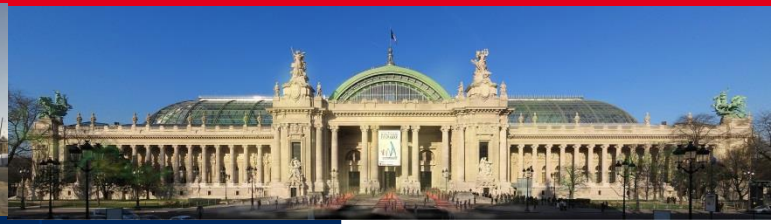
26th World Gas Conference

1 – 5 June 2015, Paris, France



Boom and Bust: Uncertainty regarding the Role of Natural Gas in Korea's Power Generation

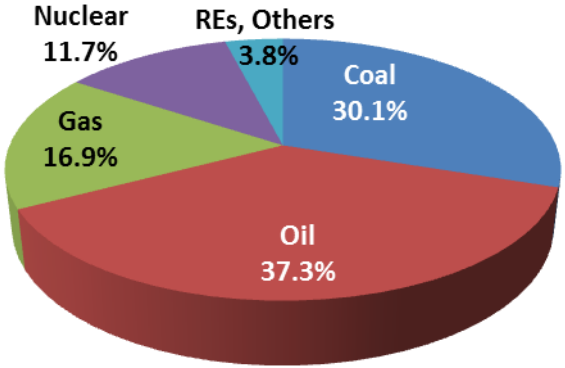
LEE, Ho-Mu
Korea Energy Economics Institute

IGU
WGCPARIS2015
WORLD GAS CONFERENCE

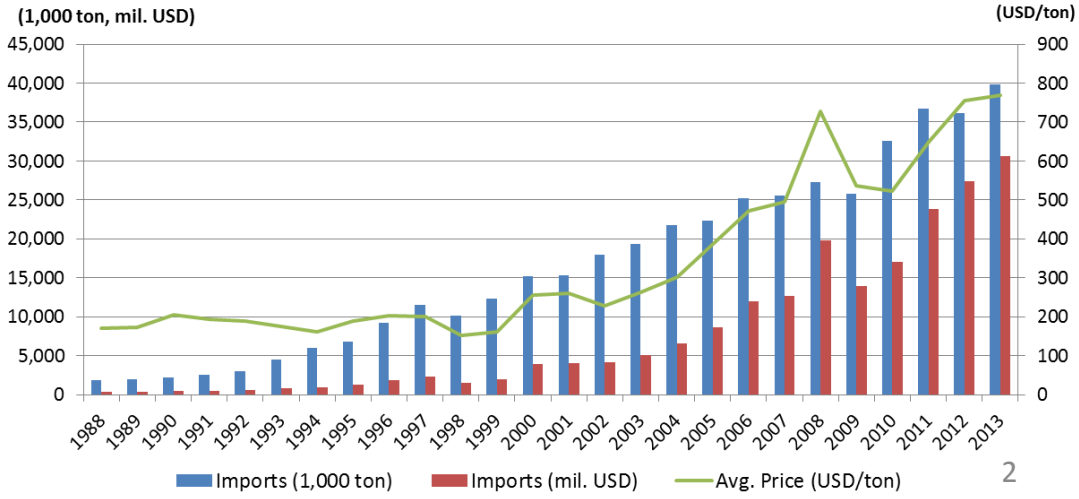
Natural Gas in Korean Energy Sector

- Fast-grown Primary Energy Source
  - 3rd largest energy source: 16.9% after oil, coal (2014)
  - Demand has grown 8% p.a. for the last decade

Total Primary Energy Supply (2014)

