



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: University of California, Berkeley - Predictive Vehicle Control – From ECU to the Cloud

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Berkeley, Concord, and Richmond, California

Proposed Action Description:

AMENDED NEPA DETERMINATION: (See attached original Determination, dated February 8, 2017). This Amended Determination follows the approval of additional funds and period of performance to support the project team's small-scale, research and development activities to adapt and expand its eco-route, eco-drive, and eco-charge controls to leverage connectivity and SAE (Society of Automotive Engineers) Level 4 (L4) automation to generate additional fuel efficiency benefits in electrified vehicles including EVs and plug-in hybrid electric vehicles, under Phase 2 of their Next-Generation Energy Technologies for Connected and Autonomous On-Road Vehicles (NEXTCAR) project. Specifically, the project team will deploy, test, and validate a prototype AI system across an electric bus fleet with a goal to verify cost savings compared to diesel fueled vehicles. If successful, this project could enable at least a 20% reduction in energy consumption of future connected and automated vehicles.

Project activities will be conducted at existing facilities at University of California (UC), Berkeley (Berkeley, CA), UC Berkeley, Richmond Field Station (Richmond, CA), UC Berkeley, Gomentum Station (Concord, CA), and AVConnect, Inc. (Berkeley, CA) designed for the applicable activities. Project tasks continue to fit within the class of actions identified under the DOE Categorical Exclusion identified below. This assessment was based on a review of the proposed scope of work and the potential environmental impact of the project. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements. No modifications will be made to the existing facilities to accommodate the proposed work.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: **GEOFFREY GOODE** Digitally signed by GEOFFREY GOODE
Date: 2023.10.31 13:23:40 -04'00'

Date Determined:



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: Next-Generation Energy Technologies for Connected and Automated On-Road Vehicles (NEXTCAR) Program (FOA No. DE-FOA-0001564)

Program or Field Office: Advanced Research Projects Agency - Energy (ARPA-E)

Location(s) (City/County/State): CA, DE, IN, MI, MN, OH, PA, TN, TX

Proposed Action Description:

The NEXTCAR Program seeks to fund the development of new and emerging vehicle dynamic and powertrain (VD&PT) control technologies that can reduce the energy consumption of future vehicles through the use of connectivity and vehicle automation. The NEXTCAR Program is composed of 11 small-scale research and development projects that will be conducted by universities, for-profit entities, non-profit entities, and federal laboratories. If successful, NEXTCAR technologies will improve the energy efficiency of future connected and automated vehicles by at least 20% beyond other planned vehicle efficiency improvements. Potential improvements include reduced fuel/energy consumption and reduced energy-related emissions for future Light, Medium, and Heavy-Duty on-road vehicles. All of the NEXTCAR projects fit within the class of actions identified under the DOE Categorical Exclusion identified below and do not involve any extraordinary circumstances that may affect the significance of the environmental effects of the projects. This assessment was based on a review of the proposed scope of work and the potential environmental impacts of each project. Prime Recipients are prohibited from conducting public on-road testing until they secure all necessary permits in accordance with applicable local, state, and federal regulations.

Project tasks for all 11 projects under the NEXTCAR Program (listed in Attachment A) will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:

Date Determined: 02/08/2017

Attachment A: Projects in the NEXTCAR Program

Prime Recipient	Project Title
Southwest Research Institute	Model Predictive Control for Energy-Efficient Maneuvering of CAVs Equipped with 12V Micro-Hybrid Engine Technology
Michigan Technological University	NEXTCAR: Connected and Automated Control for Vehicle Dynamics and Powertrain Operation on a Light-Duty Multi-Mode Hybrid Electric Vehicle
University of California – Riverside	An Innovative Vehicle-Powertrain Eco-Operation System For Efficient Plug-In Hybrid Electric Buses
General Motors, LLC	InfoRich VD&PT Controls
University of California – Berkeley	Predictive Data-Driven Vehicle Dynamics and Powertrain Control: from ECU to the Cloud
Purdue University	Enabling High-Efficiency Operation through Next-Generation Control Systems Development for Connected and Automated Class 8 Trucks
Ohio State University	Fuel Economy Optimization with Dynamic Skip Fire in a Connected Vehicle
University of Minnesota – Twin Cities	Cloud Connected Delivery Vehicles: Boosting Fuel Economy Using Physics-Aware Spatiotemporal Data Analytics and Real-Time Powertrain Control
University of Delaware	Ultimately Transformed And Optimized Powertrain Integrated With Automated And Novel Vehicular And Highway Connectivity Leveraged For Efficiency (Utopian Vehicle)
University of Michigan	Integrated Power And Thermal Management For Connected And Automated Vehicles (IPTM-CAV) Through Real-Time Adaptation And Optimization
Pennsylvania State University	Maximizing Vehicle Fuel Economy Through The Real-Time, Collaborative, And Predictive Co-Optimization Of Routing, Speed, And Powertrain Control