

# IEA Hydrogen Roadmap

## North America Workshop

January 28-29, 2014

9650 Rockville Pike, Bethesda, Maryland

### Agenda

During the North American Workshop we are expecting detailed and constructive discussions centred around the roll - out of hydrogen technologies in the United States and Canada.

Stakeholders from industry, government and academia will provide their view on technology, infrastructure, market development and policy expectations in North America.

Time	Topic
9:00-10:30	Opening of the Workshop - Context for the Day: <ul style="list-style-type: none"> <li>IEA Roadmap Vision/Scope/Structure/Process – Cecilia Tam</li> <li>Objectives/Role of H2 Roadmap/ Expected Outcomes of Workshops – Alex Koerner</li> </ul> Discussion Session Topics: <ul style="list-style-type: none"> <li>Existing regional roadmap documents</li> <li>Harmonization of regional roadmap visions</li> </ul>
10:30- 10:45	Coffee break
10:45 – 11:30	Market Drivers- Transportation: Short presentations (10min) on technology development and milestones: <ul style="list-style-type: none"> <li>FCEV roll-out strategy for California – Joan Ogden, UC Davis</li> <li>Progress on FCEV Development, Honda Watanabe</li> </ul> Discussion Session, possible relevant topics: <ul style="list-style-type: none"> <li>FCEV planned roll-out starting in 2015</li> <li>Opportunities for heavy-duty transportation applications (buses, trucks)</li> </ul>
11:30-12:15	Market Drivers- Stationary Power: Short presentations (10min) on technology development and milestones: <ul style="list-style-type: none"> <li>Hydrogen &amp; Fuel Cell Applications – A Canadian Perspective, Eric Denhoff, CHFCA</li> <li>Stationary Power Systems, Shanna Knights, Ballard</li> </ul> Discussion Session, possible relevant topics: <ul style="list-style-type: none"> <li>Lessons learned for backup power needs during natural disasters</li> <li>H2 in chemical industry/refining industry</li> <li>Distributed generation applications</li> </ul>
12:15-13:30	Lunch (Breakout Opportunities)

13:30-14:30	<p>Supply/Demand for Hydrogen</p> <p>Short presentations (10min) on the Supply and Demand for H2</p> <ul style="list-style-type: none"> <li>• H2 Supply and demand, Eric Miller, DoE</li> </ul> <p>Discussion Session, possible relevant topics:</p> <ul style="list-style-type: none"> <li>• Regional impact of low natural gas prices on H2 prospects</li> <li>• IEA-HIA Global Resource Study</li> <li>• Steam Methane Reform vs. Electrolysis</li> <li>• Supply/source of H2 in the near- to long-term</li> </ul>
14:30-15:30	<p>Hydrogen Infrastructure: How to overcome Chicken and Egg?</p> <p>Short presentations (10min) on H2 infrastructure:</p> <ul style="list-style-type: none"> <li>• Lessons learned from public-private partnerships, Morry Markowitz, H2USA</li> <li>• H2 infrastructure analysis, Amgad Elgowainy, ANL</li> <li>• Bringing Hydrogen Fuel Cell Electric Vehicles to the Golden State, Robert Bienenfeld, California Fuel Cell Partnership</li> </ul> <p>Discussion Session, possible relevant topics:</p> <ul style="list-style-type: none"> <li>• Roll-out plans in the US and investment needs</li> <li>• Synergies with existing H2 generation/transmission infrastructure</li> <li>• Lessons learned from N. American demonstration projects</li> <li>• Refilling infrastructure – barriers and challenges</li> </ul>
15:30-15:45	Coffee break
15:45-16:45	<p>Industry and policy makers – expectations and requirements:</p> <p>Short presentations (10min) from industry and policy makers</p> <ul style="list-style-type: none"> <li>• Lessons learned from early markets, Peter Devlin, DoE</li> <li>• H2 Safety &amp; Codes and Standards, A. Tchouvelev</li> </ul> <p>Discussion, possible relevant topics:</p> <ul style="list-style-type: none"> <li>• Need for market pull policies</li> <li>• The role of long term emission targets and fuel economy regulation</li> <li>• The role of regulation/standards for successful H2 technology roll - out</li> <li>• Harmonization of safety regulation for HRS</li> </ul>
16:45-17:30	Day one recap and discussion

<b>Time</b>	<b>Day 2</b>
9:00-10:30	<p>Near-Term Pathways Toward Renewable Hydrogen</p> <p>Short presentations (10min) prior to breaking into Two Groups</p> <ul style="list-style-type: none"> <li>• Canadian Industry Perspective (Rob Harvey, Hydrogenics)</li> <li>• US Industry Perspective (Robert Friedland, Proton OnSite)</li> </ul> <p>Proposed Breakout Topics:</p> <p>Group 1</p> <ul style="list-style-type: none"> <li>• Role of natural gas and biogas for various energy vectors and market options</li> <li>• Role of electrolysis for various energy vectors and market options</li> </ul> <p>Group 2</p> <ul style="list-style-type: none"> <li>• Value proposition for Grid Integration / Power to Gas, including role and opportunities of zero cost/low cost electricity</li> <li>• NREL Renewable Electricity Futures Study</li> </ul>
10:30- 10:45	Coffee break
10:45 - 11:45	<p>Breakout Session Report Out and Discussion:</p> <p>Proposed Discussion Topics:</p> <ul style="list-style-type: none"> <li>• Key elements/metrics identified for inclusion in Roadmap</li> <li>• Incorporation of existing regional roadmap elements into IEA Roadmap</li> <li>• Major take-away messages in preparation of Roadmap</li> <li>• Identifying major information gaps</li> </ul>
11:45-12:15	Wrap up and next steps

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