Committee Report

To: Warden Mitch Twolan
Members of the Planning and Development Committee

From: Kara Van Myall
Director of Planning and Development

Date: May 16, 2019

Re: Bruce County Review of Industrial Electricity Prices and Programs

Recommendation:

That the “Bruce County Review of Industrial Electricity Prices and Programs” be endorsed as the submission to the Provincial Government’s call for consultation.

Background:

On April 1st, the Provincial government launched a 60-day consultation period to seek input on industrial electricity pricing and programs. Submissions can be sent electronically throughout this period.

Over the years, there have been many recommendations put forth for improvements to Ontario's energy industry. This report recognizes three notable ones and highlights those as the background research for the submission to the Province.

1. The 2002 Ontario Alternative Fuel Sources Select Committee’s submission on issues facing the Ontario electricity sector (attached).
2. The 2012 Ontario PC Party’s white paper “Paths to Prosperity - Affordable Energy” (attached).
3. The 2017 Ontario Society of Professional Engineers’ submission to the then Minister of Energy Glen Thibeault, call for commentary on Ontario’s Long-Term Energy Plan (LTEP) (attached).

These referenced reports form the basis for the recommended submission to the Province.

Many of the measures previously noted but never implemented have the research to suggest that they would in fact, improve and modernize Ontario’s Energy Sector. In addition, many of the noted recommendations highlighted in the submission will help to advance Saugeen First Nation and Bruce County’s partnership to build large-scale hydrogen deployment and infrastructure in Bruce County.
Submission on Industrial Electricity Prices and Programs:

This submission, on behalf of Bruce County, is not suggesting new recommendations but instead supports those previously reported. These reports are attached to this submission and should be considered part of Council’s remarks for this consultation exercise.

The following highlights taken from these reports are specifically noted as these will directly impact the County’s partnership with Saugeen First Nation to advance foundational hydrogen infrastructure in the Bruce County region. Bruce County Council believes that hydrogen plays a significant role in decarbonization, clean energy technology advancement and has the potential to ignite a new industrial revolution that will enhance the economy, move the Province of Ontario into a leadership role in clean tech and put Canada back on the forefront in fighting climate change.

1. The Ontario Alternative Fuel Sources Select Committee in 2002 made specific recommendations regarding clean hydrogen. It should be noted, that many of these were specifically to de-carbonize public transit.

One recommendation noted that “fuel cells that use hydrogen as a fuel and oxygen as an oxidant to produce electricity present the greatest possible air emissions benefits. At present, hydrogen fuel is normally “stripped” from other carbon-based fuels but may in the future be economically produced by hydrolysis - the passing of an electric current through water. Fuel cells may serve as an alternative to the internal combustion engine for motor vehicles, railway locomotives, and as a stationary power source”.

Recommendations were made for Ontario to be involved in research, development, testing, and promotion of fuel cells as this market continues to evolve. The committee also saw the potential merits of using Ontario’s established supply of off-peak power (from clean energy sources like nuclear and hydraulic sources and moving away from gas or coal) to produce hydrogen for fuel cells through electrolysis.

In addition, the report identified other recommendations important to modernize this sector. They are as follows taken directly from the document (as such dates are in the past):

- Public Transit - Effective immediately, all future provincial support to municipal transit systems must be applied to alternative fueled vehicles. No municipal transit system will be allowed to purchase non-alternative fueled vehicles after January 1, 2005, and 100% of municipal bus fleets must be converted to ‘clean’ technologies (preferably hydrogen) by January 1, 2015. All municipal electrically-powered transit services (subways, light rail transit services, streetcars and trolley buses) must be 100% ‘green’ electrically powered by July 1, 2004.

- The Ontario government shall commit to the full ‘hydrogeneration’ of the Go transit rail and bus fleets by December 31, 2006.

- Transportation fuels, vehicles and engines - The ministry of finance shall exempt biodiesel, hydrogen as a fuel, and hydrogen fuel cells for use in Ontario from provincial fuel, sales, and retail taxes. The ministry shall also assess the cost of
exempting other fuel additives that enhance fuel efficiency and emissions performance by December 31, 2002.

