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**Supplementary Information**
**Oral Intervention**

**Presentation from**
**The Inverhuron Committee Inc.**

In the Matter of

**Ontario Power Generation Inc.**

Proposed Environmental Impact Statement for OPG's Deep Geological Repository (DGR) Project for Low and Intermediate Level Waste

Joint Review Panel

**September 16 to October 12, 2013**

**Renseignements supplémentaires**
**Intervention orale**

**Présentation par**
**The Inverhuron Committee Inc.**

À l'égard de

**Ontario Power Generation Inc.**

Étude proposée pour l'énoncé des incidences environnementales pour l'Installation de stockage de déchets radioactifs à faible et moyenne activité dans des couches géologiques profondes

Commission d'examen conjoint

**16 septembre au 12 octobre 2013**

Canada

Oral Intervention from

**The Inverhuron Committee Inc.**

*In the Matter of*
Ontario Power Generation Inc.
Proposed Environmental Impact Statement for
OPG's Deep Geological Repository (DGR) Project
for Low and Intermediate Level Waste

October 8, 2013

# The Inverhuron Committee Inc.

Marti McFadzean, Chair

Volunteer organization formed in October 2012 to oppose Ontario Power Generation's proposed Deep Geologic Repository (DGR) for low and intermediate level waste at the Bruce Nuclear site.

Inverhuron – closest community, some residents trace their roots back to the 1850s.

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## Global Environment Concerns

- The lack of due diligence in the location for this project since Kincardine alone was studied;

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## Global Environment Concerns *cont.*

- The concern over this repository being the first one to be built in argillaceous limestone and therefore experimental in nature;

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## Global Environment Concerns *cont.*

- The history around the world of other repositories that have allowed water to enter the site and have contaminated the surrounding land and ground water;

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## Global Environment Concerns *cont.*

- The proximity to Lake Huron, which provides the drinking water to 40 million citizens and contains 21% of the world's fresh water, when water itself is becoming labelled the "gold" of this century;

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## Global Environment Concerns *cont.*

- The need to consult a wider audience because the issue of nuclear waste should require more than an environmental assessment of the area within a ten or twenty kilometre radius.
- This issue is an ethical, social and political question that must be decided democratically by all citizens connected to the Great Lakes;

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## Global Environment Concerns *cont.*

- The development of new technology which may change the way that we deal with nuclear waste (i.e., the fast-neutron reactors that have been developed within the last generation to burn 85% of the uranium fuel bundles and leave reusable waste); and

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## Global Environment Concerns *cont.*

- Acknowledgement of the Golder and Associates Report, which indicated that leaving the waste in situ, repackaging it above ground or building a repository were all acceptable options.

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## The Result

With the above in mind, we can only conclude that to construct a deep geologic repository at the proposed site is dangerous, which leads us to ask the Joint Review Panel to **deny** this project.

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## Project Creep

- The cost estimate in Table 8 of the Golder report is $927 million for a deep rock vault versus $648 million for the status quo method.
- Why would a company spend an additional $279 million to bury low level waste with a toxic lifespan of merely 60 years?

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## Project Creep *cont.*

- A wider profile of the waste to be housed in the low and intermediate level repository.

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## Project Creep *cont.*

- **2004 - 90% LLW, 10% ILW**
- **2012 - 61% LLW, 39% ILW**

- **2004 - Waste capacity of 130,000 $m^3$**
- **2012 - Waste capacity of 203,995 $m^3$**

- The cost has grown by $1.2 billion and additional waste capacity of 70,000 $m^3$

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## Project Creep *cont.*

- These changes in both overall capacity, percentages of low level to intermediate level waste and the project cost estimates result in us wondering what the final repository will look like.

- In fact, it appears that an initial majority low level waste project has changed to highly toxic, long term radioactive material.

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## Project Creep *cont.*

- Could the decommissioned waste also be placed in the Kincardine repository based on the elastic cost estimates as well as the varying size of the repository?

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## Project Creep *cont.*

- Would the 30 hectare operation to hold 200,000 cubic metres of waste need to be doubled at the Bruce site if additional waste is added to the project?

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## Project Creep *cont.*

- Would there be no requirement for a new environmental assessment if the percentage of low to intermediate level waste remains the same by expanding the footprint of the repository?

