STAFF INTERROGATORY #12

INTERROGATORY

Issue 2 – Cost Consequences

Topic: Geothermal Energy Service (GES) Program

Ref: Exhibit B / Tab 1 / Schedule 1 / p. 24, #69 and p. 26, #76 and #77

Preamble:
Enbridge Gas indicates that it plans to offer this Program to the residential market. For customers that participate in this Program, Enbridge Gas will supply and install separate geothermal loops for each home or building owner.

Enbridge Gas also states that the home or building owner will arrange for the installation of the ground source heat pump and other equipment necessary to complete the geothermal energy system. Enbridge Gas will provide support to the customer to ensure that the appropriate equipment is procured and installed.

Questions:

a) Please explain what Enbridge Gas means by the residential market (e.g., single family homes, multi-family homes, etc.)?

b) Please explain how Enbridge Gas intends to promote its GES Program to improve residential customer awareness? What are the estimated resources and costs associated with this activity in 2018, 2019 and years 3 – 21? Would these costs be included in its Cap and Trade GGEIDA? Please explain.

c) Please explain what Enbridge Gas means by the home owner will arrange for the installation of the ground source heat pump system. For example, does this mean that a home owner is responsible for: 1) procuring a geothermal energy system from a supplier and 2) contracting for the installation of that system? \
   i) If so, does Enbridge Gas intend to work with OGA member suppliers and contractors to implement its GES program? Please explain.
      1. Does Enbridge Gas intend to use the same contractor to install its geothermal loops that the customer will use to install its geothermal system? Please explain.
      2. Does Enbridge Gas intend to use internal resources to install the geothermal loops? Please explain. (a) If yes, please outline the resources and costs in 2018, 2019 and years 3-21?

3. Please explain in detail how Enbridge Gas intends to provide support to the customer to ensure that the appropriate equipment is procured and installed?

d) Please explain whether a geothermal energy system (i.e., ground-source heat pump system) that a customer procures typically includes the geothermal loops?
   i) Are geothermal loops typically sold separately from the geothermal energy system? Please explain.
      1. If so, how much does a geothermal loop cost in the marketplace?
      2. What percentage of the costs does geothermal loops represent compared to the cost of a geothermal energy system (e.g., 25%, 50%, etc.)?

e) Does Enbridge Gas intend to enter into a service agreement with the geothermal energy supplier and/or installation contractor? If yes, please provide the service agreement.
   i) Will these be standardized agreements?
   ii) What is expected length of the contracts?

RESPONSE

a) By “residential market”, Enbridge is referring to the low density residential market including detached, semi-detached, and townhomes and low rise townhomes.

b) Enbridge will leverage its existing relationships with developers and builders to promote this technology in lieu of natural gas. Additionally, Enbridge intends to use digital marketing in the form of a website page to provide more information to its potential customers.

   $100,000 per year is estimated for marketing costs for the 10 year forecast period. Additionally, one full time marketing resource is estimated for 2018, 2019 and 2020 with an additional marketing resource estimated for years beyond that. The costs associated with these items are included in Enbridge’s DCF model to set fees for the Geothermal Energy Service. The Company has not hired any resources or incurred any marketing costs pending the outcome of this proceeding.

c) Similar to how the current natural gas and furnace installation and procurement works, the home owner or builder will arrange for the installation of the heat pump system. Enbridge will contract, procure and install the underground geothermal loop. Enbridge will also ensure that the geothermal loop sizing is appropriate for the specified heat pump and size of home and will inspect and quality assure the

commissioning of the system (Heat pump and Geothermal loop) to ensure the system works.

i) OGA members consist of drilling contractors as well as heat pump suppliers. Enbridge will not contract with any heat pump suppliers for the supply of the heat pump system which is the responsibility of the customers. Enbridge will contract for the installation of the underground geothermal loops.
   1. This would depend on the circumstances and the contractor's ability and willingness to provide both services.
   2. Enbridge does not intend to use internal resources to install geothermal loops at this time.
   a. Not applicable.
   3. Enbridge will design an installation and maintenance standard that will have to be adhered to and an inspection process in conjunction with the commissioning of the ground source heat pump system.

Geothermal systems typically include the underground geothermal loops and the internal heat pump system. The costs for each component may be separately identified or may be part of an overall price.

1. Costs of geothermal loops vary by geography, soil condition. A typical horizontal geothermal loop costs between $1,300 to $1,800 per tonne of heating capacity. A vertical drilled loop costs between $2,500 to $4,500 per tonne of heating capacity.
2. For a vertical loop geothermal system, the costs are up to 50% of the total system costs and for horizontal systems the costs are roughly 25% of the total system costs.

d) Enbridge will contract with qualified geothermal drillers (some of whom may be OGA members).

i) The nature of these agreements/contracts have not been determined.
ii) The length of these agreements/contracts have not been determined.