



## **Request for Proposal (“RFP”)**

**Topic:** Examining Safety Impacts of Electric Vehicle Braking Profiles and Lighting Thresholds

**Posting Date:** March 28, 2024

**Sponsoring Organization:** AAA Foundation for Traffic Safety (“AAAFTS”)

**Deadline to Submit Proposal:** Thursday, May 9, 2024, 5:00 PM EDT

### **Background and Purpose**

AAAFTS is seeking a research organization (“Consultant”) to examine the impact of battery electric vehicle (EV) braking profiles and corresponding brake light thresholds on safety.

Over the past decade, battery electric vehicles (EVs) have established themselves as a legitimate option in the mainstream vehicle market. EVs differ from traditional internal combustion engine (ICE) vehicles, including differences in vehicle weight and acceleration profiles. Moreover, EVs use regenerative braking systems (RBS), which use the kinetic energy created when a car slows down to recharge the battery. An RBS causes a vehicle to decelerate as soon as the foot is lifted off the accelerator pedal and continues to actively brake if neither pedal is depressed. At aggressive RBS settings, drivers can use one-pedal driving where the vehicle will rapidly slow and even come to a full stop without the driver ever having to step on the physical brake pedal.

It follows that the deceleration profiles of EVs can differ from ICE which can, in turn, impact other motorists. This is further confounded by variability in the conditions under which the rear brake lights are activated. The purpose of this research is to examine how drivers in a following car react to the braking of a lead EV, using different braking profiles and timings or thresholds for brake lights.

### **Objectives**

The objectives of this project are to:

- Identify and synthesize key literature regarding brake lighting and deceleration profiles, including a consideration of relevant Federal Motor Vehicle Safety Standards. This is not intended as an exhaustive synthesis of the entire body of knowledge concerning car following, braking and time-to-collision, brake lamp configurations, etc.; however, efforts should be made to draw important inferences from past relevant works.

- In an experimental setting, examine how different thresholds or mappings of vehicle deceleration and brake light activation impact responses and safety in drivers of a following vehicle. Such an evaluation should look at a variety of mappings and consider other factors (e.g., different driver types, road situations, vehicle type).
- Identify recommended actions to be taken by traffic safety stakeholders to mitigate safety concerns identified.

### **Method**

The AAA Foundation envisions that the objectives of this research could be met through multiple methods utilizing a variety of research tools, including but not limited to literature review and synthesis as well as laboratory or field experimentation. The AAA Foundation envisions that a project of the intended scale would likely take approximately 18–24 months to complete.

### **Uses**

It is AAAFTS' express intention to (i) obtain a non-exclusive, royalty-free license in perpetuity to the output and contents of the Research Project, and (ii) be the first party to publish findings from the Research Project on its website and other media channels. After AAAFTS' initial release, Consultant may publish, use or disseminate the materials obtained or derived from the Research Project in coordination with AAAFTS. Consultant agrees to acknowledge AAAFTS as the sponsor in any publications. AAAFTS agrees to list the Consultant and individual researchers as authors.

### **Proposal Format & Requirements**

Your proposal must meet the following formatting requirements:

- Use standard letter-sized page (8.5 x 11 inch), with at least one-inch margins on all sides.
- All text should be single-spaced.
- Body text should use font no smaller than 12-point; footnotes and text inside of tables should use font no smaller than 10-point.
- The body of the proposal must not exceed five (5) pages (excluding title page, CVs, appendices, and budget material).
- Please submit the proposal as a PDF.

Proposals shall include the following elements. Failure to follow these instructions may result in disqualification:

#### **1. Title Page**

- Title of the proposal.
- Names and affiliations of all investigators.
- Address, telephone number, and email of the primary investigator and/or the individual to whom correspondence regarding the proposal is to be addressed.

- An abstract, not exceeding 300 words.

## 2. Main Body

The body of the proposal shall be no longer than five (5) pages (not including title page, CVs, appendices, or any budget information) and should contain the sections listed below.

