



U.S. DEPARTMENT
of **ENERGY**

Office of Critical Minerals
and Energy Innovation



2025 Annual Merit Review Vehicle Technologies Office

Results Report

December 2025

3. Off-Road, Rail, Marine, and Aviation Technologies

The Vehicle Technologies Office (VTO) funds research and development (R&D) of engines, batteries, power electronics, motors, materials, and transportation systems. VTO leverages the unique capabilities and world-class expertise of the national laboratory system to innovate new vehicle technologies. VTO is uniquely positioned to accelerate innovative transportation technologies due to strategic public-private research partnerships with industry (e.g., the U.S. DRIVE Partnership, the 21st Century Truck Partnership) that leverage relevant expertise. These partnerships prevent duplication of effort, focus U.S. Department of Energy (DOE) research on critical R&D barriers, and accelerate progress.

The Off-Road, Rail, Marine, and Aviation (ORMA) Technologies subprogram supports research, development, demonstration, and deployment (RDD&D) to develop and deploy new propulsion and efficient vehicle technologies in off-road, rail, marine, and aviation applications that increase fuel efficiency and reduce air pollution emissions.

The goal of this portfolio is to conduct coordinated research with industry, universities, and the national laboratories through competitive cooperative agreements and Cooperative Research and Development Agreements (CRADAs) and other laboratory directed funding to advance non-road transportation technologies that offer economic benefit to the United States. The subprogram conducts industry-focused RDD&D on engine, hybrid, and electrified systems as well as powertrains that can utilize renewable fuels, such as advanced biofuels, hydrogen, renewable diesel, and e-fuels. The subprogram coordinates with and utilizes expertise from other Offices and VTO programs as needed.

The subprogram supports cutting-edge research at the national laboratories, in close collaboration with industry, while working closely with other agencies including the Environmental Protection Agency and Department of Transportation's Federal Railroad Administration, Maritime Administration, Federal Aviation Administration, and the National Aeronautics and Space Administration to achieve goals for energy innovation in these sectors. The subprogram uses a multi-laboratory initiative, including high performance computing and hardware in-the-loop resources, for research to optimize vehicle efficiency which also can be applicable to on-road heavy-duty vehicles.

The subprogram also supports industry needs to develop predictive, high-fidelity modeling and simulation tools that are scalable and can leverage future exascale computing capabilities. The activity will fund research of alternative and renewable fuel properties utilizing chemical kinetics modeling of different molecules to determine their impact on combustion efficiency and emissions. It will also develop numerical routines and models of complex chemical reactions that can reduce the computational time and

increase the accuracy required for high-fidelity engine models, making them viable for use by industry.

Project Feedback

In this merit review activity, each reviewer was asked to respond to a series of questions, involving multiple-choice responses, expository responses where text comments were requested, and numeric score responses (on a scale of 1.0 to 4.0). In the pages that follow, the multiple choice and numeric score questions will be presented in graph form for each project. A table presenting the average numeric score for each question for each project is presented below.

Table 3-1 – Project Feedback

Presentation ID	Presentation Title	Principal Investigator (Organization)	Page Number	Approach	Technical Accomplishments	Collaboration	Future Research	Weighted Average
ORMA001	Overcoming Key Barriers to H ₂ ICEs – Mixing, Pre-Ignition, and Ultra-Lean Operation	Ales Srna (Sandia National Laboratories)	3-9	3.38	3.50	3.50	3.38	3.45
ORMA002	Alcohol Combustion in CI Engines – Understanding Mixing, Ignition and Pollutant Emissions	Dario Lopez-Pintor (Sandia National Laboratories)	3-10	3.40	3.20	3.60	3.20	3.30
ORMA003	Soot Predictions from DNS of a Lab-Scale Combustor with Sustainable Aviation Fuels	Bruno Soriano (Sandia National Laboratories)	3-11	3.38	3.38	3.38	3.31	3.37
ORMA004	Mixing-Controlled Compression-Ignition Combustion with Low-Lifecycle-CO ₂ Fuels	Chuck Mueller (Sandia National Laboratories)	3-12	3.50	3.60	3.70	3.30	3.55
ORMA005	Alcohol Spray and H ₂ Jet Experiments and Modeling	Lyle Pickett (Sandia National Laboratories)	3-13	3.50	3.25	3.25	3.13	3.30

Presentation ID	Presentation Title	Principal Investigator (Organization)	Page Number	Approach	Technical Accomplishments	Collaboration	Future Research	Weighted Average
ORMA006	Low Lifecycle Carbon Fuel (LLCF) Combustion and Emission Models	Scott Wagnon (Lawrence Livermore National Laboratory)	3-14	3.80	3.50	3.60	3.90	3.64
ORMA012	Enabling Hydrogen Combustion for Large-Bore Locomotive Engines through Advanced CFD Modeling	Muhsin Ameen (Argonne National Laboratory)	3-15	3.20	3.20	3.60	3.10	3.24
ORMA014	Implementing Low Lifecycle Carbon Fuels on Locomotive Engines – CRADA with Wabtec	Dean Edwards (Oak Ridge National Laboratory)	3-16	3.20	2.80	3.40	2.80	2.98
ORMA015	Predictive CFD Tools for Off-Road IC Engines Utilizing Alternative Fuels	Riccardo Scarcelli (Argonne National Laboratory)	3-17	3.38	3.63	3.38	3.25	3.48
ORMA016	Methanol-Fueled Engines for Marine and Off-Road Applications	Derek Splitter (Oak Ridge National Laboratory)	3-18	3.67	3.58	3.58	3.58	3.60
ORMA018	SAF Combustion and Contrail Formation Research	Julien Manin (Sandia National Laboratories)	3-19	3.38	3.38	3.50	3.25	3.38
ORMA019	Multi-Phase Flow Studies of SAFs for Industry-Relevant Conditions and Geometries	Brandon Sforzo (Argonne National Laboratory)	3-20	3.63	3.50	3.63	3.50	3.55

Presentation ID	Presentation Title	Principal Investigator (Organization)	Page Number	Approach	Technical Accomplishments	Collaboration	Future Research	Weighted Average
ORMA020	Aviation Emissions Modeling	Matt McNenly (Lawrence Livermore National Laboratory)	3-21	3.60	3.60	3.50	3.50	3.58
ORMA021 (ACE171)	Simultaneous Greenhouse Gas and Criteria Pollutants Emissions Reduction for Off-Road Powertrains	James McCarthy (Eaton)	3-22	3.30	3.30	3.00	3.10	3.24
ORMA026	Articulated Dump Truck (ADT) Electrification – Commercialization of New Technology in Construction Vehicles	Brij Singh (John Deere)	3-23	3.20	2.90	3.10	2.90	3.00
ORMA027 (ACE170)	Control of Aldehyde Emissions from Alcohol-Fueled, Non-Road Engines	Sreshtha Majumdar (Oak Ridge National Laboratory)	3-24	3.38	3.50	3.38	3.25	3.42
ORMA037	Sustainable Aviation Fuel Characterization	Gina Fioroni (National Renewable Energy Laboratory)	3-25	3.17	3.42	3.42	3.33	3.34
ORMA038	Towards Accurate Modeling of Fuel and Combustion Characteristics of SATF	Debolina Dasgupta (Argonne National Laboratory)	3-26	3.38	3.38	3.38	3.38	3.38
ORMA040	Optimized Low Carbon Fuel Range Extender (HyREX)	Jon Dickson (Cummins Inc.)	3-27	3.30	3.10	3.20	3.30	3.19

Presentation ID	Presentation Title	Principal Investigator (Organization)	Page Number	Approach	Technical Accomplishments	Collaboration	Future Research	Weighted Average
ORMA041	Reducing Low-Load Emissions and N ₂ O	Dhruba Deka (Pacific Northwest National Laboratory)	3-28	3.50	3.58	3.17	3.25	3.47
ORMA042	Unforeseen Challenges with Renewable Fuels	Kenneth Rappe (Pacific Northwest National Laboratory)	3-29	3.13	3.25	3.00	3.13	3.17
ORMA043	Low-Load Cycle Emission Control	Yong Wang (Pacific Northwest National Laboratory)	3-30	3.42	3.50	3.58	3.25	3.46
ORMA045	Biodiesel Poisoning of Close-Coupled SCR Catalysts for Off-Road Engines	Todd Toops (Oak Ridge National Laboratory)	3-31	3.75	3.58	3.67	3.25	3.59
ORMA046	Ammonia for 4-Stroke Marine Dual Fuel and Gas Engines (Retrofits and New)	Scott Curran (Oak Ridge National Laboratory)	3-32	3.75	3.75	3.63	3.63	3.72
ORMA048	Medium Duty Off-Road DME Engine Achieving High Efficiency and Ultra Low Emissions	André Boehman (University of Michigan)	3-33	3.10	3.20	3.30	2.90	3.15
ORMA050	A Low Greenhouse Gas Advanced Spark Ignition Engine that can Operate on Natural Gas and Natural Gas-Hydrogen Blends with Diesel	Jeff Naber (Michigan Technical University)	3-34	3.20	3.30	3.50	3.30	3.30

Presentation ID	Presentation Title	Principal Investigator (Organization)	Page Number	Approach	Technical Accomplishments	Collaboration	Future Research	Weighted Average
ORMA052	Simulation of Jet Engine Performance using SATF Blends	Shashank Yellapantula (National Renewable Energy Laboratory)	3-35	3.83	3.33	3.33	3.33	3.46
ORMA055	High Energy-Efficient Hybrid Excavator Powered by Hydrogen Combustion Engine	Andrea Vacca (Purdue University)	3-36	3.10	3.20	3.50	3.20	3.21
ORMA056	Transient-Capable Hydrogen-Hybrid for Off-Road (THOR)	Chad Koci (Caterpillar Inc.)	3-37	3.60	3.40	3.60	3.40	3.48
ORMA057	High Power, Ultra-Low Emissions HD H ₂ Engine	Nathan Peters (Dumarey USA)	3-38	3.33	3.17	3.50	3.33	3.27
ORMA058	Greatly Reduced Vehicle Platinum Group Metal (PGM) Content Using Engineered, Highly Dispersed Precious Metal Catalysts	Yong Wang (Washington State University)	3-39	3.50	3.20	3.20	3.00	3.25
ORMA059	Robust NH ₃ -SCR Catalysts to Enable H ₂ -ICEs	Yong Wang (Pacific Northwest National Laboratory)	3-40	3.30	3.40	2.90	3.00	3.26

Presentation ID	Presentation Title	Principal Investigator (Organization)	Page Number	Approach	Technical Accomplishments	Collaboration	Future Research	Weighted Average
ORMA060	Development and Demonstration of a Medium-Duty Off-Road DME Engine with a Combustion Recipe for Ultra-Low NO _x	Ben Lawler (Clemson University)	3-41	3.90	3.70	3.70	3.40	3.71
ORMA061	Performance and Emissions Characteristics of a Locomotive Engine Using Biofuels	Muni Biruduganti (Argonne National Laboratory)	3-42	3.00	3.00	3.10	2.90	3.00
ORMA062	Measurements of Fundamental Combustion Behavior: SATFs and Surrogates	Scott Goldsborough (Argonne National Laboratory)	3-43	3.50	3.63	3.38	3.25	3.52
ORMA064	Development of a High-Efficiency, Low-Emissions, Heavy-Duty Hydrogen Internal Combustion Engine	Jay Shah (Cummins Inc.)	3-44	3.25	3.00	3.38	3.25	3.14
ORMA066	High-Fidelity CFD Modeling of Aviation Emissions	Chao Xu (Argonne National Laboratory)	3-45	3.67	4.00	3.67	3.50	3.81
Overall Average				3.42	3.388	3.41	3.26	3.38

Presentation Number:

ORMA001

Presentation Title:

Overcoming Key Barriers to H₂ICEs – Mixing, Pre-Ignition, and Ultra-Lean Operation

Principal Investigator:

Ales Srna, Sandia National Laboratories

Presenter

Ales Srna, Sandia National Laboratories

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

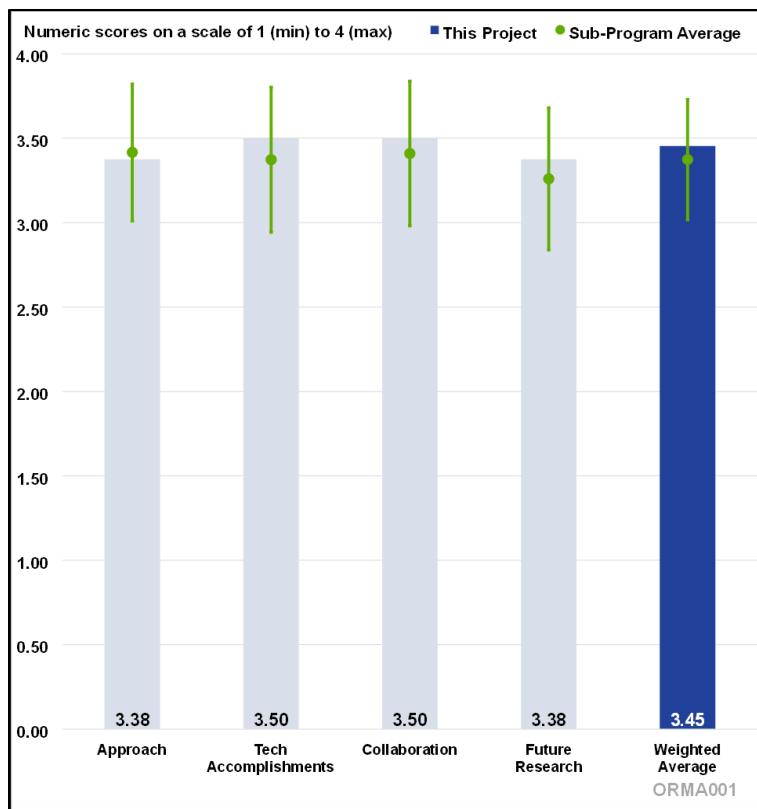


Figure 3-1 - Presentation Number: ORMA001 Presentation Title: Overcoming Key Barriers to H₂ICEs – Mixing, Pre-Ignition, and Ultra-Lean Operation Principal Investigator: Ales Srna, Sandia National Laboratories

