Introduction to

SMU Geothermal Energy & Waste Heat to Power Conference

Successful Heat to Power Development

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March 14, 2013

NRGreen POWER

Agenda

- Introduction to :
  - NRGreen Power, and
  - Alliance Pipeline Canada
- Technology
  - Waste Heat to Power– advantages & process
  - Organic Rankine Cycle
- Development Opportunities and Challenges
  - Waste Heat to Power Opportunities

HEAT IS POWER
LET'S CAPTURE IT

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Overview – NRGreen Power

- NRGreen Power is an Alliance Canada related party first established in 2002
- Commercial development of waste heat electrical generation opportunities at Alliance Pipeline compressor stations

Strong and Stable Ownership
50% Enbridge
50% Veresen


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Waste Heat to Power Generation Process:

Innovative technology consists of two processes

- The 1st process loop captures waste heat from hot turbine exhaust using a heat exchanger that contains circulating thermal oil and a waste heat recovery unit
- The 2nd process loop is the energy converter system that transfers the heat from the thermal oil to a circulating organic working fluid through a series of heat exchangers using the Organic Rankine Cycle process

New Facilities: Alberta Initiatives

Waste Heat to Power U.S. Opportunities:

Proposed Projects at Alliance Compressor Stations:

Seven sites capable of 6 MW

These projects will provide the following benefits:

- Can generate **700,000 MWh per year**
  - Enough to power ~182,000 homes
- No new GHG emissions and does not use water
  - **Offset @*385,000 tonnes* of GHG Emissions per year**
- Estimated ~ $300 million of capital investment

Advancing Waste Heat to Power:

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Closing remarks:

- NRGreen Power has a solid, safe and efficient history operating WHP facilities
- Advantages of NRGreen Power's Projects include:

  Electricity generation that produces no new greenhouse gas emissions

  - Reliable source of base-load power from existing pipeline compressors

  Technology can be applied to other industrial heat sources
- Project Economics require Public Policy Support on a State / Federal level to facilitate future development of Waste Heat to Power Projects in the U.S.