- Objectives
- Approach: Proposals should provide detailed description of the proposed project tasks and methods, the expected results and output, and potential limitations. When applicable, proposals must describe how subjects or respondents will be identified and recruited.
- Timeline and Supporting Environment: Describe the project timeline, where the activities will take place, and what facilities and resources will be used (if applicable). Present all timelines in terms of project month. Note that actual dates will be determined at the contract agreement stage. Timeline should include significant milestones, final report and other anticipated products or project outputs.

## 3. Project Budget

Please state the total budget request (including indirect costs as applicable) at the end of the proposal body. Please include a detailed budget including indirect costs as an Appendix. Proposals may provide multiple options for study designs that differ in scale and budget.

For awarded contracts, invoices should be based on actual expenses linked to project deliverables. Progress reports will be required. All travel requests should be documented and justified. Conference travel may or may not be justifiable depending on the purpose and scope of work.

AAAFS is a charitable entity and is not committed to matching the indirect cost rates of the U.S. government or other entities. However, universities and organizations can request a limited amount of indirect costs. Current maximum allowable rates are:

- 0% rate for **government agencies, other private foundations, and for-profit organizations**;
- Up to a 20% rate for **U.S. universities, U.S. colleges**; and
- Up to a 25% rate for **non-governmental organizations (NGOs)**.

Rates and limitations apply to both the primary applicant and any subcontractors. Each respective organization may receive indirect costs up to the rate applicable to their organization. A contractor with an actual indirect cost rate lower than the maximum rate provided above should not increase the funding request to the maximum allowed.

## 4. CVs or Resumes for Key Project Staff

### Other Suggestions

The body of the proposal should be self-contained; it should be able to be understood by

a reviewer without any supporting appendices.

Proposal reviewers are knowledgeable about scientific methods, data analysis, and most major traffic safety topics. As such, technical details related to the tasks and method should be prioritized over background information.

### **Evaluation Criteria**

Proposals are assessed based on three criteria: (1) *innovation*, (2) *approach*, and (3) *team experience and supporting research environment*:

*Criterion 1: Innovation* (weight: 20%):

Does the applicant propose novel theoretical concepts, methods, instrumentation, or interventions? Is the proposed work expected to have impact on progress in the relevant fields and/or enhance programmatic initiatives?

*Criterion 2: Approach* (weight: 60%):

Does the application clearly respond to the RFP objectives? Are the overall strategy, methodology, and analyses well-reasoned, technically sound, and appropriate to accomplish the project objective(s)?

*Criterion 3: Team Experience and Supporting Environment* (weight: 20%):

Are the Principal Investigators and proposed personnel well-suited to the project, in terms of skills and experience? Are the institutional support, equipment, and other physical resources available to project personnel adequate for the project proposed?

Project budget requests will be assessed in relation to the scope of the work proposed.

### **Proposal Submission**

**Deadline: Thursday, May 9, 2024, 5:00 PM EDT.**

**No proposals will be accepted after this time.**

Submit your proposal electronically to [RFP@aaaafoundation.org](mailto:RFP@aaaafoundation.org).

When sending your proposal to the AAA Foundation, please give your electronic files names that can help identify them.

### **Questions**

An FAQ document is available at this [link](#), which includes common questions from previous years.

If you have other questions, please email them to [RFP@aaaafoundation.org](mailto:RFP@aaaafoundation.org). AAAFTS will accept questions until 5:00 PM EDT, April 5, 2024. Answers to these questions will be posted on the AAAFTS website no later than 5:00 PM EDT, April 9, 2024.

### **Terms and Conditions**

The selection of a Consultant is conditioned upon and not considered final until a Research Agreement is executed by both AAAFTS and the Consultant.

## **About the Sponsor**

Established in 1947 by The American Automobile Association, Inc., the AAA Foundation for Traffic Safety is an independent, publicly funded 501(c)(3) charitable research and education organization dedicated to saving lives by preventing traffic crashes and reducing injuries. AAAFTS' mission is to prevent traffic deaths and injuries by conducting research into their causes and by educating the public about strategies to prevent crashes and reduce injuries when they occur. Additional information about the AAA Foundation for Traffic Safety can be found at [www.aaafoundation.org](http://www.aaafoundation.org).