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA001_Srna_2025.pdf

Presentation Number:

ORMA002

Presentation Title:

Alcohol Combustion in CI Engines – Understanding Mixing, Ignition and Pollutant Emissions

Principal Investigator:

Dario Lopez-Pintor, Sandia National Laboratories

Presenter

Dario Lopez-Pintor, Sandia National Laboratories

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

80% of reviewers felt that the project was relevant to current DOE objectives, 20% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA002_Lopez-Pintor_2025_o.pdf

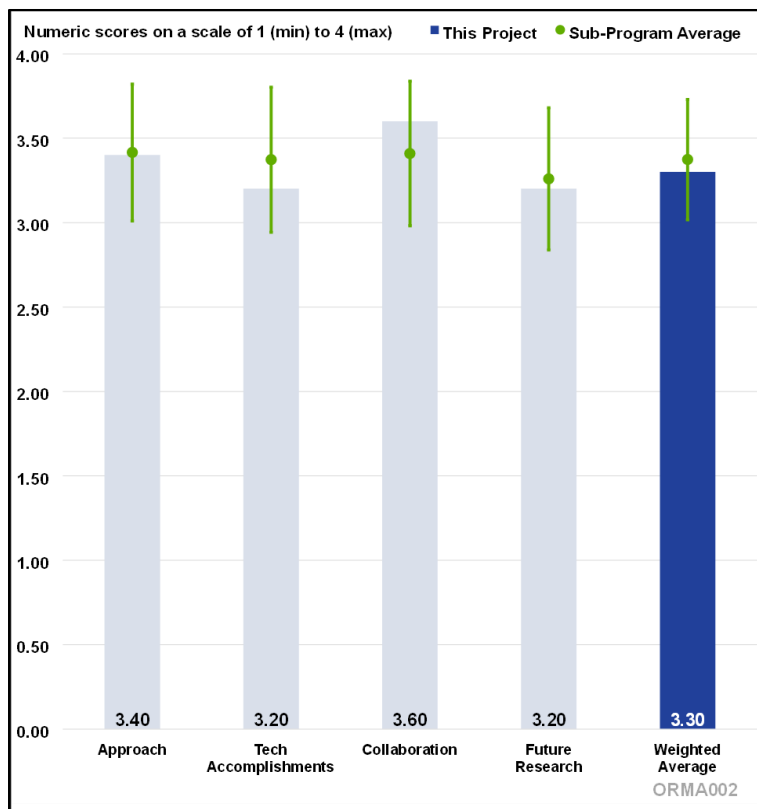


Figure 3-2 - Presentation Number: ORMA002 Presentation Title: Alcohol Combustion in CI Engines – Understanding Mixing, Ignition and Pollutant Emissions Principal Investigator: Dario Lopez-Pintor, Sandia National Laboratories

Presentation Number:

ORMA003

Presentation Title:

Soot Predictions from DNS of a Lab-scale Combustor with Sustainable Aviation Fuels

Principal Investigator:

Bruno Soriano, Sandia National Laboratories

Presenter

Bruno Soriano, Sandia National Laboratories

Reviewer Sample Size

A total of eight reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 75% of reviewers felt that the resources were sufficient, 25% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA003_Soriano_2025_o.pdf

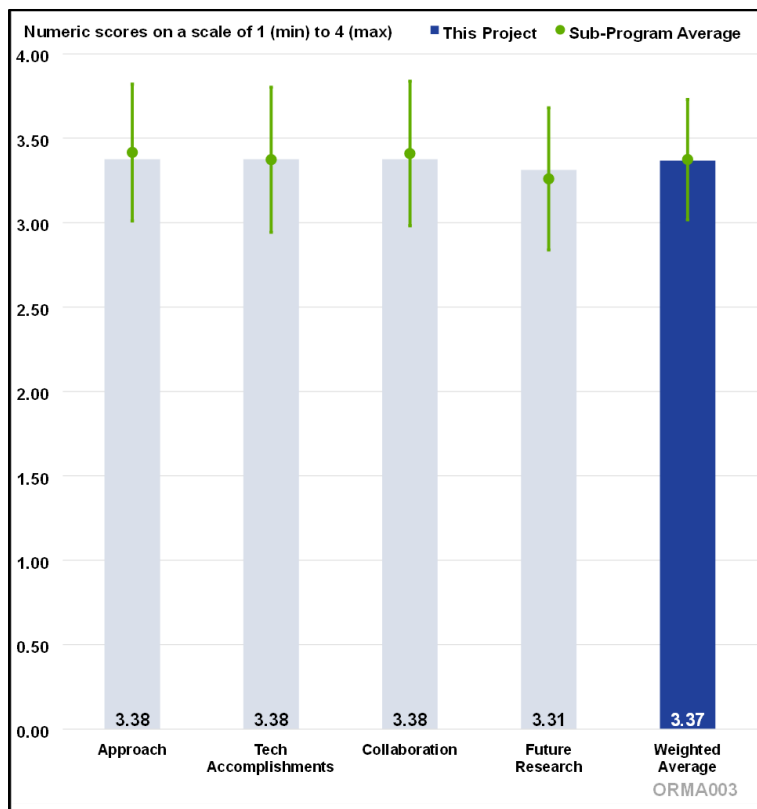


Figure 3-3 - Presentation Number: ORMA003 Presentation Title: Soot Predictions from DNS of a Lab-Scale Combustor with Sustainable Aviation Fuels Principal Investigator: Bruno Soriano, Sandia National Laboratories

Presentation Number:

ORMA004

Presentation Title:

Mixing-Controlled Compression-Ignition Combustion with Low-Lifecycle-CO₂ Fuels

Principal Investigator:

Chuck Mueller, Sandia National Laboratories

Presenter

Chuck Mueller, Sandia National Laboratories

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 60% of reviewers felt that the resources were sufficient, 20% of reviewers felt that the resources were insufficient, 20% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA004_Mueller_2025_o.pdf

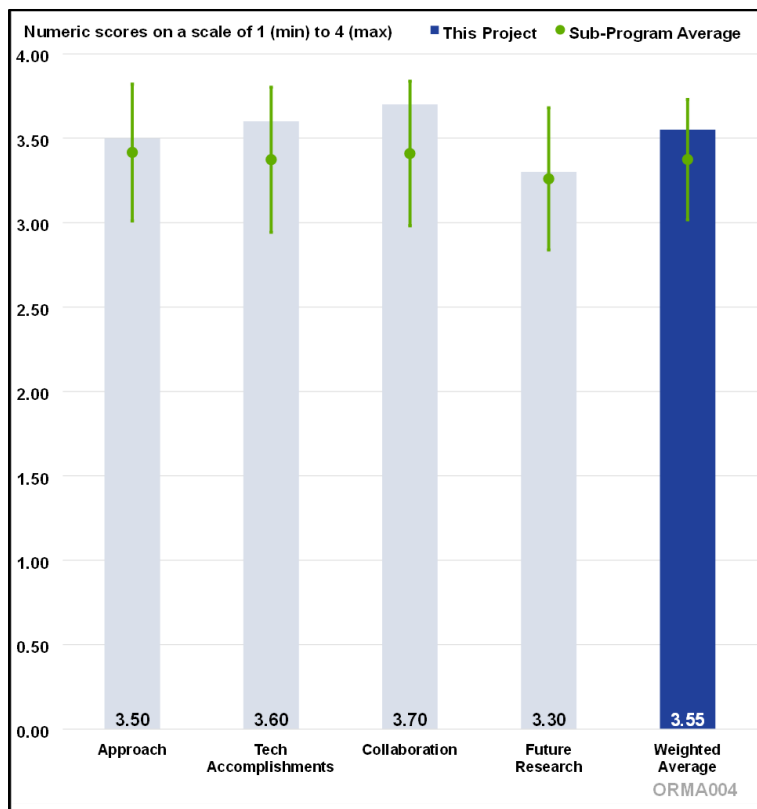


Figure 3-4 - Presentation Number: ORMA004 Presentation Title: Mixing-Controlled Compression-Ignition Combustion with Low-Lifecycle-CO₂ Fuels Principal Investigator: Chuck Mueller, Sandia National Laboratories

Presentation Number:

ORMA005

Presentation Title:

Alcohol Spray and H₂ Jet Experiments and Modeling

Principal Investigator:

Lyle Pickett, Sandia National Laboratories

Presenter

Lyle Pickett, Sandia National Laboratories

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 75% of reviewers felt that the resources were sufficient, 25% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA005_Pickett_2025_o.pdf

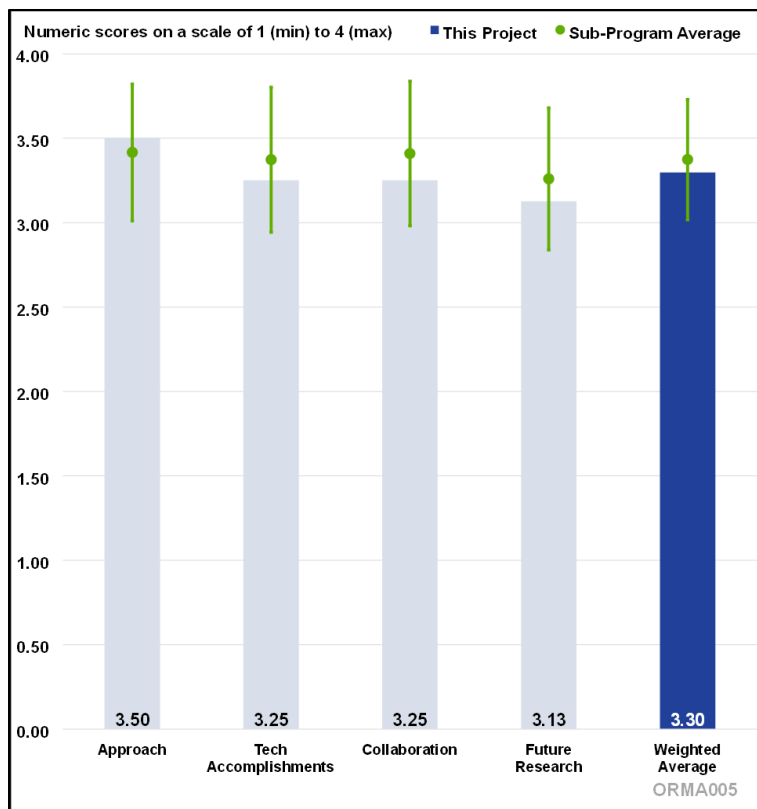


Figure 3-5 - Presentation Number: ORMA005 Presentation Title: Alcohol Spray and H₂ Jet Experiments and Modeling Principal Investigator: Lyle Pickett, Sandia National Laboratories

Presentation Number:

ORMA006

Presentation Title:

Low Lifecycle Carbon Fuel (LLCF)
Combustion and Emission Models

Principal Investigator:

Scott Wagon, Lawrence Livermore
National Laboratory

Presenter

Scott Wagon, Lawrence Livermore
National Laboratory

Reviewer Sample Size

A total of five reviewers evaluated
this project.

Project Relevance and Resources

100% of reviewers felt that the
project was relevant to current DOE
objectives, 0% of reviewers felt that
the project was not relevant, and
0% of reviewers did not indicate an
answer. 80% of reviewers felt that
the resources were sufficient, 20%
of reviewers felt that the resources
were insufficient, 0% of reviewers
felt that the resources were
excessive, and 0% of reviewers did
not indicate an answer.

