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## National Capital Area Chapter

United States Association for  
Energy Economics

December 2003

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# news

## *Computing the Cost and Carbon Content of Hydrogen Vehicle Fuel*

### Our Next Luncheon at Library of Congress

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- WHEN:** Noon, Friday, December 19
- WHERE:** 6<sup>th</sup> Floor, Madison Building—Montpelier Dining Room  
Library of Congress (enter from Independence Avenue)  
1<sup>st</sup> Street & Independence Avenue, SE  
Washington, DC
- SPEAKER:** Michael Stavy, Consulting Energy Economist, Chicago

This month NCAC members will have an opportunity to review a professional paper now submitted to the Journal of Solar Energy Engineering. Michael Stavy, an energy economist from Chicago, will present his paper, entitled “Worksheets for Computing the Levelized Cost (US\$/gasoline gal equivalent) and Carbon Content (lb-CO<sub>2</sub>/gasoline gas equivalent) of Hydrogen Vehicle Fuel Produced at a Model Wind Electric Powered Hydrogen Electrolizer.”

The paper presents a published technical and financial algorithm for the evaluation of demonstration and commercial hydrogen vehicle fuel generators and fuel cell vehicles. The paper provides a tool for national decision-makers to check whether the quantitative values of the auto, oil and hydrogen vehicle industry engineers and executives actually “work.” The reader has to enter accurate quantitative values on the worksheets. Stavy has provided benchmark input values and some sensitivity analysis to show the reader how to use the worksheets. So bring your No. 2 pencils!

**Michael Stavy** is an independent consulting energy economist with a specialization in renewable energy. Before launching a private practice in 1990, he taught finance in France, at the University of Illinois at Chicago and the College of DuPage, Illinois.

*Join us on Friday, December 19 at 12:00 pm for networking, with the lunch-line forming promptly at 12:30 and the presentation beginning at 1 pm so we are done by 2 pm.*

**COST:** \$20.00 for members (\$5.00 for student members) and \$25.00 for non-members—guests are always welcome. Make checks payable to NCAC-USAE. **RSVP:** By COB Tuesday, December 16 to Leslie Coleman by phone (202/463-9780) or email (lcoleman@nma.org). Cancellations after noon Wednesday will be billed.

## Highlights of the November Lunch

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**SPEAKER:** Hill Huntington, Stanford University's Energy Modeling Forum

### *Natural Gas, Fuel Diversity and North American Energy Markets*

Huntington, reporting on the EMF's natural gas project completed this fall, noted that it was not really a forecasting exercise, but rather an effort to use models to structure analysts' thinking about gas markets. He said that North American gas markets have been in transition in recent years, and now one of the timely questions is whether or not continental resources are peaking, just as oil production did thirty years ago. Is it a crisis, or a short-term market imbalance?

He said that the market has had a wild ride for natural gas prices in the past several years, with short-term fluctuations determined by weather, inventory, and expectations. However, it is the long term that was the focus of the EMF's gas initiative. Huntington explained it was felt to be difficult to determine whether the current situation could be described better as "depleted resources" or as "expanded demand," or some combination. For example, natural gas reserve replacement rates seem to show that reserves are being replaced. Thus, the group went beyond the "depleted resource" scenario and took a wider view.

He explained the EMF's process, saying it provides a communication bridge between developers and users of analysis: 1. Comparing different approaches for strengths and limitations, 2. Developing important insights, and 3. Identifying new research. The EMF process revolves around working groups, with input from experts, modelers, corporate and policy advisors, as well as the Intergovernmental Panel On Climate Change, the Council of Economic Advisors, and corporate affiliates and government sponsors. Models compared included NEMS (EIA), POEMS, EPA/ICF CERI MUSINGS USMARKAL, NARG (California Energy Commission). Scenarios examined included: "low oil price", "low drilling productivity", "high growth", "high oil price," and "expanded frontier."

Looking across models and scenarios, the range of wellhead natural gas prices in 2020, for example, runs between \$4 and \$4.50 per million BTU for the low supply/high demand cases, while the low oil price case ends up at not much over \$3.

Looking at the reference case across models, there seems to be an inverse relation between consumption and price. This is as might be expected, and is consistent with differing starting conditions for resource availability. Huntington also made an effort to add the NPC study to the reference case analysis as best as could be done from available information.

He said that, judging by the higher price derived from the NPC study, one might simply conclude that the NPC panelists were supply pessimists, but he maintained there was more to it than that. He said that the NPC results, compared with other models, tended to be more sensitive to changes in conditions. He thought the EMF results differed from the NPC results in that for the NPC study, policy has more effect, and for the EMF models, technology and markets have relatively more effect.

Huntington's conclusions from this study included the view that markets may be a lot more sensitive to price than some people had thought, on both the supply and demand sides; volatile prices do not necessarily equate to resource depletion; natural gas may lose some market share; subsidies are not needed for new sources; there is a need for compromises in energy/environmental policies; an expanded frontier could reduce prices; fuel competition serves as an important brake on gas prices.

## 2003 OFFICERS and COUNCIL MEMBERS

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# 2003 MEMBERSHIP RENEWAL/REGISTRATION FORM

## National Capital Area Chapter U.S. Association for Energy Economics

- Please check here for membership renewal.
- Please check here for new membership registration.
- Please check here for student membership registration.

Membership registration/renewal for the NCAC/USAEE is expected by the end of the preceding calendar year.

Please return your registration form and check to **Leslie Coleman**—NCAC/USAEE 2003 Treasurer at: **National Mining Association, 101 Constitution Ave., Suite 500 East, NW, Washington, DC 20001**. Phone: 202/463-9780. Email: [lcoleman@nma.org](mailto:lcoleman@nma.org).

Full membership dues for 2003 are \$20.00 (students \$10.00). Please make checks payable to NCAC/USAEE.

*Please print very clearly.*

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