

Appendix C: Evaluation Forms

General Project Evaluation Form

This evaluation form is for use with the following Hydrogen and Fuel Cell Technologies Office review panels/projects: Hydrogen Production Technologies;¹ Hydrogen Infrastructure Technologies (Delivery/Infrastructure/Storage); Fuel Cell Technologies; Systems Development and Integration; and Analysis, Codes and Standards.²

Evaluation Criteria: U.S. Department of Energy (DOE) 2023 Hydrogen Program Annual Merit Review

Please provide specific, concise comments to support your evaluation—it is important that you write in full sentences and clearly convey your meaning to prevent incorrect interpretation.

1. Approach to Performing the Work

The degree to which project objectives and critical barriers have been clearly identified and are being addressed, and the extent to which the project is well-designed, feasible, and integrated with other relevant efforts. (**Weight = 20%**)

- 4.0 – Outstanding.** Sharply focused on overcoming critical barriers; difficult to improve significantly.
 - 3.5 – Excellent.** Effective; contributes to overcoming most barriers.
 - 3.0 – Good.** Generally effective but could be improved; contributes to overcoming some barriers.
 - 2.5 – Satisfactory.** Has some weaknesses; contributes to overcoming some barriers.
 - 2.0 – Fair.** Has significant weaknesses; may have some impact on overcoming barriers.
 - 1.5 – Poor.** Minimally responsive to project objectives; unlikely to contribute to overcoming the barriers.
 - 1.0 – Unsatisfactory.** Not responsive to project objectives; unlikely to contribute to overcoming the barriers.
- 4.0 – Outstanding
 3.5 – Excellent
 3.0 – Good
 2.5 – Satisfactory
 2.0 – Fair
 1.5 – Poor
 1.0 – Unsatisfactory

Comments on Approach to Performing the Work:

¹ HydroGEN seedling projects use Form B.

² Newly awarded projects will be evaluated using the same criteria as this General Project form but with a lower scoring weight on Accomplishments (5%) and higher weights on Approach (40%) and Proposed Future Work (25%).

2. Accomplishments and Progress Toward Overall Project and DOE Goals

The degree to which progress toward project objectives has been made and measured against well-defined performance indicators, and the degree to which the project has demonstrated progress toward addressing critical barriers to achieving DOE goals. (**Weight = 35%**)

4.0 – Outstanding. Outstanding progress toward project objectives is demonstrated through clear and measurable performance indicators; results have led directly to overcoming one or more critical barriers.

3.5 – Excellent. Excellent progress toward project objectives is demonstrated through clear and measurable performance indicators; results suggest that one or more critical barriers will be overcome.

3.0 – Good. Significant progress has been made, but there are weaknesses that need to be addressed to improve the rate of progress or improve the clarity of the project's objectives and performance indicators; contributes to overcoming some barriers.

2.5 – Satisfactory. Moderate progress has been made, but there are weaknesses that need to be addressed to improve the rate of progress or improve the clarity of the project's objectives and performance indicators; contributes to overcoming some barriers.

2.0 – Fair. Modest progress—rate of progress has been slow; may have some impact on overcoming barriers.

1.5 – Poor. Minimal progress toward project objectives and poorly defined performance indicators; unlikely to contribute to overcoming the barriers.

1.0 – Unsatisfactory. Little to no demonstrated progress toward project objectives; unlikely to contribute to overcoming the barriers.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Accomplishments and Progress Toward Overall Project and DOE Goals:

3. Collaboration and Coordination with Other Institutions

The degree to which the project effectively engages and coordinates project partners and interacts with other entities and projects to accelerate project progress and improve the likelihood of the project's success and impact.
(Weight = 10%)

4.0 – Outstanding. Close, appropriate collaboration with other institutions; partners are full participants and well-coordinated.

3.5 – Excellent. Good collaboration; partners participate and are well-coordinated.

3.0 – Good. Collaboration exists; partners are fairly well-coordinated.

2.5 – Satisfactory. Some collaboration exists; coordination between partners could be significantly improved.

2.0 – Fair. A little collaboration exists; coordination between partners could be significantly improved.

1.5 – Poor. Most work is done at the sponsoring organization with little outside collaboration; little or no apparent coordination with partners.

1.0 – Unsatisfactory. No apparent coordination with partners.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Collaboration and Coordination with Other Institutions:

4. Potential Impact

The degree to which the project supports and advances progress toward the project's specific performance targets and the Hydrogen Program goals and objectives, as delineated in the Program and subprogram overview presentations given during the Annual Merit Review. (**Weight = 20%**)

4.0 – Outstanding. Project is critical to the Hydrogen Program and has potential to significantly advance progress toward DOE RD&D goals and objectives.

