

Proposed Scope and Design of Natural Gas Market Assessment

Joint Committee Workshop
2011 Integrated Energy Policy Report Proceeding
California Energy Commission

February 24, 2011

Ross Miller
Electricity Analysis Office
Electricity Supply Analysis Division

DOCKET

11-IEP-1L

DATE FEB 24 2011

RECD. FEB 25 2011



Purposes for Which Natural Gas Market Assessments Are Used

Natural Gas Market Assessments and Forecasts support:

- ❑ Energy policy making and program implementation activities
- ❑ Relative economics of alternative electricity resource choices, such as
 - ◆ energy efficiency programs
 - ◆ distributed generation choices (e.g., photovoltaics, combined heat and power)
 - ◆ new gas-fired generation
- ❑ Energy costs for households and businesses
- ❑ Environmental impacts of natural gas market activity
- ❑ Electricity demand assessments
- ❑ Wholesale electricity and natural gas market procurement, including hedging
- ❑ Natural gas infrastructure requirements assessments



Electricity Analysis Office

Natural Gas Unit

Long-range assessments of the demand for natural gas evaluate drivers of:

- end use gas demand;
- gas demand to serve grid-delivered end use electric generation;
- generating resources (e.g., renewables, coal) which substitute for gas-fired generation (either utilization or construction) :
 - ◆ world, national, regional and state energy and environmental policies,
 - ◆ economic choices utilities make for generation capacity expansion.



Modeling World Gas Market

- World Gas Trade Model - simplified
 - general equilibrium model iterates world-wide regional natural gas demand & supplies, “investing” in new pipelines, if economic
 - perfect foresight in making return-on-investment decisions
 - resulting prices are those that would have to be sustained to make investments economic (under the assumed future conditions)
- Thousands of assumptions are made about future conditions of complex, interacting key drivers
- Provide insights on potential market outcomes under different plausible future conditions



Proposed Scope and Design of Natural Gas Market Assessment

Focus assessment on cases helpful to decisionmakers, rather than having a single point forecast be the primary product.

Part 1: Explore California's potential vulnerabilities, or opportunities, across a plausible range of conditions that could drive future wholesale gas market prices.

- **High Gas Price Case** - assumes a plausible combination US-policy-driven and market conditions that would lead to higher wholesale gas demand and higher gas prices
- **Low Gas Price Case** - assumes a plausible combination of US-policy-driven and market conditions that would lead to lower wholesale gas demand and lower gas prices



Proposed Scope and Design of Natural Gas Market Assessment (cont'd)

Part 2: Explore California's potential vulnerabilities, or opportunities, across a plausible range of conditions that could drive future California gas demand, costs, and infrastructure additions.

- **High CA Gas Demand Case** – assumes a plausible combination of CA-policy-driven conditions that would lead to high gas demand
- **Low CA Gas Demand Case** – assumes a plausible combination of CA-policy-driven conditions that would lead to low gas demand

Both cases will have a stressed sensitivity case that assumes low hydroelectricity conditions, high summer low winter temperatures, and robust economic conditions.



Proposed Scope and Design of Natural Gas Market Assessment (cont'd)

Part 3: Policy-relevant sensitivities to guard against one-side biases

Explore key uncertainties testing the claim that shale gas is a “game changer” for the U.S. gas market.

- ❑ **Shale Environmental Mitigation Sensitivity Case** – assumes high plausible combination of environmental mitigation costs or constraints on shale gas production

Explore potential market impacts of pipeline pressure limitations on transportation capacity.

- ❑ **Reduced Pipeline Pressure Case** – assumes reduced pipeline pressures/capacities associated with new public safety limitations



Uncertainty Analysis Helps Decisionmakers

- Policy decisions often seek to strike a balance between competing objectives.
- Decisions carry risk because the future is highly uncertain.
 - Accurate probability of complex future outcomes unachievable.
 - Even knowing what factors matter, and to what degree, is a challenge.
 - Consequences of actions based on one forecast are uncertain—another future can happen instead.
- Moderating the risks of decisionmaking requires understanding the ranges of forecasts and their consequences.
- Prudently selecting forecasts can moderate the risks of potential consequences of a specific decision.
 - Decisionmaker's risk tolerance is important

