

Transcript of Presentation to the Public Utilities Board

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Good morning - I am Jack Swinimer from Holyrood. Thank you very much for allowing me to make a presentation to you today.

I have been a member of the Holyrood environmental care committee since 2005 and I have been a member of the community liaison committee of the Holyrood thermal generating station since 2009. I am not here to speak to you on behalf of either committee, but as an individual. My mentioning these committees is to establish my background.

On moving to Holyrood some 10 years ago I quickly became aware of the harmful pollutants emitting from the smokestacks at the thermal generating station. In 2003, I believe it was, the Holyrood town council held a meeting to allow residents to voice their concerns. Representatives of Hydro were there and we were informed there would be "risk assessment" carried out and invited residents to attend a meeting with Cantox officials who would be conducting the assessment.

I won't belabour the point, but this assessment carried out for Hydro and paid for by Hydro was completely discredited on presentation to Holyrood residents.

I have since learned when Hydro/Nalcor went to the Public Utilities Board for a rate increase to burn cleaner fuel some of the members of your board may have said words to the effect "...based on the Cantox report - why do you need cleaner fuel?"

What did we do next?

A town hall meeting in Holyrood was convened with the Provincial Minister of Environment and officials of Hydro in attendance. This meeting was so important to me that I interrupted a Florida holiday to fly home to be a part of the panel. There were many testimonials of suffering and deaths.

At this meeting everyone left the meeting with the clear understanding that:

1. The Cantox report was a discredited report and could not be relied on.
2. Residents wanted scrubbers and particulate removal equipment installed at the Holyrood facility.

A petition was circulated, by the present Mayor of Holyrood, in the communities of Holyrood, Seal Cove and vicinities. This petition, with over 5,000 signatures was then presented to the legislature.

The former Mayor of Holyrood forwarded a letter to the Provincial Minister of the Environment asking that scrubbers and particulate removal equipment be installed at the Holyrood facility. Additionally he asked that other mayors on the Avalon join him in sending letters to the Minister. Other mayors did send letters including the former Mayor of St. John's.

In 2007 an Earth Day demonstration was held in front of the Hydro sign on route 60. It is worth noting the leader of the NDP party stood shoulder to shoulder with us on that day.

With the forgoing as background, as you can imagine, residents of Holyrood were delighted that the provincial government/Nalcor in their 2007 energy report on page 38 said *"in the long term the current level of emissions from the Holyrood facility is unacceptable"* and further on page 39 said *"in the event that the Lower Churchill project does not proceed as anticipated scrubbers and precipitators will be installed at the Holyrood facility."* (reference pages attached)

Let me back up and tell you one of the major reasons the Holyrood thermal generating station is so unacceptable.

- The stacks at Holyrood are continually pumping harmful metals in the air. Some 50 metals, including antimony, arsenic, nickel and vanadium are disbursed at Holyrood.
- The particulate matter can be broken down into 2 groups coarse particles and smaller particles - those 2.5 microns and smaller.
- The coarse particles will damage your house, your car, etc., but are likely to be largely filtered out before invading your body, however, the fine particles travel deep into your lungs causing lung damage and premature death.

If you go on the internet you will find numerous references to particulate matter. I am providing just 2 references (pages attached) :

- Excerpt from the Ontario ministry of the environment.
- PIMA County, USA (4 pages)

Many more references could have been provided but these 2 should give you an understanding of what is involved.

There could be those listening to my remarks who will say 'yes – but these harmful toxins can be found in other sources.'

Agreed, but I go back to the Canadian Cancer Association's statement to the effect –and let me paraphrase - **if we can prove something is harmful and you are releasing this in the air, we don't have to prove you caused any particular health problem, we simply have to hold to the fact that these emissions do cause health problems and should be discontinued.**

My appearing before you is to ensure you are not taken in by the politicians, bloggers and talk show participants who would have you believe that the \$600 million expenditure on scrubbers and particulate removal equipment is in some way an attempt by Nalcor to come up with another way to justify the Muskrat Falls project.

Hopefully, I have convinced you that the residents of Holyrood and all of Conception Bay and indeed all of the Avalon, have fought long and hard to have the provincial government undertake to correct a long standing problem. It is extremely disappointing that certain people would make statements without researching the facts.

I support the Muskrat Falls development. I won't try to give you reasons - there are others better qualified to do that than me. But I have 33 years in banking, largely in the commercial lending field and so I know the difference between lending money to finance deficits and lending money to finance revenue producing assets.

Borrowing to finance Muskrat Falls will see revenue producing assets to service the loan. Borrowing to finance the cost of scrubbers and particulate removal equipment at Holyrood will only add to the provincial debt without any corresponding increase in revenue producing assets.

