H2 Refuel Updates and Q&A

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Updates and Q&A Webinar

September 22, 2015

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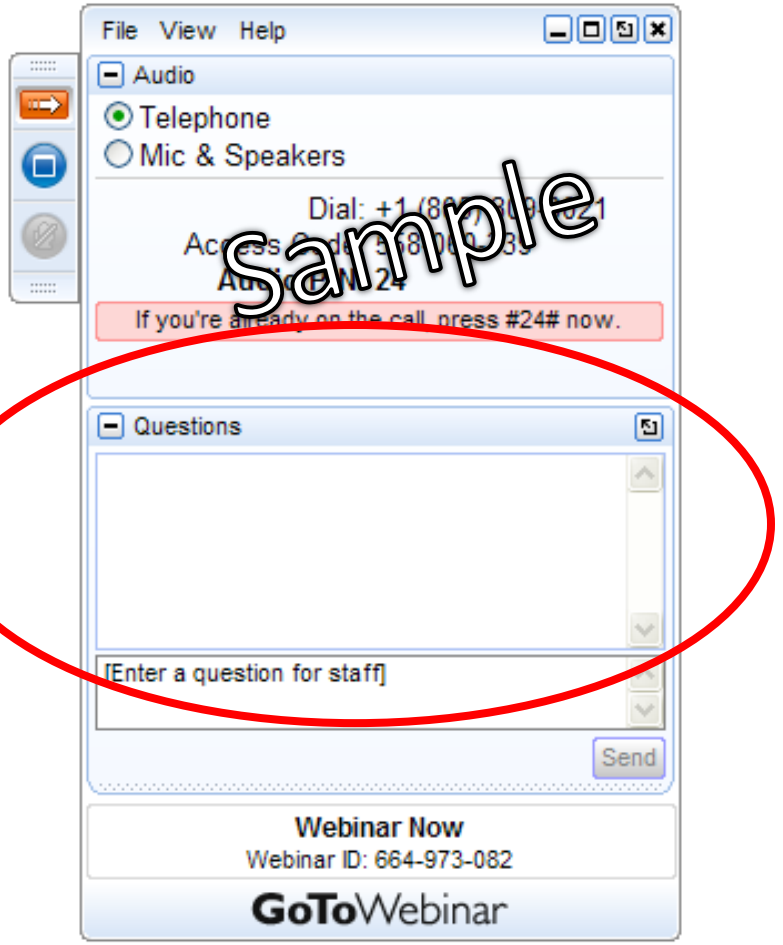
U.S. Department of Energy

Question and Answer

- Please type your question into the question box



hydrogenandfuelcells.energy.gov

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U.S. Department of Energy

Challenging America's innovators to develop on-site systems to generate and dispense hydrogen to fuel vehicles at homes, community centers or small businesses.

The Winning Entry Gets $1 Million!

Year One — Teams form, develop plans, and submit designs by October 29, 2015.

Year Two — Finalists are announced in December 2015, and will prepare their entries, and start testing in early Summer 2016. Open houses will let the public get a peek!

Beyond — The competition closes October 31, 2016. Technical and cost data will be analyzed to select the $1 million winner.

Want to compete? Interested in seeing what teams are doing? Looking to join a team? For more information, to sign up for updates, or register, visit http://hydrogenprize.org/

Timeline

The Goal: Deploy an on-site hydrogen generation system that uses electricity or natural gas and can be used in homes, community centers, retail sites or similar locations to fuel hydrogen vehicles. The best entry, based on technical and cost criteria, wins $1 million!

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The Competition:

2014

October
- Competition opens: Contestants have one year to find partners, design a system, test components, find a place to install the system, and register for the prize

2015

October
- Contestants submit data and designs, and a team of independent judges selects finalists to enter the testing phase

December
- Finalists are announced and they have 7 months to build, install, and prepare systems for testing

2016

July-October
- Remote and on-site testing data collection for the technical criteria
- Independent financial experts evaluate the cost criteria
- Open house to let the public get a peek at the entries!

December
- Data analyzed and H-Prize winner announced

Presentation at Glance

- Guideline updates
- Fill protocol information
- Submission checklist
- Registration process

Active in social media?