3.5 – Excellent. The project aligns well with the Hydrogen Program and DOE RD&D objectives and has the potential to advance progress toward DOE RD&D goals and objectives.

3.0 – Good. Most project aspects align with the Hydrogen Program and DOE RD&D objectives.

2.5 – Satisfactory. Project aspects align with some of the Hydrogen Program and DOE RD&D objectives.

2.0 – Fair. Project partially supports the Hydrogen Program and DOE RD&D objectives.

1.5 – Poor. Project has little potential impact on advancing progress toward the Hydrogen Program and DOE RD&D goals and objectives.

1.0 – Unsatisfactory. Project has little to no potential impact on advancing progress toward the Hydrogen Program and DOE RD&D goals and objectives.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Potential Impact:

5. Proposed Future Work

The degree to which the project has effectively planned its future in a logical manner by incorporating appropriate decision points, considering barriers to its goals and, when sensible, mitigating risk by providing alternate pathways.
Note: if a project has ended, please leave blank. (Weight = 15%)

4.0 – Outstanding. Plans clearly build on past progress and are sharply focused on critical barriers to project goals; difficult to improve significantly.

3.5 – Excellent. Effective; contributes to overcoming most barriers.

3.0 – Good. Plans generally build on past progress and should contribute to overcoming some barriers.

2.5 – Satisfactory. Has some weaknesses; contributes to overcoming some barriers.

2.0 – Fair. Plans may lead to improvements but need better focus on addressing project weaknesses; may have some impact on overcoming barriers.

1.5 – Poor. Minimally responsive to project objectives; unlikely to resolve project weaknesses and contribute to overcoming barriers.

1.0 – Unsatisfactory. Not responsive to project objectives; unlikely to contribute to overcoming barriers.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Proposed Future Work:

SUMMARY OF REVIEWER COMMENTS

Project Strengths:

Project Weaknesses:

Recommendations for Additions/Deletions to Project Scope:

HydroGEN Seedling Project Evaluation Form

This evaluation form is for use with HydroGEN seedling projects.

Evaluation Criteria: U.S. Department of Energy (DOE) 2023 Hydrogen Program Annual Merit Review

Please provide specific, concise comments to support your evaluation—it is important that you write in full sentences and clearly convey your meaning to prevent incorrect interpretation.

1. Approach to Performing the Work

The degree to which barriers have been clearly identified and are being addressed through project innovation, and the extent to which the project is well-designed and feasible. A strong emphasis should be placed on the appropriateness of the scope of work toward validation of the project's technology innovation. (**Weight = 20%**)

4.0 – Outstanding. Sharply focused on critical barriers and validating technology innovation; difficult to improve significantly.

3.5 – Excellent. Effective; contributes to overcoming most barriers and validating technology innovation.

3.0 – Good. Generally effective but could be improved; contributes to overcoming some barriers and validating technology innovation.

2.5 – Satisfactory. Has some weaknesses; contributes to overcoming some barriers and validating technology innovation.

2.0 – Fair. Has significant weaknesses; may have some impact on overcoming barriers and/or validating technology innovation.

1.5 – Poor. Minimally responsive to project objectives; unlikely to contribute to overcoming the barriers or validating technology innovation.

1.0 – Unsatisfactory. Not responsive to project objectives; unlikely to contribute to overcoming the barriers or validating technology innovation.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Approach to performing the work:

2. Accomplishments and Progress Toward Overall Project and DOE Goals

The degree to which progress has been made and measured against performance indicators, and the degree to which the project has demonstrated progress toward DOE goals, as well as the HydroGEN Consortium mission. A particular emphasis should be placed on the strength of the data presented by the accomplishments (including data from the HydroGEN nodes leveraged by the project) in terms of supporting accomplishments. An additional emphasis should be placed on the strength of the project's current budget period's go/no-go criteria, if applicable, and on project progress toward meeting these criteria. (**Weight = 30%**)

4.0 – Outstanding. Outstanding progress toward ambitious go/no-go criteria; accomplishments are supported by strong and convincing data; difficult to improve significantly.

3.5 – Excellent. Excellent progress toward impactful go/no-go criteria; accomplishments are supported by strong data.

3.0 – Good. Significant progress toward meaningful go/no-go criteria; accomplishments are supported by adequate data.

