

Joint Committee Workshop on Economic, Demographic, and Energy Price Inputs for Electricity, Natural Gas and Transportation Fuel Demand Forecasts

February 24, 2011

California Energy Commission



Purpose of These Slides

These slides are provided with the Workshop notice on February 10 to give stakeholders additional early information about the scope and nature of the February 24 workshop.

Shortly before the February 24 workshop, staff will provide the individual presentations of materials to be discussed at the workshop.



Purpose & Scope of Workshop

Discuss & receive public comments for 2011 Integrated Energy Policy
Report on staff's long-term energy demand assessments and forecasts

Scope:

- *proposed analytic methods,*
- *modeling inputs, and*
- *assumptions* about key drivers of demand
 - ◆ Economic,
 - ◆ Demographic
 - ◆ Initial transportation fuel, natural gas & electricity prices



Statutory Background for Staff's Assessments

Conduct "assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices."

Provide an analytic foundation for developing energy policies

Focus on the most current and pressing energy issues facing the state, and across different markets and systems

In-depth and integrated analysis which explicitly addresses interfuel and intermarket effects



Coordinated Activity Across Multiple Divisions/Offices

Electricity Supply Analysis Division develops assessments and forecasts of the state's electricity and natural gas markets

- Demand Analysis Office (DAO) analyzes statewide electricity and natural gas end use demand
 - DAO's includes long-range assessments of drivers of demand for *grid-delivered* power
- Electricity Analysis Office's (EAO) Natural Gas Unit's long-range assessments of the statewide, regional, US and worldwide demand for natural gas
 - Drivers of demand for *grid-delivered* power are key drivers to gas demand for electricity generation

Fuels and Transportation Division's Fossil Fuels Office develops assessments and forecasts of the transportation fuels industry and related markets.



Proposed Scope and Design of Electricity and Natural Gas Demand Forecast & Assessment

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Demand Analysis Office
Electricity Supply Analysis Division



Demand Analysis Office

Demand Analysis Office (DAO) analyzes statewide and regional electricity and natural gas demand

- changes in economic activity,
- population growth,
- urban development,
- industrial expansion and energy intensity,
- growth in different building types, and
- energy and environmental policies.

DAO's long-range assessments of drivers of demand for *grid-delivered* power account for complex interactions among many public policies such as

- energy efficiency
- customer-side-of-the-meter distributed generation
- transportation electrification and compressed natural gas



Purposes for Which Electricity & Natural Gas Demand Forecasts Are Used

Electricity Market Assessments and Forecasts support:

Energy policy making and program implementation activities

Relative economics of alternative electricity resource choices

- energy efficiency programs
- peak demand response programs
- distributed generation choices (e.g., photovoltaics, combined heat and power)
- new gas-fired generation

Energy cost burden on households and businesses

Environmental impacts of electricity market activity

Natural gas demand assessments

Wholesale electricity and natural gas market procurement, including hedging

Electricity generation and transmission infrastructure requirements assessments



Electricity and Natural Gas Demand Forecasts: Defining a Range

- High econ-demo growth, lower electricity rates, low (committed) efficiency program impacts (*high demand scenario*)
- Mid economic growth from Economy.com or Global Insight, mid electricity rates, mid efficiency program impacts (for comparison to utility forecasts)
- Lower econ-demo growth, high electricity rates, high efficiency program impacts (*low demand scenario*)



Additional Scenarios: Uncommitted Efficiency

- IOU program impacts beyond 2013, POU beyond 2011
- Federal standards, Big Bold, etc.
- Scenarios as in 2009 IEPR: High, Medium, and Low Efficiency impacts
- Results in “managed” forecasts for IOUs along with LADWP and SMUD
- High uncommitted combined with *low demand scenario*, low uncommitted with *high demand scenario*



Proposed Scope and Design of Natural Gas Market Assessment

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Electricity Analysis Office
Electricity Supply Analysis Division



Electricity Analysis Office

Natural Gas Unit

EAO's Natural Gas Unit's long-range assessments of the demand for natural gas evaluate:

- above-mentioned drivers of end use gas demand and gas demand to serve grid-delivered electric generation, and
- drivers of changing amounts or cost of renewable and coal-fired electric generation supplies, which lead to changes in utilization and future construction of gas-fired generation, for example:
 - ◆ world, national, regional and state energy and environmental policies;
 - ◆ economic choices utilities make for generation capacity expansion;



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 cost burden on 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



Proposed Scope and Design of Natural Gas Market Assessment

Part 1: Explore California's potential vulnerabilities, or opportunities, across a plausible range of conditions that could drive future wholesale market gas prices. We will not attempt to make "accurate" date-specific predictions of natural 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 uncertainties testing the claim that shale gas is a “game changer” for the U.S. gas market.

- **Challenge Shale Gas Sensitivity Case** – assumes highest plausible combination of environmental mitigation costs or constraints on shale gas production

Part 3: 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.



Preliminary Natural Gas Price Assumptions

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Electricity Analysis Office
Electricity Supply Analysis Division



Preliminary Natural Gas Price Assumptions

- Short historical description of “actual” natural gas prices in the last 10 years
- Historical projections of natural gas prices. They got it wrong.
- Historical assumptions in forecasts.
- Some existing public natural gas forecasts
 - EIA’s *2010 Annual Energy Outlook* natural gas forecast and assumptions, including several scenarios
 - EIA’s 2011 early release *Annual Energy Outlook* natural gas forecast and assumptions
 - California natural gas utilities forecast used in the *2010 California Gas Report* and assumptions
 - CPUC recommendations of natural gas projections for MPR and power procurement
 - Bentek’s natural gas projections
- Current general statements on natural gas prices ---IEA, Bentek, EIA, Navigant, and others.