Share your thoughts using:

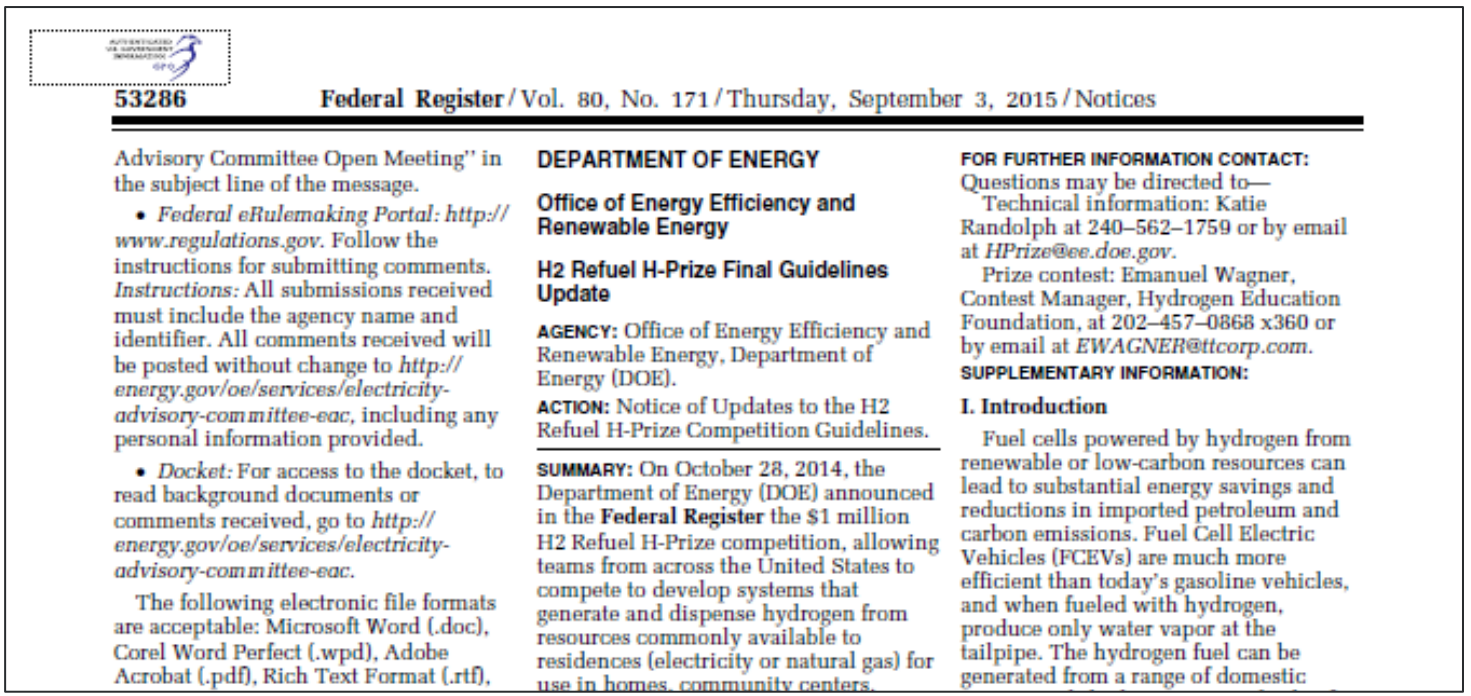
#H2IQ

#H2Refuel

Guideline Updates

Updated guidelines published in the Federal Register September 3

- Federal Register Notice available at https://federalregister.gov/a/2015-21733
- Summaries are available at www.hydrogenprize.org and www.hydrogen.energy.gov/hprize.html



53286 **Federal Register** / Vol. 80, No. 171 / Thursday, September 3, 2015 / Notices

Advisory Committee Open Meeting'' in the subject line of the message.

• *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the instructions for submitting comments. *Instructions:* All submissions received must include the agency name and identifier. All comments received will be posted without change to *http://energy.gov/oe/services/electricity-advisory-committee-eac,* including any personal information provided.

• *Docket:* For access to the docket, to read background documents or comments received, go to *http://energy.gov/oe/services/electricity-advisory-committee-eac.*

The following electronic file formats are acceptable: Microsoft Word (.doc), Corel Word Perfect (.wpd), Adobe Acrobat (.pdf), Rich Text Format (.rtf),

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

H2 Refuel H-Prize Final Guidelines Update

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy (DOE).