2.5 – Satisfactory. Satisfactory progress toward adequate go/no-go criteria; accomplishments are supported by some data.

2.0 – Fair. Limited data and accomplishments to support the go/no-go criteria; go/no-go criteria may be weak.

1.5 – Poor. Unlikely to meet the go/no-go criteria; go/no-go criteria may be weak.

1.0 – Unsatisfactory. Unlikely to meet the go/no-go criteria; go/no-go criteria are inadequate or missing.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Accomplishments and Progress toward overall project and DOE goals:

3. Collaboration Effectiveness with HydroGEN and, if Applicable, Other Research Entities

The degree to which the project has engaged with the HydroGEN Energy Materials Network and has effectively used nodes to accelerate materials development and improve the likelihood of the project's success and impact. This also includes the effectiveness of project engagement with the broader materials research community, including work with HydroGEN's crosscutting benchmarking/protocols (2b) project team, the HydroGEN Data Team, pathway-specific working groups, and others. An additional factor is the broader value and impact of the project's data-sharing through the HydroGEN Data Hub. (**Weight = 25%**)

4.0 – Outstanding. Close, appropriate collaboration with other institutions, specifically the HydroGEN Consortium, with appropriate use of nodes, contributions to the benchmarking/protocols (2b) project and the HydroGEN Data Hub; partners are full participants and well-coordinated.

3.5 – Excellent. Good collaboration with other institutions, specifically the HydroGEN Consortium, with appropriate use of nodes, contributions to the benchmarking/protocols (2b) project and the HydroGEN Data Hub; partners participate and are well-coordinated.

3.0 – Good. Collaboration exists with the HydroGEN Consortium and includes node utilization and engagement with the benchmarking/protocols (2b) project and the HydroGEN Data Hub; partners are fairly well-coordinated.

2.5 – Satisfactory. Some collaboration exists; coordination between partners could be significantly improved, specifically with respect to the HydroGEN Consortium node utilization activities and engagement with the benchmarking/protocols (2b) project and the HydroGEN Data Hub.

2.0 – Fair. A little collaboration exists; coordination between partners could be significantly improved, specifically with respect to the HydroGEN Consortium node utilization activities and engagement with the benchmarking/protocols (2b) project and the HydroGEN Data Hub.

1.5 – Poor. Most work is done at the sponsoring organization, with little outside collaboration; there is little or no apparent coordination with partners or the HydroGEN Consortium.

1.0 – Unsatisfactory. No apparent coordination with partners and the HydroGEN Consortium.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Collaboration Effectiveness with HydroGEN and, if applicable, other research entities:

4. Potential Impact

The degree to which the project supports and advances progress toward the DOE Hydrogen Program goals and objectives, and also supports and advances the HydroGEN Consortium mission. A strong emphasis should be placed on the project's potential to advance the discovery and development of novel, advanced water-splitting materials systems, which will enable meeting the DOE ultimate hydrogen production goal of \$1/kg H₂ or interim hydrogen production goal of \$2/kg H₂. An additional factor to consider is how well the project fits into, leverages, and potentially enhances the framework and resources of the HydroGEN Consortium. (**Weight = 15%**)

4.0 – Outstanding. Project is critical to the Hydrogen Program, has potential to significantly advance progress toward DOE RD&D goals and objectives, and is significantly leveraging and contributing to the resources and framework of the HydroGEN Consortium.

3.5 – Excellent. The project aligns well with the Hydrogen Program and DOE RD&D objectives, has the potential to advance progress toward DOE RD&D goals and objectives, and is aptly leveraging and contributing to the resources and framework of the HydroGEN Consortium.

3.0 – Good. Most project aspects align with the Hydrogen Program and DOE RD&D objectives, and the project is adequately leveraging and contributing to the resources and framework of the HydroGEN Consortium.

2.5 – Satisfactory. Project aspects align with some of the Hydrogen Program and DOE RD&D objectives, and the project is leveraging and contributing to the resources and framework of the HydroGEN Consortium to some extent.

2.0 – Fair. Project only partially supports the Hydrogen Program and DOE RD&D objectives, and the project is not adequately leveraging and contributing to the resources and framework of the HydroGEN Consortium.

1.5 – Poor. Project has little potential impact on advancing progress toward the Hydrogen Program and DOE RD&D goals and objectives, and the project has minimal interaction with HydroGEN to leverage and contribute to the resources and framework of the HydroGEN Consortium.

