California Energy Commission

North American Market Gas-Trade (NAMGas) Model: Scenarios Addressing Gas Issues Uncertainties

Staff Workshop

2013 Integrated Energy Policy Report

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- **California Policy Case**: Six assumptions that pose major impacts on California gas markets:
  - Begins with the Low Price/High Demand Common Case. Plus, these five assumptions are also included:
    - California meets 33% RPS by 2020; other WECC states delay meeting their RPS three years
    - NGVs meet the most optimistic policy goals
    - All energy efficiency goals achieved as outlined in the Energy Commission's *California Energy Demand Forecast 2012-2022*
    - Monterey Shale fully developed in seven years

- **California Policy Case (continued)**:
  - New carbon credit price response curves
- All other factors assume the same values as in the Low Price/High Demand Common Case:
  - P10 cost environment; i.e., 90% chance that natural gas production costs will fall below 160% of year 2000 costs.
  - LNG exports
  - Added hydrofracking O&M costs for water use and disposal
  - Coal-fired generation conversion
  - Technology improvement rate
  - GDP/economic growth
  - GHG/cap & trade

- **Natural Gas/Electric Case:** Impact on gas markets of larger renewables share and larger conversion of coal to gas in electric sector.
  - Begins with the Reference Case, and adds these assumptions:
    - California meets 40% RPS by 2020; all other WECC states meet their RPS on time
    - 80 GW of U.S. coal-fired electric generation converted to natural gas
  - All other factors are the same as in the Low Price/High Demand Common Case:
    - P50 cost environment; i.e., equal chance that natural gas production costs will fall above or below 105% of year 2000 costs.

- **Natural Gas/Electric Case (continued)**:
  - Natural gas vehicles
  - Energy efficiency
  - North American recoverable natural gas reserves base
  - LNG exports
  - Added operations and maintenance costs for water use and disposal
  - Technology improvement rate
  - GDP/Economic growth
  - GHG/Cap & trade

- **Low Innovation Case:** Models the impact of assumptions that restrict U.S. gas supply.
  - Begins with the Reference Case, and adds these assumptions:
    - North American recoverable natural gas reserves base shrinks by 7.5% to 12.5%
    - High Price/Low Demand Common Case operations and maintenance cost assumptions for water use and disposal
    - Technology improvement rate 0.5% (half the Reference Case value)

- **Low Innovation Case (continued):**
  - All other assumptions are the same as in the Reference Case:
    - P50 cost environment; i.e., equal chance that natural gas production costs will fall above or below 105% of year 2000 costs.
    - RPS compliance
    - Natural gas vehicles
    - Energy efficiency
    - LNG exports
    - Coal-fired generation conversion
    - GDP/Economic growth
    - GHG/Cap & trade

Questions and Comments