ACTION: Notice of Updates to the H2 Refuel H-Prize Competition Guidelines.

SUMMARY: On October 28, 2014, the Department of Energy (DOE) announced in the **Federal Register** the $1 million H2 Refuel H-Prize competition, allowing teams from across the United States to compete to develop systems that generate and dispense hydrogen from resources commonly available to residences (electricity or natural gas) for use in homes, community centers,

FOR FURTHER INFORMATION CONTACT: Questions may be directed to—

Technical information: Katie Randolph at 240–562–1759 or by email at *HPrize@ee.doe.gov.*

Prize contest: Emanuel Wagner, Contest Manager, Hydrogen Education Foundation, at 202–457–0868 x360 or by email at *EWAGNER@ttcorp.com.*

SUPPLEMENTARY INFORMATION:

I. Introduction

Fuel cells powered by hydrogen from renewable or low-carbon resources can lead to substantial energy savings and reductions in imported petroleum and carbon emissions. Fuel Cell Electric Vehicles (FCEVs) are much more efficient than today's gasoline vehicles, and when fueled with hydrogen, produce only water vapor at the tailpipe. The hydrogen fuel can be generated from a range of domestic

Guideline Updates

Key Update: Alternative scoring process

- New information and comments indicated that two minimum score targets may not be achievable in the competition timeframe
- If no entry receives at least the minimum score for all scoring criteria, the alternative process relaxes availability and/or total installed system cost targets
- ***If any entry receives at least the minimum score for all scoring criteria, the winner will be determined as described in the original guidelines***

Addendum Decision Tree

If no finalist receives at least a minimum score in each category:

Did at least one finalist receive the minimum score in all scoring criteria except for availability and is the availability 60% or higher?

Yes → Finalists receiving a minimum score in all criteria except for availability and having an availability of 60% or higher will be considered for the prize. Zero points will be given for availability and the highest total score will win. Competition is over.

No ↓

Did at least one finalist receive the minimum score in all scoring criteria except for total installed system cost, and is the total installed less than or equal to $35,000/kg/day for a home system or $18,000/kg/day for a community system?

Yes → Finalists receiving a minimum score in all criteria except for the total installed system cost and the total installed system cost does not exceed $35,000/kg/day for a home system or $18,000/kg/day for a community system will be considered for the prize. Zero points will be given for the total installed system cost and the highest total score will win. Competition is over.

No ↓

Did at least one finalist receive the minimum score in all scoring criteria except for total installed system cost and availability, and is the availability 60% or higher and is the total installed cost less than or equal to $35,000 /kg/day for a home system or $18,000/kg/day for a community system?

Yes → Finalists receiving the minimum score in all criteria except total installed system cost and availability, and have an availability of 60% or higher and the total installed system cost does not exceed $35,000 /kg/day for a home system or $18,000/kg/day for a community system, will be considered for the prize. Zero points will be given for the total installed system cost and availability criteria and the highest total score will win. Competition is over.

No ↓

The prize is not awarded and the competition is over.

Guideline Updates

Other updates include added information, clarifications, and correction

- **Additional Information**
  - Expanded tie resolution process
  - Laid out communication expectations for the finalists
- **Corrected one entry in dispensing time criteria table**
- **Scoring criteria evaluation updates**
  - Additional criteria and testing information have been and continues to be provided on the H-Prize website
  - Information on Tested Availability, Direct User Costs, and Total Installed System Costs added to guidelines
- **Clarifications**
  - Cost criteria are based on ***actual*** costs of the H2 Refuel system entry, not projected future costs

