Introduction

The 2009 DOE Hydrogen Program and Vehicle Technologies Program Annual Merit Review and Peer Evaluation Meeting was held May 18-22, 2009 in Arlington, Virginia. The review encompassed all of the work done by the Hydrogen Program and the Vehicle Technologies Program: a total of 304 individual activities were reviewed for Vehicle Technologies, by a total of 142 reviewers. A total of 1,286 individual review responses were received for the technical reviews.

The objective of the meeting was to review the FY 2008 accomplishments and FY 2009 plans for the Vehicle Technologies Program, and provide an opportunity for industry, government, and academic to give inputs to DOE on the Program with a structured and formal methodology. The meeting also provided attendees with a forum for interaction and technology information transfer.

The reviewers for the technical sessions were drawn from a wide variety of backgrounds, including current and former vehicle industry members, academia, government, and other expertise areas. In the technical sessions, these reviewers were asked to respond to a series of specific questions regarding the breadth, depth, and appropriateness of the DOE Vehicle Technologies Program. The technical questions are listed below, along with the scoring metrics (if appropriate): these questions were used for all Vehicle Technologies Program reviews with the exception of the Education and Technology Integration work that had been transferred from the Hydrogen Program during FY 2009.

Question 1: Does this project support the overall DOE objectives of petroleum displacement? Why or why not?

Question 2: Approach to performing the work: the degree to which technical barriers are addressed, the project is well-designed, feasible, and integrated with other efforts. Scoring: 4=outstanding (sharply focused on technical barriers; difficult to improve approach significantly); 3=good (generally effective but could be improved; contributes to overcoming some barriers); 2=fair (has significant weaknesses; may have some impact on overcoming barriers); 1=poor (not responsive to project objectives; unlikely to contribute to overcoming the barriers). (Scoring weight for overall average: 20%)

Question 3: Technical accomplishments and progress toward overall project and DOE goals: the degree to which progress has been made, measured against performance indicators and demonstrated progress toward DOE goals. Scoring: 4=outstanding (excellent progress toward objectives, suggests that barriers will be overcome); 3=good (significant progress toward objectives and overcoming one or more barriers); 2=fair (modest progress in overcoming barriers, rate of progress has been slow); 1=poor (little or no demonstrated progress toward objectives or any barriers). (Scoring weight for overall average: 40%)

Question 4: Collaboration and coordination with other institutions. Scoring: 4=outstanding (close, appropriate collaboration with other institutions, partners are full participants and well coordinated); 3=good (some collaboration exists, partners are fairly well coordinated); 2=fair (a little collaboration exists, coordination between partners could be improved); 1=poor (most work is done at the sponsoring organization with little outside collaboration, little or no apparent coordination between partners). (Scoring weight for overall average: 10%)

Question 5: Proposed future research: the degree to which the project has effectively planned its future work in a logical manner by incorporating appropriate decision points, considering barriers to the realization of the proposed technology, and, when sensible, mitigating risk by providing alternate development pathways. Scoring: 4=outstanding (plans clearly build on past progress and are sharply focused on barriers); 3=good (plans build on past progress and generally address overcoming barriers); 2=fair (plans may lead to improvements, but need better focus on overcoming barriers); 1=poor (plans have little relevance toward eliminating barriers or advancing the program).

Question 6: Resources: how sufficient are the resources for the project to achieve the stated milestones in a timely fashion? Responses: excessive, sufficient, insufficient.

The Education and Technology Integration work used the following questions, which were generally similar to the ones used for the other projects in this Merit Review.

Question 1: Relevance to overall DOE objectives – the degree to which the project supports the goals and objectives of the relevant section of the Multi-Year RD&D plan. Scoring: 4 - Outstanding. Project is critical to the DOE Program RD&D objectives and fully addresses the key technical targets; 3 - Good. Project strongly supports the DOE Program RD&D objectives and addresses key technical targets; 2 - Fair. Project only partially supports the DOE Program RD&D objectives or the key technical targets; and 1 - Poor. Project provides little support to the Program RD&D objectives or the key technical targets. (Scoring weight for overall average: 20%)

Question 2: Approach to performing the work – the degree to which technical barriers are addressed, the project is well-designed, feasible, and integrated with other efforts. Scoring: 4 - Outstanding. Sharply focused on technical barriers; difficult to improve approach significantly; 3 - Good. Generally effective but could be improved; contributes to overcoming some barriers; 2 - Fair. Has significant weaknesses; may have some impact on overcoming barriers; and 1 - Poor. Not responsive to project objectives; unlikely to contribute to overcoming the barriers. (Scoring weight for overall average: 20%)

Question 3: Technical Accomplishments and Progress toward overall project and DOE Technology Validation goals – the degree to which progress has been made, measured against performance indicators and demonstrated progress towards DOE goals. Scoring: 4 - Outstanding. Excellent progress toward objectives; suggests that barrier(s) will be overcome; 3 - Good. Significant progress toward objectives and overcoming one or more barriers; 2 - Fair. Modest progress in overcoming barriers; rate of progress has been slow; and 1 - Poor. Little or no demonstrated progress towards objectives or any barriers. (Scoring weight for overall average: 40%)

Question 4: Collaborations with other institutions - the degree to which the project interacts with industry partners, universities and laboratories. Scoring: 4 - Outstanding. Close, appropriate collaboration with other institutions; partners are full participants; 3 - Good. Some collaboration exists; full/needed coordination could be accomplished easily; 2 - Fair. A little collaboration exists; full/needed coordination would take additional significant; and 1 - Poor. Most work is done at the sponsoring organization with little outside interaction. (Scoring weight for overall average: 10%)

Question 5: Proposed Future Activities – the degree to which the project has effectively planned its future work in a logical manner. Scoring: 4 - Outstanding. Plans clearly build on past progress and are sharply focused on barriers; 3 - Good. Plans build on past progress and generally address overcoming barriers; 2 - Fair. Plans may lead to improvements, but need better focus on overcoming barriers; and 1 - Poor. Plans have little relevance toward eliminating barriers or advancing the program. (Scoring weight for overall average: 10%)

Question 6: Project Strengths

Question 7: Project Weaknesses

Question 8: Recommendations for Additions/Deletions to Project Scope

Responses to the questions were submitted electronically through a web-based software application, PeerNet, operated by the Oak Ridge Institute for Science and Education (ORISE). Database outputs from this software

application were then analyzed and summarized to collate the multiple-choice, text comment, and numeric scoring responses to produce the summary report.

The report is organized into individual sections for each technical area. Responses to the questions are summarized in the pages that follow, with summaries of numeric scores for each technical session, as well as text and graphical summaries of the responses for each individual technical activity. A list of the activities (and page numbers) for each section appears at the start of each section.