1.0 – Unsatisfactory. Project has little to no potential impact on advancing progress toward the Hydrogen Program and DOE RD&D goals and objectives, and the project is not leveraging and contributing to the resources and framework of the HydroGEN Consortium.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Potential Impact:

5. Proposed Future Work

The degree to which the project has effectively planned its potential future work in a logical manner and leverages progress made in previous budget periods toward meeting end-of-project goals and advancing the materials research mission of the HydroGEN Consortium. (**Weight = 10%**)

4.0 - Outstanding. Sharply focused on critical barriers, meeting end-of-project goals and advancing the materials research mission of the HydroGEN Consortium; difficult to improve significantly.

3.5 - Excellent. Effective; contributes to overcoming most barriers, meeting most end-of-project goals and advancing the materials research mission of the HydroGEN Consortium.

3.0 - Good. Generally effective but could be improved; contributes to overcoming some barriers, meets some end-of-project goals, and has potential to advance the materials research mission of the HydroGEN Consortium.

2.5 - Satisfactory. Has some weaknesses; contributes to overcoming some barriers, meets some end-of-project goals, and may contribute to advancing the materials research mission of the HydroGEN Consortium.

2.0 - Fair. Has significant weaknesses; may have some impact on overcoming barriers, makes minimal progress toward end-of-project goals, and insignificantly contributes to advancing the materials research mission of the HydroGEN Consortium.

1.5 - Poor. Minimally responsive to project objectives; unlikely to contribute to overcoming the barriers or meet end-of-project goals and will most likely not contribute to advancing the materials research mission of the HydroGEN Consortium.

1.0 - Unsatisfactory. Not responsive to project objectives; unlikely to contribute to overcoming the barriers or meet end-of-project goals and is unlikely to contribute to advancing the materials research mission of the HydroGEN Consortium.

- 4.0 – Outstanding
- 3.5 – Excellent
- 3.0 – Good
- 2.5 – Satisfactory
- 2.0 – Fair
- 1.5 – Poor
- 1.0 – Unsatisfactory

Comments on Proposed Future Work:

SUMMARY OF REVIEWER COMMENTS

Project Strengths:

Project Weaknesses:

Recommendations for Additions/Deletions to Project Scope:

2023 AMR – DOE Hydrogen Program Review Questions

Dear DOE Hydrogen Program Reviewer: We appreciate your input on the overall DOE Hydrogen Program and its participating DOE offices. Please provide your scores and comments on the questions below *based on the Annual Merit Review (AMR) sessions you attended and your particular areas of expertise and focus*. You may answer as many questions as you like; blank or N/A scores will not affect the merit review results. Your comments will be useful in helping to guide future DOE program strategies and priorities.

The DOE Hydrogen Program is being coordinated through the Hydrogen and Fuel Cell Technologies Office (HFTO) in the DOE Office of Energy Efficiency and Renewable Energy (EERE), with research, development, demonstration, and deployment (RDD&D) activities across multiple DOE offices including Fossil Energy and Carbon Management (FECM), Nuclear Energy (NE), Science (SC), Advanced Research Projects Agency–Energy (ARPA-E), Office of Clean Energy Demonstrations (OCED), Office of Technology Transitions (OTT), Loan Programs Office (LPO), Office of Electricity (OE), Office of Indian Energy Policy and Programs (IEPP), and others. For each question you answer, please provide comments (as applicable) on the overall Hydrogen Program and, as appropriate, on specific Hydrogen Program offices.

Please refer to the AMR's plenary program for overview presentations on the overall DOE Hydrogen Program. Information on specific RDD&D activities being carried out by the different DOE offices can be found in the plenary, oral, and poster AMR presentations.

1. The Hydrogen Program plan and strategy were clearly articulated and well-aligned with the mission and goals of the National Clean Hydrogen Strategy and Roadmap and of the Hydrogen Shot.

Please rate your response on a scale of 1 through 10, with 1 indicating that you strongly disagree and 10 indicating that you strongly agree, or N/A if you have no opinion.

1	Hydrogen Program Overall Strategy
Score	

General Comments:

Specific Comments: on how well the Hydrogen Program has identified important challenges to meeting goals and articulated plans to address the challenges.

2. The Hydrogen Program is aligned well with industry and stakeholder needs and appropriately complements private-sector, state, and other non-DOE investments and RDD&D.

Please rate your response on a scale of 1 through 10, with 1 indicating that you strongly disagree and 10 indicating that you strongly agree, or N/A if you have no opinion.

2	Hydrogen Program Stakeholder Alignment
Score	

General Comments: Please describe any areas that you feel are not well aligned with industry needs or that require more (or less) federal funding support.