Fill Protocol Information

Simulated Fill

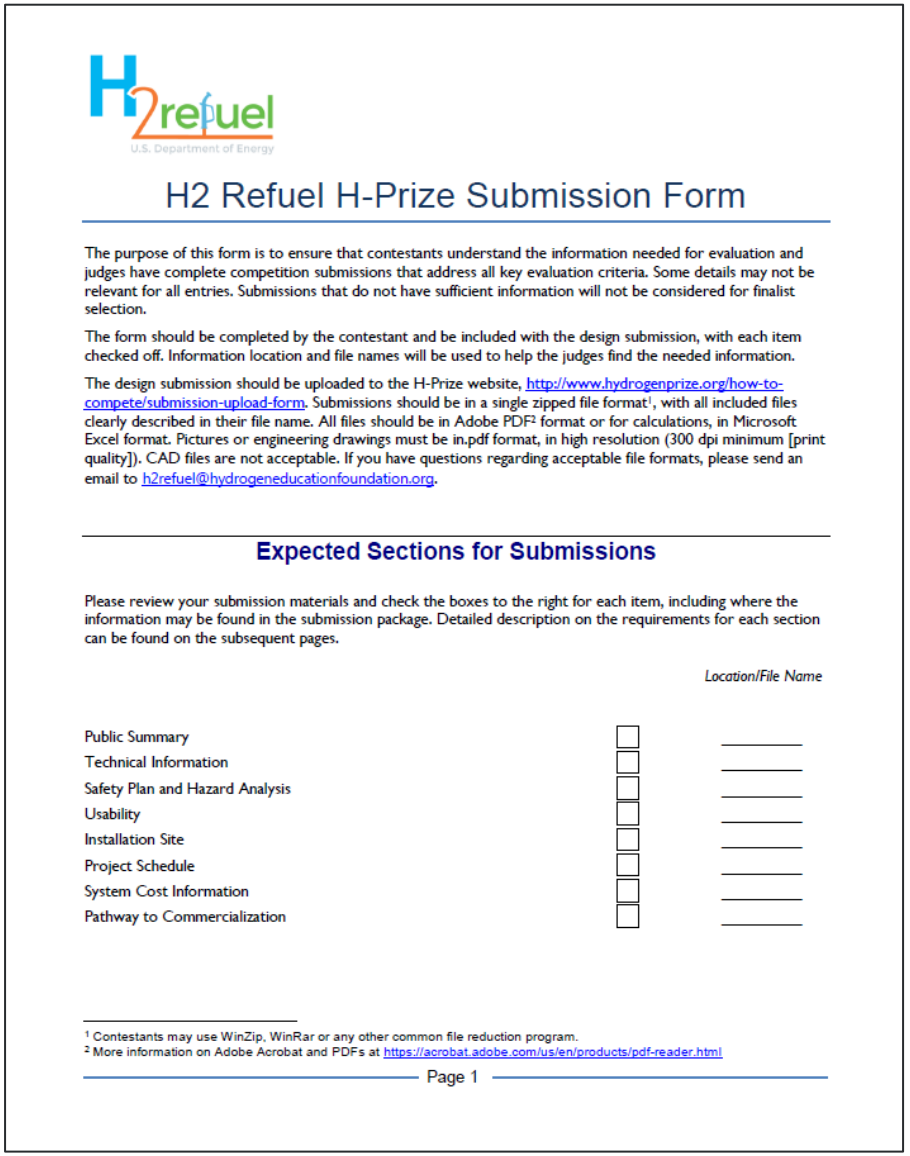
- To gather enough relevant data, systems should reach at least 50% planned capacity per week - simulated fills can be used for testing if vehicle use is below this level
- A list of relevant safety information and codes and standards for the tank system is being prepared
- For systems >350 bar, Type III and Type IV tanks can be used; 350 bar systems can also use Type I tanks
- *Contestants will need to consult individual tank manufacturer specifications*

Testing Fills

- To gather relevant system data, the nozzle pressure must reach the design system pressure during at least 25% of fills

Check List

- Lists the information judges will need to select finalists
- Guidance only – the minimum requirements from the guidelines have not changed
- Find the document with full details at http://www.hydrogenprize.org/how-to-compete/submission-checklist/



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H2 Refuel H-Prize Submission Form

The purpose of this form is to ensure that contestants understand the information needed for evaluation and judges have complete competition submissions that address all key evaluation criteria. Some details may not be relevant for all entries. Submissions that do not have sufficient information will not be considered for finalist selection.

The form should be completed by the contestant and be included with the design submission, with each item checked off. Information location and file names will be used to help the judges find the needed information.

The design submission should be uploaded to the H-Prize website, http://www.hydrogenprize.org/how-to-compete/submission-upload-form. Submissions should be in a single zipped file format[1], with all included files clearly described in their file name. All files should be in Adobe PDF[2] format or for calculations, in Microsoft Excel format. Pictures or engineering drawings must be in.pdf format, in high resolution (300 dpi minimum [print quality]). CAD files are not acceptable. If you have questions regarding acceptable file formats, please send an email to h2refuel@hydrogeneducationfoundation.org.

