LNG Realities

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LNG Myths vs. Reality

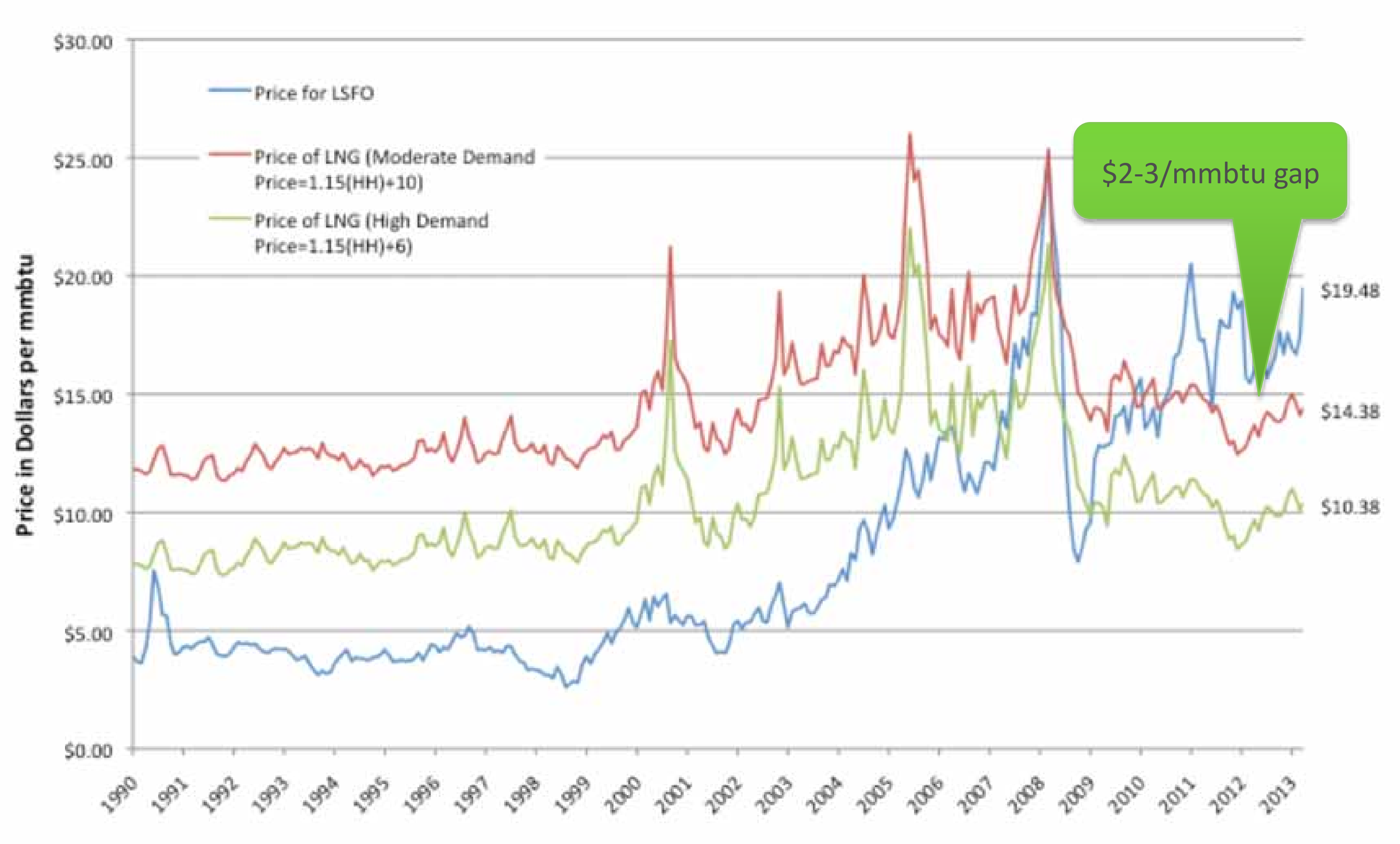
MYTH	REALITY
LNG is lower risk than oil	• US volatility ~ equal • Global LNG more highly concentrated in countries that also do not like us
US supply is and will remain cheaper than the global LNG market	• Arbitrage does not exist in global energy markets for supplies in OECD counties for long periods of time
LNG is far cheaper than oil and will save Hawai'i consumers LOTS of money (>20%)	• Depends on re-gasification volume, configuration, and gas supply contract terms • Relative prices of gas & oil will depend on supply/demand dynamics of each • Hawai'i may be able to take advantage of current market discontinuity by acting now to secure real asset hedges
LNG is safer than oil imports	• Each has different type of safety, environmental & terrorism risk • LNG does have lower carbon footprint

US Natural Gas is as volatile as oil, and has temporarily diverged due to stranded oversupply

Volatility	1990-2000	2000-2010	2010-2013	1990-2013
Oil:	20.95%	48.93%	10.20%	68.80%
HH:	23.59%	39.99%	19.57%	61.79%

Source: Bloomberg
Assumes 1 barrel of crude oil equals 5.6 mmbtu
Volatility calculated as coefficient of variation (standard deviation/mean)

The cost savings of LNG depend on scale from volume and could evaporate at long run gas prices

