

CODES & STANDARDS FOR THE HYDROGEN ECONOMY

2008 DOE Hydrogen Program Review

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Project ID: SCSP1

Timeline

Start: December 5, 2007

End: September 30, 2011

30% Complete

Barriers

All Currently Intended Sub Contracts Are Now In Place

Prime Contract Cost – Share Requirements Have Now Been Met or Exceeded

Overview

Budget

Total Project: \$7.5 M

DOE Share: \$6.0 M

Cost Share: \$1.5 M

Partners

- To Date: 11 Leading Code & Standard Developers, Experts
- See Slide 11

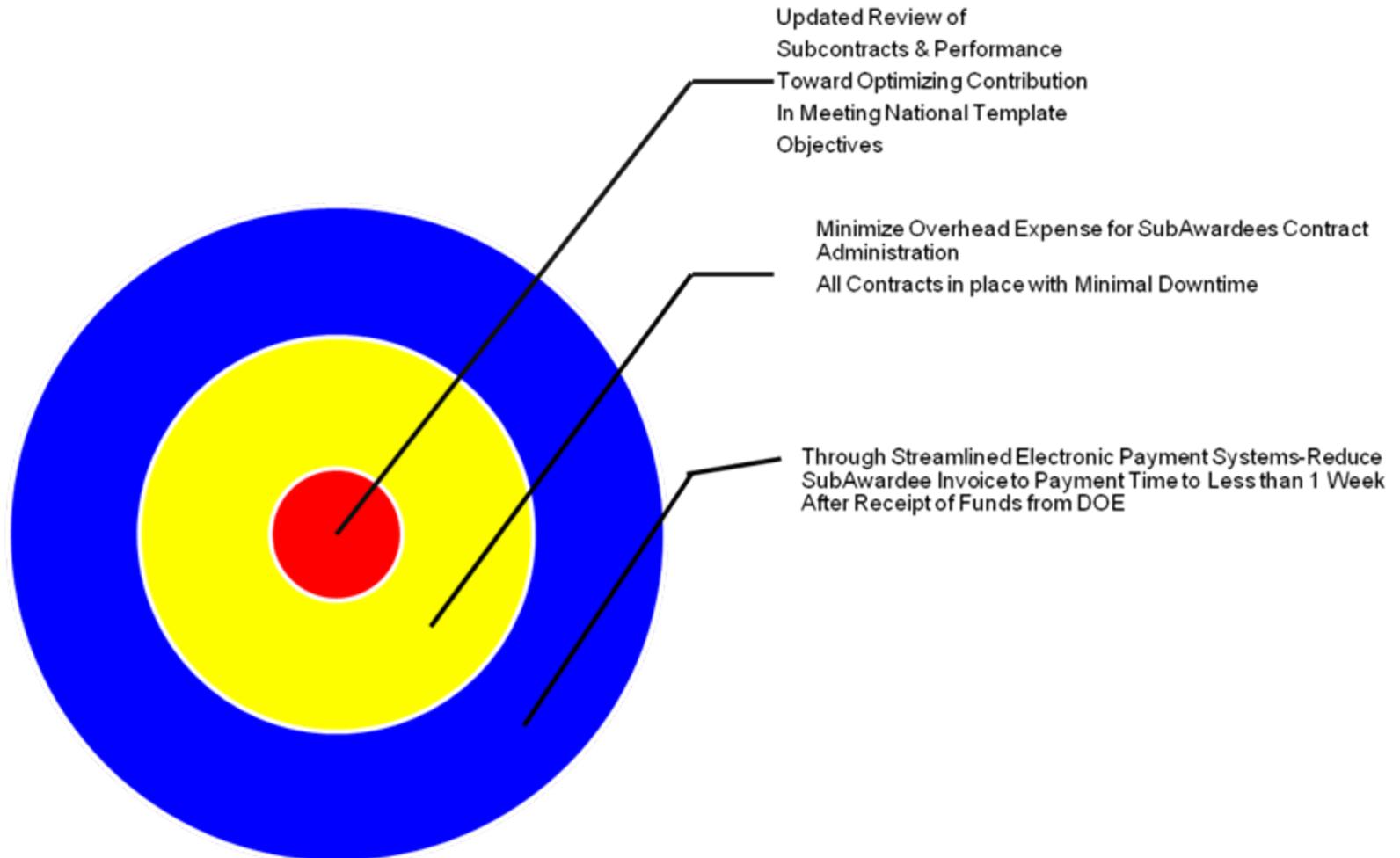
General Objectives of DOE Codes & Standards Project

- To accelerate the availability of appropriate codes and standards to ensure consistency and, if possible, uniformity of requirements and to facilitate deployment.
- To enable certification to applicable standards in order to facilitate approval by local code officials and safety inspectors.
- To Promote uniform standards because manufacturers cannot cost-effectively manufacture multiple products that would be required to meet different and inconsistent standards

Objectives (continued)

- The overarching objective for Codes & Standards for The Hydrogen Economy (DE-FC36-07GO 17004) is to facilitate timely completion of the necessary codes and standards for hydrogen and fuel cell technologies and infrastructure. Specific project objectives include:
 - Coordinate and facilitate the accelerated development of codes and standards in close collaboration with DOE, National Laboratories and other relevant agencies;
 - Establish strong partnerships with industry, SDOs and CDOs;
 - Facilitate information dissemination to technology developers, implementers and local code officials.

