



U.S. DEPARTMENT OF  
**ENERGY**

# Hydrogen Safety Workshop Welcoming Remarks



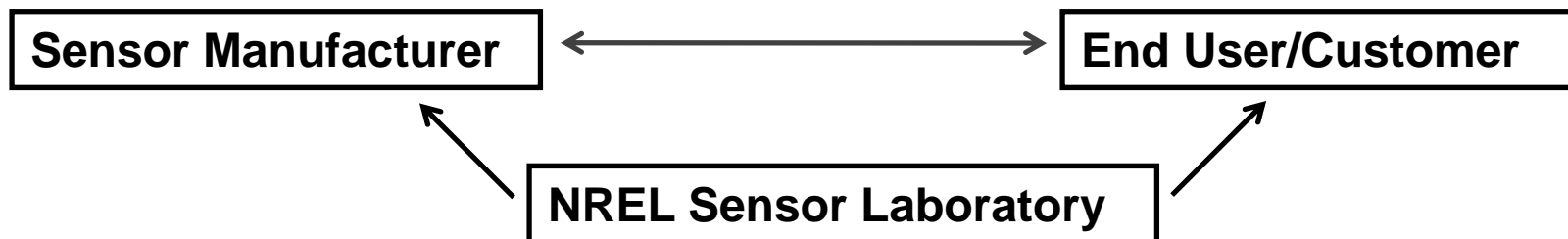
W.J. Buttner,

R. Burgess, M. Post, C. Rivkin  
Codes and Standards Group  
Hydrogen Technology and Systems Center  
National Renewable Energy Laboratory  
Golden, CO 80401

**DOE-NREL**  
**Hydrogen Sensor Workshop**  
June 8, 2011  
Chicago, IL

# The NREL-DOE Hydrogen Sensor Workshop (NREL Sensor Test Laboratory)

- National and International
- Sensor Development
  - independent assessment
  - Test/validate new sensor R&D
- Sensor Deployment
  - Work with End Users
  - Outreach
- Sensor Requirements
  - SDOs



# Purpose of the Workshop I



- Recent Incident (2009, announced 5/17/2011)  
(<http://www.h2incidents.org>)
  - “Two False Hydrogen Alarms in Research Laboratory”
    - Gas Sensor Alarmed
      - No H<sub>2</sub> release, “non-Event”
      - Probable Cause: Design Flaw
    - Damage and Injuries
      - None
      - **\$10,000 bill from the fire department**

# Purpose of the Workshop II

- Some Common Perceptions (misconceptions)
  - “Sensors Don’t Work”
  - “Sensors are too expensive”
- Some Common Issues
  - Which Sensor Type is best for application
  - How should sensor be deployed
  - Maintenance requirements
  - “Sensors are too expensive”
  - False alarms

# Role of the Work Shop

- Identify critical hydrogen sensor applications
  - Define target specifications
    - Prioritize (critical, important, useful)
  - Assess current capability
  - Identify technology gaps/barriers
- Foster collaborations between stakeholders
  - developer and end-user communication
- Publication of Findings
  - NREL Report, WEB Site
- Layout
  - Topical talks
  - Small Breakouts groups (topical)
  - Group Discussions

# Morning Agenda I

- **Welcoming Remarks**  
*William Buttner, NREL*
- **DOE Fuel Cell and Hydrogen Program; Role of Sensors**  
*Scott McWhorter, SRNL; DOE*
- **2007 Workshop**  
*Robert Glass/Lawrence Livermore National Laboratory*
- **2011 Workshop Background and Objectives; Technology Update**  
*Robert Burgess, NREL*
- **Codes and Standards Sensor Requirements**  
*Carl Rivkin, NREL*
- **What a Battery User Needs From A Hydrogen Sensing Unit**  
*Curtis Ashton, CenturyLink*

**BREAK**

# Morning Agenda II

- **Wide Area Sensing Needs**  
*Nick Barilo, PNNL*
- **Hydrogen Fuel Detection Based on Smart Sensor Systems**  
*Gary Hunter, NASA GRC*
- **Indoor Fueling**  
*Robert Skinnell, DLA Susquehanna and Snapper Poche LMI*
- **Hydrogen Sensor Certification**  
*Michael Alexander, Project Engineer, UL*
- **Sensor Metrics**  
*William Buttner, NREL*
- **Wrap-Up Morning Session**

**LUNCH (provided)**

**(concurrent with Sensor Technology Talks)**

# Afternoon Agenda I

- Breakout Session I 1:15
- Breakout Session II 2:00
- Breakout Session III 2:45
- Break 3:30

**Other topics:  
SUGGESTIONS?**

	<i>Indoor Fueling &amp; Operations</i>	<i>Storage</i>	<i>Residential</i>	<i>battery backup</i>	<i>Industrial Trucks (forklifts)</i>	<i>Production</i>	<i>OTHER Topics?</i>
BREAK OUT I	A. Pooche		C. Rivkin		A. Harris	J. Cohen	open
BREAKOUT 2		R. Burgess		C. Ashton			Open
BREAKOUT 3							Vehicle Safety (Buttner)

## GOALS of BREAKOUT GROUPS

- Identify Performance Parameters for Applications
- Assign target specification for each parameter
- Identify gaps/shortcomings of existing technologies
- Brief summary document



## Afternoon Agenda II (following breakout sessions)

- Open Discussion
  - Breakout Group Summary
- Wrap up
- **DINNER**
  - Optional (e.g., not provided)

Giordano's Chicago Style Pizza  
9415 West Higgins Road

