California Energy Commission

The World Gas Trade Model: Key Drivers

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World Gas Trade Model: Key Drivers

- **Resource assessments**
  - Assessments of technically recoverable resources are the most important factor affecting regional trade flows and price;
  - In general, price path in any long-term model should be most affected by the quantity of resources that are technically available.

- **Resource costs**
  - Costs of developing resources in various regions around the world define the subset of *technically* recoverable resources which are *economically* recoverable;
  - Change as price increases;
  - Regional trade flows will typically reflect the fact that production generally occurs from the lower cost resources first.

World Gas Trade Model: Key Drivers (cont'd)

- **Demand in Four Disaggregated Sectors**
  - Residential sector factors:
    - weather, population, natural gas price, income, and heating oil price.
  - Commercial sector factors:
    - weather, population, income, natural gas price, and heating oil price.
  - Industrial sector factors:
    - industrial production, weather, and natural gas price.
  - Power Generation sector factors:
    - total electricity generation, weather, natural gas price, fuel oil price, renewable electricity generation, and coal price.
  - In general, high rates of demand growth tend to push the marginal source of production into higher cost regions.
  - This influences the flow of trade and the price.

World Gas Trade Model: Key Drivers (cont'd)

- **Gas substitutes**
  - Assumptions about the cost of "backstop" resources define the long run ceiling on gas price.
  - As this price is approached, future investments in higher cost natural gas resources are disadvantaged.

- **Policy parameters**
  - Assumptions regarding various political and regulatory constraints can have profound impacts on model outcomes;
  - Policy may limit access to resources, inflate demand, or lead to accelerated adoption of backstop technologies

World Gas Trade Model: Key Drivers (cont'd)

- **Investment parameters**
  - Fiscal terms under which resources and infrastructure can be developed ultimately influences economic viability;
  - Factors such as high taxes/royalties and higher-than-normal required returns can inhibit production in those regions affected, thus shifting the flow of trade.
- **Assumptions regarding timing and availability of resources and infrastructure**
  - Constraints imposed on the availability of infrastructure (e.g., the start date and capacity of pipeline infrastructure) can have a large influence on regional pricing and flows.
- ***April 19th 2011* Workshop will explore key drivers in greater detail.**