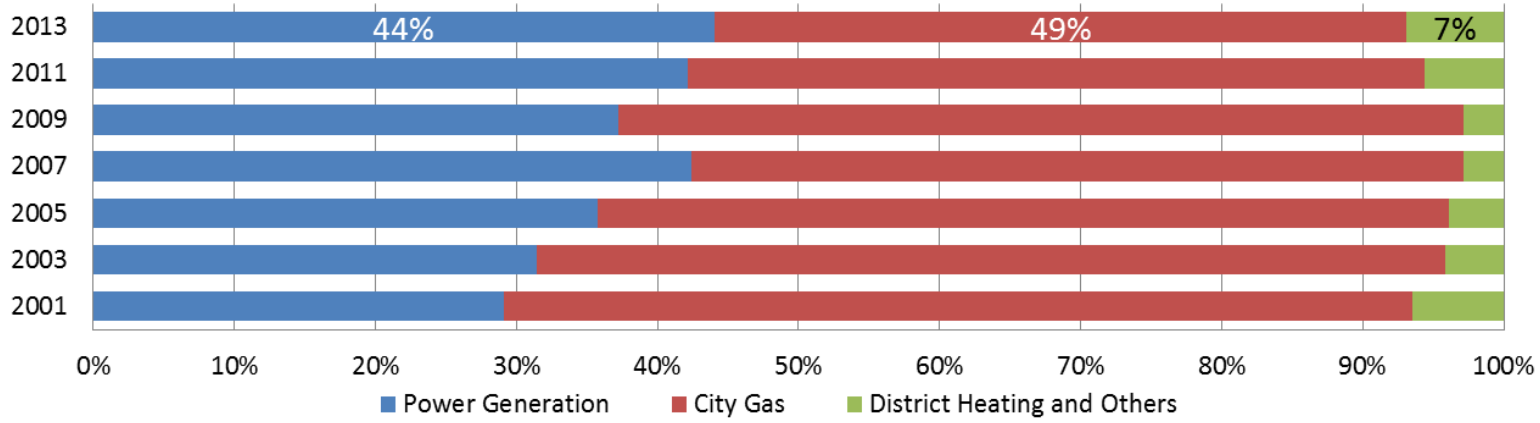


Natural Gas (LNG) Import & Average Price



Characteristics of Natural Gas Demand

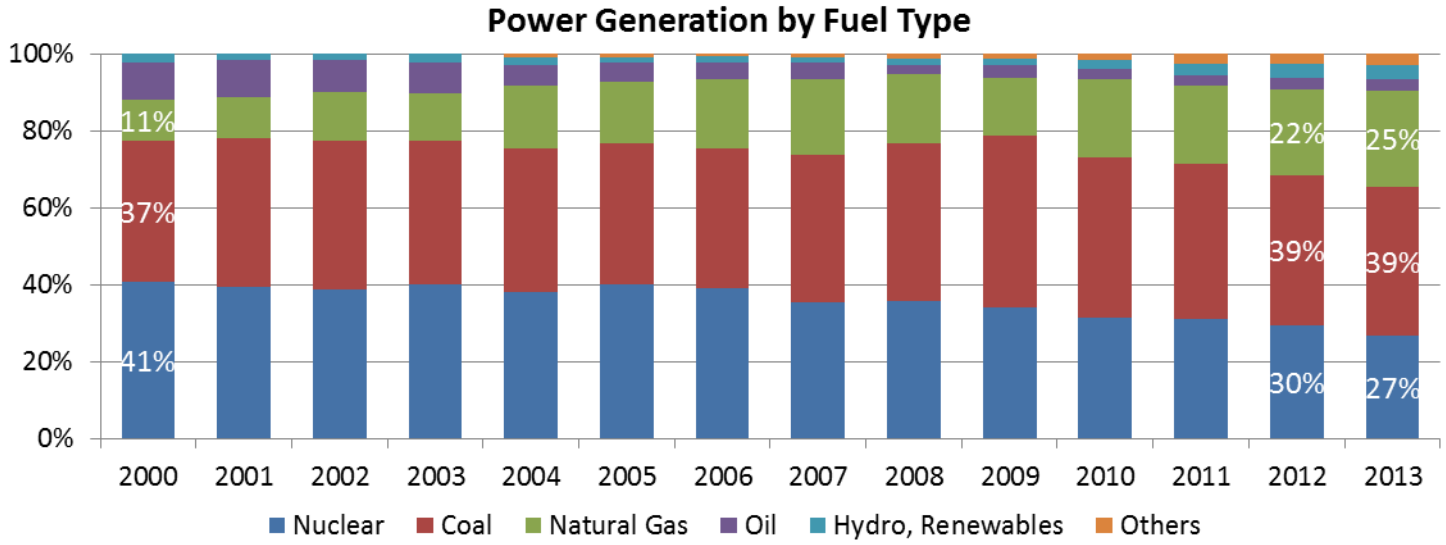
- Balanced between City Gas & Power Generation
- High Seasonality
  - Heating demand during winter (in both city gas and electricity)
- Spurred by Power Sector
  - 4.4 MMt (30%) in 2000 → 17.6 MMt (44%) in 2013