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## Project Creep *cont.*

- Considering the already staggering cost of this project, will the high level waste be added to this project by a decision of politicians who are feeling the pressure of the cancelled gas plant, the mega-quarry and other projects that have been costly and then cancelled?

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## Project Creep *cont.*

- If so, will this project be modified without a further cumulative environmental assessment?

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## Project Creep *cont.*

- This gives an unacceptable amount of scope for the proponent to be able to drastically change this project if a licence is granted by the CNSC.
- The project appears to be a foot-in-the-door proposal without a delineated design, mandate or containment profile.

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## Geology of the Lake Huron Shoreline

- "*Another interesting finding which was fairly recent is the deep sinkholes discovered at the bottom of Lake Huron. The large portion of the bedrock that's 40 million years old beneath Lake Huron is karst limestone. It's relatively soft.*"

– Ms. Janette Anderson 2009

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## Geology of the Lake Huron Shoreline *cont*.

- *"from 10,000 to 8,000 years ago, Lake Huron's limestone bedrock was exposed due to extremely low lake levels following the last glacier maximum. Karst sinkholes were created when a chemical reaction between limestone and acidic water dissolved away passages or holes in the rock, leaving behind weakly supported ceilings that could easily collapse or sink. The Lake Huron sinkholes were subsequently covered with ground water to the bottom of the lake, providing a unique habitat for aquatic life."*

- *These sinkholes are predominantly located at the shoreline and slightly interior to the coastline.*

Dr. Bopaiah Biddanda, Michigan's Grand Valley State University,
Russ Green of the Thunder Bay National Marine Sanctuary

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## Geology of the Lake Huron Shoreline *cont*.

Dr. Charles Rhodes insists that:

- the repository requires an elevation in order to ensure that no water will infiltrate the repository;
- the entire concept of digging a 600m deep hole below the level of Lake Huron with a large chamber (160,000 $m^3$) at the bottom in which to bury nuclear waste is fraught with ground water and subsurface rock related cost escalation and performance risks.

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## Geology of the Lake Huron Shoreline *cont*.

Dr. Charles Rhodes insists that:

- After seepage pumping stops due to closure of the repository, the storage chamber will fill with seepage water up to a pressure of about 60 atmospheres.
- As the hydraulic pressure inside the repository rises, the water molecules trapped in the rock pores will enable outward ion transport through the rock via a process known as ion diffusion.

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## Geology of the Lake Huron Shoreline *cont*.

Dr. Charles Rhodes insists that:

- there is no practical engineered waste container and sealing system, except complete immersion in tar or a similar liquid hydrocarbon, which will withstand the 60 atmosphere hydraulic pressure.

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## Geology of the Lake Huron Shoreline *cont*.

- "the Salina A1 Upper Carbonate unit and the Guelph Cambrian/Shadow Lake Formations are thin, permeable layers that represent potential pathways for relatively rapid horizontal advective radionuclide transport away from the repository site."
- that OPG "consider a more appropriate conceptual model of solute transport at the Bruce site that would feature a more representative geological environment."

– 2013 Ministry of Natural Resources

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## Geology of the Lake Huron Shoreline *cont*.

**The economic efficiencies of this location cannot and should not trump the geological appropriateness of the site.**

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## Local Issues

- Inverhuron – Closest community to Bruce site
- Very few contacted in 2005 Survey
- Not included in 2009 AECOM Public Attitude Study
- Not “willing host” community.

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## Hardy Stevenson Peer Review 2012

- Indicated that Inverhuron should have been consulted.
- Request for referendum unheeded.

**Both are germane to fully engaging the ratepayers within the boundaries of the municipality.**

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## Hardy Stevenson Peer Review *cont.*

Section 10: Accidents and Malfunctions

- *"at a minimum, the research will be undertaken once the site preparation and construction phase is complete and subsequent to any accidents or malfunctions of the DGR or associated operations, resulting in a release of radioactive contamination to the environment. This is wholly inadequate. There should be no radioactive releases to the public or the environment. If so, the DGR has bigger problems than public relations."*
- We cannot allow human assets to be collateral damage for the sake of an out-of-sight, out-of-mind solution to radioactive waste that still carries unmitigated danger!

