

IBEW 37 Presentation on Climate Change



SLIDE 1 (Introduction)

Globe



Thank you for your time today. My name is Ross Galbraith, and I'm the Business Manager of Local 37 of the International Brotherhood of Electrical Workers, the IBEW.

I'm going to deliver my presentation in English, however I do have a summary sheet in both English and French that I'll be leaving with you today.

I'd like to start by telling you a little bit about the IBEW. We represent the majority of electrical utility workers in Canada and the United States, and we've been strong advocates for a reliable and secure electrical power system, both here in New Brunswick and throughout North America. It's an essential service that we all rely upon, and we've seen what works, and more importantly what hasn't worked.

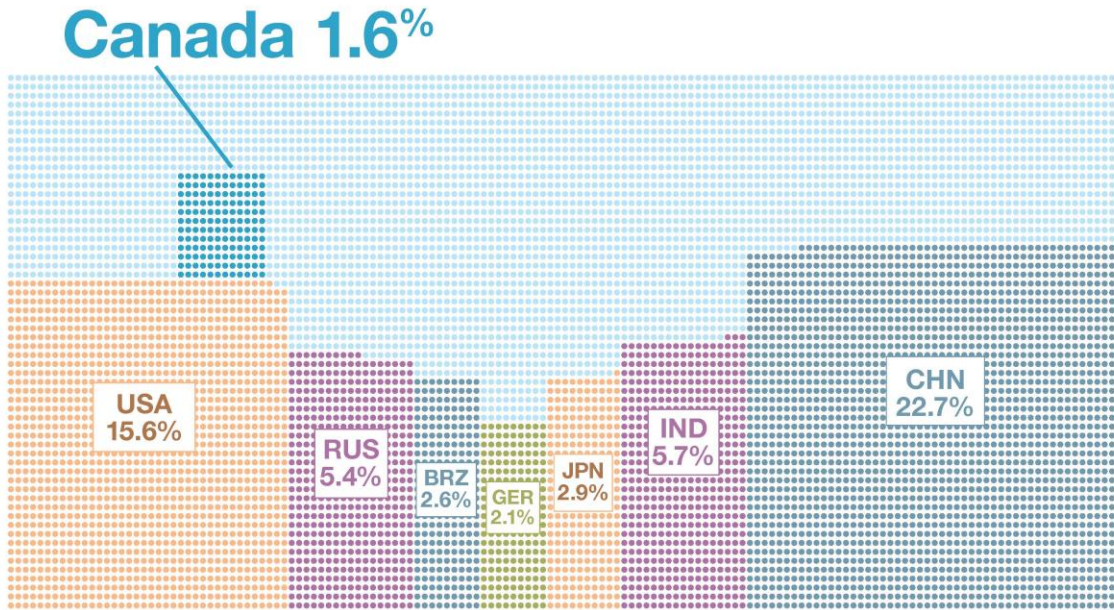
Because the conversation around climate change inevitably includes a look at the role of electrical power generation in greenhouse gas emissions, I'm going to talk about some of our concerns as it relates

to maintaining a stable and reliable electrical system, recognizing that it is an essential service in our modern society.

To begin with though, I want you to know that the IBEW acknowledges that climate change is a real and serious problem. The science is overwhelmingly definitive on this, and only those who choose not to believe the evidence can come to any other conclusion.

However, in saying that, this is a problem that has developed over time and some perspective is needed in understanding how we compare to others within the magnitude of this problem, and also in our ability to contribute to a solution, and the significant impacts if we don't use a sensible, balanced approach when planning the future of our electrical sector.