Let me conclude with this... In multi-player hockey and baseball trades it is held that the team that obtains the best player is the team that 'wins' the trade.

With respect to Muskrat Falls, if you substitute most believable for best player then I think Ed Martin and Wade Locke are ~~the winners~~ *on the team that are the winners*

Thank you very much.

POLICY ACTIONS

Holyrood

The Government of Newfoundland and Labrador will address environmental concerns related to Holyrood by either:

- A. Replacing Holyrood generation with electricity from the Lower Churchill through a transmission link to the Island; or
- B. Installing scrubbers and precipitators, and maximize the use of wind, small hydro and energy efficiency programs, to reduce reliance on Holyrood.

One of the goals of this Energy Plan is to maximize the value from resource developments, including the benefits from wind generation. To maximize these benefits, the Provincial Government believes the Energy Corporation should control the development of all wind projects and determine when to develop alone or with private sector partners. We will enable this by adopting a policy that no new leases for wind development on crown land will be issued except to the Energy Corporation or another company acting in partnership with the Energy Corporation.

The wind industry can also be a major employer in the province if we capitalize on the significant manufacturing and fabrication opportunities associated with large-scale wind projects. We can utilize the skills and infrastructure we have developed in our manufacturing and fabrication sector to expand into activity related to the wind power industry.

Holyrood

In an average year, the Holyrood Thermal Generating Station (Holyrood) provides about one-quarter of the electric power capacity on the Island of Newfoundland. It burns heavy fuel oil, also referred to as Number 6 fuel oil or Bunker-C and, on average, emits 1.3 million tonnes of GHGs and significant amounts of other pollutants. However, this facility is essential to the Island system. As the only major generating facility on the Avalon Peninsula, it provides generating capacity to meet peak winter demand and voltage support within the largest load centre. During dry periods, when less water is available for hydro generation, Holyrood use increases significantly.

Holyrood presents the biggest challenges for the Island system in the near-term. The cost of operating Holyrood has increased along with world oil prices, resulting in a large portion of the rate increases for Island customers in recent years. Because it produces significant amounts of polluting emissions and GHGs, it also creates a negative impact on the environment. In a preliminary effort to address this issue, the province, through NLH, has assessed several options, leading to the decision by the Provincial Government to mandate the use of lower-sulphur fuel at Holyrood in the short-term. This action is expected to reduce sulphur dioxide (SO₂) by 50 per cent and particulate emissions by 40 per cent. In addition, NLH's recent awards for 51MW of wind generation will reduce the requirement for thermal generation and related emissions by approximately 15 per cent. Our renewed efforts to improve energy efficiency will also lower the emissions from Holyrood. Depending on the outcome of an assessment of emissions from burning lower-sulphur fuel, the maximum sulphur content of the fuel may be lowered further in the future, though this measure will result in an increase in fuel costs.

In the long-term, the current level of emissions from the Holyrood facility is unacceptable. The Provincial Government, through NLH, has investigated the long-term options to address Holyrood emissions and decided to replace Holyrood generation with electricity from the Lower Churchill through a transmission link to the Island. This replacement provides an excellent opportunity to partner with the Federal Government to reduce GHG emissions.

In the event that the Lower Churchill Project does not proceed as anticipated, scrubbers and precipitators will be installed at the Holyrood facility. This will clean up many of the pollutants, however, it will not reduce the GHG emissions. As previously discussed in this Section, part of this alternate plan will be to increase the amount of wind and small hydro on the Island system. Natural gas conversion will also be assessed as a potential option if and when it is available.

The earliest date for the full commercial delivery of Lower Churchill power is 2015 and the earliest date for the scrubber and precipitator installation option would be 2013. Both options require the commitment of certain expenditures through the 2009 timeframe and Government will keep both options proceeding until the 2009 decision date for the Lower Churchill. In addition, NLH will continue to assess small hydro potential and wind opportunities on the Island system.

Isolated Diesel Systems

Communities that are not connected to the Labrador or Island power grids depend on small diesel-generating plants. Despite the substantial operating costs of these systems, the cost of interconnecting them and developing renewable generation is typically still greater. Therefore, many isolated communities will continue to be served by diesel generation, as it is the most feasible and cost-effective way to provide reliable electrical service. The costs of these isolated systems are currently being subsidized in the order of 75 per cent by other residential rate payers in the province. The Provincial Government has also recently provided an additional subsidy to residential customers in Coastal Labrador communities as part of the NSP for Labrador. This additional subsidy will make the effective rates that residential customers in these communities pay for basic customer service and the lifeline monthly block of electricity equal to Labrador Interconnected rates. Furthermore, the NSP committed to a review of commercial rates in these communities in conjunction with the sanctioning of the Lower Churchill project.