Office-Specific Comments: Please comment on particular strengths and/or improvement opportunities relative to specific DOE Hydrogen Program offices in the table below:

DOE OFFICE	STRENGTHS	IMPROVEMENT OPPORTUNITIES
EERE		
FECM		
NE		
SC		
ARPA-E		
OCED		
OTHER (specify)		

3. The Hydrogen Program's portfolio of projects is appropriately balanced across research areas to help achieve its mission and goals, and it has an appropriate balance between near-, mid- and long-term RDD&D (including lab projects and consortia, FOA [funding opportunity announcement] projects, CRADA [cooperative research and development agreement] projects, etc.).

Please rate your response on a scale of 1 through 10, with 1 indicating that you strongly disagree and 10 indicating that you strongly agree, or N/A if you have no opinion.

3	Hydrogen Program Project Portfolio
Score	

General Comments: Please describe any over- or under-represented areas, including any gaps in the overall Hydrogen Program project portfolio or any comments you may have on whether funding levels in each area are appropriate.

Office-Specific Comments: Please comment on particular project portfolio strengths and/or gaps relative to specific DOE Hydrogen Program offices in the table below:

DOE OFFICE	PROJECT PORTFOLIO STRENGTHS	PROJECT PORTFOLIO GAPS
EERE		
FECM		
NE		
SC		
ARPA-E		
OCED		
OTHER (specify)		

4. The Hydrogen Program is effectively collaborating in RDD&D across the DOE offices and with other agencies.

Please rate your response on a scale of 1 through 10, with 1 indicating that you strongly disagree and 10 indicating that you strongly agree, or N/A if you have no opinion.



General Comments: Please comment generally on offices or agencies that should be more engaged or leveraged and in what manner.

Office-Specific Comments: Please comment on particular strengths and/or improvement opportunities relative to specific DOE Hydrogen Program offices in the table below:

DOE OFFICE	COLLABORATION STRENGTHS	IMPROVEMENT OPPORTUNITIES
EERE		
FECM		
NE		
SC		
ARPA-E		
OCED		
OTHER (specify)		

5. The Hydrogen Program is sufficiently incorporating a diversity of approaches for addressing energy and environmental justice (EEJ), as well as diversity, equity, inclusion, and accessibility (DEIA), in the execution and impacts of its RDD&D activities.

Please rate your response on a scale of 1 through 10, with 1 indicating that you strongly disagree and 10 indicating that you strongly agree, or N/A if you have no opinion.

5	Hydrogen Program EEJ and DEIA
Score	

General Comments: Please comment on which stakeholders, external groups, or resources (e.g., academia, companies, small businesses, types of industries, states, other agencies) should be more engaged with or leveraged and in what manner.

Targeted Comments: Please comment on particular strengths and/or improvement opportunities in EEJ and DEIA relative to the overall DOE Hydrogen Program and/or to specific offices:

6. Please comment on whether the Hydrogen Program is doing enough to advance goals for workforce development and science, technology, engineering, and mathematics (STEM) education.

General Comments: Please comment on how the Hydrogen Program could build on and/or adjust its current portfolio to accomplish goals in workforce development and STEM.

Targeted Comments: Please comment on particular highlights and/or improvement opportunities in workforce development and STEM relative to the overall DOE Hydrogen Program and/or to specific offices.

7. The Hydrogen Program also collaborates with other countries through several international partnerships, such as the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE), Clean Energy and Hydrogen Ministerials, Mission Innovation, the International Energy Agency, and others. Please comment on actions DOE can undertake in conjunction with these or other international activities that can effectively accelerate U.S. progress in hydrogen and fuel cell technologies.

Comments:

8. Please provide any additional suggestions you may have for improvement of the overall DOE Hydrogen Program (e.g., in areas such as technology development, demonstration, and scale-up; technoeconomic and environmental impact assessments; safety, codes, and standards; soft costs; commercial liftoff; and outreach and education).

Comments:

9. Based on DOE's hydrogen activities, and given the Bipartisan Infrastructure Law (BIL) funding across the RDD&D spectrum, how likely do you think it is that:

- a) The BIL target of \$2/kg clean H₂ will be achieved by 2026?*

	10 – very likely 1 – not likely
Score	

- b) The Hydrogen Shot (\$1/kg clean H₂ by 2031) will be achieved?*

	10 – very likely 1 – not likely
Score	

* Note: These are modeled leveled costs of production only, at high volumes (e.g., GW scale).