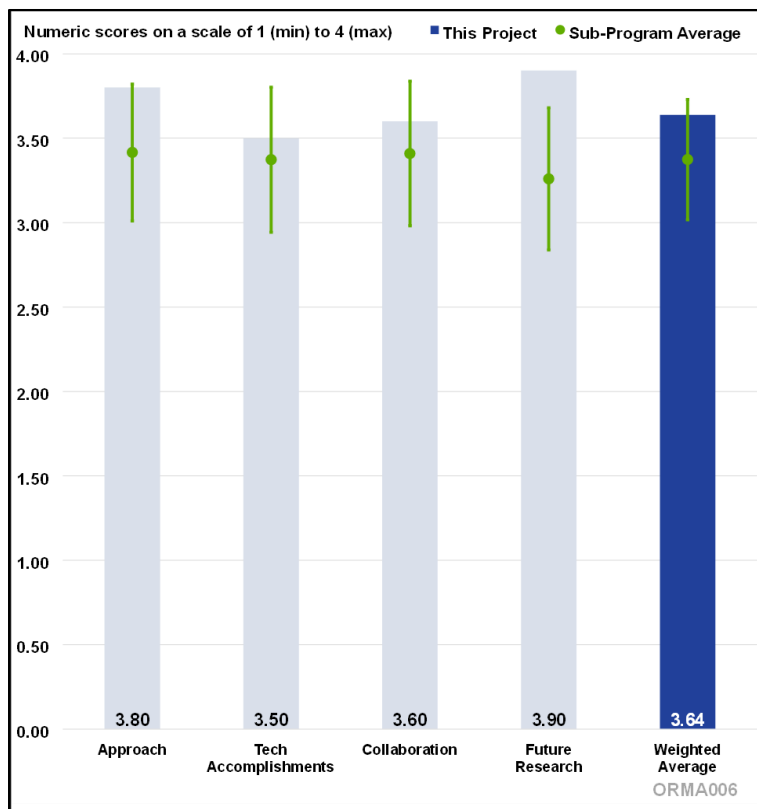


Figure 3-6 - Presentation Number: ORMA006 Presentation Title: Low Lifecycle Carbon Fuel (LLCF) Combustion and Emission Models Principal Investigator: Scott Wagon, Lawrence Livermore National Laboratory

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA006_Wagon_2025_o.pdf

Presentation Number:

ORMA012

Presentation Title:

Enabling Hydrogen Combustion for Large-Bore Locomotive Engines through Advanced CFD Modeling

Principal Investigator:

Muhsin Ameen, Argonne National Laboratory

Presenter

Muhsin Ameen, Argonne National Laboratory

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 80% of reviewers felt that the resources were sufficient, 20% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA012_Ameen_2025_o.pdf

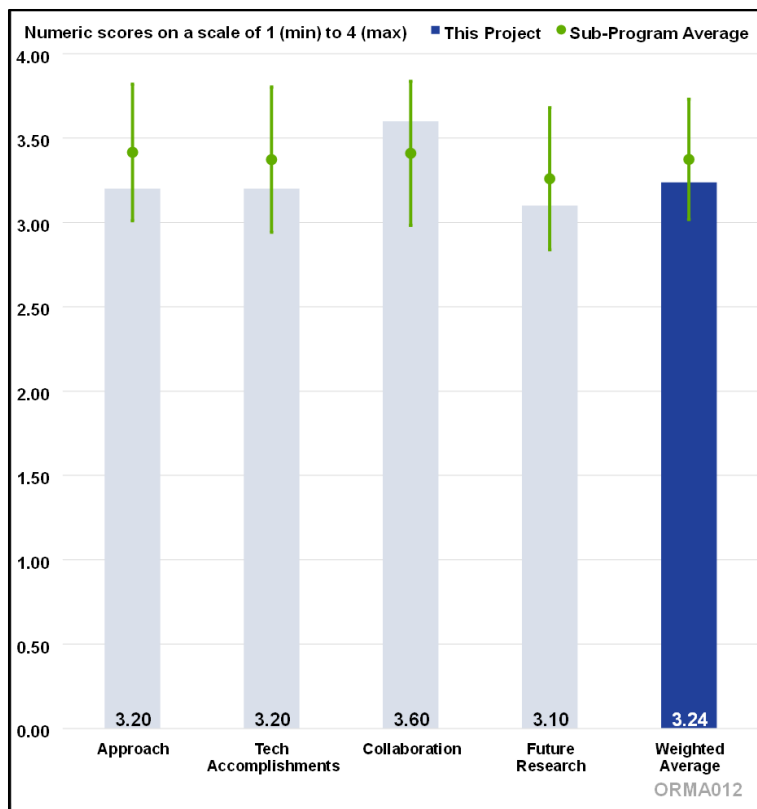


Figure 3-7 - Presentation Number: ORMA012 Presentation
Title: Enabling Hydrogen Combustion for Large-Bore Locomotive Engines through Advanced CFD Modeling
Principal Investigator: Muhsin Ameen, Argonne National Laboratory

Presentation Number:

ORMA014

Presentation Title:

Implementing Low Lifecycle Carbon Fuels on Locomotive Engines – CRADA with Wabtec

Principal Investigator:

Dean Edwards, Oak Ridge National Laboratory

Presenter

Dean Edwards, Oak Ridge National Laboratory

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA014_Edwards_2025_o.pdf

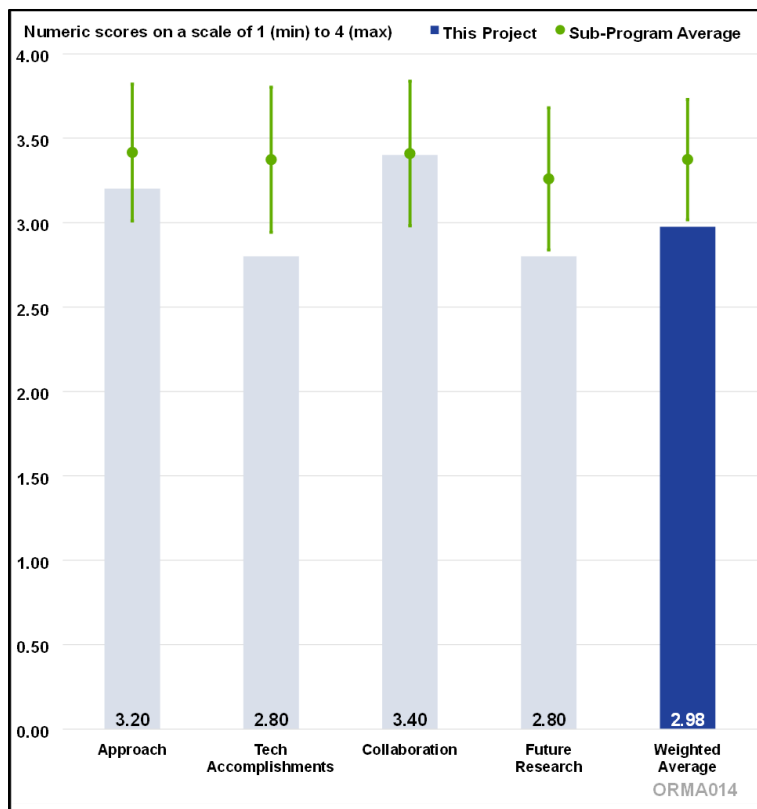


Figure 3-8 - Presentation Number: ORMA014 Presentation Title: Implementing Low Lifecycle Carbon Fuels on Locomotive Engines – CRADA with Wabtec Principal Investigator: Dean Edwards, Oak Ridge National Laboratory

Presentation Number:

ORMA015

Presentation Title:

Predictive CFD Tools for Off-Road IC Engines Utilizing Alternative Fuels

Principal Investigator:

Riccardo Scarcelli, Argonne National Laboratory

Presenter

Riccardo Scarcelli, Argonne National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

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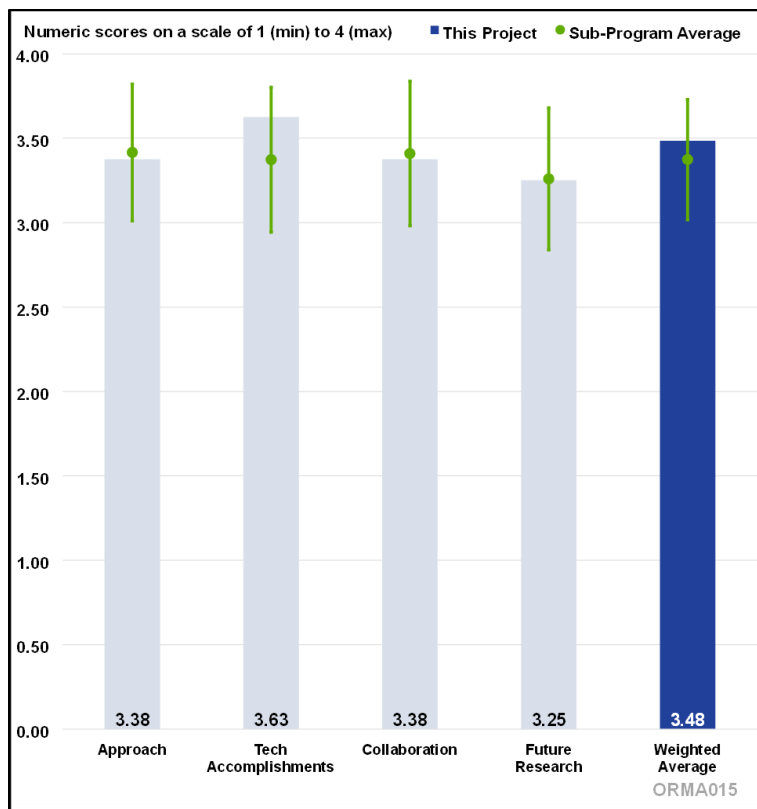


Figure 3-9 - Presentation Number: ORMA015 Presentation Title: Predictive CFD Tools for Off-Road IC Engines Utilizing Alternative Fuels Principal Investigator: Riccardo Scarcelli, Argonne National Laboratory

Presentation Number:

ORMA016

Presentation Title:

Methanol-Fueled Engines for Marine and Off-Road Applications

Principal Investigator:

Derek Splitter, Oak Ridge National Laboratory

Presenter

Derek Splitter, Oak Ridge National Laboratory

Reviewer Sample Size

A total of six reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

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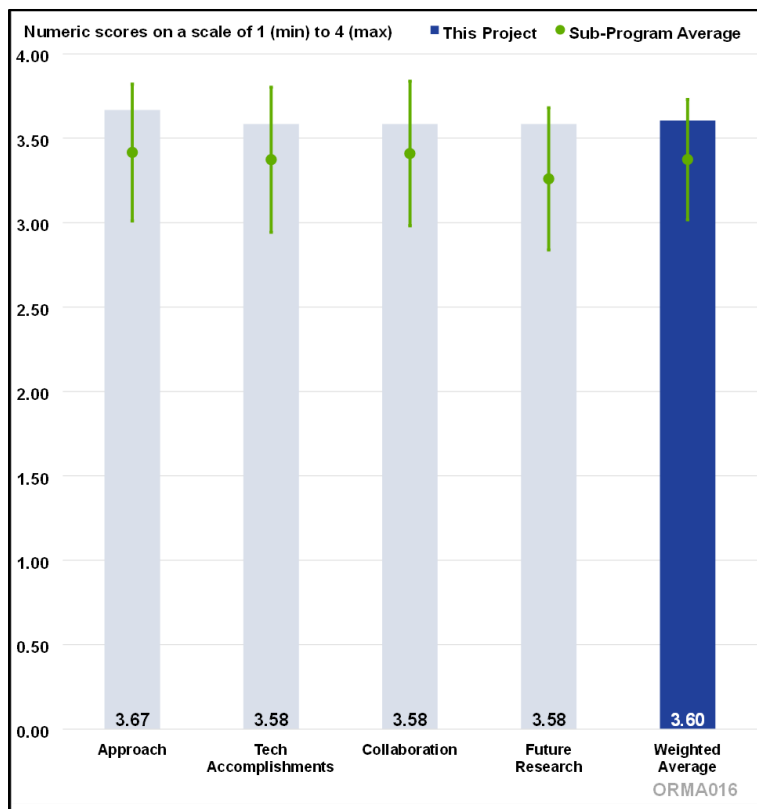


Figure 3-10 - Presentation Number: ORMA016 Presentation Title: Methanol-Fueled Engines for Marine and Off-Road Applications Principal Investigator: Derek Splitter, Oak Ridge National Laboratory

Presentation Number:

ORMA018

Presentation Title:

SAF Combustion and Contrail Formation Research

Principal Investigator:

Julien Manin, Sandia National Laboratories

Presenter

Julien Manin, Sandia National Laboratories

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 75% of reviewers felt that the resources were sufficient, 25% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

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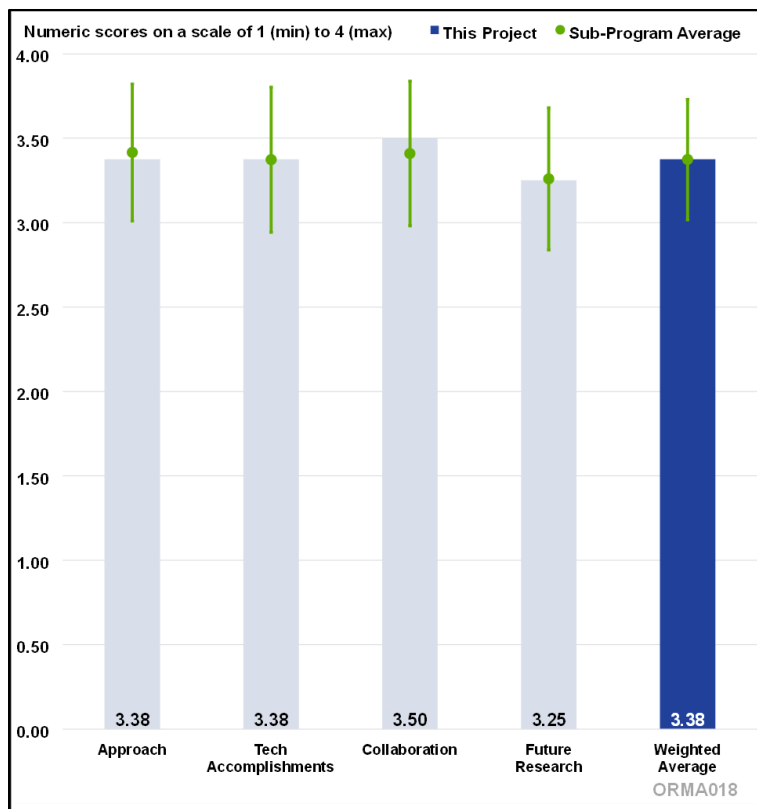


Figure 3-11 - Presentation Number: ORMA018 Presentation Title: SAF Combustion and Contrail Formation Research Principal Investigator: Julien Manin, Sandia National Laboratories

Presentation Number:

ORMA019

Presentation Title:

Multi-Phase Flow Studies of SAFs for Industry-Relevant Conditions and Geometries

Principal Investigator:

Brandon Sforzo, Argonne National Laboratory

Presenter

Brandon Sforzo, Argonne National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

