

GVEA's Three Step Plan

Step 2 - LNG

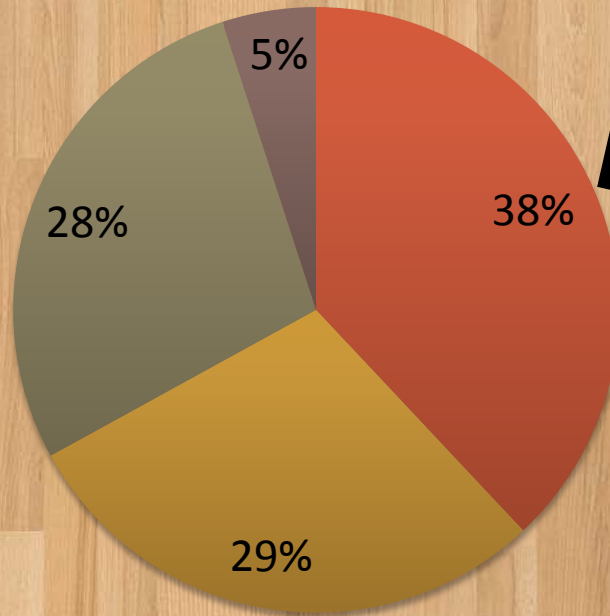
Fairbanks Industry Update

Dr. Brian Newton, President & CEO



Kick the Oil Habit

2010 Fuel Make Up



 Oil

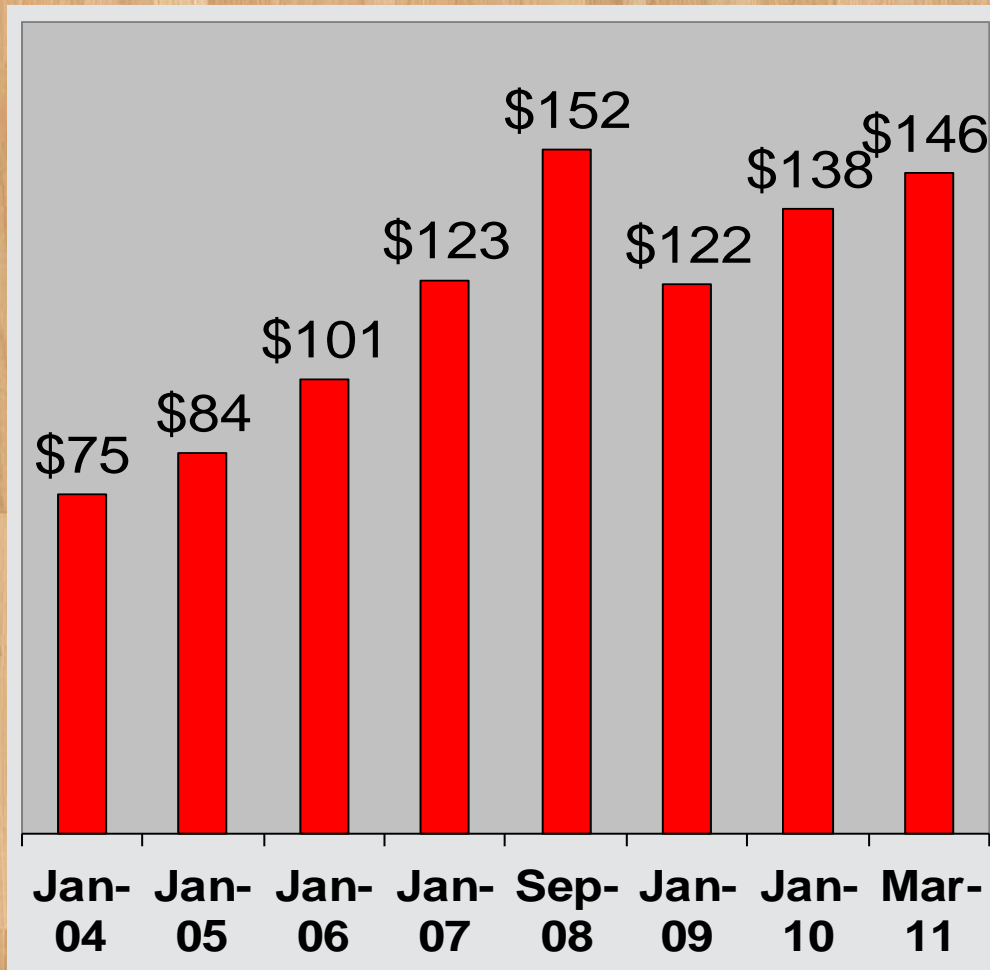
 Coal

 Natural Gas

 Hydro



Residential Bills



2004 - 2011

- 2004 - \$75
- 2005 - \$84
- 2006 - \$101
- 2007 - \$123
- 2008 - \$152
- 2009 - \$122
- 2010 - \$138
- 2011 - \$146
- Oil volatility!

