Introduction of South Hook Combined Heat & Power (CHP) Opportunity

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Presentation Outline

• What is CHP?
• South Hook History
• South Hook CHP Concept
• Conclusions
CHP = Combined Heat & Power

- Same as “cogeneration”
- Uses energy that would otherwise be wasted from thermal power production
- CHP contributes 11% of electric power in Europe, 8% in the United States

ExxonMobil LaBarge CHP Wyoming, USA (100 MW)
CHP Offers Many Advantages

- Energy efficiency
- Emissions reduction
- Operating cost savings
- Reliability improvement

ExxonMobil Beaumont CHP
Texas, USA (~500 MW)
CHP also has challenges

- Brownfield construction
- Location dependent on site heat demand
- High capex vs stand-alone gas power plant
- Requires stable regulatory framework

ExxonMobil Antwerp CHP Belgium (125 MW)
South Hook LNG Terminal History

- Located on Milford Haven in Wales
- South Hook Terminal fully commissioned in 2010
- Joint venture with Qatar Petroleum International, ExxonMobil, Total
Current Terminal Operation

- South Hook is a conventional LNG receiving and regassification terminal
- Warm water, heated by fuel gas, is the medium for heat transfer in the vaporisers
South Hook CHP Concept

• Residual heat from a gas-fired combined cycle plant could be used for LNG vaporisation
SHCHP - High Efficiency

- Heat from combustion used 3 times
  - Gas turbine generates power
  - Steam turbine generates power
  - Hot water vaporizes LNG
- CHP efficiency ~ 85%

- 35% for Gas Turbine Power
- 20% for Steam Power
- 30% for LNG Vaporization
- 15% Waste Heat

South Hook CHP
Gas for Power Growing Rapidly

Gas Demand By Sector

Source: ExxonMobil 2013 Outlook for Energy
Conclusions

• Gas plays a critical role in power generation

• CHP can further extend the environmental benefits of gas-fired power generation

• Strong partnerships are key to identifying innovative opportunities like South Hook CHP
Thank You

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