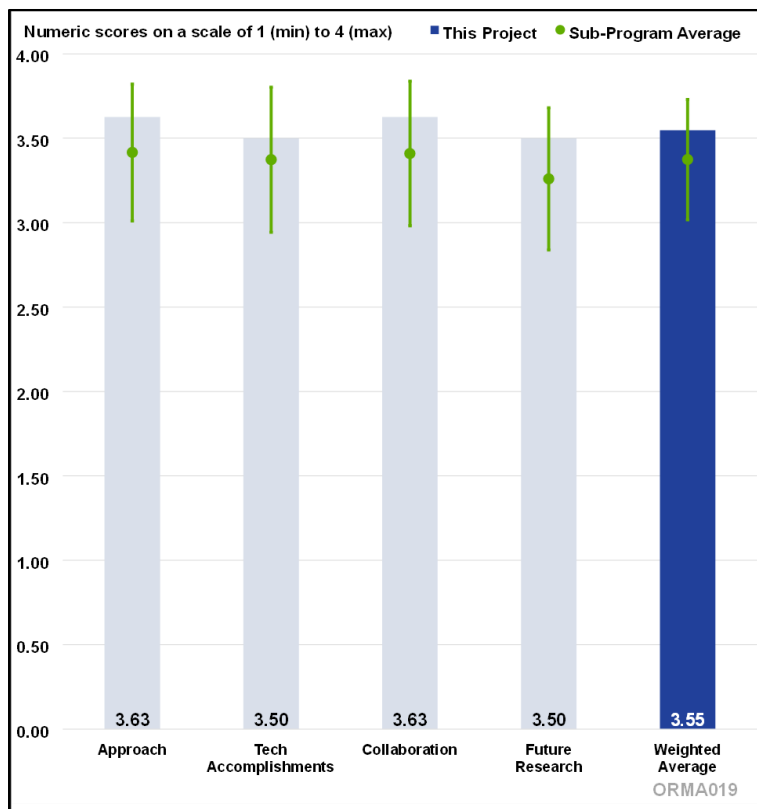


Figure 3-12 - Presentation Number: ORMA019 Presentation Title: Multi-Phase Flow Studies of SAFs for Industry-Relevant Conditions and Geometries Principal Investigator: Brandon Sforzo, Argonne National Laboratory

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA019_Sforzo_2025_o.pdf

Presentation Number:

ORMA020

Presentation Title:

Aviation Emissions Modeling

Principal Investigator:

Matt McNenly, Lawrence Livermore National Laboratory

Presenter

Matt McNenly, Lawrence Livermore National Laboratory

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA020_McNenly_2025_o.pdf

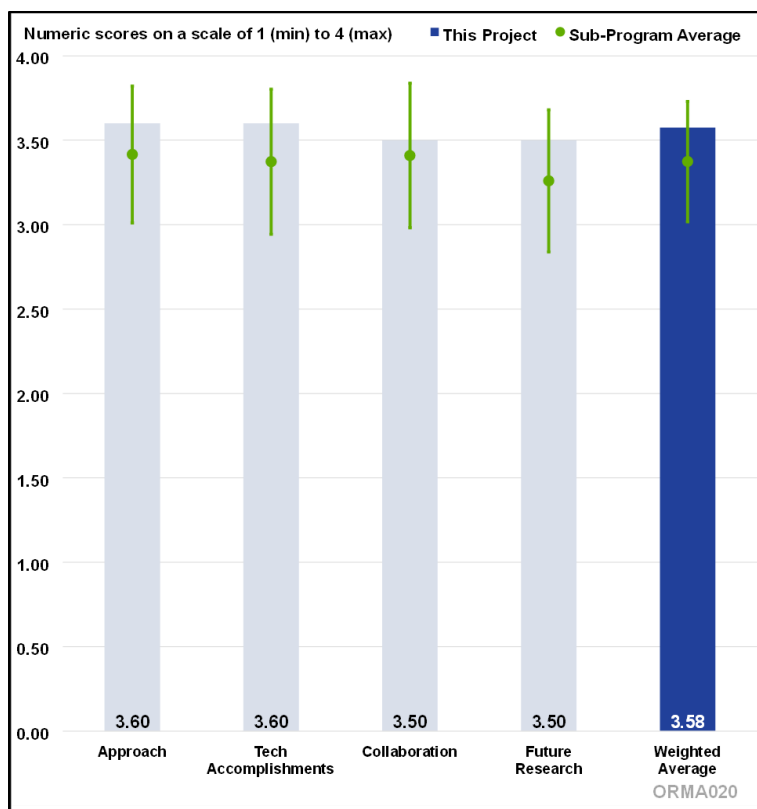


Figure 3-13 - Presentation Number: ORMA020 Presentation Title: Aviation Emissions Modeling Principal Investigator: Matt McNenly, Lawrence Livermore National Laboratory

Presentation Number:

ORMA021 (ACE171)

Presentation Title:

Simultaneous Greenhouse Gas and Criteria Pollutants Emissions Reduction for Off-Road Powertrains

Reduction for Off-Road Powertrains

Principal Investigator:

James McCarthy, Eaton

Presenter

James McCarthy, Eaton

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 80% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 20% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

[https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA021\(ACE171\)_McCarthy_2025_o.pdf](https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA021(ACE171)_McCarthy_2025_o.pdf)

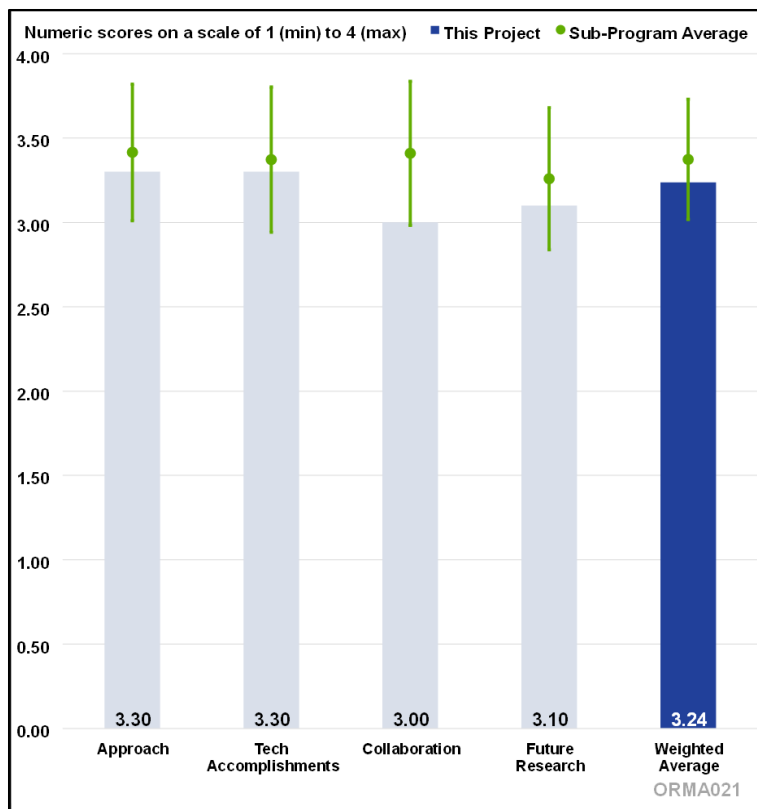


Figure 3-14 - Presentation Number: ORMA021 (ACE171)
Presentation Title: Simultaneous Greenhouse Gas and Criteria Pollutants Emissions Reduction for Off-Road Powertrains
Principal Investigator: James McCarthy, Eaton

Presentation Number:

ORMA026

Presentation Title:

Articulated Dump Truck (ADT)
Electrification – Commercialization
of New Technology in Construction
Vehicles

Principal Investigator:

Brij Singh, John Deere

Presenter

Brij Singh, John Deere

Reviewer Sample Size

A total of five reviewers evaluated
this project.

Project Relevance and Resources

100% of reviewers felt that the
project was relevant to current DOE
objectives, 0% of reviewers felt that
the project was not relevant, and
0% of reviewers did not indicate an
answer. 100% of reviewers felt that
the resources were sufficient, 0%
of reviewers felt that the resources
were insufficient, 0% of reviewers
felt that the resources were
excessive, and 0% of reviewers did
not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA026_Singh_2025_o.pdf

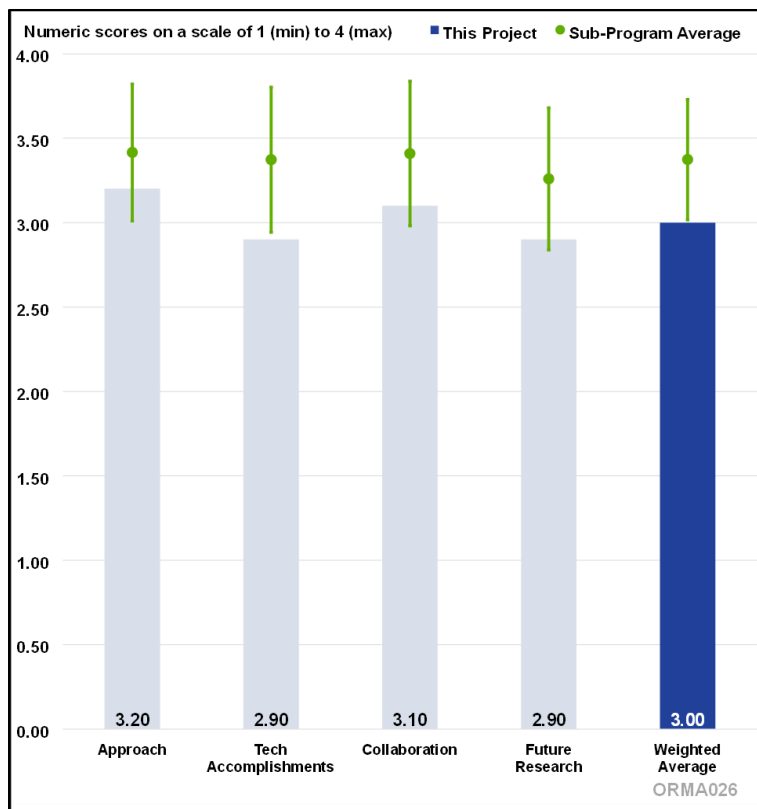


Figure 3-15 - Presentation Number: ORMA026 Presentation
Title: Articulated Dump Truck (ADT) Electrification –
Commercialization of New Technology in Construction
Vehicles Principal Investigator: Brij Singh, John Deere

Presentation Number:

ORMA027 (ACE170)

Presentation Title:

Control of Aldehyde Emissions from Alcohol-Fueled Non-Road Engines

Principal Investigator:

Sreshtha Majumdar, Oak Ridge National Laboratory

Presenter

Sreshtha Majumdar, Oak Ridge National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

[https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA027_\(ACE170\)_Majumdar_2025_o.pdf](https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA027_(ACE170)_Majumdar_2025_o.pdf)

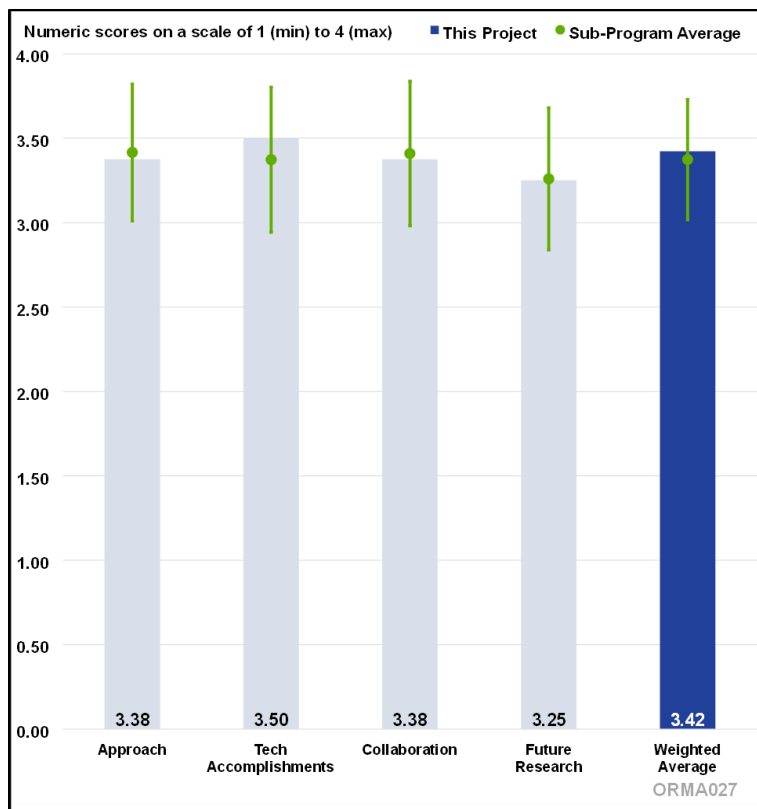


Figure 3-16 - Presentation Number: ORMA027 (ACE170)
Presentation Title: Control of Aldehyde Emissions from Alcohol-Fueled Non-Road Engines
Principal Investigator: Sreshtha Majumdar, Oak Ridge National Laboratory

Presentation Number:

ORMA037

Presentation Title:

Sustainable Aviation Fuel
Characterization

Principal Investigator:

Gina Fioroni, National Renewable
Energy Laboratory

Presenter

Robert McCormick, National
Renewable Energy Laboratory

Reviewer Sample Size

A total of six reviewers evaluated
this project.