Natural Gas Demand by Use

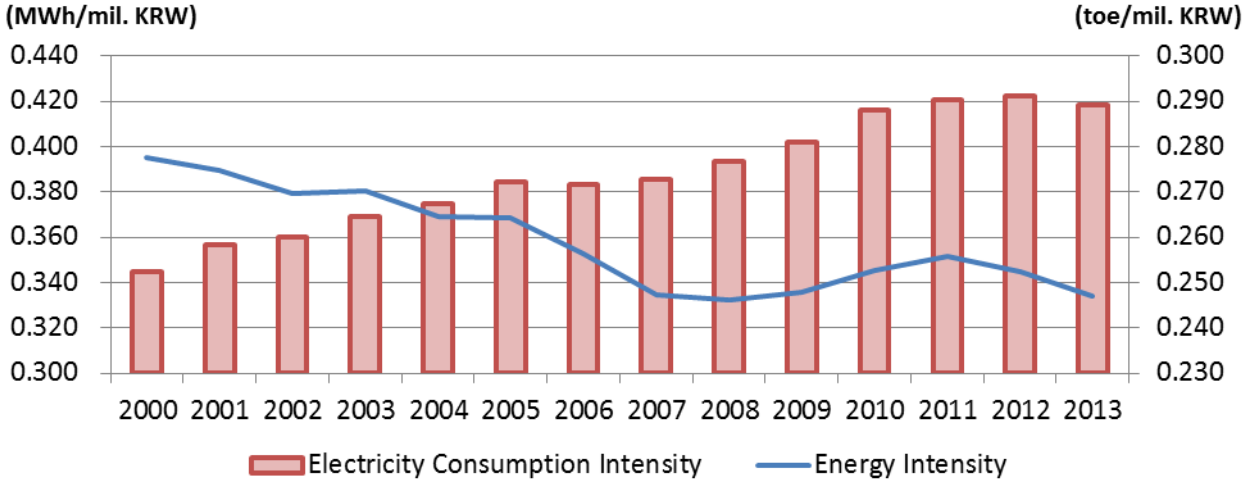
Rapid Growth of Gas-fired Generation

- Share in Power Generation Doubled since 2000
  - Capacity: 12.8GW (2000) → 24.3GW (2013)
  - Generation: 28.1TWh (11%, 2000) → 127.7TWh (25%, 2013)



Rapid Growth of Gas-fired Generation

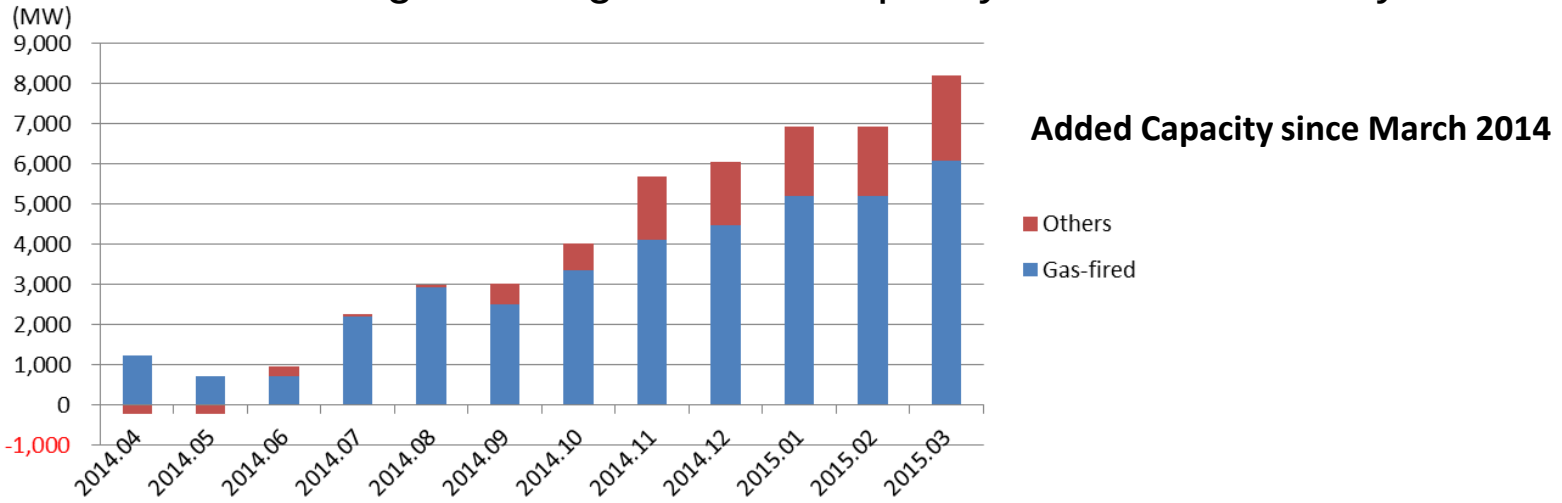
- Quick Fix for Power Supply Crunch
  - Government-set electricity demand management targets often missed
  - “More supply” usually preferred to “less demand” (by high price)
  - Gas power: best available option (short lead time, less pollutants)



