

Electrolysis-Utility Integration Workshop

**September 22-23, 2004
Broomfield, CO**

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ENERGETICS

Purpose/Non-Purpose

Purpose

- To identify the opportunities and challenges facing the wide-spread deployment of electrolysis based hydrogen production in the U.S.

Non-Purpose

- Not to discuss electrolyzer R&D needs
 - Focus on electricity infrastructure and interface issues
- Not to discuss R&D needs associated with other hydrogen production technologies (e.g., natural gas)

Key Drivers

- Water electrolysis is a leading candidate for hydrogen production in the transition
 - Nearly 300 hydrogen refueling stations will be needed in the early stages
- DOE electrolysis cost goal: \$2.85/kg by 2010
 - Today's cost is \$4-\$6/kg H₂
- Technology advances to lower capital costs will help, but:

Key challenge for electrolysis is electricity price and availability

➤ Accounts for 60-90% of the cost/kg of delivered hydrogen

Key Question

Is hydrogen production via water electrolysis a *viable* option for the transition?

Key Needs:

- Low-cost, low-emission electricity
 - 3.5 - 4.5¢/kWh (or less)
- Available generation, transmission and distribution capacity

Workshop Products

- What *opportunities* does deployment of electrolysis offer the electric utility industry?
- What are the technical, regulatory, market, or economic *challenges*?
- What needs to be done to *enable* deployment of electrolysis-based hydrogen production?

Workshop Agenda -- Today

- 9:00 am Plenary Presentations
Hydrogen & Electricity Industry Perspectives
- 12:00 pm Lunch (with speaker)
- 1:00 pm Plenary Presentations
DOE Perspective on Electrolysis Technology & Infrastructure Options
- 3:30 pm Parallel Breakout Groups
Impacts, Opportunities and Barriers
- 5:15 pm Adjourn
- 6:00 pm Group Dinner (no host)

Workshop Agenda -- Tomorrow

- 7:30 am Continental Breakfast
- 8:30 am Breakout Groups (cont'd)
Barriers and Needs
- NOON Lunch
- 1:00 pm Breakout Groups (cont'd)
Analysis of Top Priority Needs
- 2:00 pm Plenary: Breakout Summaries
- 2:30 pm Action Items, Wrap-Up, Adjourn
- 3:00 – 5:00 Tour of Nat'l Wind Technology Center
and Electrolysis Test Facility

Our Respective Roles

Energetics Facilitators

- **Process Experts**
 - Explain focus questions
 - Document ideas
 - Keep us on target
 - Keep us on time
 - Keep us happy!

All of You

- **Technical Experts**
 - Contribute ALL content
 - Think creatively
 - Think cooperatively

Ground Rules

- No speeches (one-minute rule)
- No side conversations
- No cell phones
- Have fun!

Questions?