2008 Objectives

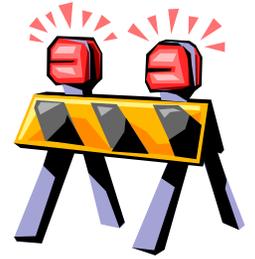


The Barriers



- **Limited Government Influence on Model Codes.** The code development process is a consensus-based, voluntary process. Government support can affect its progression, but ultimately consensus from participants is required by standard development and code publishing groups.
- **Competition between SDOs and CDOs.** Competition between various organizations can hinder the creation of consistent hydrogen codes and standards.
- **Limited State Funds for New Codes.** Budgetary shortfalls in many states and local jurisdictions impact the adoption of codes and standards, since funds are not consistently available for purchasing new codes or for training building and fire safety officials.

The Barriers (cont.)



- **Large Number of Local Government Jurisdictions (there are approximately 44,000).** The large number of jurisdictions hinders universal adoption of codes and standards.
- **Lack of Consistency in Training of Officials.** The training of code officials is not mandated. There are a large number of jurisdictions and significant variation in training facilities, requirements.
- **Limited DOE Role in the Development of International Standards.** Governments can participate and influence the development of codes and standards, but cannot direct the development of international standards.

The Barriers (cont.)



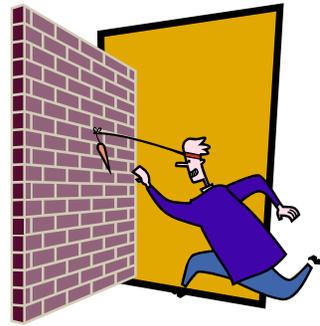
- **Need for Representation at International Forums.** Participation in international forums and meetings is voluntary and has previously been ad hoc rather than planned and coordinated in advance. Our national interest requires representation.
- **International Competitiveness.** International economic competition complicates development of international standards.
- **Conflicts between Domestic and International Standards.** National positions can complicate the harmonization of domestic and international standards.
- **Lack of National Consensus on Codes and Standards.** “Intra” national Competitive issues can also hinder consensus.

The Barriers (cont.)



- **Need for Technical Data to Revise Standards.** Research activities are underway to develop and verify the technical data needed to support codes and standards development, such as requirements for retrofitting existing infrastructure and universal parking certification.
- **Affordable Insurance is Not Available.** New technologies not yet recognized in codes and standards will have difficulty in obtaining reasonably priced insurance.

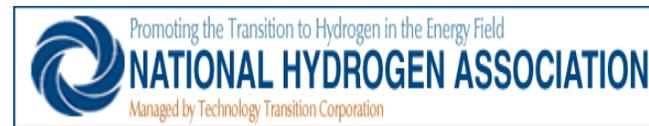
The Barriers (cont.)



- **Large Footprint Requirements for Hydrogen Fueling Stations.** The existing set-back and other safety requirements can result in large footprints
- **Parking and Other Access Restrictions.** Complete access to parking, tunnels and other travel areas has not yet been secured

Codes & Standards Partners with DOE Hydrogen Program

Sub Awards 2007	
1	ANSI Contract #RL-2007-002
2	ASME Contract #RL-2007-011 <i>(in process)</i>
3	CGA Contract #RL-2007-010
4	CSA America Contract #RL-2007-004
5	GWS Solutions Contract #RL-2007-003
6	ICC Contract Contract#RL-2007-006
7	Kelvin Hecht Contract #RL-2007-001
8	NFPA Contract #RL-2007-005
9	NHA Contract #RL-2007-008
10	SAE Contract #RL-2007-009
11	USFCC Contract #RL-2007-007



Approach

- **In close collaboration with DOE Hydrogen Program and Technical Advisors, develop streamlined contracting procedures.**
- **Consistent with DOE requirements, advocate Subawardee Improvement suggestions**
- **Utilizing modern electronic funds transfers, reduce invoice to payment time to less than 1 week after receipt of DOE funds.**
- **Deliver low overhead services to the Hydrogen Codes & Standards Program, with experienced energy and business professionals**

