

ORIGINAL

N.H.P.U.C. Case No. DE 11-250

Exhibit No. # 51

Witness Thomas C. Frantz

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**Question:**

66. In 2007, was it reasonable to expect gas production across North America to remain flat, demand for gas to grow, and therefore, for gas prices to rise?

**Answer:**

In the April 14, 2014 meeting, PSNH stated that it would be satisfied if a response was provided to 66 with the question refined to ask for Mr. Hachey's opinion.

The Companies previously objected to this request. Notwithstanding the objection and without waiving the same, please see North American Natural Gas Supply Assessment prepared for American Clean Skies Foundation by Navigant Consulting, dated July 4, 2008, for a description of the "tremendous growth in recent years" of natural gas shales. This conflicts with the premise "to expect natural gas production across North America to remain flat." The report is available at <http://www.cleanskies.org/pdf/navigant-natural-gas-supply-0708.pdf>.

Provided by: Michael Hachey



# North American Natural Gas Supply Assessment

Prepared for:  
**American Clean Skies Foundation**

Report Date: July 4, 2008

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## **Introduction » Description of Assignment**

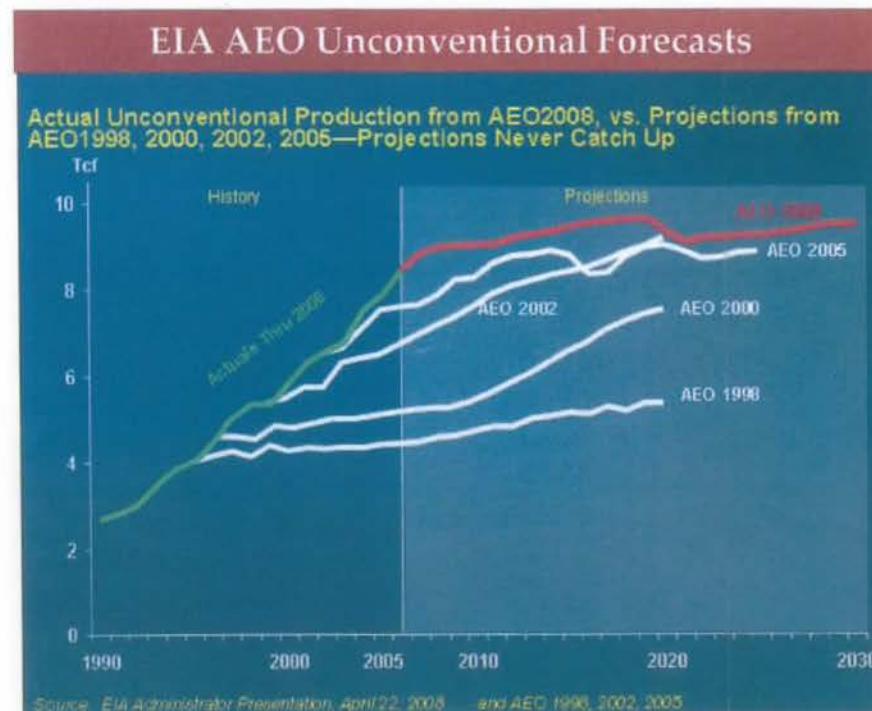
### **Updating the State of North American Natural Gas Supply**

- NCI was engaged to develop an accurate current assessment of North American natural gas production and recoverable reserves, with particular emphasis on the rapid, ongoing development of unconventional gas resources.
- Of the unconventional resources to be emphasized in NCI's review, shale gas is particularly important.
- Among other things, NCI was to test the premise that most public sources of gas-supply information, in particular the U.S. Energy Information Administration (EIA) have understated the contribution and potential of unconventional resources because their emergence has been too rapid for the underlying models to capture it accurately.
- This required obtaining or developing production and reserve data by basin and by type of gas on as current a basis as possible, reflecting actual conditions in the current year through the first quarter.
- Because such current data was often not directly obtainable in any organized format, NCI used a variety of approaches, including research through producer analyst presentations, reports in the trade press, and extensive direct outreach to producers and certain production-state officials.

## Introduction » Concerns over “Official” Estimates

### EIA Understatement of Resource Base and Development Appears Chronic

- EIA forecasts of unconventional gas production in each Annual Energy Outlook (AEO) from 1998 forward have been significantly outstripped by actual behavior.





## NCI Conclusions

- Unconventional gas, especially shale, has ramped up sharply over the last several years, both in terms of annual production and in terms of economically recoverable reserves. The extent of this ramp-up has not been fully captured by many reserve estimators, in particular the EIA.
- Based upon producer outreach responses, just the “big seven” shale plays are expected to reach a range of 27 to 39 Bcf/day over the next 10 to 15 years, timing that coincides with opportunities for phased expansion of natural gas use.
- Higher prices have significantly expanded the economically recoverable volumes, and are continuing to do so.
- Some producers and analysts have very high estimates of the ultimate recoverable gas, well in excess of U.S. Geological Survey (USGS) or Potential Gas Committee (PGC).
- The rapid escalation of unconventional production observed historically is continuing, and the unconventional resource base appears adequate to support that escalation to allow significantly increased volumes of unconventional production to continue for decades.
- A conservative estimate of the total domestic proved reserves and ultimately recoverable domestic resource base, adjusting from the most recent PGC study, reaches 1,680 Tcf, in excess of 88 years of U.S. production at current levels.
- Estimates by producers active in developing the shale resource are much larger, reaching levels that would imply a further increase to more than 2,247 Tcf, or 118 years at current production levels — This important resource is not constrained.