Expected Sections for Submissions

Please review your submission materials and check the boxes to the right for each item, including where the information may be found in the submission package. Detailed description on the requirements for each section can be found on the subsequent pages.

		Location/File Name
Public Summary	☐	_____
Technical Information	☐	_____
Safety Plan and Hazard Analysis	☐	_____
Usability	☐	_____
Installation Site	☐	_____
Project Schedule	☐	_____
System Cost Information	☐	_____
Pathway to Commercialization	☐	_____

[1] Contestants may use WinZip, WinRar or any other common file reduction program.
[2] More information on Adobe Acrobat and PDFs at https://acrobat.adobe.com/us/en/products/pdf-reader.html

Page 1

Sections

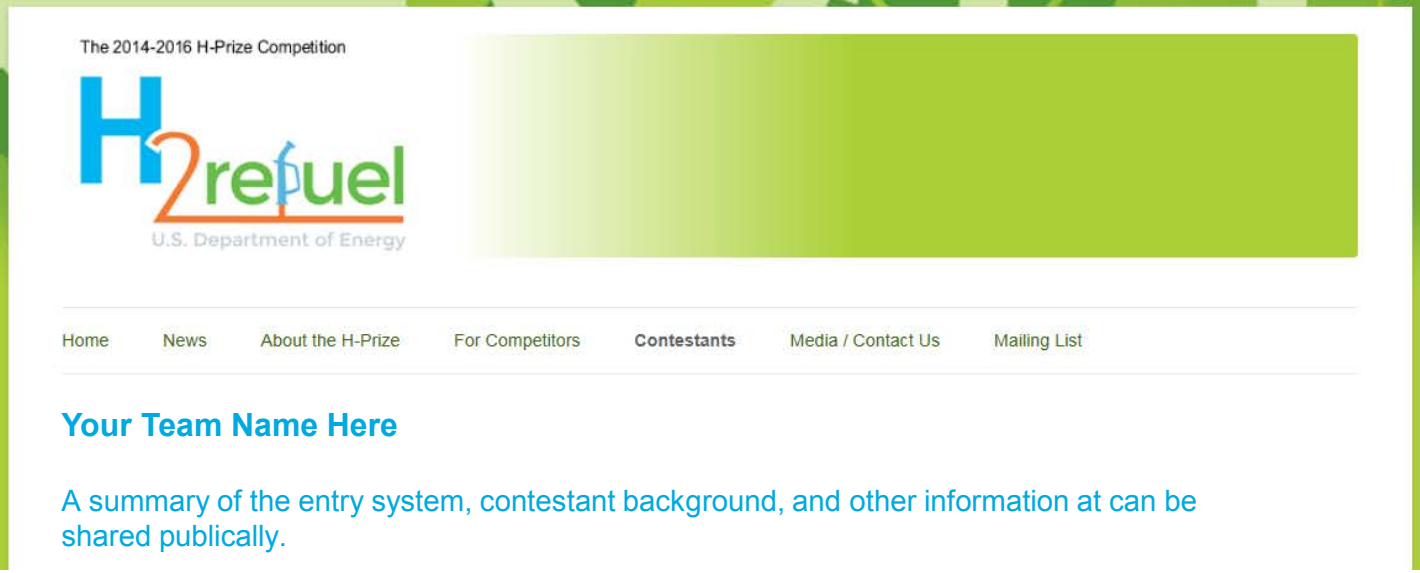
Form provides info for both competitors and judges

- Checklist and location listing allows contestants to direct judges to the relevant information
- Description of sections provides contestants with details on information needed by judges
- Expected sections/topics:
  - Public Summary
  - Technical Information
  - Safety Plan and Hazard Analysis
  - Usability
  - Installation Site
  - Project Schedule
  - System Cost
  - Pathway for Commercialization

