

Proposed agenda for NREL H<sub>2</sub>/FC Manufacturing R&D Workshop, Renaissance Hotel, Washington, D.C.,  
August 11-12, 2011

**Overall purpose:**

- (1) identify and prioritize challenges and barriers to the manufacture of hydrogen and fuel cell systems and components
- (2) identify and prioritize R&D activities that government can support to overcome the barriers

Thursday, August 11

Plenary (M. Ulsh, NREL) [Mount Vernon Square]

- 9:00 Welcome and Program Overview (Dr. S. Satyapal, DOE)
- 9:10 Background/summary of DOE Hydrogen and Fuel Cell Manufacturing R&D activities (Dr. N. Garland, DOE)
- 9:20 DOE's Industrial Technologies Program Manufacturing Activities (Dr. L. Christodoulou, DOE)
- 9:30 Automation Status (G. Sperrick, PMD Automation)
- 9:55 Summary of DOD Manhattan Project (J. Christensen, PE, NREL)
  - 10:00-10:15 Low-Temperature (D. Sousa, PE, Ballard)
  - 10:15-10:30 High-Temperature (Dr. D. Carter, Argonne)
  
- 10:30 Morning Break
  
- 10:45 Summary of PEM FC Manufacturing (Dr. E. DeCastro, BASF)
- 11:15 Summary of High-Temp FC Manufacturing (S. Kanuri, UTC)
- 11:45 Summary of High Pressure Tank Manufacturing (M. Leavitt, Quantum)
  
- 12:15 Lunch [Mount Vernon Square]

Technical Session IA: PEM cells/stack (N. Garland, DOE) [Mount Vernon Square]

- 1:15 Invited Talk on industry status – stack manufacturing (D. Sousa, Ballard)
- 1:40 Breakout session – needs and barriers (M. Ulsh, NREL)
- 4:45 Session Summary/Wrap-up

Technical Session IIA: High Temperature cells/stack (T. Lucas, FCE) [rooms 12-14]

- 1:15 Invited Talk on industry status – stack manufacturing (M. Richards, Versa)
- 1:40 Breakout session – needs and barriers (D. Carter, ANL)
- 4:45 Session Summary/Wrap-up

Technical Session III: Small Fuel Cell Systems with Hydrogen Storage (N. Stetson, DOE) [room 16]

- 1:15 Invited Talk on industry status – (G. Rambach, TruLite)
- 1:35 Invited Talk on industry status – (TBD)
- 1:55 Breakout session – needs and barriers (M. Lefenfeld, SiGNa)
- 4:45 Session Summary/Wrap-up
  
- 5:00 Adjourn

Friday, August 12

Technical Session IB: PEM/Electrolyzer BOP/system (W. Podolski, ANL) [Mount Vernon Square]

- 8:30 Invited Talk on industry status – system (J. Torrance, Proton OnSite)
- 8:55 Invited Talk on industry status – other BOP (D. Frank, Hydrogenics)
- 9:20 Breakout session – needs and barriers (D. Wheeler, DJW Tech)

Technical Session IIB: High Temperature BOP/system (H. Ghezel-Ayagh, FCE) [rooms 12-14]

- 8:30 Invited Talk on industry status – fuel processing and other BOP (T. Litka, Acumentrics)
- 9:20 Breakout session – needs and barriers (S. Kanuri, UTC)

Technical Session IV: Production and Delivery (E. Miller, DOE) [room 16]

- 8:30 Invited Talk on industry status – Centralized Production (B. Bonner, Air Products)
- 8:50 Invited Talk on industry status – Tube trailer design/manufacturing (Dr. N. Newhouse, Lincoln Composites)
- 9:10 Invited Talk on industry status – Distributed Production (P. Rao, Nuvera)
- 9:20 Breakout session – needs and barriers (E. Miller, DOE)

Summary (N. Garland, DOE) [Mount Vernon Square]

- 12:00 Summary Remarks IA
- 12:10 Summary Remarks IIA
- 12:20 Summary Remarks III
- 12:30 Summary Remarks IB
- 12:40 Summary Remarks IIB
- 12:50 Summary Remarks IV
- 1:00 Overall Summary, Next Steps, and Dismissal
- 1:10 Adjourn

**Workshop Output:**

- Preliminary list of R&D needs for hydrogen and fuel cell manufacturing

**Post Workshop Output:**

- Review and update prioritized lists of challenges/barriers and opportunities for government support