Electricity Consumption Intensity & Energy Intensity 2000-2013

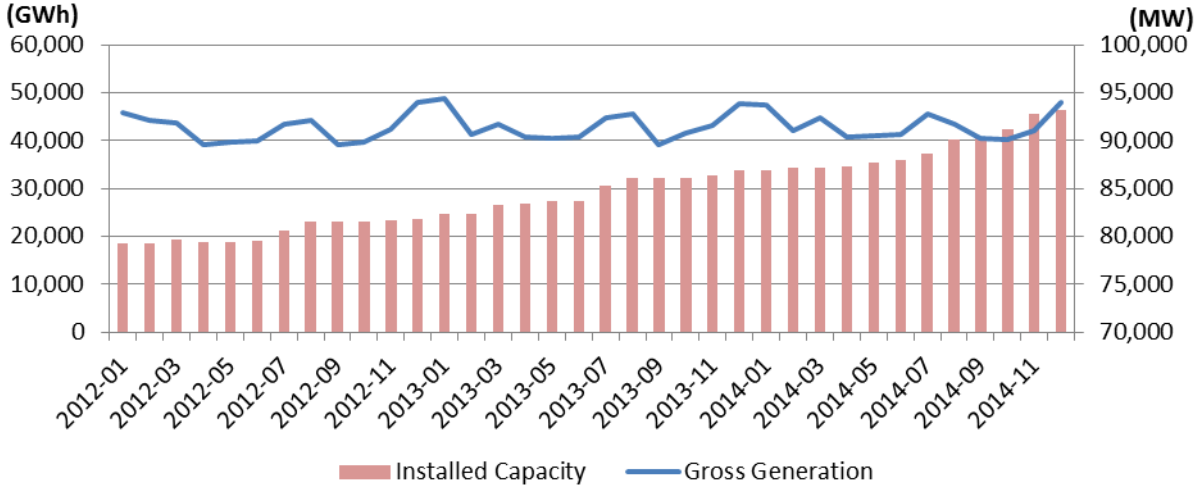
Gas-fired Capacity Being Stacked Up…

- Gas Power Generation: Lucrative Business for Several Years
  - Wholesale electricity price remained high due to high LNG price
  - High utilization rate with new nuclear & coal capacity getting delayed
- Power Companies Made Huge Investment
  - 6,000+MW of gas-fired generation capacity added since last year