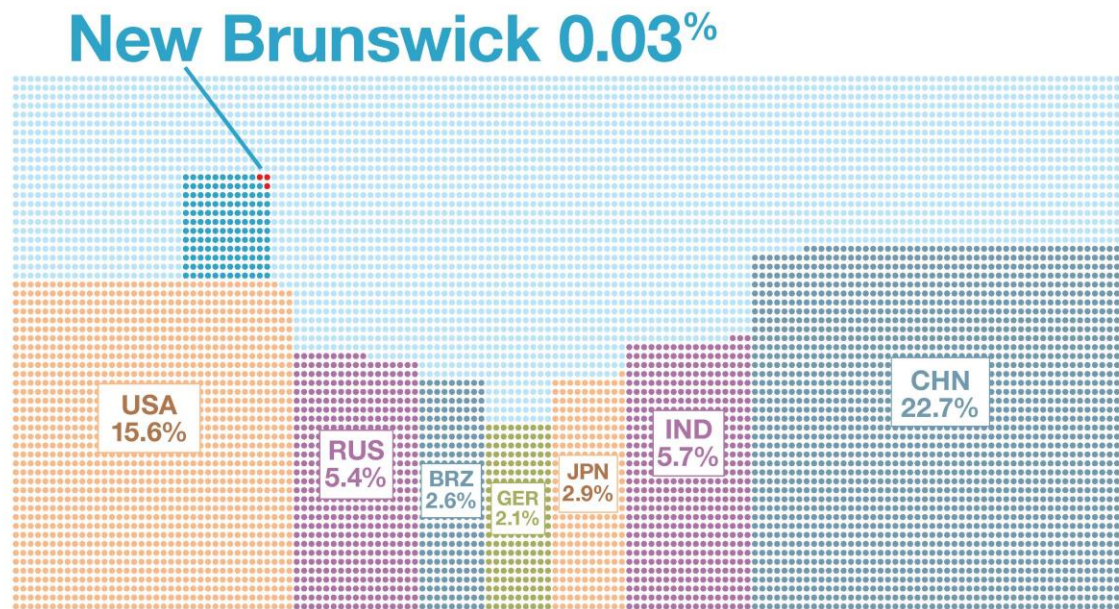
SLIDE 2 (Canada and world GHG)



This graphic shows how Canada compares to the rest of the world with respect to global green house gas (GHG) emissions. There are

9,000 dots on this graphic, which represents the world's annual emissions, and it's further broken down by colour to show the contributions by several of the world's highest emitters. The number of dots represents visually that nation's contribution to global emissions. The most recent data tells us that Canada is responsible for about 1.6% of total emissions.

SLIDE 3 (NB GHG and the world)



Of the total being emitted, New Brunswick is responsible for less than .03% of all global emissions

In other words, less than 3/100ths of one percent of global greenhouse gas emissions come from New Brunswick, a percentage that would be very hard to represent on a traditional graph.

In fact, over 75% of New Brunswick's electricity generation is already non-carbon emitting and if we stopped all emissions today, the global effect would be insignificant. But conversely, the effect in New

Brunswick on the reliability of our power system and on the cost of electricity to our customers would be anything but.

This is not to say we should do nothing, we do have a responsibility to be part of the effort to combat climate change.

SLIDE 4 (Responsibility – reasonable and appropriate measures)



In reality, New Brunswick has already been doing more than many jurisdictions in this area, and as mentioned earlier, our electricity production is already over 75% non-carbon emitting, and in addition we've reduced our greenhouse gas emissions from power generation by 64% since 2001.

I could go into further detail but for time's sake, and so as not to be redundant, I reference NB Power's submission for details regarding progress made to date, and future progress expected due to increased development of renewables and decreased demand through such initiatives as the smart-grid and measures to promote the use of energy efficient heat pumps and LED lighting.

Doing more is a must – but considering the very small part we have any control over, we must proceed in a reasonable and appropriate manner.

SLIDE 5 (Reliability Affordability & Jobs)

1 Reliability

2 Affordability

3 Jobs

While climate change mitigation is a global responsibility, here in New Brunswick it's also our responsibility to consider how our path forward could impact the electrical system and our way of life. I'm going to focus on three of the areas that we're most concerned about:

1. Reliability
2. Affordability
3. Jobs

1. RELIABILITY

Our base-load power plants are key
(e.g., Belledune and Point Lepreau)

It's no secret that fossil fuel generating stations are under scrutiny because they produce CO₂. For example, here in New Brunswick, Belledune Generating Station might be considered a target because it's a coal fired plant, and the objective is to move away from fossil fuels.

Accordingly, I'm going to use the example of how an early closure of Belledune, before it's normal life cycle ends, would impact the three areas I just mentioned – reliability, affordability and jobs.