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## Hardy Stevenson Peer Review *cont.*

Section 4: Selection of Valued Ecosystem Components

"*Approach to Evaluation*

- *Communities have also adopted sustainability 'analysis tools' that assist them to examine proposed new developments through a sustainability lens. These tools could be applied to assist with the assessment of the DGR. Using this tool as part of the Socio-Economic Environment Technical Support Document (TSD) would have helped to determine whether the DGR supports or detracts from valued community characteristics as specifically defined by the community. Instead, the Socio-Economic TSD (page 244, Section 8.5.3.3) relies on Public Attitude Research to identify valued community characteristics and indicators of community satisfaction. The analysis could have instead acknowledged the community vision, identified how each community articulates their own goals consistent with the vision."*

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## Hardy Stevenson Peer Review *cont.*

Section 6: Changes in Air Quality

- *"During the site preparation and construction, operations and decommissioning phases, various activities and operations may result in changes in air quality. There is a need to be more specific with interactions with VECs. For example, under 'physical assets' VECs in Table 6.2.2-1, we would have expected more analysis of how diminished air quality would affect the community character."*

- Concern about health issues such as asthma, chronic obstructive pulmonary disease and other respiratory illnesses.

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## Hardy Stevenson Peer Review *cont.*

Section 6: Potential interactions between Changes in Ground Water Quality and Socio-Economic Environment VECs

- *"Ground water quality appears to have the potential to affect off-site residential potable water. If this is true, the interaction needs further discussion since all ground water quality and flow issues should be able to be managed on site."*
- Our ground water flows into Lake Huron and the Great Lakes Basin which provides the drinking water to 40 million Canadian and American citizens. This issue of contaminated water has dire consequences.

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## Hardy Stevenson Peer Review *cont.*

Section 7: Indirect Changes

- Other measurable changes (indirect) in the socio-economic environment during the site preparation and construction phase of the DGR project may be associated with measureable changes in natural assets.
- Suggests that there will be indirect changes to property value as a result of the project.
- The Property Value Protection Plan is only to be discussed after licensing. This does not give the project a complete framework and leaves residents to negotiate after the fact.

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## Hardy Stevenson Peer Review *cont.*

Section 8: Likely Effects (population and demographics)

- *"There is an expectation of some outmigration of people due to the location of the DGR and replacement of people who would be more tolerant of the DGR. While this may or may not occur, it could hardly be considered to be a beneficial effect. If it does occur, it should be brought forward as a residual effect. Thus, instead of outmigration being an effect where no mitigation measures are warranted, a strong communications program could be a follow-up mitigation measure to encourage people to stay in the community."*

- Many of the residents of this community are founding families from the mid 1800s and early 1900s. The physical and psychological damage to our generation and those who follow is unthinkable.

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## Recent Polling

- October 2012 - Inverhuron Community Polled

- Question:
  *Do you support the proposed DGR being built at Bruce Nuclear Generating Station?*

- Results:

| | |
|---|---|
| **Yes - in favour** | **5%** |
| **No - opposed** | **86%** |
| **Undecided** | **9%** |

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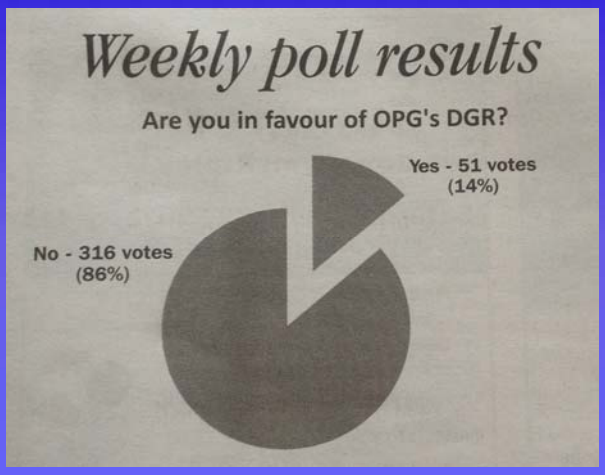
# Recent Polling




The Kincardine Independent Newspaper, June 19, 2013

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# Conclusion

The Inverhuron Committee has through research, discussion, and analysis concluded that this project is not good for Inverhuron, for Kincardine, for Ontario, for Canada nor for the United States.

We oppose this project, and strongly recommend that the Joint Review Panel **deny** the licensing of this project.

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Many of us are third, fourth & fifth generation residents of Inverhuron. We need to preserve it for future generations.

**The Inverhuron Committee**
www.inverhuroncommittee.ca
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