While Electricity Demand Slows…

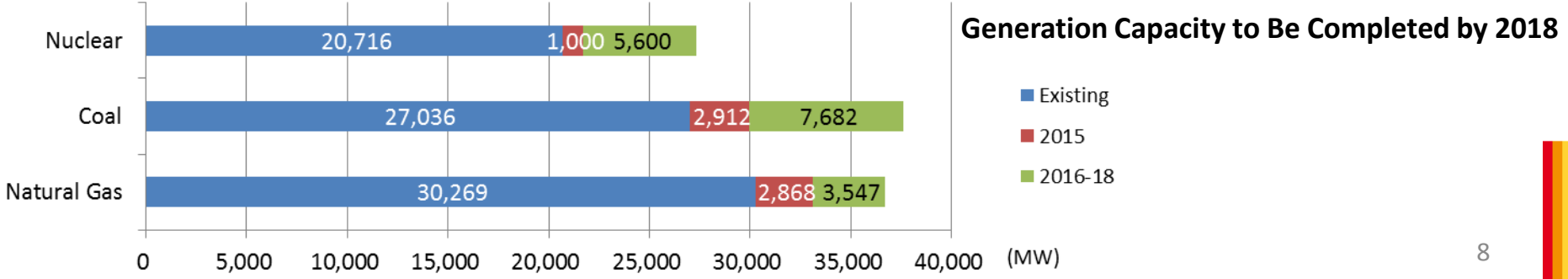
- Recently Market Getting Pessimistic on Future Electricity Demand
  - Stagnant economy (short-run); industry becoming less energy-intensive and rationalization of electricity price (long-run)
  - Demand almost unchanged but capacity up by 13.5GW since 2012



Installed Generation Capacity & Gross Generation 2012-2014 (Monthly)

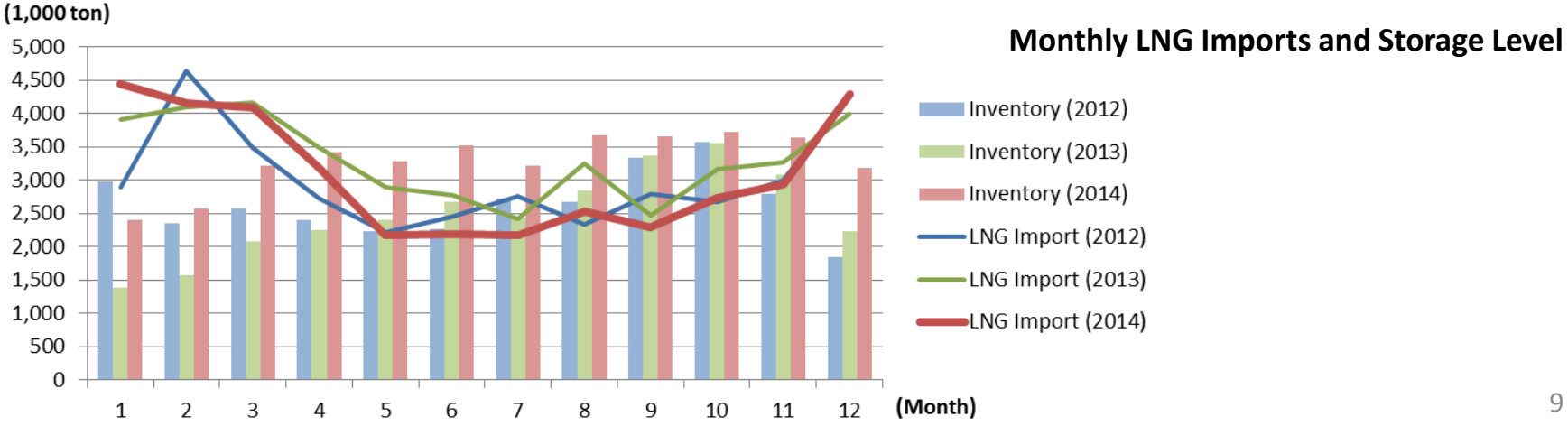
And New Power Plants Get on the Ring

- Significant Increase in Base Load Capacity Ahead
  - Government favorably approved them for the sake of supply security after the nation-wide blackout in 2011
  - Gas-fired generators already being marginalized in the merit order
- More Efficient Gas Power Stations under Construction
  - KOGAS supplies them mostly on identical terms
  - The same fuel price leads to fierce efficiency competition: the old die out