Public Summary

Description of the entry system and plans that can be shared publically

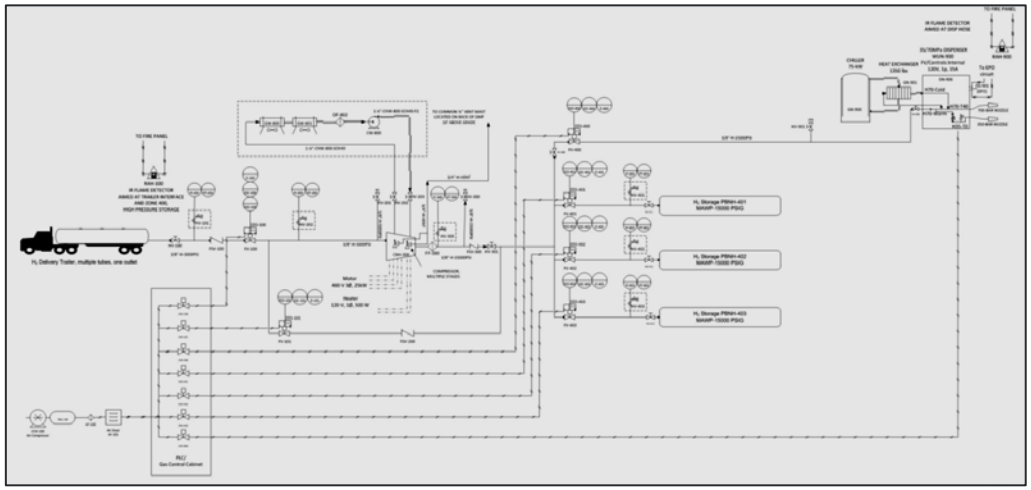
- To be used for communication purposes - not used for evaluation purposes
- Should not include any confidential or proprietary information
- Information in other submission sections will be considered confidential



Technical Information

Complete and detailed description of the system designs and plans

- System designs, layout drawings, Piping and Instrumentation Diagrams, electrical drawings and installation requirements
- Data supporting the potential to meet the finalist criteria
- System specifications
- Description of all key components
- Compatibility with NREL data collection system*

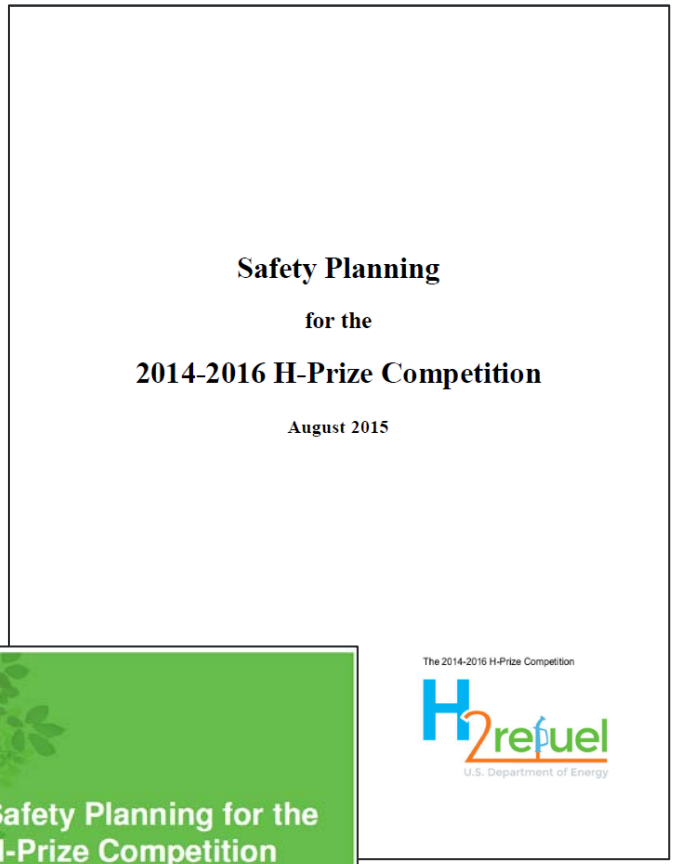


* http://www.hydrogenprize.org/how-to-compete/h2-refuel-h-prize-data-collection/

Safety Plan and Hazard Analysis

Detailed guidelines for this required document are provided

- Safety Planning guidelines for H2 Refuel entries can be found at http://www.hydrogenprize.org/how-to-compete/safety/
- Also check out the Safety Planning webinar: http://www.hydrogenprize.org/about-the-h-prize/webinars-and-presentations/#Safety