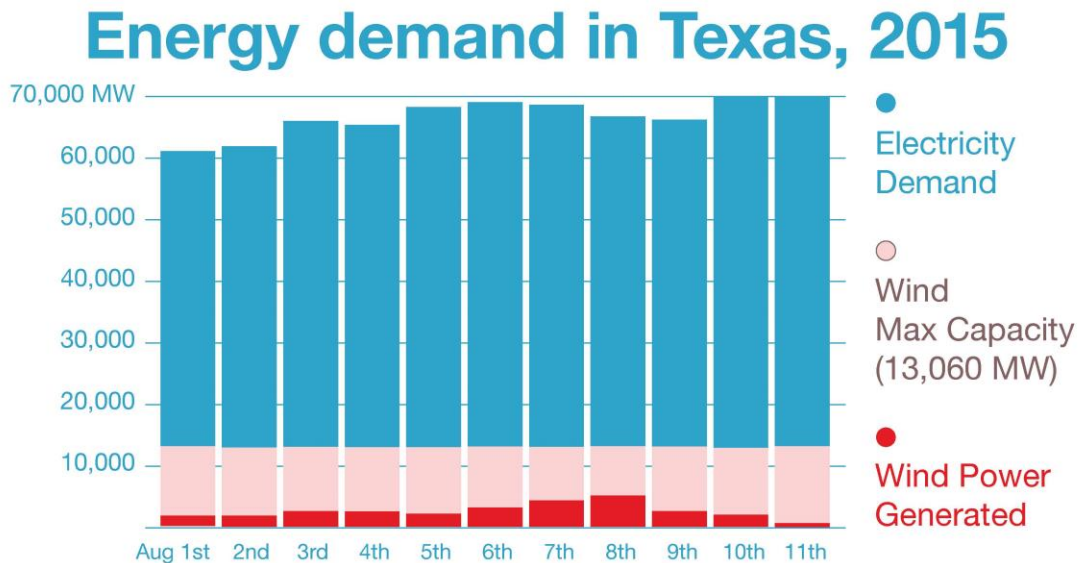
First, Belledune like Point Lepreau, represents base load power, which is fundamental to reliability.

Reliability is dependent on base-load generation - a steady electrical supply that isn't conditional on the wind blowing or the sun shining. Michigan is a case in point. A number of coal and nuclear plants in that state have closed, and with other aging plants scheduled to close soon, it's created such a reliability issue that the head of the state's

7

Public Service Commission has warned that Michigan could “go dark” if measures aren’t taken soon to address the problem.

SLIDE 7 – (Wind generation in Texas)



Now some would say an increased use of renewables is the answer, but let’s look at this slide showing energy demand vs. wind power generated last August in the state of Texas. It’s a clear example of just how unreliable renewables can be. The blue bars show how much electricity was needed to meet demand. The pink shows what wind was capable of producing if all the windmills were working at full capacity, and the red shows the amount of power that was actually generated on those days. As you can see, on the days that Texas needed the most electricity, wind power was at its lowest, and nowhere near its installed capacity. The point being – wind is not the answer. Yes, it has a place in our energy mix, but it simply cannot replace base load.

SLIDE 8 (Hydro Quebec)



Alternately, some others might say that we could purchase power from Hydro Quebec to replace the base-load electricity that Belledune produces. What they're missing is that this is a risky alternative.

We can't simply hope that Hydro Quebec will have spare electricity for us when we need it. Their system may be impaired, or they may need the electricity for themselves.

For example, many of you will recall the large ice storm in 1998 that destroyed large sections of Hydro Quebec's transmission system which resulted in power outages of up to a month in some cases. If we don't maintain our own source of base load power, and with the likelihood of more large scale storms, it could mean that at the very time we need Hydro Quebec's power, it may not be available.

You may also remember the "polar vortex" that brought extreme cold temperatures throughout the Eastern seaboard and parts of eastern Canada in January of 2014. Failures by the Hydro Quebec system left 200,000 people without power, and Quebec relied on electricity

9

from New York State to help meet their own demand. A review conducted afterwards determined that the reason the state of New York was able to help Quebec and avoid blackouts itself was “the vital role of base load nuclear power” from New York’s own Indian Point Energy Center.

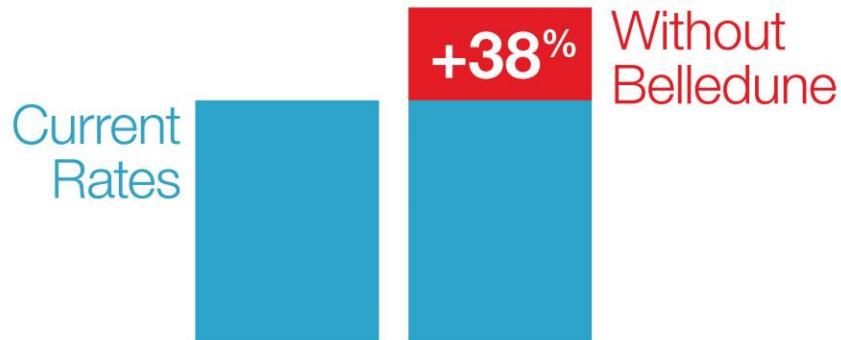
This highlights the fact that during the coldest winter months, Hydro Quebec’s dams are not always able to produce enough power for their needs let alone generate extra power for use elsewhere. In fact, they’ve often relied on New Brunswick for power in the coldest months of the year.