Average residential bill of 700 kWh per month

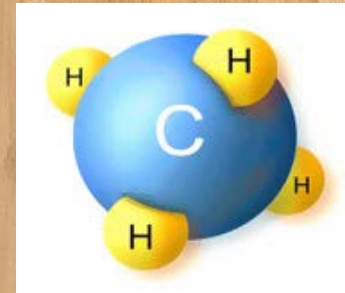
GVEA's Strategies

- Conservation/ Efficiency
- Wind
- HCCP
- Liquefied Natural Gas
- Pipeline
- Susitna



Liquefied Natural Gas Facts

- Natural Gas
 - Remove condensates (H_2O , CO_2 , H_2S)
 - Remove ethane, propane, alkanes, nitrogen
 - Yield almost pure methane CH_4
- Cryogenic
 - $-160^\circ\text{C}/-260^\circ\text{F}$
 - Transported at atmospheric pressure (3.6 psi)
 - Boil-off gas (must be burnt, compressed, re-liquefied)
- Energy density
 - 60% of diesel fuel
 - 70% of gasoline





Plant Size/Logistics

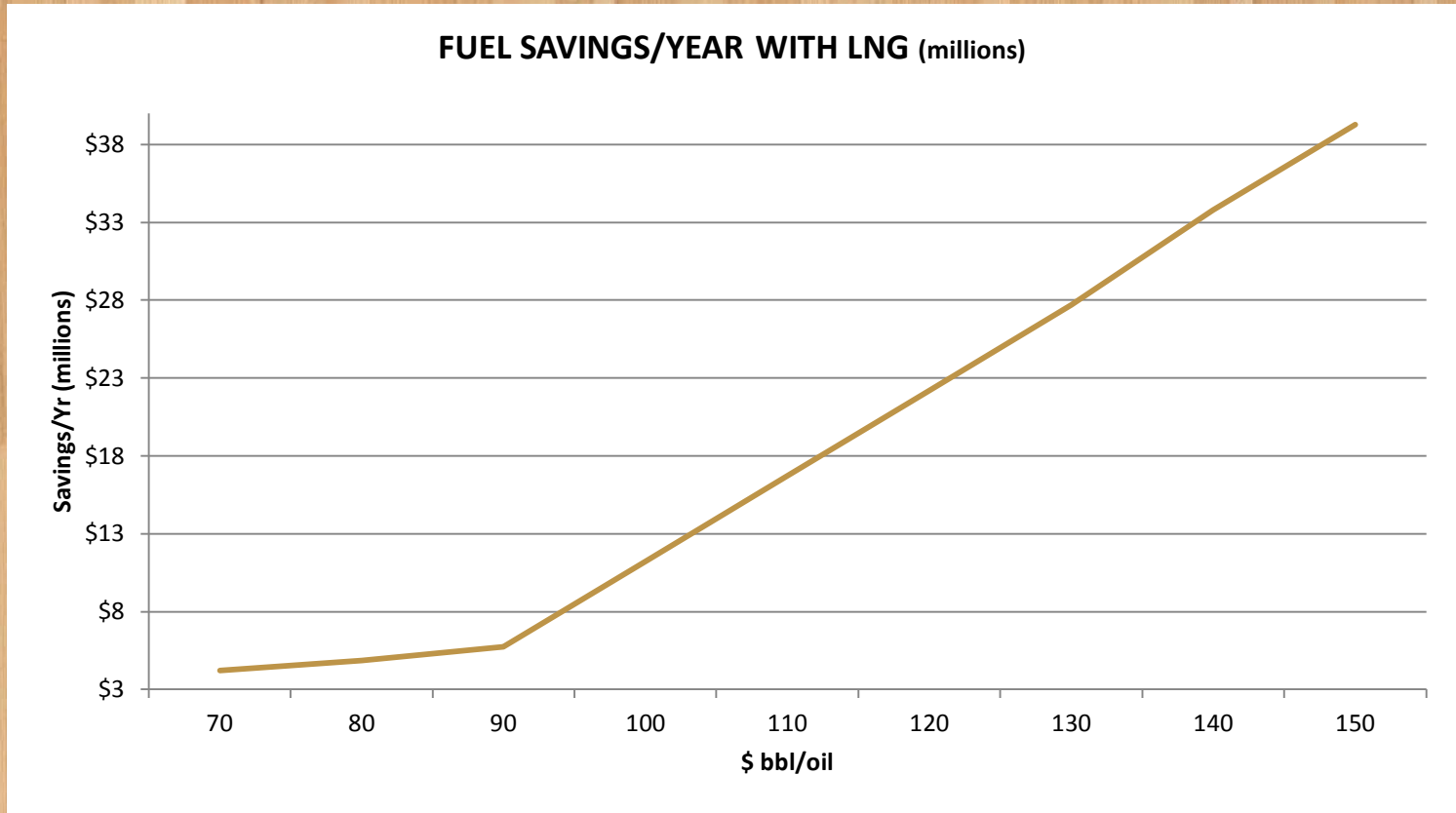
- Plant size
 - GVEA: 3.5 Bcf/yr
 - FHR: 3.5 Bcf/yr
- Trucking logistics
 - Tankers 10,000-13,500 gallons
 - LNG 3.5 lbs gallon (gas-6.2, water-8.3)
 - Approximately 40 trucks/day (20 each way)
 - 6300 loads per year
 - Tractors (LNG/diesel)



GVEA/Flint Hills MOU

- **LNG produced/delivered AT COST!**
- Fuel take determines:
 - Plant size
 - Capital contribution
 - Engineering proration
- GVEA/FHR contract terms:
 - Determine who is seller and who is buyer
 - Seller owns and operates plant
 - Buyer's LNG needs met first
 - Operating costs split on volumetric basis
 - Expansion can be by either party

Fuel Savings/YEAR with LNG



Timeline

- Phase 0 – concept/demand (Sept. 2011)
- Phase 1 – Size ~ 80% cost (Dec 2011)
- Phase 2 – Process design ~ 50% cost (Mar 2012)
- Phase 3 – Engineering ~30% cost (Sept 2012)
- Phase 4 – Detailed engineering ~10% (May 2013)
- Phase 5 – Construction (2013-2014)
- Phase 6 – Startup (2014)

GVEA's Three-step Plan

- #1 - Eva Creek Wind
- #2 - HCCP
- #3 - LNG

Questions?