Usability

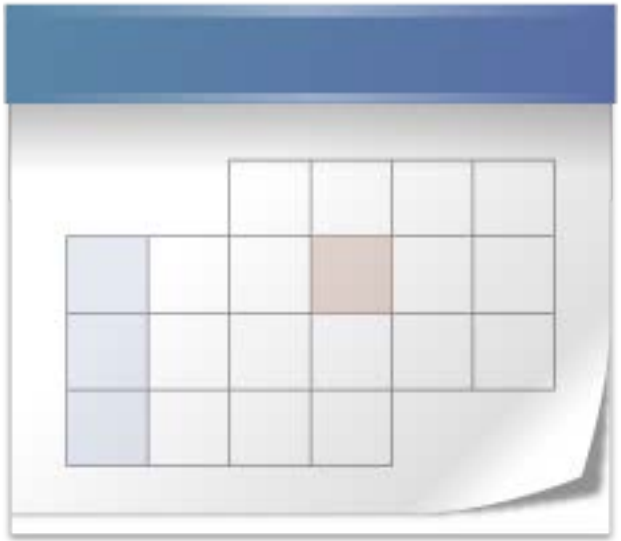
Ability of system to be used in intended locations, not only testing site

- Intended locations would be related to appropriate category – e.g., houses for Home systems, apartments or businesses with hydrogen-fueled fleets for Community systems
- System operation and needed training for an average user
- Impact on surroundings – footprint, noise, etc.
- Expected maintenance
  - To evaluate the "Tested Availability" finalist criteria, submissions will need to provide a planned maintenance schedule for the testing period

Installation Site and Project Schedule

Information about location and timing

- Documented evidence of cooperation from the installation site
- Availability of entry for public access during the open house day
- Schedule to show entry could be completed by the beginning of the testing phase in July 2016



System Cost

Information to evaluate potential to meet the minimum cost criteria

- Detailed description of the estimated costs for labor, components, permits, feedstocks, routine and non-routine maintenance
- Final cost estimate to build the system, and sources of costs with dates
- Estimates are for the actual system being entered into the competition – not a projected future system

Pathway for Commercialization

Supporting H-Prize goal to advance commercial applications of hydrogen energy technologies

- Information to show the potential of the system to ultimately be commercialized
- Description of a pathway to commercial production of the entry system
- Discussion of expected cost reductions, further advances needed for large-scale production
- Potential for investment and partnering

Registration

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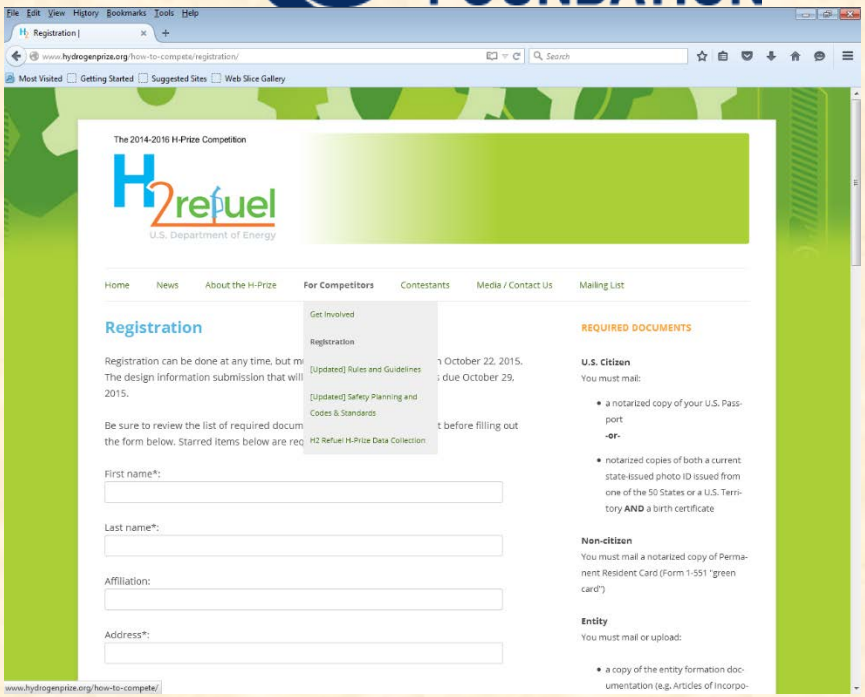

- Go to www.hydrogenprize.org
- Click “Registration” under the “For Competitors” tab
- You will fill out:
  - Contact Information
  - Status
  - Indication of compliance with all H-Prize rules
- Registrant will receive confirmation email upon registration completed
- **Registration must be completed by October 22, 2015**
- Recommended to register ahead of deadline
- Entries due October 29, 2015

