Furthering Canadian Leadership in Sustainable Oil Production

Presentation to the Senate Standing Committee on Energy, the Environment and Natural Resources

December 6, 2016
Who We Are

An alliance of oil sands developers dedicated to the responsible development of Canada’s oil sands using in situ technologies

IOSA Members

Alliance Partners

Together these members manage a combined 30 billion barrel resource base
Our Sustainable Approach

**Responsible**
Excellent performance on key environmental indicators - land, water and greenhouse gas emissions

**Committed to Canadian Communities**
Canadian companies committed to local job creation, indigenous engagement, and community investment

**Leaders in Innovation**
Integrating new technologies to enhance oil recovery and reduce GHG emissions

Attracting investment is key to furthering our low carbon production technology leadership
Canada has the third largest oil reserves in the world – 97% of which are in the oil sands

Includes 166 billion barrels of oil sands reserves

Growing World Energy Demand

Renewables will serve a greater proportion of the global energy market, while fossil fuels will remain as the largest share of global energy demand.

Fossil Fuel Energy as a Share of Consumption
2013: 81%  
2040: 75%

Steam-Assisted Gravity Drainage (SAGD) is the primary recovery technology used for in situ production and is changing the face of oil sands development

- Significantly reduced land impact with 85 - 90% of the land surface undisturbed
- Water sourced from non-drinkable sources - over 90% recycle rate
- Minimized GHG footprint by reducing steam-to-oil ratio and using cogeneration

80% of oil sands reserves will be developed in situ
Low Carbon Production Through Technology

IOSA producers are self-motivated to lower costs and reduce emissions

- **Infill Wells and Non-Condensable Gas**
  Infill wells and non-condensable gases increase efficiency by reducing steam use while increasing recovery.

- **Solvent-Assisted SAGD**
  Solvents (e.g. propane and butane) help improve oil flow in the reservoir and further reduce steam use.

- **Electromagnetic Heating and Solvents**
  Process uses no steam, and heats the reservoir by using radio frequency electromagnetics.

- **Solvent Only**
  Heated solvent vapor allows the heavy oil to flow to the production well, without the use of steam.
As Canada transitions to lower emission electricity sources, cogeneration provides reliable, efficient, green power

- **Reliable**
  - Using dependable natural gas turbines, electricity is delivered to Albertans 24/7.

- **Low Price**
  - Excess electricity is offered to the power pool at $0 because the unit runs to produce oil. This helps average down Alberta’s electricity prices.

- **Supports Coal Retirement**
  - Because cogen units always run, they are ideal to replace coal facilities while supporting new renewable power sources.

Alberta has the largest installed cogeneration capacity in North America (4,500 MW)
Value-Added Processing With Fewer Emissions

MEG’s HI-Q® – Industry-leading partial upgrading technology

- Allows heavy oil to be sent to market from Alberta without the need for imported diluent
- Allows more product through the same pipeline

Shovel ready demonstration plant in Alberta’s Industrial Heartland

- Immediate new jobs in construction, operations and processing, though significant funding required
- Value-added diversification
- 20% lower carbon footprint than conventional upgrading

In situ technology combined with cogeneration of steam and power produces one of the greenest oil barrels globally.

**Range of common U.S. and Canadian imports**

**Production, Refining and Distribution**

20%-30% of emissions

**Gasoline Consumption**

70%-80% of emissions

• Furthering our carbon reduction leadership requires substantial investment in technology and innovation.

• Canada must remain competitive to attract investment. The cumulative cost of policies and regulations should be monitored and compared against competing jurisdictions.

• Regulatory predictability and efficiency is critical to securing investment. Regulatory processes should be efficient and effective and avoid duplication with provincial processes.

• New infrastructure to tidewater accesses higher world oil pricing which increases revenues to support technology investment.

• Government support for innovation in the oil sands sector improves commercialization timelines and industry adoption.