So while the eventual move off of fossil fuels is certainly necessary, it’s equally necessary that we strike the proper balance, and not find ourselves in the situation of many other jurisdictions where the move away from base-load power generation is causing reliability issues.

Closing Belledune and losing that base-load capacity would leave us extremely vulnerable.

SLIDE 9 (Affordability)

2. AFFORDABILITY



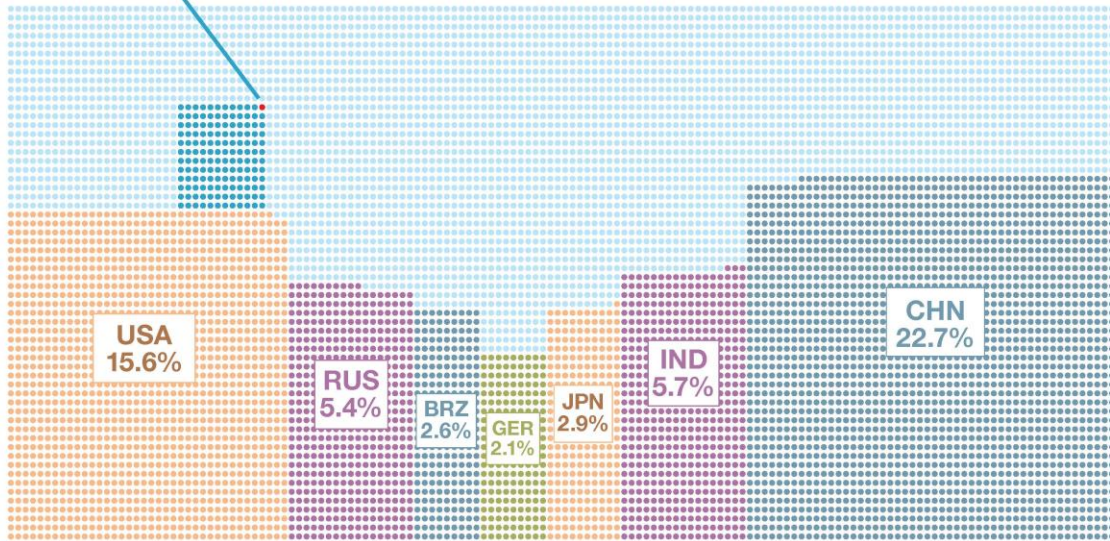
Moving on to affordability, we know that shutting down Belledune before it reaches the end of its normal lifespan would result in it becoming a “stranded asset” – a facility that suffers from write-down or devaluation due to a premature closure. According to previously reported NB Power analysis, an early closure of Belledune would result in electricity rate increases of about 38 percent. This would be a gigantic burden for a province where many rate payers and industries are already struggling.

I submit that this huge impact on our power rates is unacceptable, given the very minor difference it would make to green house gas volumes globally.

How minor a difference? Remember the graphic with the dots showing the volume of greenhouse gas emissions that come from New Brunswick? Here’s one that visualizes just how small a contributor Belledune is to those numbers.

SLIDE 10 (Belledune GHG 0.01 %)

Belledune 0.01%



That's point-zero-one of one percent of global emissions, or put another way, 0.0001.

And to eliminate that point zero zero zero one, our rates would increase by 38%. It simply doesn't make sense.

There's one further point I'd like to make about NB Power's existing fossil generating stations such as the one at Belledune.

Some have made the argument that since Ontario has retired fossil fueled power plants and Alberta is planning to, that New Brunswick should too. What is ignored is that Belledune is a state-of-the-art facility with highly effective emissions control equipment. It has actually won multiple awards for efficiency including environmental recognition. It was the first plant in North America with both a high efficiency "scrubber", which captures approximately 90% of the

sulphur dioxide, and with low NOx burners in order to reduce nitrogen oxides. The fossil fuel plant at Coleson Cove has also been retrofitted with a similar high efficiency scrubber. The bottom line is that NB Power's investment in this expensive state-of-art technology means that our fossil fueled generating plants are some of the cleanest in the world. Many of the plants that closed, or are slated for closure, have no such technology.

My point is that we have made huge investments in making sure our plants in New Brunswick have highly effective emission controls, and closing any of our power plants would have a far less environmental benefit than the closure of plants that don't have this expensive equipment installed.