Important Check Boxes

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- “Contestants must submit a signed waiver of claims against the Federal Government and the HEF”
- “Contestants must obtain liability insurance, or satisfactorily demonstrate financial responsibility”
- “Contestants must name the Federal Government as an additional insured under the Registered contestants’ insurance policy and agree to indemnify the Federal Government against third party claims”
- Contestants must identify the sole point of contact with H2 Refuel H-Prize Competition officials
  - Default contact is individual identified during registration
  - Changes to sole point of contact need to be provided immediately

Required Documents

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Team Roster

- Details who is part of the contestant team
- Required at time of registration
- All team members must be U.S. citizens or permanent residents
- Can be updated until 72 hours before award presentation

If you are a U.S. citizen you must mail either:

- A notarized copy of your U.S. Passport or,
- Notarized copies of both a current state-issued photo ID issued from one of the 50 States or a U.S. Territory AND birth certificate

If you are not a U.S. citizen:

- A notarized copy of Permanent Resident Card
  - Form 1-551 “Green Card”

Entities must mail or upload:

- A copy of the entity formation documentation showing the place of formation
  - e.g. Articles of Incorporation
- A self-certification of the primary place of business

Mailing Address:

Hydrogen Education Foundation
Attn: H-Prize
1211 Connecticut Ave NW, Suite 650
Washington D.C. 20036

Additional Information

HYDROGEN EDUCATION FOUNDATION

- All this information and more is located on the H-Prize website!
  - http://www.hydrogenprize.org/
- Take a look at the FAQ!
  - http://www.hydrogenprize.org/about-the-h-prize/faqs/
- Sign up for the H-Prize mailing list!
  - http://www.hydrogenprize.org/mailing-list/
- Follow us on Twitter!
  - @H2Refuel

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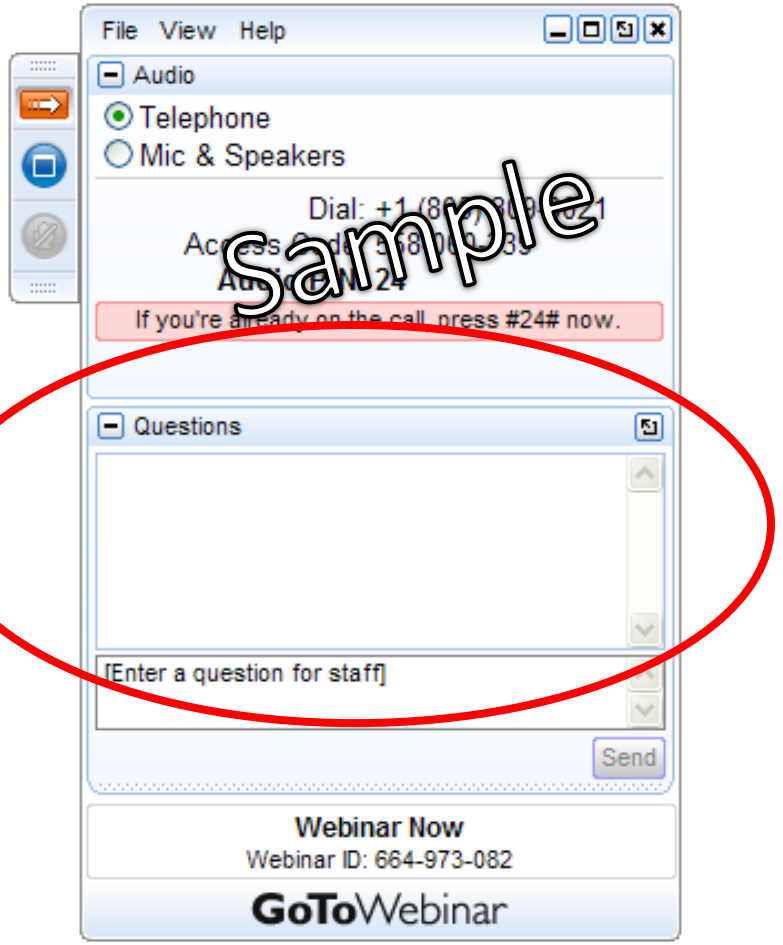

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