VII.1 Determine Baseline Knowledge of Hydrogen and Fuel Cells

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Objectives

- To measure the current level of awareness and understanding of hydrogen and fuel cell technologies and the hydrogen economy in four target populations:
  - General public
  - Students and educators
  - State and local government agencies
  - Potential large-scale users
- To establish a baseline for comparison of future evaluations of awareness, knowledge, and opinion of the same four target populations

Technical Barriers

This project addresses the following technical barriers from the Education section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- Lack of Awareness
- Institutional Barriers and Access to Audiences
- Regional Differences

Approach

- Review existing literature on hydrogen knowledge and attitudes
- Design survey instruments that are targeted to specific populations
- Obtain approval from the Office of Management and Budget (OMB) to conduct the surveys
- Conduct surveys and analyze data to establish a baseline of knowledge and opinions for each target population
- Establish a non-survey metrics information collection methodology
- Publish a Baseline Knowledge Assessment report

Accomplishments

- Completed literature review and published final report in October 2003
- Published 60-day and 30-day Federal Register Notices concerning surveys
- Completed survey instruments for all populations
- Received OMB approval for the surveys of the general public and students
- Completed draft plan for data analysis and quality assurance

- Conducted pilot surveys of general public and student populations
- Completed full survey of 1,000 respondents of general public
- Continued to work with OMB to obtain approval to conduct surveys of remaining populations

Future Directions

- Obtain approval from OMB to conduct surveys of educators, state and local agencies, and large-scale users
- Analyze survey results to determine the baseline knowledge of hydrogen and fuel cells for each of the populations involved in the surveys
- Identify subject areas where hydrogen knowledge is lacking
- Identify institutional barriers that prevent target audiences from receiving instruction or becoming informed about the Hydrogen Program
- Use the survey results to identify differences, where appropriate, among regions, genders, and age groups
- Determine the appropriate mechanism for conveying information about hydrogen and hydrogen technologies to each of the audiences
- Continue collection and analysis of non-survey metrics
- Document survey and non-survey metrics findings in a report
- Document programs, methods, and data to facilitate repeating the surveys in 2007 and comparing results with the 2004 baseline
- Archive 2004 survey data, programs, and documents
- Repeat surveys in 2007 and again in 2010

Introduction

The Hydrogen Program needs to determine the baseline knowledge of hydrogen and fuel cells in the United States in order to design an appropriate educational program and, in the future, to assess the effectiveness of the educational program. Baseline knowledge of hydrogen and fuel cells will be determined through surveys of four distinct population groups: the general public, students and educators, state and local governments, and potential large-scale users and/or agencies that impact large-scale users. Each of these populations is very different and requires a different approach for assessing knowledge. While recognizing that knowledge-assessment surveys cannot pinpoint causality of changes in knowledge and opinions, subsequent surveys identical in methodology to the baseline surveys can measure changes from baseline knowledge levels. The effect of the educational program will be measured in terms of program activities designed to impact baseline knowledge levels.

Approach

This task was initiated during FY 2003 with planning sessions, a literature search, and limited testing of draft questionnaires to ensure that the surveys were well-defined and that the objectives for both current and future surveys would be accomplished. Surveys were designed, refined, and tested for each of the target populations. Processes and procedures for collecting and analyzing the survey data were established and documented.

Results

It was decided to use a Computer-aided Telephone Interview (CATI) methodology to administer the surveys. The survey instruments have similar designs. For each population group, one section focuses on obtaining information that is specific to that particular group.

While the public and student surveys were initiated during this reporting period, survey results had not been analyzed at the time this report was prepared. Pilot testing on 50 general public respondents indicates some interesting results, but

these indications are preliminary. Results of interviews with 1,000 persons (the general public survey) will be used for the final analysis of this population group.

OMB approval to conduct the public and student surveys was obtained, and a great deal of explanatory information has been supplied to OMB on the remaining populations. The survey instruments have been prepared for all populations, and a plan has been completed for data analysis and quality assurance.

Non-survey metrics have been collected on a limited basis. Figure 1 shows the results of counts of the number of times certain keywords (fuel cells, hydrogen economy, hydrogen infrastructure, hydrogen storage) appeared in five major metropolitan newspapers for all of 2003 and for the first five months of 2004. Less than half as many articles about hydrogen-related topics have appeared in newsprint in 2004 than there were in 2003 at about the same time.

Conclusions

Although there are few quantitative results to report resulting from the surveys, a great deal of effort has gone into ensuring that the survey instruments are valid and that the population samples

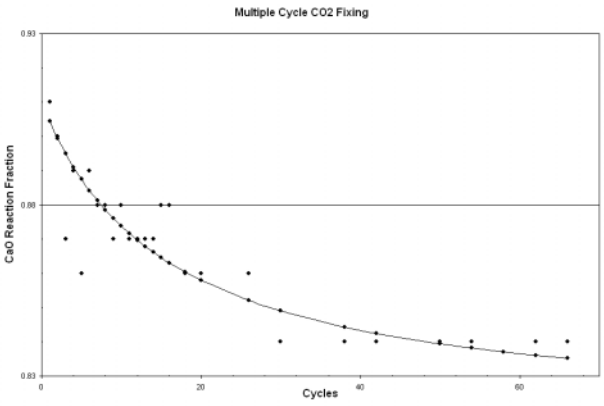

Figure 1. Counts of Hydrogen-Related Key Words in Five Major Metropolitan Newspapers

are carefully constructed. Data analysis and quality assurance plans have been carefully constructed.

FY 2004 Publications/Presentations

1. Truett, Tykey, *Literature Review for the Baseline Knowledge Assessment of the Hydrogen, Fuel Cells and Infrastructure Technologies Program,* Oak Ridge National Laboratory, Oak Ridge, Tennessee, ORNL/TM-2003/258, October 2003.

2. Truett, Tykey, "Baseline Knowledge Assessment," presentation to the 2004 DOE Hydrogen Program Review," May 27, 2004.