SLIDE 11 (Jobs)



I'd now like to focus on the employment impact of a potential closure. There are 120 people who work at Belledune. These are well paid jobs that are crucial in a struggling area of the province. And in addition to the direct jobs at the generating station, there are also

about one hundred thirty more indirect and induced jobs in the region that support the operation of the station and the needs of the employees who work there.

To elaborate on this point, if a decision were ever made to retire the Belledune plant prematurely, not only would it cause a catastrophic impact on New Brunswick's power rates, but consideration would need to be given to the future of the people who currently work there, and the impact it would have on the greater region.

SLIDE 12 (New energy jobs)

New Energy Jobs



Some have argued that workers employed in legacy facilities could transition to jobs in the renewable energy sector. While there may be some examples of this that I'm not aware of, there are also many examples where these jobs are not steady, full time or well paid. Reports of the viability of replacement jobs in the new energy sector are all over the board.

SLIDE 13 (Govt requested to investigate viability of energy jobs)

We submit

Government launch an independent and objective study to determine the viability of new renewable energy employment

We submit that the government should initiate an independent and objective study to determine the true viability of jobs in the renewable energy sector, and what impact they could have in New Brunswick. For example, if we lose good jobs here in order to simply install technology that is manufactured in other jurisdictions, the result will be a net loss for New Brunswick.

If truly equivalent jobs in new energy technology are available, a comprehensive transition program needs to be rolled out.

SLIDE 14 (Transition program – ERIP/Severance)

- ✓ Transition program
- ✓ Early retirement/severance

As well, if there are impacts on employment within existing facilities, we would want to see details of a specific program for early retirement, severance, re-training and job placement initiatives for the “stranded human assets” that might be created.

SLIDE 15 (Nuclear plus SMRs)

Nuclear Point Lepreau + *SMRs*

- ✓ No GHGs
- ✓ Low cost
- ✓ Safe

I'm now going to speak about a few other options that we'd like you to think about.

As you know, nuclear power is a good part of the solution in providing base-load power generation that doesn't emit green house gas. We have Point Lepreau which is a work horse in supplying base load non-carbon electricity of course, but going forward we should also look at the feasibility of introducing Small Modular Reactors, known as "SMR"s. Developments in this field are advancing quickly, and a Canadian company, Terrestrial Energy, is at the forefront of developing this technology. It's worthwhile to explore the possibility of siting this new technology in New Brunswick at the appropriate time, for SMRs could very well become a part of lessening our carbon footprint even further, and New Brunswick could become a world leader in this new type of power plant.

In addition, as your committee searches for New Brunswick's appropriate response in dealing with climate change, Mactaquac should also be part of that energy future. It represents a steady source of power throughout the year and is an important non-carbon asset that should continue its operation.

While no decision has yet been made on its future, we would hope that its value in regards to climate change will be considered when that decision is made.

SLIDE 16 (EVs)



One further area on which I'd like to comment concerns electric vehicles or EVs. As we know, transportation is one of the largest sources of CO₂, and advances in electric vehicles mean they are becoming an important part of countering climate change.

I appreciate that the "greenness" of an electric car depends to a large extent on where the electricity to run it comes from, but the way

technology is advancing, there's little doubt electric vehicles are the future.

Given that we're already at more than 75% non-emitting power generation in New Brunswick, and that the percentage is projected to keep increasing, electric vehicles could be an especially viable "green" option in this province.

To this end we would encourage the province to support the development of an infrastructure with charging stations that will help make electric vehicles a viable alternative to gas and diesel powered vehicles.

In closing, I want to reiterate three points.

SLIDE 17 (Summary)

We're a very small contributor
to global emissions

First, we share responsibility to be part of the solution. And we also need to recognize that the impact we can make on reversing global

19

scale climate change is very small, while the potential costs to New Brunswick are very high if we don't take a measured, phased-in approach.

SLIDE 17 – 1ST BUILD

We're a very small contributor
to global emissions

We've already made reductions

Second, we've already made significant reductions in our greenhouse gas emissions and we're currently at over 75% non-emitting generation, and we've had a 64% drop in greenhouse gas emissions since 2001. There are a number of other initiatives in the works that will see our performance improve even further.

SLIDE 17 – 2ND BUILD

We're a very small contributor
to global emissions

We've already made reductions

Focus needs to be:
Reliability, Affordability, Jobs

And last but not least, we need to continue to do more, but in a way that respects the priorities of:

- Reliability
- Affordability
- Jobs

I thank you for the opportunity to make this presentation, and I'll do my best to respond to any questions any of you may have.

SLIDE 18 – (Questions?)