In time, when the cost of connecting a community to the electricity grid becomes less than maintaining its isolated diesel system, these communities will be connected. This was done in Rencontre East in 2006, and previously in such communities as Burgeo, St. Anthony, Fogo-Change Islands, Petite Forte, Grand Bruit and others.

Although diesel generation is the least expensive method of supplying electricity to isolated consumers, it is still costly. In terms of energy use, it is also inefficient. Space heating with an oil-fired furnace, for example, is more than twice as efficient as burning diesel fuel for power generation for electric heating. The Provincial Government's Home Heating Rebate program helps to offset the cost of heating, however, conservation measures could have an additional benefit to customers whose heating bills are high. The Provincial Government's renewed efforts in energy efficiency and conservation programs will help in this regard. An innovative technology that may allow NLH to reduce the use of diesel-generated electricity in remote communities is combining wind power and hydrogen. This is currently undergoing research and development in Ramea and is discussed in more detail in **Section 6 - Energy and the Economy**.

POLICY ACTIONS

Isolated Diesel Systems

The Government of Newfoundland and Labrador will:

- Review commercial rates in Labrador coastal communities in conjunction with the sanctioning of the Lower Churchill project.
- Work with the Aboriginal governments and groups to reduce the reliance on diesel energy in their communities where possible.
- Continue to compare interconnection and diesel generation costs as operating costs change.
- Support research and development into wind and/or wind/hydrogen integration for isolated communities.

Approximately 34 per cent and 24 per cent of PM_{2.5} emitted in Ontario in 2006 came from residential and transportation sectors, respectively, while other industrial processes accounted for 21 per cent. Lesser sources of PM_{2.5} include smelters/primary metals, miscellaneous, and pulp and paper.

What are the effects of fine particulate matter?

The greatest effect on health is from particles 2.5 microns or less in diameter. Exposure to fine particulate matter has been associated with hospital admissions and several serious health effects, including premature death. People with asthma, cardiovascular or lung disease, as well as children and elderly people, are considered to be the most sensitive to the effects of fine particulate matter. Adverse health effects have been associated with exposure to PM_{2.5} over both short periods (such as a day) and longer periods (a year or more).

Fine particulate matter is also responsible for environmental effects such as corrosion, soiling, damage to vegetation and reduced visibility.

The following table shows the health effects of different AQI levels caused by fine particulate matter.

Health effects of different Air Quality Index (AQI) levels caused by fine particulate matter

Category	AQI	Pollutant Concentration Breakpoints (µg/m ³)	Fine Particulate Matter (PM _{2.5})
Very Good	0 - 15	0 - 11	Sensitive populations may want to exercise caution.
Good	16 - 31	12 - 22	Sensitive populations may want to exercise caution.
Moderate	32 - 49	23 - 45	People with respiratory disease at some risk.
Poor	50 - 99	46 - 90	People with respiratory disease should limit prolonged exertion; general population at some risk.
Very Poor	100 or over	91 or over	Serious respiratory effects even during light physical activity; people with heart disease, the elderly and children at high risk; increased risk for general population.

Note: The AQI sub-index for PM_{2.5} is based on a 3 hour running average concentrations.
 µg/m³ = micrograms per cubic metre.



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Health

Ozone Mapping

Data

FAQ

What is Particulate Matter?

There are things floating around in the air. Most of them, you cannot even see. They are a kind of air pollution called particles or particulate matter. In fact, particulate matter may be the air pollutant that most commonly affects people's health.

Have a Look.

Particles can come in almost any shape or size, and can be solid particles or liquid droplets. We divide particles into two major groups. These groups differ in many ways. One of the differences is size, we call the bigger particles PM₁₀ and we call the smaller particles PM_{2.5}.

BIG. The big particles are between 2.5 and 10 micrometers (from about 25 to 100 times thinner than a human hair). These particles are called PM₁₀ (we say "P M ten", which stands for Particulate Matter up to 10 micrometers in size). These particles cause less severe health effects.

SMALL. The small particles are smaller than 2.5 micrometers (100 times thinner than a human hair). These particles are called PM_{2.5} (we say "P M two point five", as in Particulate Matter up to 2.5 micrometers in size).

Where particulate matter comes from ...

Size isn't the only difference. Each type of particle is made of different material and comes from different places.