Project Relevance and Resources

100% of reviewers felt that the
project was relevant to current DOE
objectives, 0% of reviewers felt that
the project was not relevant, and
0% of reviewers did not indicate an
answer. 67% of reviewers felt that
the resources were sufficient, 0%
of reviewers felt that the resources
were insufficient, 33% of reviewers
felt that the resources were
excessive, and 0% of reviewers did
not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA037_Fioroni_2025_o.pdf

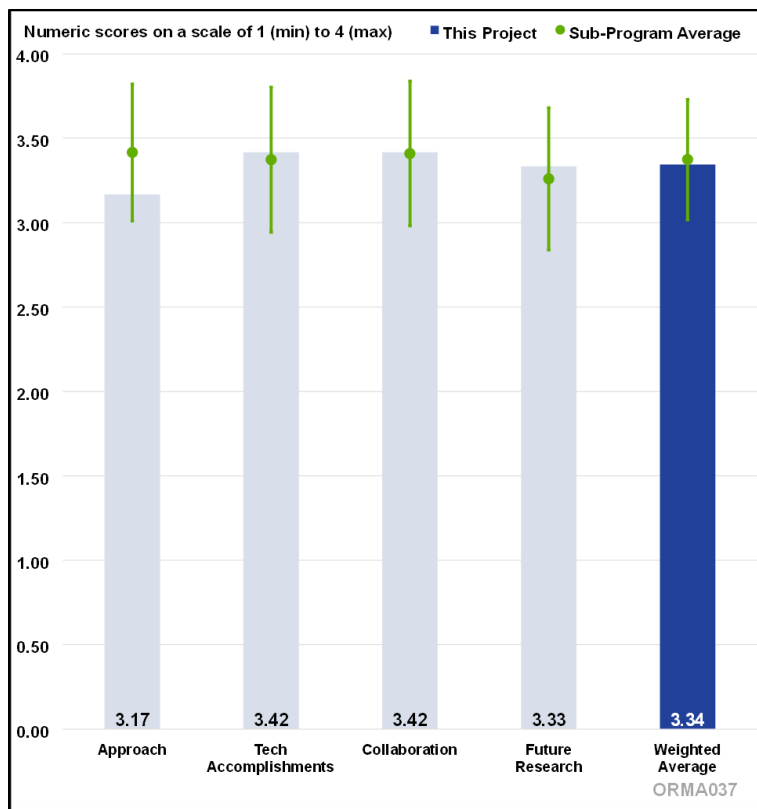


Figure 3-17 - Presentation Number: ORMA037 Presentation Title: Sustainable Aviation Fuel Characterization Principal Investigator: Gina Fioroni, National Renewable Energy Laboratory

Presentation Number:

ORMA038

Presentation Title:

Towards Accurate Modeling of Fuel and Combustion Characteristics of SATF

Principal Investigator:

Debolina Dasgupta, Argonne National Laboratory

Presenter

Debolina Dasgupta, Argonne National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

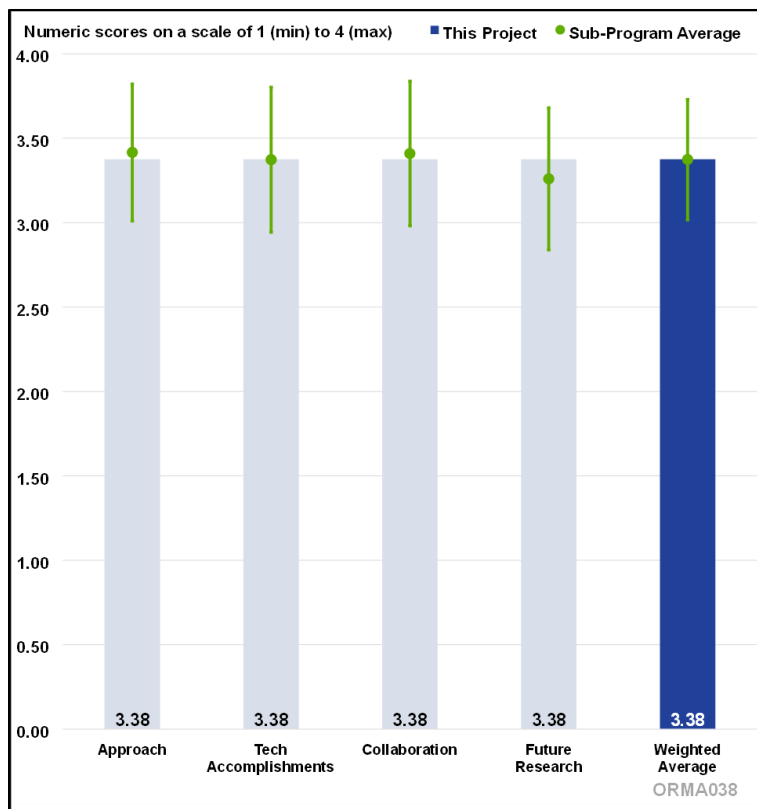


Figure 3-18 - Presentation Number: ORMA038 Presentation Title: Towards Accurate Modeling of Fuel and Combustion Characteristics of SATF Principal Investigator: Debolina Dasgupta, Argonne National Laboratory

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA038_Dasgupta_2025_o.pdf

Presentation Number:

ORMA040

Presentation Title:

Optimized Low Carbon Fuel Range Extender (HyREX)

Principal Investigator:

Jon Dickson, Cummins Inc.

Presenter

Jon Dickson, Cummins Inc.

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA040_Dickson_2025_o.pdf

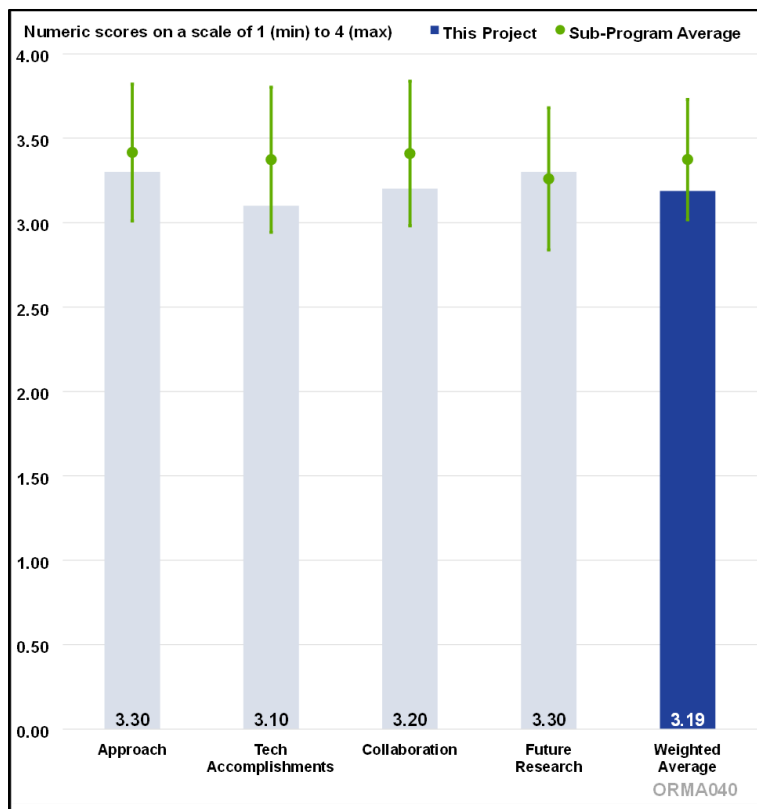


Figure 3-19 - Presentation Number: ORMA040 Presentation
Title: Optimized Low Carbon Fuel Range Extender (HyREX)
Principal Investigator: Jon Dickson, Cummins Inc.

Presentation Number:

ORMA041

Presentation Title:

Reducing Low-Load Emissions and N₂O

Principal Investigator:

Dhruba Deka, Pacific Northwest National Laboratory

Presenter

Dhruba Deka, Pacific Northwest National Laboratory

Reviewer Sample Size

A total of six reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA041_Deka_2025_o.pdf

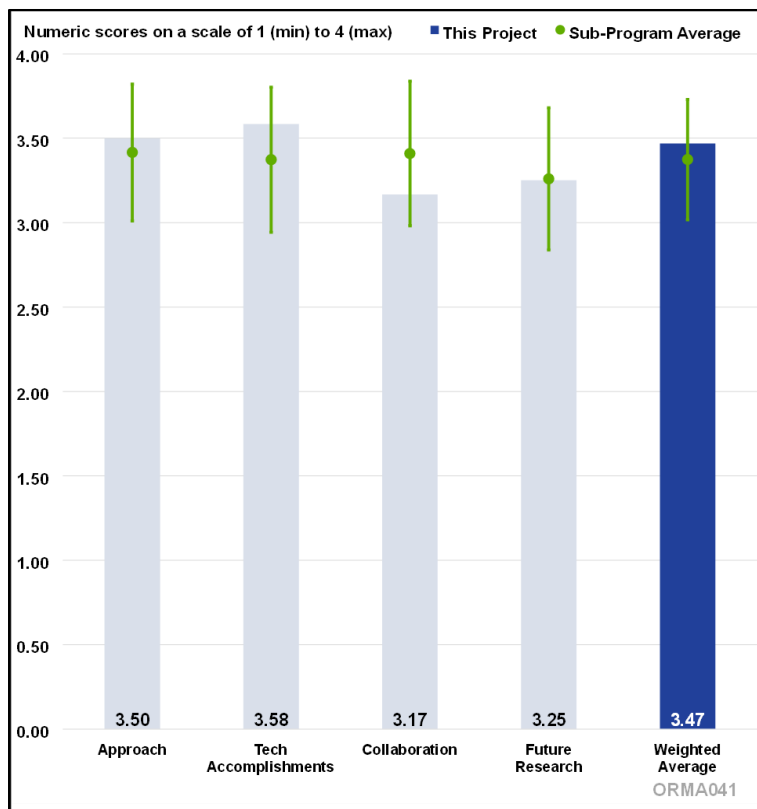


Figure 3-20 - Presentation Number: ORMA041 Presentation Title: Reducing Low-Load Emissions and N₂O Principal Investigator: Dhruba Deka, Pacific Northwest National Laboratory

Presentation Number:

ORMA042

Presentation Title:

Unforeseen Challenges with Renewable Fuels

Principal Investigator:

Kenneth Rappe, Pacific Northwest National Laboratory

Presenter

Kenneth Rappe, Pacific Northwest National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA042_Rappe_2025_o.p df

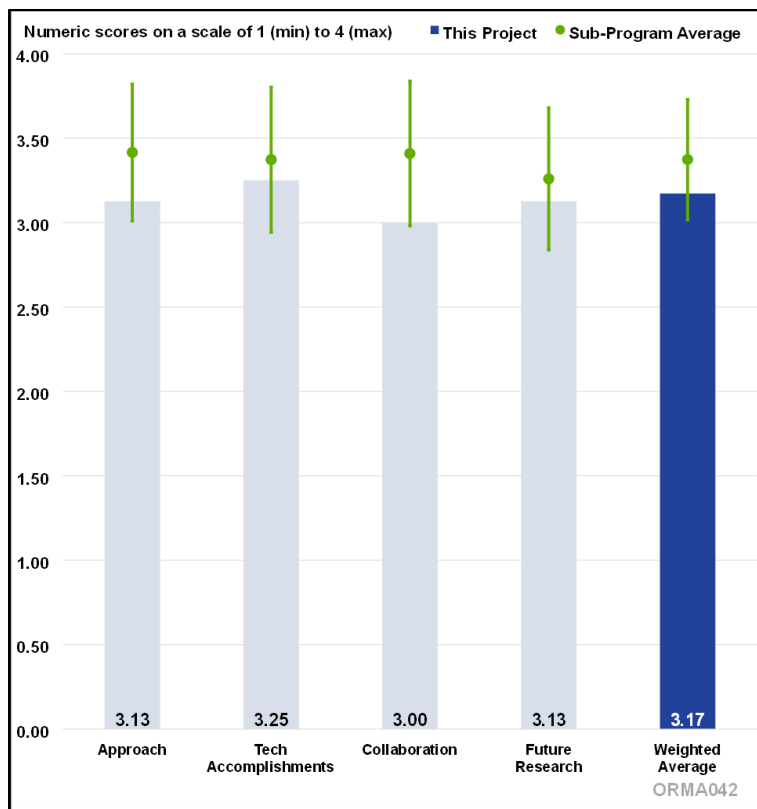


Figure 3-21 - Presentation Number: ORMA042 Presentation Title: Unforeseen Challenges with Renewable Fuels Principal Investigator: Kenneth Rappe, Pacific Northwest National Laboratory

Presentation Number:

ORMA043

Presentation Title:

Low-Load Cycle Emission Control

Principal Investigator:

Yong Wang, Pacific Northwest
National Laboratory

Presenter

Yong Wang, Pacific Northwest
National Laboratory

Reviewer Sample Size

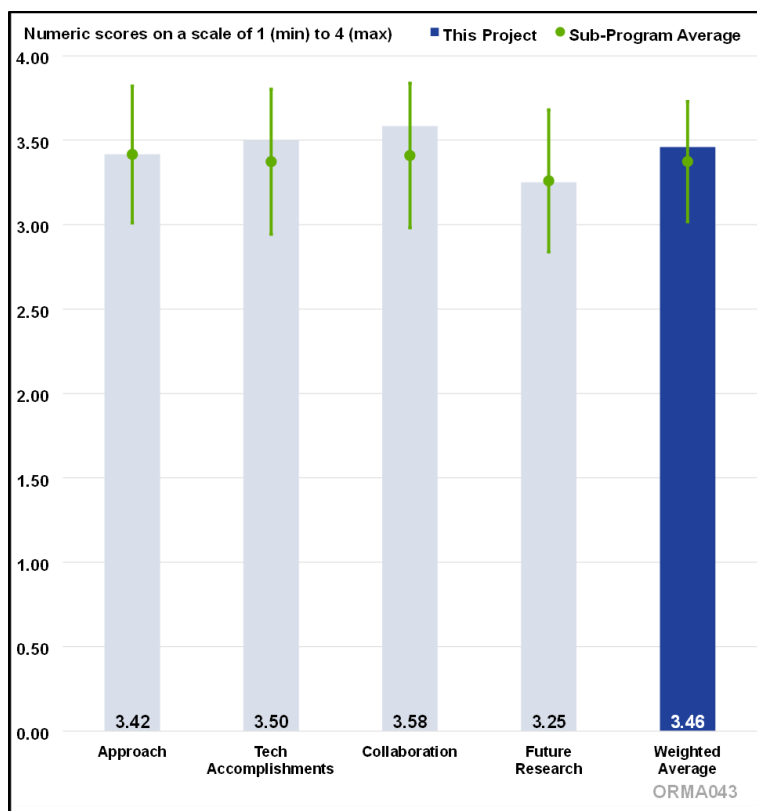
A total of six reviewers evaluated
this project.