- The ministry of environment and energy shall not require hybrid vehicles to undergo drive clean inspections for six years, and electric and hydrogen/fuel cell vehicles shall be exempt from drive clean.

- The Ontario government shall expand retail sales tax incentives for selected alternative-fueled vehicles including all motorized two-wheeled and four-wheeled (or more) vehicles, for ‘on road’ or ‘off road’ use, as follows: natural gas vehicles will have the sales tax reduced to 6%; hybrid vehicles reduced to 4%; and all electric vehicles and fuel cell vehicles reduced to 2% for a period of no less than five years. There shall be an additional $2000 grant for pure hydrogen cars/trucks/off-road vehicles up to 25% of the value of the vehicle.

- The Ontario government shall require all railroads operating in Ontario to utilize ‘clean’ diesel according to the following schedule” ‘road grade’ diesel by January 1, 2004 and diesel-ethanol (or diesel with similar technical specifications) by January 1, 2005. The Ontario government shall offer significant assessment relief (set at a fixed rate per kilometer below the current average rate) for a rail system that completely converts to hydrogen fuel cell motive power. All locomotives must be converted to hydrogen by January 1, 2015.

- Fuel Cells and Hydrogen - The Ontario government shall undertake a public-private partnership in conjunction with bus and fuel cell manufacturers, and transit and motor coach operators, to operate fuel cell powered buses in Ontario. As part of the requirements to move to 100% clean technologies outlined in recommendation 73, a 25% capital grant for the term of five years shall be offered to municipalities for the purchase of hydrogen-powered buses.

- The Ontario government shall establish a program to rapidly acquire and test a number of hydrogen powered light and heavy-duty vehicles for the government fleet. Provisions should be made for government to share in any commercially viable modifications that result from such tests.

- The Ontario government shall undertake an assessment of the long-term potential of using off peak nuclear power for the production of hydrogen in Ontario and report its finding by December 31, 2002.

2. The Ontario PC’s “Paths to Prosperity: Affordable Energy” made a specific recommendation to explore options like green hydrogen in order to deal with Ontario’s oversupply of power and suggested using it in power plants, industrial operations, and vehicle fleets.

3. The Ontario Society of Professional Engineers made several significant recommendations on several key points including:
• Surplus Sale - Too much surplus zero emission electricity (= 10 TWh/yr in 2015) is being sold at very low prices to adjoining jurisdictions on an interruptible basis instead of being used in Ontario for fuel switching applications to help lower emissions in other sectors.

• Surplus Curtailment - Too much surplus zero emission electricity (= 5 TWh/yr in 2015) is being curtailed (wasted) instead of being used in Ontario for fuel switching applications to help lower emissions in other sectors.

• Ontario does not have an interruptible electricity market or price plan to effectively utilize its surplus zero emission electricity inside Ontario.
  
  o Electricity Pricing & Energy Management - Current electricity price plans are not effective at reducing peak load because they do not produce enough savings for consumers to invest in energy management equipment that will automatically level their load.

  o Residential & Small Business Plans - Current residential and small business electricity plans discourage these consumers from using surplus zero emission electricity when it is available during “on peak” and “mid peak” time-of-use hours because there are no provisions to reduce the rates when surplus electricity is available.

  o Large Business & Industrial Plans - Current large business and large industrial plans discourage these consumers from using surplus electricity when it is available due to the large global adjustment, transmission, and distribution energy charges. These charges should be capacity-based charges not energy-based charges.

• Lack of Long-Term Storage - Ontario has a low emission power system with relatively little long-term storage. This makes it difficult to effectively use intermittent wind and solar generation economically to supply uninterruptible electrical load.