	Coarse Particles (PM ₁₀)	Fine Particles (PM _{2.5})
What they are	<ul style="list-style-type: none"> • smoke, dirt and dust from factories, farming, and roads • mold, spores, and pollen 	<ul style="list-style-type: none"> • toxic organic compounds • heavy metals
How they're made	<p>crushing and grinding rocks and soil</p> <p>then blown by wind</p>	<ul style="list-style-type: none"> • driving automobiles • burning plants (brush fires and forest fires)

or yard waste)

- smelting (purifying) and processing metals

These particles get around.

Which particles do you think travel farther?

PM₁₀ (big) **OR** PM_{2.5} (small)

How far do you think PM₁₀ particles can travel?

100 feet 25 miles 500 miles

How far do you think PM_{2.5} particles can travel?

100 feet 25 miles 500 miles

The smaller particles are lighter and they stay in the air longer and travel farther. PM₁₀ (big) particles can stay in the air for minutes or hours while PM_{2.5} (small) particles can stay in the air for days or weeks. And travel? PM₁₀ particles can travel as little as a hundred yards or as much as 30 miles. PM_{2.5} particles go even farther; many hundreds of miles.

Particulate Matter and Your Health

Getting into your body.

When you inhale, you breathe in air along with any particles that are in the air. The air and the particles travel into your respiratory system (your lungs and airway). Along the way the particles can stick to the sides of the airway or travel deeper into the lungs.

The farther particles go, the worse the effect.

Which particles can go farther into the lungs?

PM₁₀ (big) **OR** PM_{2.5} (small)

Answer: the smaller PM_{2.5} particles. Smaller particles can pass through the smaller airways. Bigger particles are more likely to stick to the sides or get wedged into one of the narrow passages deep in the lung.

Other factors that affect how deep into the lungs particles can go:

- **Mouth or nose breathing.** Breathing through your mouth allows particles to travel deeper into your lungs.
- **Exercise.** While exercising, particles can travel deeper.
- **Age.** Older people breath less deeply so particles may not get as deep.
- **Lung disease.** If lung diseases block the airway, particles will not travel as far.
- **Weather** (temperature).
- **Other pollutants in the air.**

Your body responds to the particulate invasion!

Your lungs produce mucous to trap the particles, and tiny hairs wiggle to move the mucous and particles out of the lung. You may notice something in the back of your throat (this is the mucous); the mucous leaves the airway by coughing or swallowing. If the particle is small and it gets very far into the lungs, special cells in the lung trap the particles and then they can't get out and this can result in lung disease, emphysema, lung cancer.

Health Effects

Both PM10 (big) and PM2.5 (small) particles can cause health problems; specifically respiratory health (that's the lungs and airway). Because the PM2.5 **travels deeper** into the lungs AND because the PM2.5 is made up things that are **more toxic** (like heavy metals and cancer causing organic compounds), PM2.5 can have worse health effects than the bigger PM10.

Exposure to particulate matter leads to increased use of medication and more visits to the doctor or emergency room. Health effects include the following:

- Coughing, wheezing, shortness of breath
- Aggravated asthma
- Lung damage (including decreased lung function and lifelong respiratory disease)
- Premature death in individuals with existing heart or lung diseases

Particulate Matter -- Air Quality Index (AQI) and Health Concerns

AQI Values	Air Quality Descriptor	Health Concerns*	
		PM _{2.5}	PM ₁₀
0 - 50	Good	None	None
51 - 100**	Moderate	None	None
101 - 150	Unhealthy for Sensitive Groups	People with respiratory or heart disease, the elderly, and children should limit prolonged exertion.	People with respiratory disease, such as asthma, should limit outdoor exertion.

151 - 200	Unhealthy	People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion.	People with respiratory disease, such as asthma, should avoid outdoor exertion; everyone else, especially the elderly and children, should limit prolonged outdoor exertion.
201 - 300	Very Unhealthy	People with respiratory or heart disease, the elderly, and children should avoid any outdoor activity; everyone else should avoid prolonged exertion.	People with respiratory disease, such as asthma, should avoid any outdoor activity; everyone else, especially the elderly and children, should limit outdoor exertion.
301 - 500	Hazardous	Everyone should avoid any outdoor exertion; people with respiratory or heart disease, the elderly, and children should remain indoors.	Everyone should avoid any outdoor exertion; people with respiratory disease, such as asthma, should remain indoors.

* PM has two sets of cautionary statements, which correspond to the two sizes of PM that are measured:

- Particles up to 2.5 micrometers in diameter (PM_{2.5})
- Particles up to 10 micrometers in diameter (PM₁₀)

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- An AQI of 100 for PM_{2.5} corresponds to a PM_{2.5} level of 40 micrograms per cubic meter (averaged over 24 hours).
- An AQI of 100 for PM₁₀ corresponds to a PM₁₀ level of 150 micrograms per cubic meter (averaged over 24 hours).