Project Relevance and Resources

100% of reviewers felt that the
project was relevant to current DOE
objectives, 0% of reviewers felt that
the project was not relevant, and
0% of reviewers did not indicate an
answer. 100% of reviewers felt that
the resources were sufficient, 0% of
reviewers felt that the resources
were insufficient, 0% of reviewers
felt that the resources were
excessive, and 0% of reviewers did
not indicate an answer.

Presentation Link:

[https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA043_Wang_2025_o.p
df](https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA043_Wang_2025_o.p df)



**Figure 3-22 - Presentation Number: ORMA043 Presentation
Title: Low-Load Cycle Emission Control Principal Investigator:
Yong Wang, Pacific Northwest National Laboratory**

Presentation Number:

ORMA045

Presentation Title:

Biodiesel Poisoning of Close-Coupled SCR Catalysts for Off-Road Engines

Principal Investigator:

Todd Toops, Oak Ridge National Laboratory

Presenter

Todd Toops, Oak Ridge National Laboratory

Reviewer Sample Size

A total of six reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

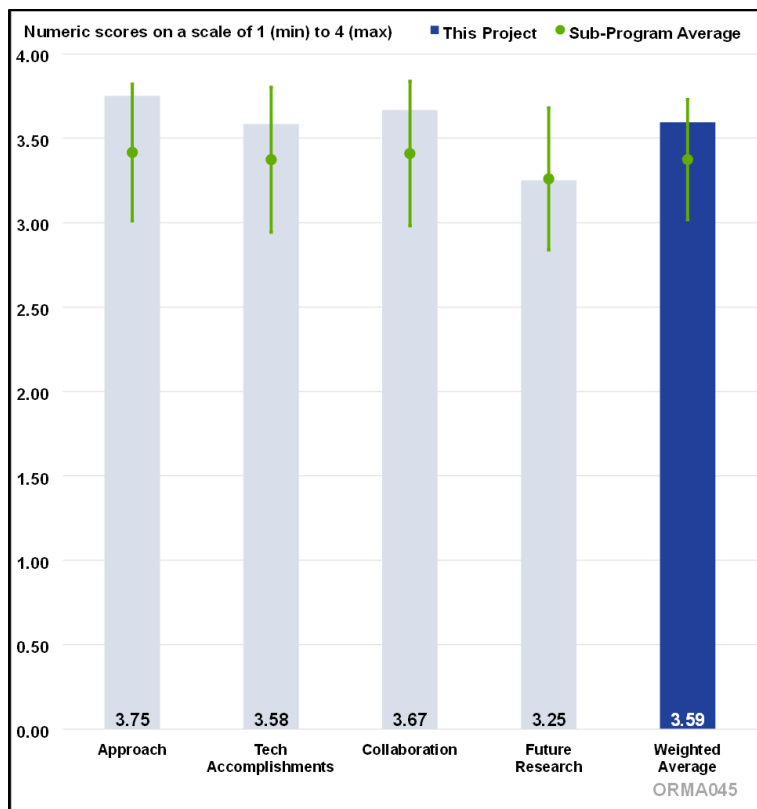


Figure 3-23 - Presentation Number: ORMA045 Presentation Title: Biodiesel Poisoning of Close-Coupled SCR Catalysts for Off-Road Engines Principal Investigator: Todd Toops, Oak Ridge National Laboratory

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA045_Toops_2025_o.pdf

Presentation Number:

ORMA046

Presentation Title:

Ammonia for 4-Stroke Marine Dual Fuel and Gas Engines (Retrofits and New)

Principal Investigator:

Scott Curran, Oak Ridge National Laboratory

Presenter

Daanish Tyrewala, Oak Ridge National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA046_Curran_2025_o.pdf

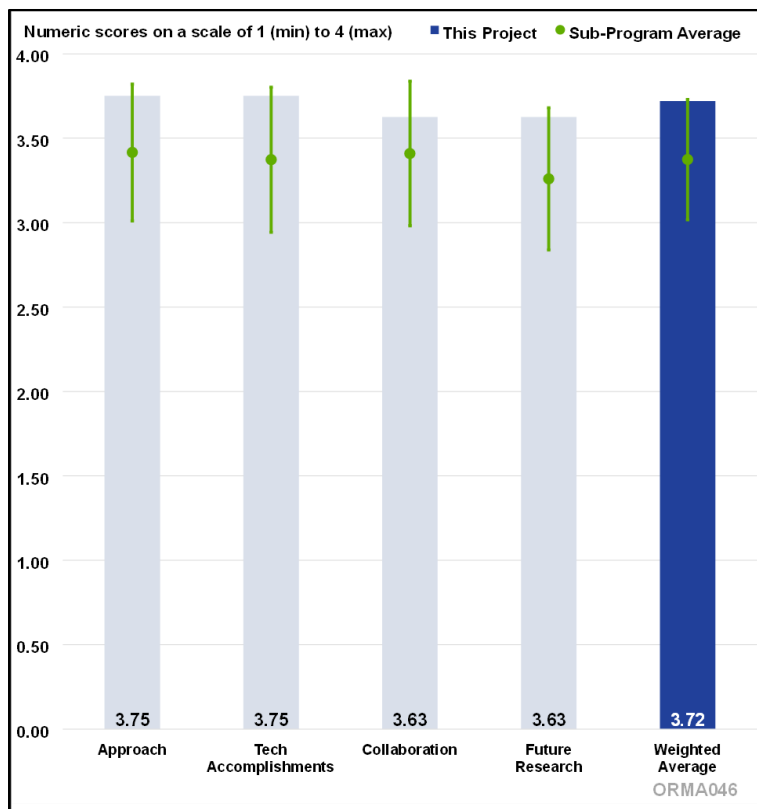


Figure 3-24 - Presentation Number: ORMA046 Presentation Title: Ammonia for 4-Stroke Marine Dual Fuel and Gas Engines (Retrofits and New) Principal Investigator: Scott Curran, Oak Ridge National Laboratory

Presentation Number:

ORMA048

Presentation Title:

Medium Duty Off-Road DME Engine Achieving High Efficiency and Ultra Low Emissions

Principal Investigator:

André Boehman, University of Michigan

Presenter

Chuck Mueller, Sandia National Laboratories

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 80% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 20% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

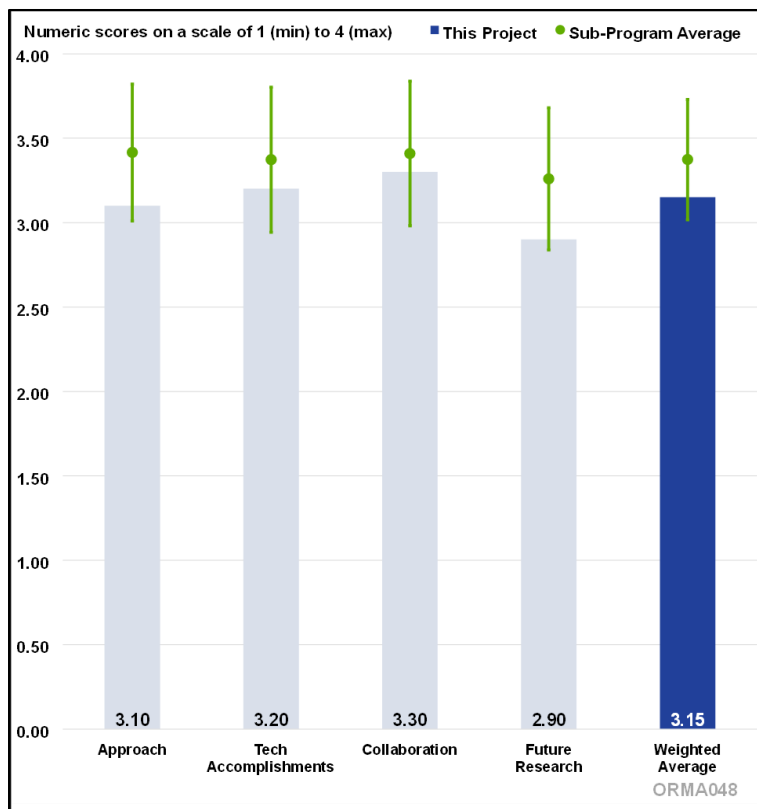


Figure 3-25 - Presentation Number: ORMA048 Presentation Title: Medium Duty Off-Road DME Engine Achieving High Efficiency and Ultra Low Emissions Principal Investigator: André Boehman, University of Michigan

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA048_Boehman_2025_o.pdf

Presentation Number:

ORMA050

Presentation Title:

A Low Greenhouse Gas Advanced Spark Ignition Engine that can Operate on Natural Gas and Natural Gas-Hydrogen Blends with Diesel

Principal Investigator:

Jeff Naber, Michigan Technical University

Presenter

Scott Miles, John Deere

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA050_Naber_2025_o.p df

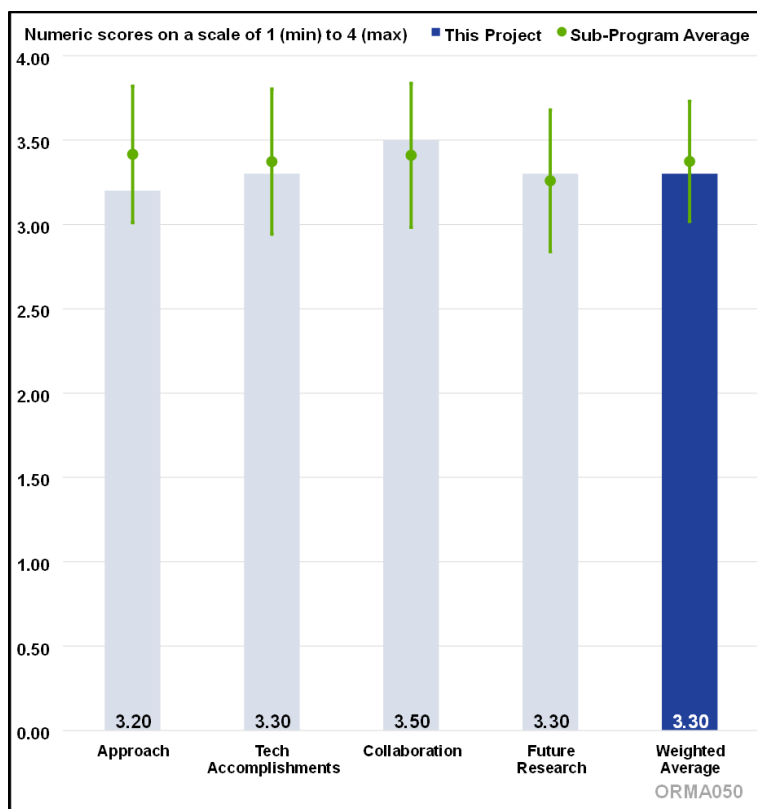


Figure 3-26 - Presentation Number: ORMA050 Presentation Title: A Low Greenhouse Gas Advanced Spark Ignition Engine that can Operate on Natural Gas and Natural Gas-Hydrogen Blends with Diesel Principal Investigator: Jeff Naber, Michigan Technical University

Presentation Number:

ORMA052

Presentation Title:

Simulation of Jet Engine Performance Using SATF Blends

Principal Investigator:

Shashank Yellapantula, National Renewable Energy Laboratory

Presenter

Shashank Yellapantula, National Renewable Energy Laboratory

Reviewer Sample Size

A total of three reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA052_Yellapantula_2025_o.pdf

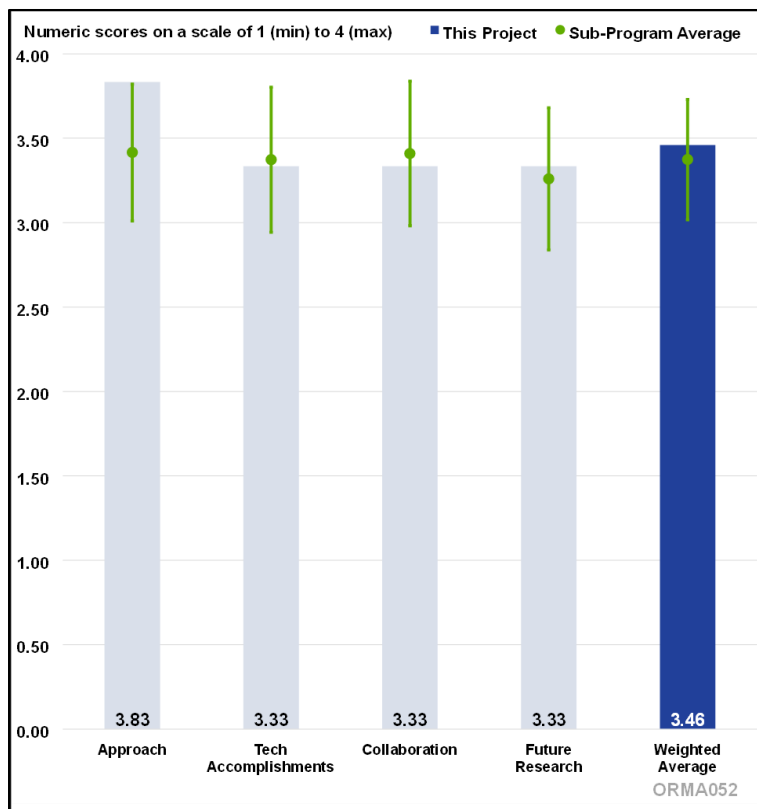


Figure 3-27 - Presentation Number: ORMA052 Presentation
Title: Simulation of Jet Engine Performance Using SATF
Blends Principal Investigator: Shashank Yellapantula, National
Renewable Energy Laboratory

