped
Global Energy Trends

Carbon has a cost
- All carbon-based fuels face challenges
  - Growing air quality and GHG requirements – trade implications
    - coal most of all; natural gas least of all

World energy demand is growing
- China is a major reason why
  - China’s economy is expected to grow by 10% per year to deal with population growth and rural/urban shift
  - China adds equivalent of a new 250 MW coal plant every day

Global prices are rising
- Demand is growing faster than new supplies
- Natural disasters disrupting supplies
- Prices paid by NSPI lag (because of hedging) – but trouble is coming as long-term contracts expire
NS Coal Price Trends

Cost of coal up 75% over six years

NSPI Coal Costs
in millions

04 05 06 07 08 09 10
Cleaner energy is the solution:
Renewables based on local cost and natural gas on North American cost, not global factors.
Cleaner Energy

Supports government commitments

Genuine leadership, doing things differently
- Atlantic Energy Cooperation and Atlantic Energy Gateway
- NS-NL hydro deal

Back to balance and living within our means
- Gov’t house-in-order initiatives - Energy savings for public sector buildings

Making life more affordable for Nova Scotia families
- Energy efficiency savings for homes and businesses
- Greater price stability through more diverse supplies/renewables

Jobs and the economy
- Building a cleaner energy economy. Making Nova Scotia more competitive
Cleaner Energy is...

Efficient; renewable; includes natural gas; and uses new technology

- **Renewables**
  - Electricity Plan - released and being implemented
  - Non-electric renewable energy policy analysis underway (heating, transportation)

- **Efficiency**
  - Policy work underway

- **Natural Gas**
  - Cleaner fuel with plentiful North American supplies at attractive prices
  - Part of NSPI’s electricity options
  - Attractive heating option and potential for transportation
Renewable Electricity Regulation

**From Policy to Law**
- Renewable Electricity Plan – April 2010
- Renewable Electricity Legislation – May 2010
- Renewable Electricity Draft Regulations – May 2010

**Consultation to Final Draft**
- Stakeholder meetings and submissions – June/July 2010
- Regulations Proclamation October 2010
Renewable Electricity Regulations Overview:
Communities an important focus
Community Feed-in-tariffs (COMFIT)

- **Eligibility**
  - First Nations, Municipalities, Universities
  - Not-for-Profits, Co-Ops, Community Economic Development Investment Funds (CEDIFs)
  - Must have 25 members/shareholders from community where project located

- **UARB process to set rates**
  - Stakeholder process underway
  - Expected completion spring 2011

- **Program applications accepted from new sources**
  - Renewable electricity from sources not under contract/connection with NSPI
  - Applications expected to be accepted spring 2011
Wind energy is our least expensive renewable electricity resource: Combined heat and power (CHP) from biomass is more energy efficient.
Combined Heat and Power (CHP) from Biomass a part of COMFIT

- All COMFIT biomass projects must be CHP
- Biomass COMFIT projects have priority over co-firing for Provincial Cap of 500,000 new dry tonnes
- All qualifying entities may apply for CHP Biomass COMFIT
- An entity that uses the heat qualifies for COMFIT regardless of its ownership structure
Wind energy is our least expensive renewable electricity resource:

Nova Scotia has an world class wind energy resource with opportunities large and small.
Renewable Regulations
Electricity from Wind

Wind Technology – 2 COMFIT Classes

- UARB will set COMFIT rates for wind technology
  - A small-scale rate at the 50 kw level (for 50 kw and under)
  - A large-scale rate (for >50kw)
- Allows all communities opportunities for COMFIT
- Supports technology development in Nova Scotia
Tidal is a Global Opportunity

Building upon our needs, our resources and our opportunities, Nova Scotia is growing an internationally focused marine renewable energy sector.
Tidal and River Technology Supported

- COMFIT Rate for small-scale in-stream tidal devices < 0.5 MW
- Developmental Tidal Feed-in tariff Rate for larger-scale devices > 0.5 MW
  - No cap on developmental arrays – to be reviewed in 2012
Website
- New website: www.nsrenewables.ca
- Source for guides and information
- Newsletter subscriptions and updates
- Electronic registry once COMFIT rate set

Community Support
- Province to explore options and develop tools to assist COMFIT proponents
Renewable Regulation
Enhanced Net Metering

Nova Scotia Power submitted Enhanced Net Metering Program for UARB approval on November 1, 2010

- UARB process underway
- Final program will be approved this spring
Independent Authority for Large IPP Projects

- Renewable Electricity Administrator appointed by Government
  - Evaluates IPP project bids
- Rules on selection criteria under development
- Request for Proposal process for REA will carried out in the next few weeks
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New Opportunities Ahead
- Consultations revealed new ideas that need more work
  - Electricity from waste heat and energy
  - Electricity from waste materials
  - Requires more legislation

New Strategies Under Development
- Energy conservation and efficiency
- District Heat and other efficient uses of natural gas
- Renewable fuels for transportation and space heating
Energy Efficiency

A dollar saved is forever...
Using less is best response to higher prices
- Investment in energy upgrades / creates jobs
- Lower energy costs save jobs

Government leads the way
- More than $10 million a year spending by government on public sector buildings (offices, schools etc.)

Efficiency Nova Scotia
- $23 million from taxpayers for non-electric efficiencies
- Leverages household spending
- $40 million a year from ratepayers for electric efficiency
Bio-Fuels for transportation
- Truly cost-effective bio-fuels a decade away
- Opportunities for niche-markets and R&D
  - Waste oil from fish processing
  - Algae bio-fuel research at NRC

Natural Gas
- District heat and other efficient uses of natural gas
- Potential for natural gas as transportation fuel
  - Key commercial fleet applications
- Economic impacts
  - Natural gas is plentiful
  - Historically had a price advantage over oil – today and for foreseeable future – a very large advantage
Energy and Economic Opportunities:
Renewable electricity growth represents billions in investment and thousands of people working.
Cleaner Energy

Renewables mean investments and jobs

- New renewable generation in NS by 2015 ~ $1.5 billion
  - 1,500 person years of employment
  - Projects from communities, independent power and NSPI
  - Tidal energy leadership

- Regional electricity from Lower Churchill ~ $6.2 billion
  - Generation
  - Transmission (Labrador, NL and NS)

- Strengthening NS-NB Connection ~ $200-250 million

- Atlantic Energy Gateway
  - The way to pull it all together
  - Studies on key renewable regional opportunities
    - Regional system operation, generation, supplier development, financing, R&D
Future Energy

Diversity equals security

**2009**
- Coal & pet. Coke: 80%
- Renewables: 10%
- Natural Gas: 10%

**2015**
- Coal & pet. Coke: 65%
- Renewables: 25%
- Natural Gas: 10%

**2020**
- Coal & pet. Coke: 40%
- Renewables: 40%
- Natural Gas: 20%

**2035?**
- Coal & pet. Coke: 25%
- NS Renewables: 20%
- Natural Gas: 25%
- Regional Renewables: 35%
Why the future needs to be cleaner: