

# Safe, Reliable and Affordable Energy in a Low Carbon Environment

*Presentation to the Ontario Geothermal Association  
February 22, 2017*

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# Enbridge

## An Evolving Energy Company

- Largest Natural Gas Utility in Canada
  - 2.1 Million customers
- Leader in renewable generation
  - Canada's 2nd largest wind generator
  - Top 5 solar generator
- Ontario's newest developer of electricity transmission
- Canada's longest liquid pipeline system
- **Enbridge has partnered in a 22 MW geothermal facility at Neal Hot Springs, Oregon**

## Enbridge's Renewable Energy Projects



Enbridge is uniquely positioned to become a leader in a low carbon economy

# Purpose

Help Ontario meet its GHG reduction goals



## Climate Change Action Plan (CCAP)

- 15% reduction target by 2020
- 37% by 2030

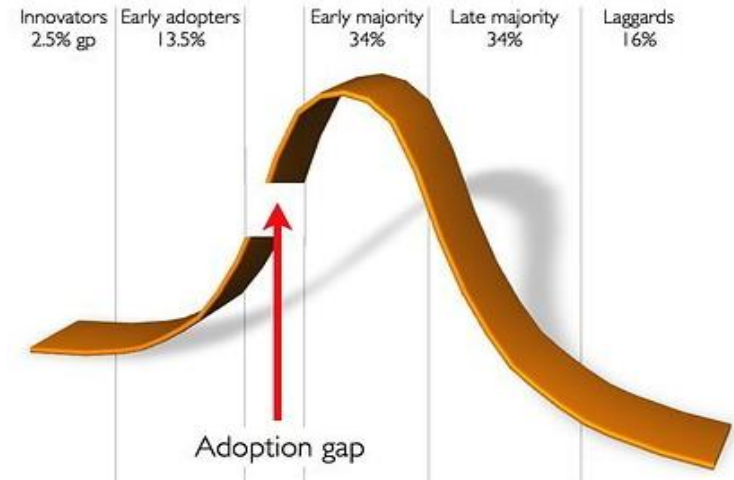
## Enbridge exists to help fuel people's quality of life

- Enbridge delivers the energy our customers want and need, such as affordable and reliable natural gas
- The CCAP gives us the business opportunity to evolve and supplement our core business, natural gas distribution, with lower carbon technologies like Geothermal
- Our evolution will be most successful with Geothermal industry support and government support (regulatory, funding)

# Background

## Barriers to Lower Carbon Technologies

- The adoption and innovation cycle of lower carbon technologies are impeded by high upfront costs and low customer demand
- Subsidies drive early adoption which typically fails to be self sustaining once subsidies are removed
- Support is required to accelerate development and bridge the adoption gap
- Over time, increased scale, lowering costs and technology improvement results in removal of subsidies and other mechanisms



# New Opportunities

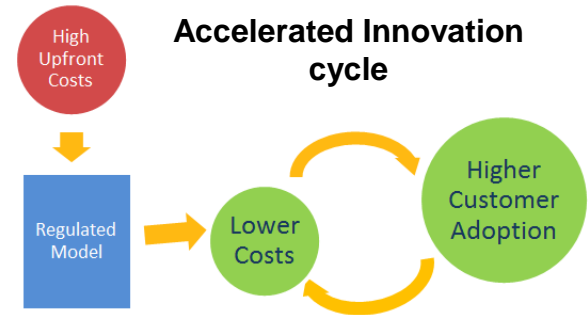
## Where do we go from here?

- Support different energy solutions for various applications
- Leverage utility financial model and Enbridge brand, along with geothermal industry expertise and government support to drive adoption of technology to overcome barriers to entry:
  - high initial cost
  - limited customer knowledge
  - attain economies of scale more quickly
  - establish consistent standards, processes and procedures
  - an established and reliable service network
- Use existing technical strengths in combination with industry partners

# Enbridge can Help Bridge the Gap

## – Enbridge is uniquely positioned to drive the lower carbon economy:

- Ability to lower adoption costs through scale, efficiency and existing infrastructure
- Rate-base mechanism distributes high upfront costs over a long period of time
- Existing regulatory framework allows unmatched acceleration of carbon reduction while ensuring oversight by OEB and end users
- Experience with establishment of partner programs
  - Full asset financing and maintenance further drives customer adoption



## – Cap and Trade proceeds could significantly accelerate customer adoption and reduce risk

## – Early investment is crucial to position Ontario as a center of excellence to propel new technologies over the maturity curve

# The Enbridge Geothermal Model

- Enbridge would invest in long-term capital intensive assets – the geothermal loops – reducing the high initial cost of a geothermal system, making geothermal affordable for consumers
- Increased volume of work helps to develop the contractor infrastructure to install and service geothermal systems
- A utility revenue requirement calculation that is similar to Enbridge's is used to set the monthly 'Connection Fee' for the loop (e.g. Standard fee or per tonne fee)
- The customer is responsible for the provision and maintenance of heat pump and related HVAC and water heating equipment
- Connection Fee onus is transferred from owner to owner when property is sold

# Stakeholder Views

**Government & Geothermal Association Support is key to success**

## **Customer:**

- Subsidy keeps the customer financially whole through the system lifecycle, and Enbridge brand provides assurance that the system will be reliable and serviced if required
- Mitigates carbon emissions while keeping energy costs affordable

## **Builder / Developer:**

- More economical path to low carbon development
- Presents opportunity to position their developments as the green alternative

## **Geothermal and HVAC Contractors:**

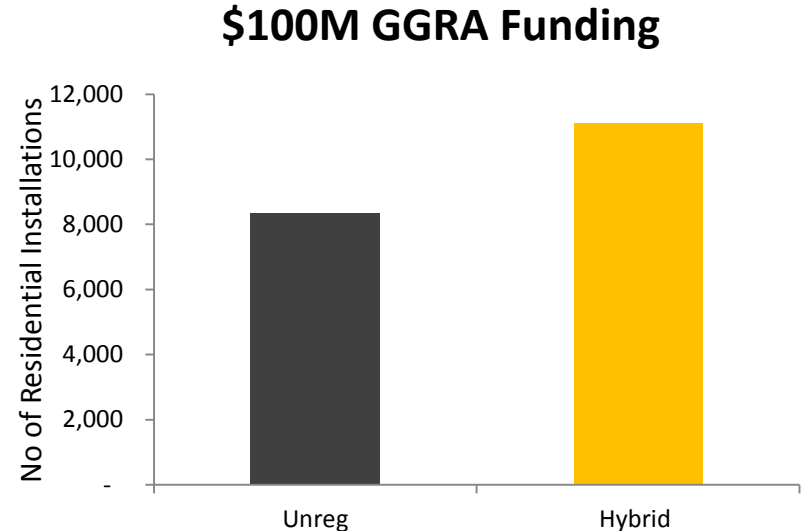
- Faster market acceptance and adoption
- Opportunity to expand business beyond what the Unregulated Model can provide (more geothermal installations for any given amount of government funding)
- Greater Ontario economic value compared to alternatives (more geothermal installations means more local content)



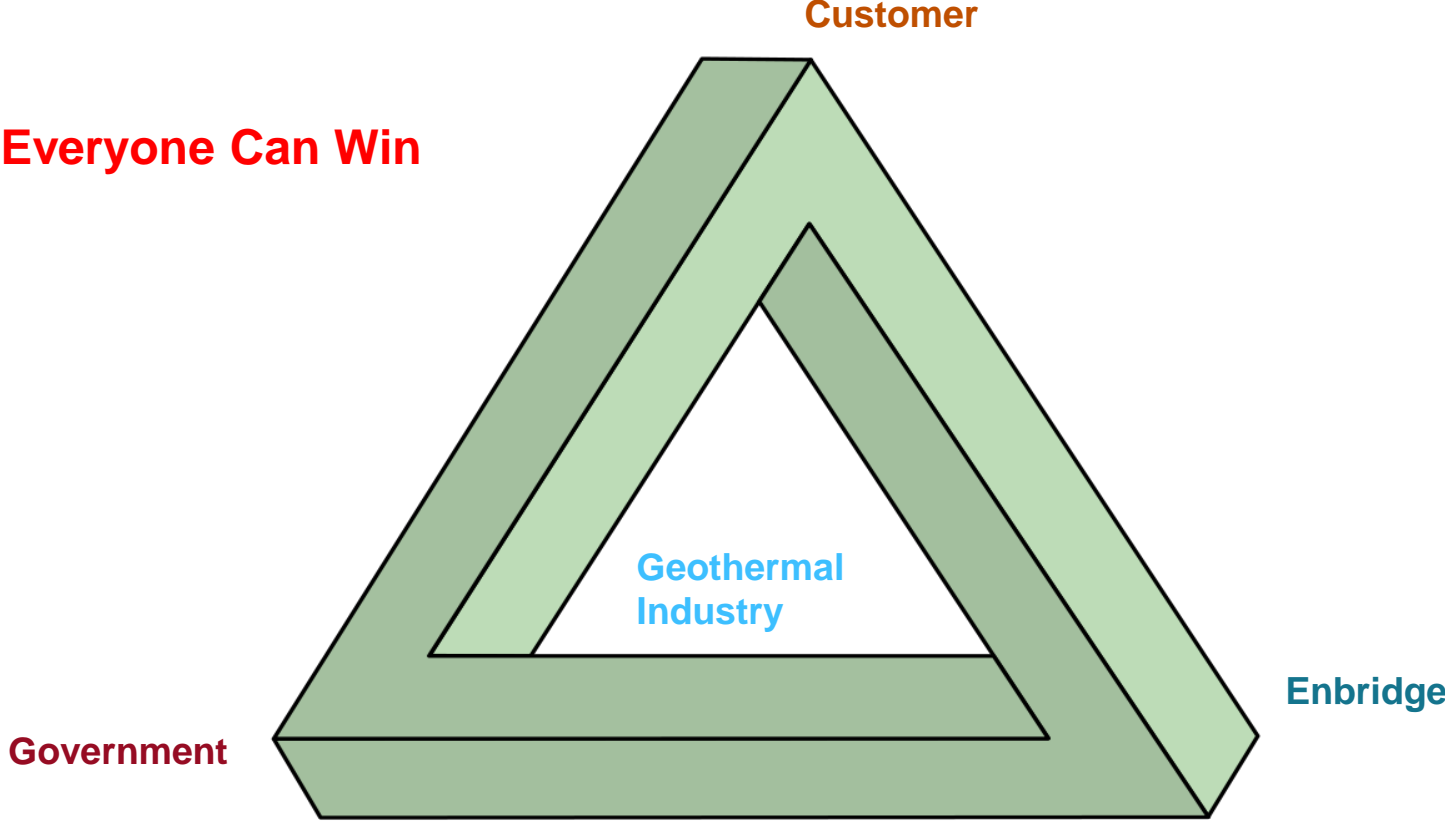
# Government View

**Significant multi-year GHG reductions through one time funding to new home owners**

- Reduces incentive amount per customer
- Increases number of geothermal homes
- Built in electricity price hedge
- High GHG abatement at lower \$/Tonne
- Increased quality/standardization of a currently fragmented market
- Enbridge's brand and credibility will significantly reduce risk to builders and customers
- Enbridge outsourcing model for installation and maintenance of geothermal systems enables
- 9 competition in the market for these services



# Value Proposition



# How Can We Make This Happen?

**By working together!**

EGD Strengths	EGD Needs
Effective and efficient new construction delivery model	Government support to include geothermal activities in our OEB-regulated undertakings
Patient low cost capital structure	Commitment that government funding will be made available for geothermal delivered through our proposed model
Strong Brand and market reputation	Experience & partners in Geothermal industry (OGA support)
Existing relationships with developers and builders	Support in convincing developers that Geothermal is an attractive option