Presentation Number:

ORMA055

Presentation Title:

High Energy-Efficient Hybrid Excavator Powered by Hydrogen Combustion Engine

Principal Investigator:

Andrea Vacca, Purdue University

Presenter

Andrea Vacca, Purdue University

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA055_Vacca_2025_o.pdf

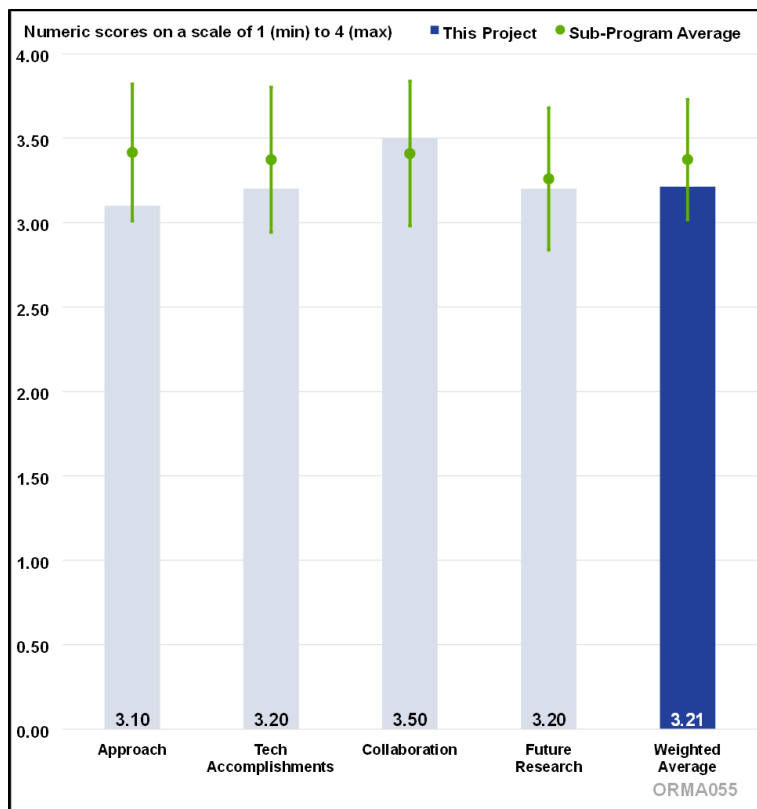


Figure 3-28 - Presentation Number: ORMA055 Presentation Title: High Energy-Efficient Hybrid Excavator Powered by Hydrogen Combustion Engine Principal Investigator: Andrea Vacca, Purdue University

Presentation Number:

ORMA056

Presentation Title:

Transient-Capable Hydrogen-Hybrid for Off-Road (THOR)

Principal Investigator:

Chad Koci, Caterpillar Inc.

Presenter

Chad Koci, Caterpillar Inc.

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

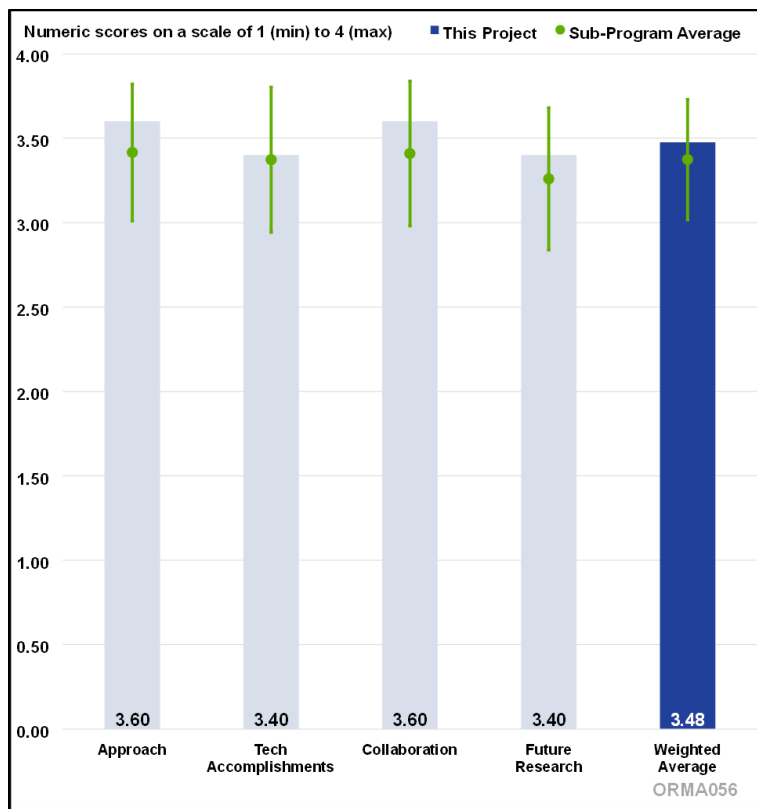


Figure 3-29 - Presentation Number: ORMA056 Presentation
Title: Transient-Capable Hydrogen-Hybrid for Off-Road (THOR)
Principal Investigator: Chad Koci, Caterpillar Inc.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA056_Koci_2025_o.pdf

Presentation Number:

ORMA057

Presentation Title:

High Power, Ultra-Low Emissions
HD H₂ Engine

Principal Investigator:

Nathan Peters, Dumarey USA

Presenter

Nathan Peters, Dumarey USA

Reviewer Sample Size

A total of three reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA057_Peters_2025_o.pdf

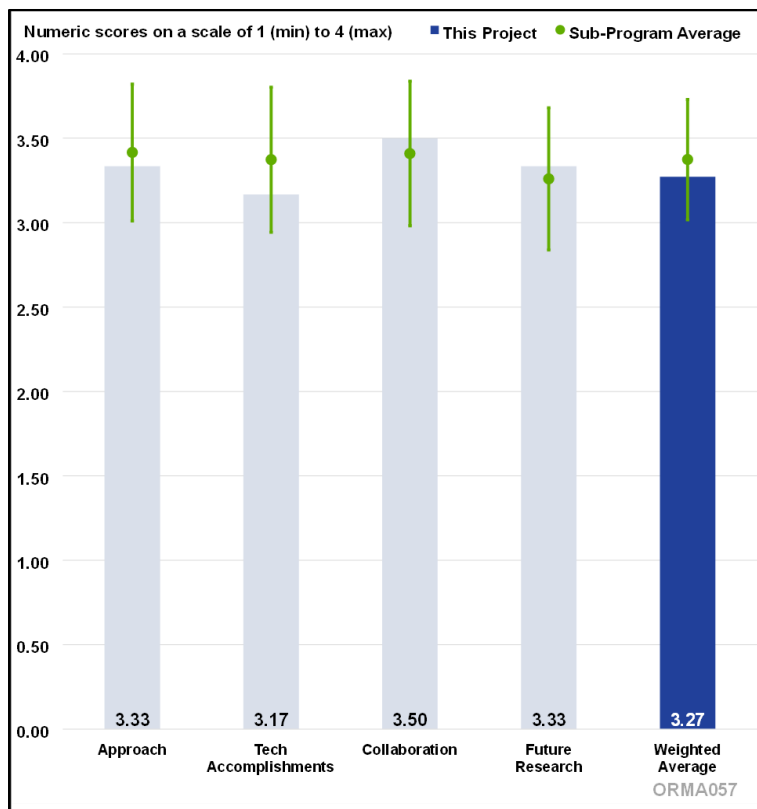


Figure 3-30 - Presentation Number: ORMA057 Presentation
Title: High Power, Ultra-Low Emissions HD H₂ Engine Principal
Investigator: Nathan Peters, Dumarey USA

Presentation Number:

ORMA058

Presentation Title:

Greatly Reduced Vehicle Platinum Group Metal (PGM) Content Using Engineered, Highly Dispersed Precious Metal Catalysts

Principal Investigator:

Yong Wang, Washington State University

Presenter

Yong Wang, Washington State University

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 80% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 20% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA058_Wang_2025_o.pdf

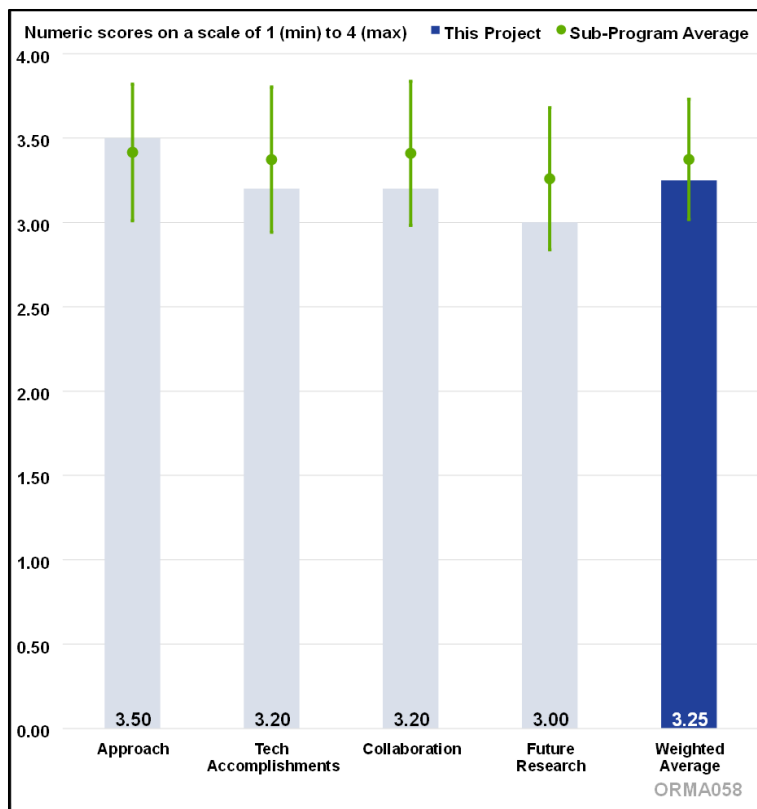


Figure 3-31 - Presentation Number: ORMA058 Presentation Title: Greatly Reduced Vehicle Platinum Group Metal (PGM) Content Using Engineered, Highly Dispersed Precious Metal Catalysts Principal Investigator: Yong Wang, Washington State University

Presentation Number:

ORMA059

Presentation Title:

Robust NH₃-SCR Catalysts to Enable H₂-ICEs

Principal Investigator:

Yong Wang, Pacific Northwest National Laboratory

Presenter

Kenneth Rappe, Pacific Northwest National Laboratory

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

80% of reviewers felt that the project was relevant to current DOE objectives, 20% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 60% of reviewers felt that the resources were sufficient, 20% of reviewers felt that the resources were insufficient, 20% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA059_Rappe_2025_o.p df

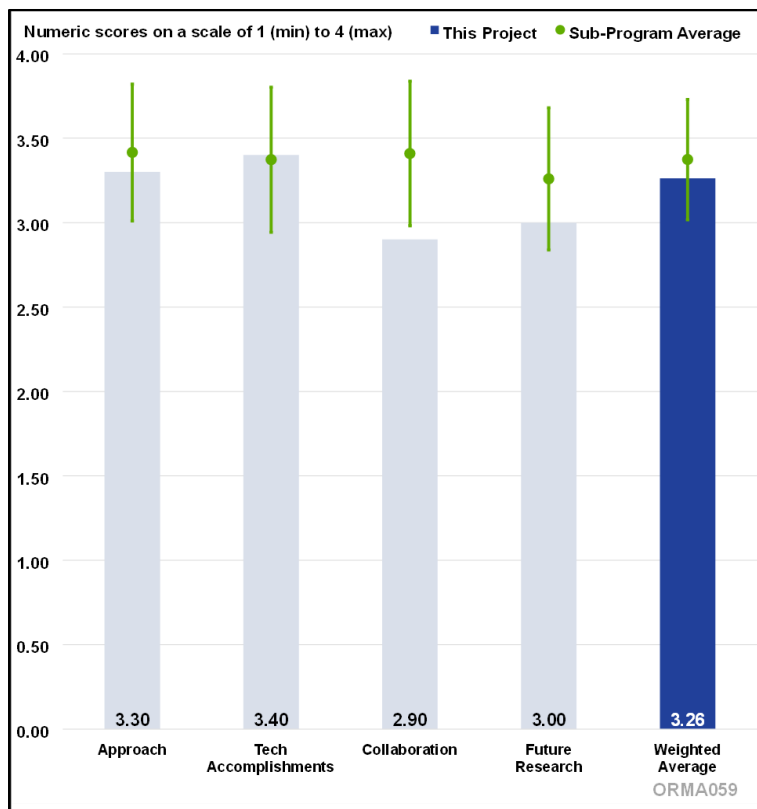


Figure 3-32 - Presentation Number: ORMA059 Presentation Title: Robust NH₃-SCR Catalysts to Enable H₂-ICEs Principal Investigator: Yong Wang, Pacific Northwest National Laboratory