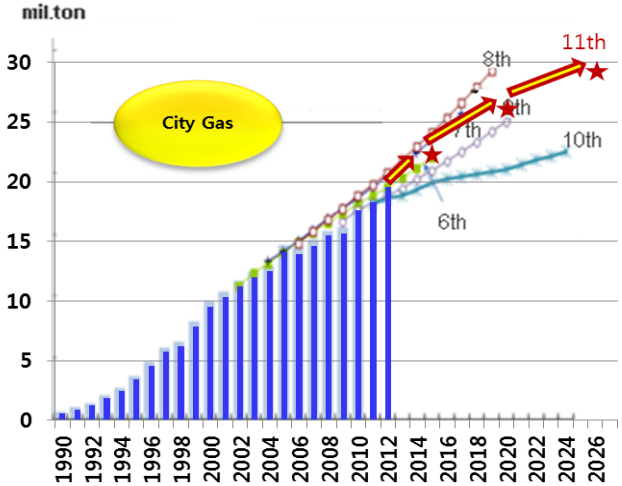
Sluggish Natural Gas Demand in 2014

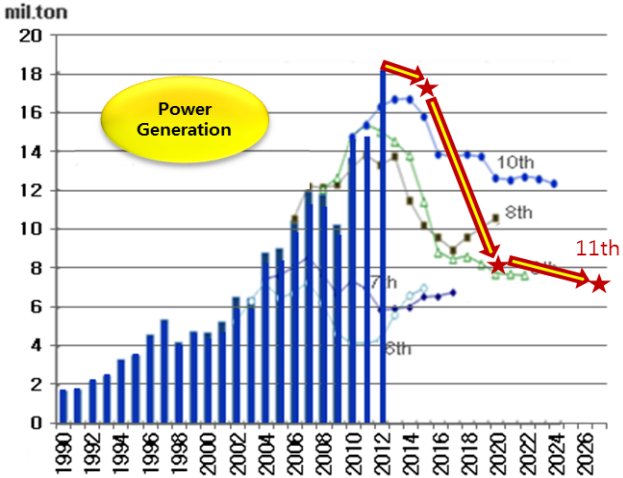
- Problematic Nuclear Reactors Back on the Grid
  - Reactors with counterfeit parts halted in H1 2013
- Good Weather for People, Bad for Gas Business
  - Warm winter, mild summer: low space heating & air conditioning
- Spot Purchase Minimized with Overflowing Inventory



Outlook for Gas Demand of Power Generation

- Latest Demand Outlook (2013): Power Sector Demand to Shrink -5.5%/yr
  - Previous outlooks also said gas-fired generation was doomed
  - Many market players now believe it could be different this time
- New Outlook Due in H2 2015 (12th Long-term Natural Gas Supply Plan)

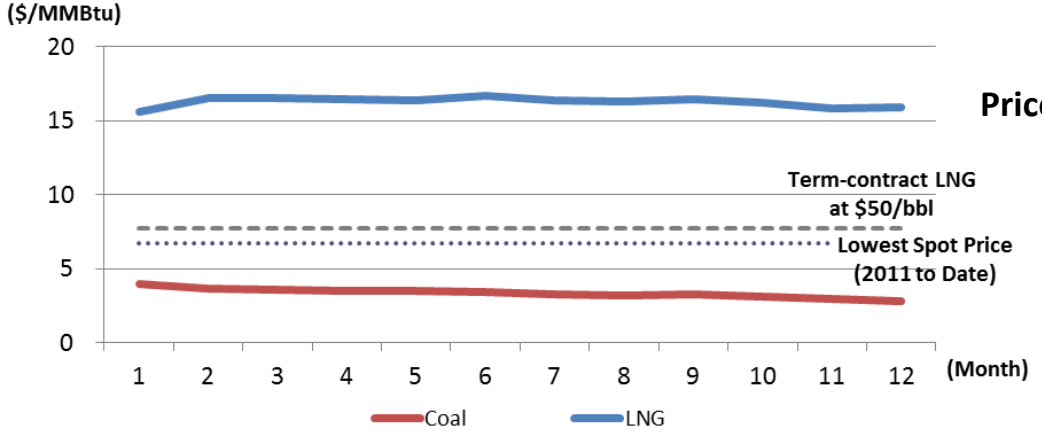




Gas Demand Outlook of 11th Long-term LNG Supply Plan

Role of Gas-fired Generation in Korea

- Power Sector Needs Versatility of Natural Gas
  - Less carbon, less air pollution
  - Location near demand centers, fuel for distributed generation
- All Generation Fuels Should Be on a Level Playing Field
  - Natural gas unable to beat coal in terms of fuel price
  - All implicit costs/benefits need to be counted in



Price of Coal and LNG in Korea

Thank You!

감사합니다.