• Capacity Characteristics & Peak Demand Are Misaligned - Ontario has too much capacity that cannot be relied upon when system peaks occur, and Ontario has too little storage to compensate for that deficiency. About 95% of solar is not available for the winter peak demand. About 90% of wind is not available for the summer peak demand. This means that intermittent generation like wind and solar have little capacity value in Ontario’s power system. The value of wind and solar generation is primarily their fossil fuel displacement value and carbon dioxide reduction value. At current natural gas prices and expected carbon allowance prices that is only a fraction of their contractual cost per kWh.

  o Wind Generation - Wind generation would have greater value if wind could be used to supply interruptible loads that can switch from fossil fuel to electricity and thereby reduce carbon dioxide emissions in other sectors.
Solar Generation - Additional solar generation capacity could be accommodated if solar could be used to supply interruptible loads that can switch from fossil fuel to electricity and thereby reduce carbon dioxide emissions in other sectors.

Specific to the Long-Term Energy Plan, the report highlighted the following:

- **Offer Consumers Surplus Zero Emission Electricity at its Wholesale Price.** Surplus zero emission electricity should be made available on an interruptible basis at its wholesale market price without additional markups to produce zero emission hydrogen using electrolyzers. If this is done, fuel cell electric vehicles (FCEVs) would also be cost effective on an energy basis. Incentives to reduce consumers’ anxiety over higher capital cost and degradation should be provided until those anxieties subside in order to facilitate rapid adoption to reduce CO2 emissions in the transportation sector.

- **Develop a Market for Interruptible Electricity** - Ontario needs to develop a market for interruptible electricity. The market or price plans need to differentiate between surplus zero emission supply and surplus carbon emitting supply. Ontario consumers should be allowed to purchase surplus zero emission supply on an interruptible basis at only its wholesale market price (effectively its marginal cost of production) with no other price markups such as global adjustment, transmission, distribution, debt retirement and regulatory charges. Those charges have effectively been fully recovered from the consumer’s uninterruptible electrical consumption. This pricing approach for surplus zero emission electricity will make fossil fuel displacement by surplus zero emission electricity economical for consumers. That will help achieve the 2030 emission reduction goal across the entire economy. Carbon emitting supply should not receive relief from various electricity price markups or that will encourage higher CO2 emissions.

- **Understand the Respective Strengths of Electrical & Natural Gas Systems** - To reduce CO2 emissions at an affordable cost the energy system planners should take advantage of the strengths of both the electrical and natural gas systems. The Ministry can facilitate optimal system planning and design by developing electricity price plans that reflect the true cost of providing base load and incremental peak load and allow the market to offer technology to meet both needs. System plans should be flexible enough to adjust base load and peak load supply as consumers adjust their demand profile with new technologies like local storage, microgrids, and energy management equipment. System planners should be aware of the characteristics of each technology including:

  - After conservation and energy efficiency, the lowest cost way to reduce carbon emissions in the industrial, building and transportation sector is to switch from fossil fuels to electricity or to hydrogen produced from zero emission electricity.
Low emission power systems produce large amounts of surplus zero emission energy. That surplus should be sold on an interruptible basis at the wholesale market price (without other markups) to Ontario consumers to facilitate fuel switching out of fossil fuels. Currently the surplus is being sold to adjoining jurisdictions on an interruptible basis at very low prices or being curtailed (wasted).

Conclusion:

The Bruce Innovates Foundational Hydrogen Infrastructure Steering Committee believes there has been some important recommendations made to improve the energy system in Ontario that need to continue to advance.

The Steering Committee also believes that as the County and its’ partner Saugeen First Nation move to advance hydrogen technologies in the region together, they can also play a role in ensuring important regulatory and program changes implementation as soon as possible to support this new industrial revolution that will enhance the economy, move the Province of Ontario into a leadership role and put Canada back on the forefront in fighting climate change.

As such, this Report and the attached supporting information should be forwarded as the County’s submission to the Ontario government’s call for consultation on industrial electricity pricing and programs.

Financial/Staffing/Legal/IT Considerations:

There are no financial, staffing, legal or IT considerations associated with this report.

Interdepartmental Consultation:

None

Link to Strategic Goals and Elements:

Goal #7 Stimulate and reward innovation and economic development
  F. Try small and then go BIG - act on ideas and take calculated risks
  G. Assignment to seek out like-minded partners for retail, agriculture and industrial development

Written by: Jill Roote, Manager of Economic Development, Planning and Development

Approved by:

Murray Clarke
Acting Chief Administrative Officer