Presentation Number:

ORMA060

Presentation Title:

Development and Demonstration of a Medium-Duty Off-Road DME Engine with a Combustion Recipe for Ultra-Low NO_x

Principal Investigator:

Ben Lawler, Clemson University

Presenter

Ben Lawler, Clemson University

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA060_Lawler_2025_o.pdf

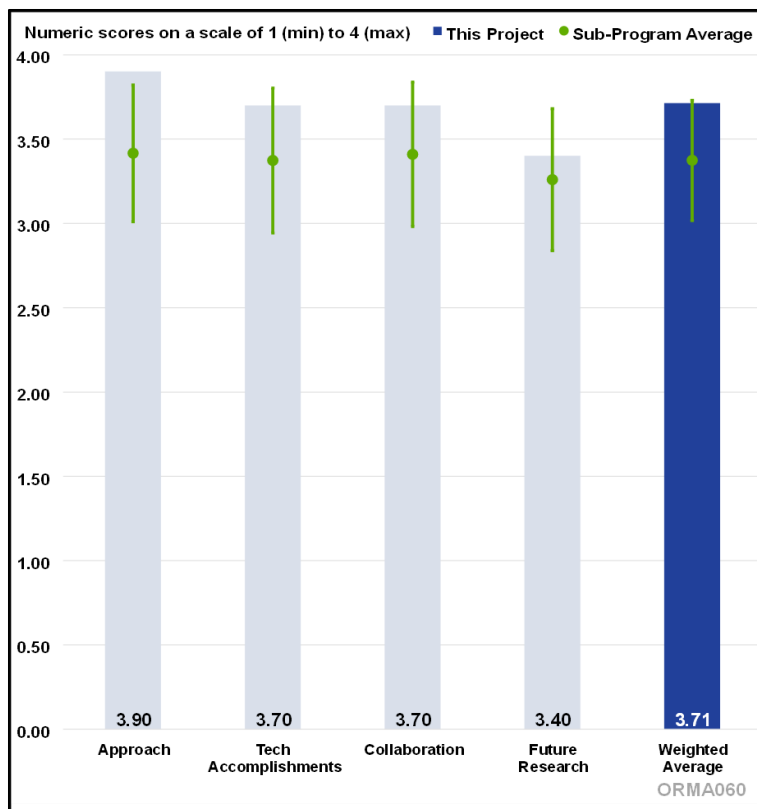


Figure 3-33 - Presentation Number: ORMA060 Presentation Title: Development and Demonstration of a Medium-Duty Off-Road DME Engine with a Combustion Recipe for Ultra-Low NO_x Principal Investigator: Ben Lawler, Clemson University

Presentation Number:

ORMA061

Presentation Title:

Performance and Emissions Characteristics of a Locomotive Engine Using Biofuels

Principal Investigator:

Muni Biruduganti, Argonne National Laboratory

Presenter

Muni Biruduganti, Argonne National Laboratory

Reviewer Sample Size

A total of five reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 80% of reviewers felt that the resources were sufficient, 20% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA061_Biruduganti_2025_o.pdf

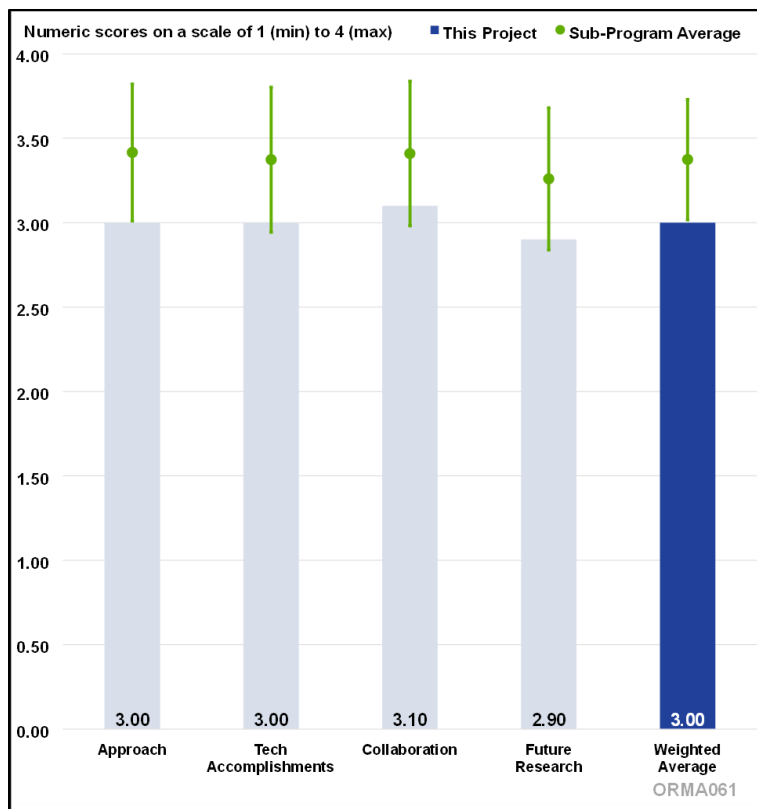


Figure 3-34 - Presentation Number: ORMA061 Presentation Title: Performance and Emissions Characteristics of a Locomotive Engine Using Biofuels Principal Investigator: Muni Biruduganti, Argonne National Laboratory

Presentation Number:

ORMA062

Presentation Title:

Measurements of Fundamental Combustion Behavior: SATFs and Surrogates

Principal Investigator:

Scott Goldsborough, Argonne National Laboratory

Presenter

Scott Goldsborough, Argonne National Laboratory

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA062_Goldsborough_2025_o.pdf

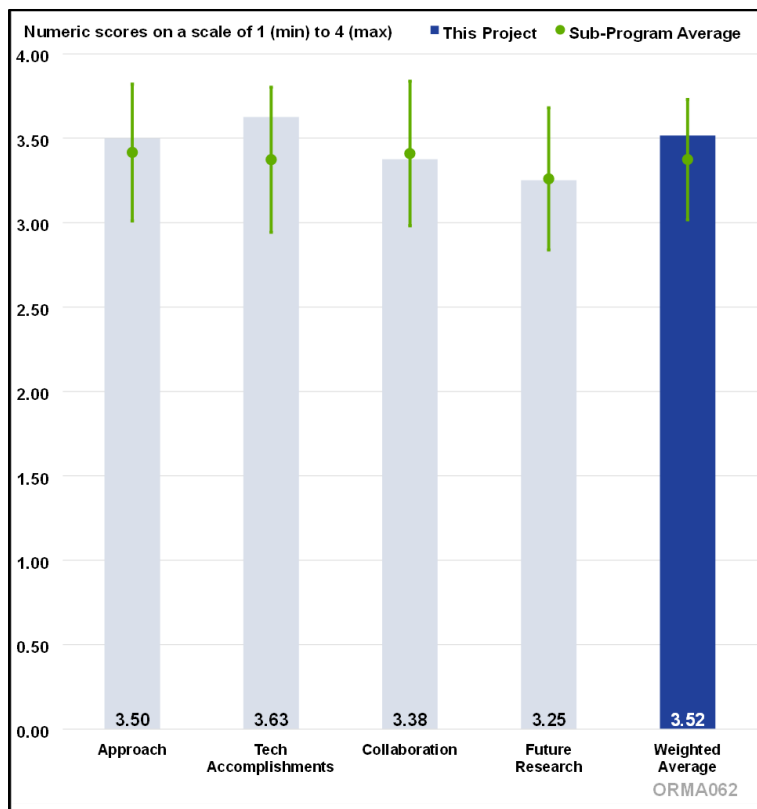


Figure 3-35 - Presentation Number: ORMA062 Presentation Title: Measurements of Fundamental Combustion Behavior: SATFs and Surrogates Principal Investigator: Scott Goldsborough, Argonne National Laboratory

Presentation Number:

ORMA064

Presentation Title:

Development of a High-Efficiency, Low-Emissions, Heavy-Duty Hydrogen Internal Combustion Engine

Principal Investigator:

Jay Shah, Cummins Inc.

Presenter

Jay Shah, Cummins Inc.

Reviewer Sample Size

A total of four reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 100% of reviewers felt that the resources were sufficient, 0% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA064_Shah_2025_o.pdf

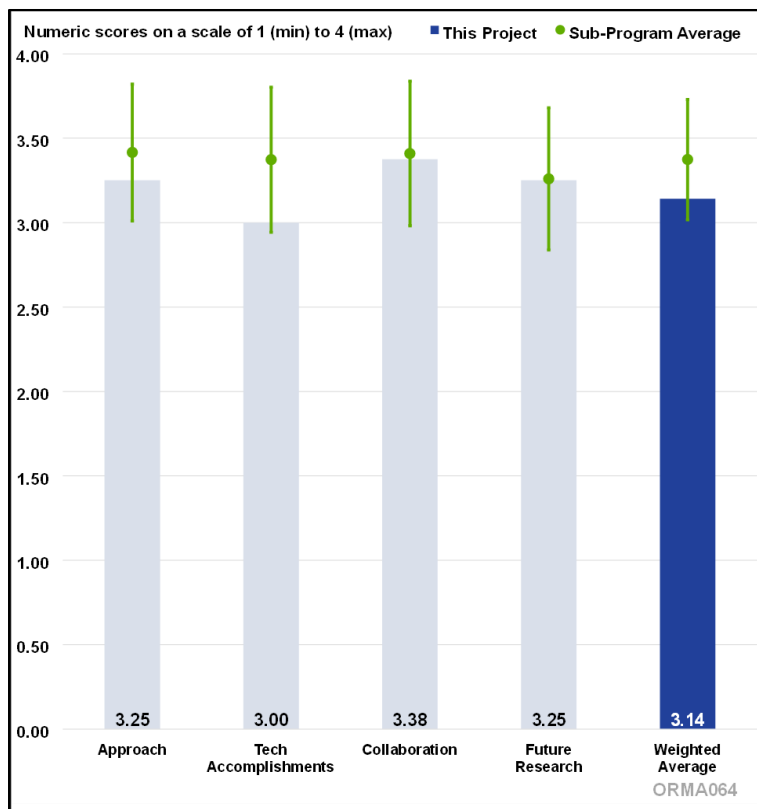


Figure 3-36 - Presentation Number: ORMA064 Presentation Title Development of a High-Efficiency, Low Emissions, Heavy-Duty Hydrogen Internal Combustion Engine Principal Investigator: Jay Shah, Cummins Inc.

Presentation Number:

ORMA066

Presentation Title:

High-Fidelity CFD Modeling of Aviation Emissions

Principal Investigator:

Chao Xu, Argonne National Laboratory

Presenter

Chao Xu, Argonne National Laboratory

Reviewer Sample Size

A total of three reviewers evaluated this project.

Project Relevance and Resources

100% of reviewers felt that the project was relevant to current DOE objectives, 0% of reviewers felt that the project was not relevant, and 0% of reviewers did not indicate an answer. 67% of reviewers felt that the resources were sufficient, 33% of reviewers felt that the resources were insufficient, 0% of reviewers felt that the resources were excessive, and 0% of reviewers did not indicate an answer.

Presentation Link:

https://www1.eere.energy.gov/vehiclesandfuels/downloads/2025_AMR/ORMA066_Xu_2025_o.pdf

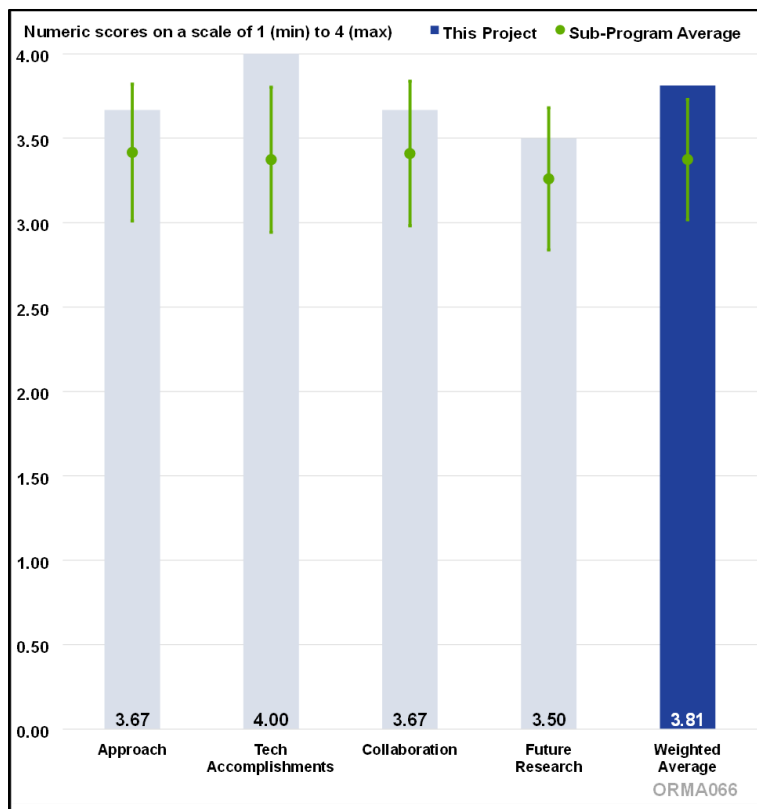


Figure 3-37 - Presentation Number: ORMA066 Presentation
Title: High-Fidelity CFD Modeling of Aviation Emissions
Principal Investigator: Chao Xu, Argonne National Laboratory

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