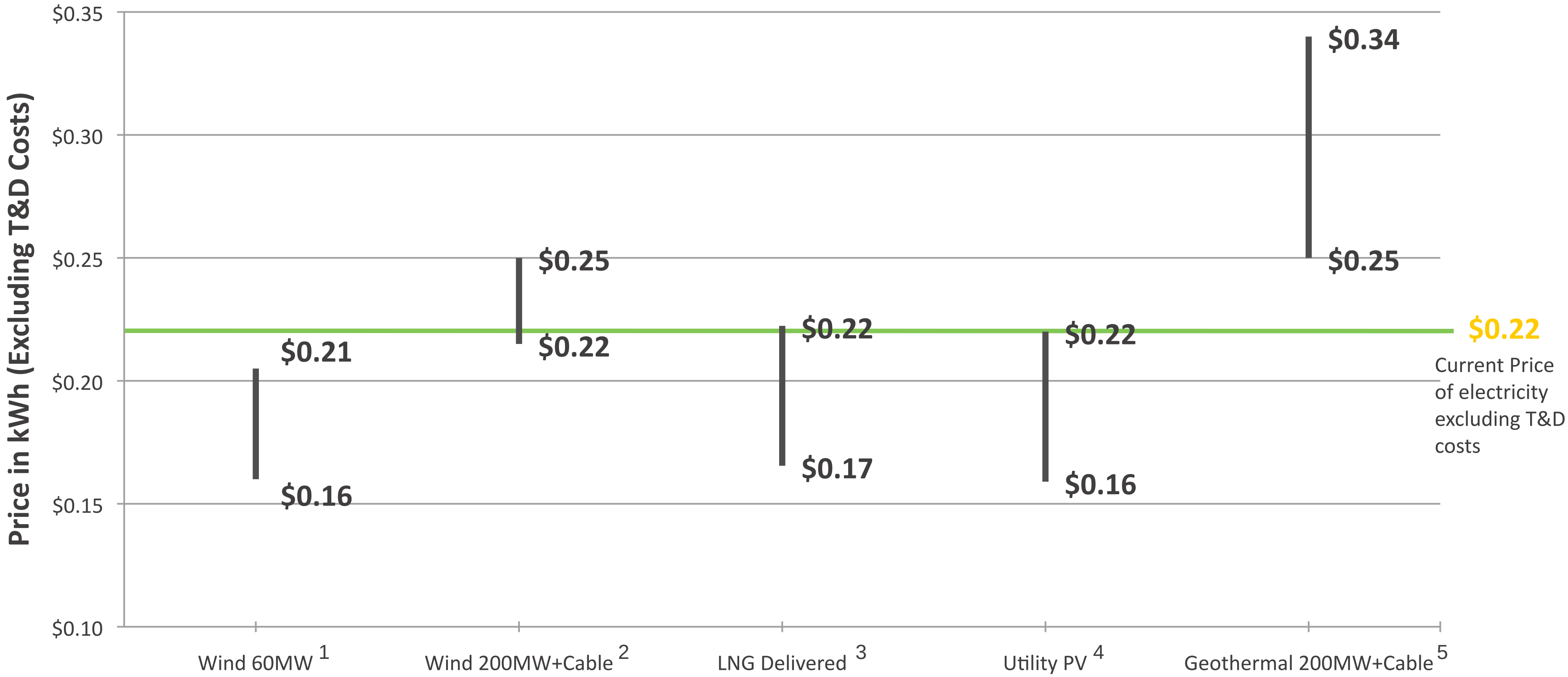


Price of LSFO delivered was calculated by converting WTI crude oil price per barrel into LSFO price per barrel by using the 2008 HECO formula: LSFO Price-1.0457(WTI Price per barrel)+3.9045, then converting into mmbtu by assuming 1 barrel of LSFO equals 6 mmbtu

Gas Reserve Trades are best indicator of Market view of long-term US Gas Prices

- Forecasting future prices creates market for minstrels – none should be relied on for policy decisions
- Gas reserves trade for the expected future value of gas, less the development and lifting costs, as modified by locational value and quality of the reserve
- Most recent trades in 2013 indicate the long term (levelized) future price of US natural gas at Henry hub to be in the ~ $4.50-5/MCF
  - Near term, gas competes with coal and fluctuates between $3.50-$4.20/MCF
- This means if we act now, we may be able to secure a delivered cost that is the equivalent of $90-100/bbl

What's is the Risk-Adjusted Least Cost source of Power for O'ahu?



Note: Prices Exclude T&D Costs.

Note: LNG Price does not take into account capital expenses of switching production facilities to natural gas.

Note: LNG Price converted to kWh by assuming 1mmbtu=293kWh and assumes a 33% electricity conversion value.

Note: Current price of electricity is based off HECO May 2013 update and estimated T&D cost per February 2012 update.

1. Public Utilities Commission Docket No. 2011-0224 and HECO IRP ES Page ES-12
2. HECO IRP Chapter 11 page 11-18 and Chapter 18 page 18-27; $0.13/kwh for wind and $0.09-$0.12/kwh for interconnection cable
3. Internal estimates
4. HECO IRP Executive Summary 2013, Hawaii Free Press 2013
5. HECO IRP Chapter 11 Page 11-4; $0.09-$0.15/kwh ($0.21 per DBEDT less assumes $0.05 from economies of scale) for geothermal and $0.16-$0.18/kwh for interconnection cable

The Right Way to Bring LNG to Hawai'i

- Transparent, inclusive process, and with real public engagement
- Structure supply as a real asset hedge on fossil energy prices by purchasing some of the gas supply as reserves or under fixed contract pricing
  - Allowing the Gas Company and HEI to directly or indirectly buy gas reserves would create a long term ~$90-100/bbl oil hedge for ratepayers
- Harmonize interests of Hawai'i Gas, Hawaiian Electric and KIUC to define infrastructure to optimize power, thermal, and transportation system benefits
  - Agree on re-gasification system design and location that is optimal for the state rather than either party
  - Define common carrier approach to avoid monopoly or oligopoly behavior
- Require that HEI use gas to allow electric system to better manage integration of renewable energy to create a far more resilient, reliable, and risk adjusted lower cost
- Equitably share benefits between shareholders and ratepayers