Project Tasks Overview

Task Number	TASK DESCRIPTION	Progress Notes
1	Coordinate with DOE, National Laboratory Representatives and Other Relevant Agencies	INITIALLY COMPLETE ONGOING
2	Manage Subcontract Awards	ONGOING
3	Facilitate Development of Codes and Standards	ONGOING
4	Support Dissemination of Information to Technology Developers, Implementers and Local Code Officials	ONGOING
5	Project Management and Reporting	ONGOING

Task Schedule

Task Number	Project Milestones	Task Completion Date				Progress Notes
		Original Planned	Revised Planned	Actual	Percent Complete	
1	Task 1.0 Coordinate with DOE, National Laboratory Representatives and Other Relevant Agencies	10/30/06	11/31/06	11/31/06	100%	Complete.
2	Subtask 1.1 Define Criteria for the Selection of Industry, CDO and SDO Participants	10/30/06	12/31/06	12/31/06	100%	Complete
3	Subtask 1.2 Selection of CDOs, SDOs and Industry Organizations	11/31/06	12/31/06	12/31/06	100%	Complete
4	Subtask 1.3 Negotiate with Selected CDOs and SDOs for Contracts	11/31/06	12/31/06	01/30/07	100%	Complete
5	Subtask 2.1 Manage Subcontract Performance	10/01/06	10/01/06	10/01/06	Ongoing	Ongoing
6	Subtask 2.2 Coordinate Collaboration Between CDOs, SDOs and Industry Organizations	10/01/06	10/01/06	10/01/06	Ongoing	Ongoing
7	Task 5.0 Project Management and Reporting	10/01/06	10/01/06	10/01/06	Ongoing	Ongoing

ANSI WEB PORTAL

<http://hcsp.ansi.org>

HYDROGEN CODES & STANDARDS PORTAL

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STANDARDS INSTITUTE



TO DAY IS TUESDAY, MAY 12

HOME |

Hydrogen Codes and Standards Portal provides one-stop access to standards critical to the jobs of building code officials, permitting officials, and fire safety officials. This information can be accessed by browsing the taxonomy below, or by using the search box to the left.

To use the browse feature,

- > Select a category or subcategory by clicking the check box next to its name.
- > If you click more than one subcategory in the same main category, records from all marked subcategories will be returned.
- > If you check subcategories from more than one main category only records that have been classified as belonging to both subcategories will be returned.

CODES & STANDARD MATRIX

KELVIN HECHT

<http://www.fuelcellstandards.com/Matrix.htm>

click to return home **Hydrogen/Fuel Cell Codes & Standards** click to return home

Select 'Application' or 'Region' Tab to Search Codes & Standards Matrix

Stationary F/C

H2 & F/C Vehicle

Portable & Micro F/C

Hydrogen Infrastructure

Misc

International

North America

Europe

Pacific Rim

Click on Area of Interest

Hydrogen & Fuel Cell Vehicle Applications

- Vehicles
 - System Design/Testing
 - Safety
 - Performance - efficiency, emissions, durability
 - Terminology
- Fuel Systems
- Fuel Cells
 - System Design/Testing
 - Performance - efficiency, emissions, durability
 - Recyclability
- Fuel Processors
 - Performance
- Fuel Tanks
- Fuel Refueling / Dispensing Connections
- Fuel Specifications

Hydrogen & Fuel Cell Vehicle Applications

Vehicles

System Design/Testing

- ▶ **Japanese Government Regulations Hydrogen Fuel Cell Vehicles**
Published Japan
- ▶ **European Integrated Hydrogen Project (EIHP) - Work Package 4 Vehicles**
Under Development European Union
- ▶ **United Nations Working Party 29 Global Technical Regulations (GTR) on Pollution and the Environment Hydrogen Vehicles**
Under Development International
- Safety**
 - ▶ **SAE J1766 Recommended Practice for Electric and Hybrid Electric Vehicle Battery Systems Crash Integrity Testing**
Published United States & Other Locals
 - ▶ **SAE J2578 Recommended Practice for General Fuel Cell Vehicle Safety**
Published United States & Other Locals
 - ▶ **ISO 23273-1 Fuel Cell Road Vehicle - Safety Specification, Part 1: Vehicle functional safety**

Future Work

- **Completion of All Remaining SubAwards, with annual funding renewals, for 2008-2011**
- **Continue Streamlining Through Electronic Payment Systems**
- **Reduce SubAwardee Transaction Time & Expense Requirements for Annual Contract Extensions for 2008 and Beyond**



Project Summary

- **Approximately 1/3 through second contract year for Regulatory Logic LLC Award Placement**
- **Start Up requirements of new cost-share with Codes & Standards partners hurdles have been overcome**
- **Ongoing positive response to streamlined electronic payments systems, which have led to invoice to payment times <1 week after receipt of DOE funds**

Questions?



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supporting **innovative regulation** toward a **sustainable world**