Request for Proposals:
Moving Zero-Emission Freight Toward Commercialization

January 2020

Background and Objectives

While medium- and heavy-duty freight vehicles represent only a small percentage of total on-road vehicles, they consume a disproportionate share of fuel and account for a significant portion of transportation sector greenhouse gas (GHG) emissions and air pollutants that are harmful to public health. Although zero-emission technology for medium- and heavy-duty vehicles is in an earlier stage of development compared to passenger vehicles, ZEV options for a growing number of medium- and heavy-duty vehicles are coming to market. Major manufacturers are moving from demonstration projects to the commercial introduction of zero-emission freight trucks across medium- and heavy-duty applications. Because freight volumes and GHG emissions from the freight sector are projected to continue growing over the coming decade, overcoming barriers to widespread electrification of the freight sector has taken on a growing sense of urgency.

The objective of this project is to identify the practical steps needed to address cost, performance, infrastructure, grid and other barriers and move ZEVs in key medium- and heavy-duty segments from demonstration projects to wide-scale commercialization through research and preparation of a comprehensive report. Specifically, it discusses policy options ranging from financial incentives in the near term to the design and implementation of zero-emission truck regulations, as well as complementary local policies. It will also discuss required infrastructure needs (i.e., electric charging or hydrogen refueling) and potential grid issues (e.g. V2X); opportunities for electrification of novel and off-road vehicles; and new regulations or standards needed to overcome the challenges and accelerate the adoption of zero-emission freight vehicles.

About the International Zero-Emission Vehicle Alliance

The International ZEV Alliance is a collaboration of 18 governments, founded in late 2015 to accelerate the global transition to zero-emission vehicles. The member governments are five countries (Canada, Germany, Netherlands, Norway, United Kingdom) and 13 subnational jurisdictions (Baden-Württemberg, British Columbia, California, Connecticut, Maryland, Massachusetts, New Jersey, New York, Oregon, Québec, Rhode Island, Vermont, Washington). The collaboration includes the sharing of data, best practices, and lessons learned, and involves coordinating on action plans to help the group collectively achieve its ZEV deployment goals. The International Council for Clean Transportation (ICCT) serves as the secretariat to the Alliance.

Each year the Alliance selects three high-priority focus area research topics for a deeper technical understanding and policy exchange; this project is an integral part of one of the focus
areas for 2020. See these links for more information on the ZEV Alliance announcement to accelerate global ZEV sales, member commitments, publications, and events.

**Project Elements**

The primary project elements are: (1) periodic engagement with the ZEV Alliance during the project; (2) an original research report as described below; (3) a webinar presentation; and (4) a public event to release and publicize the report. Engagement with the ZEV Alliance includes participation in monthly project management calls with the ZEV Alliance secretariat, an initial teleconference call with interested ZEV Alliance members to discuss the approach and project priorities, a preliminary results briefing, and the incorporation of input on the consultant’s draft report from the secretariat and ZEV Alliance members.

**Scope and organization of the research report**

The key project deliverable is an original research report of between approximately 25 and 32 pages in length as outlined below:

- **Background and motivation (3-4 pages)**
  - Review the GHG, NOx, particulate and air toxic emission contributions of freight vehicles and discuss potential mitigation through zero-emission technologies (based on literature review)
  - Catalog deployments of zero-emission trucks, by market and segment, to summarize the current state or product availability through early 2020
  - Summarize major announcements by companies (shippers, fleets, retailers, manufacturers, governments) regarding plans to shift to zero-emission vehicles or become carbon-neutral

- **Assessment of technological commercialization progress (8-10 pages)**
  - For 3-4 representative zero-emission medium- and heavy-duty truck segments (focusing on those with greater near-term feasibility, to be determined in consultation with the ZEV Alliance), perform the following analyses:
    - Examine key technology readiness attributes including technology cost, efficiency, performance, range, charging or refueling options for the most promising zero-emission technologies (e.g., battery electric, plug-in hybrid, overhead catenary, hydrogen fuel cell), considering regional differences among North America, Europe, and China;
    - Quantify infrastructure needs (depot, on-route charging points per truck, hydrogen stations) and associated costs;
    - Evaluate representative per-vehicle technology costs and benefits (upfront cost, fuel savings, maintenance, societal GHG, air quality); Analyze timing for parity for upfront cost and total cost of ownership; and identify applications currently best suited for rapid electrification.
  - Review power sector challenges, research on potential grid impacts, and opportunities to manage loads (e.g., with smart charging, commercial rate design, hydrogen generation)

- **Potential for breakthrough innovations and disruptive freight technologies (2-3 pages)**
Investigate opportunities for potential breakthrough innovations in zero-emission freight, such as for the following technologies and business models (qualitative discussion):

- Autonomous trucking: Technology status and readiness, energy and environmental impacts, societal and economic impacts
- Drones: Energy requirements, regulatory hurdles, and societal acceptance
- Battery leasing and other unique financing models
- Other related niche solutions (e.g., zero-emission inland shipping)

- Existing policies and their prospects, limitations, and potential further development (8-10 pages)
  - Summarize the treatment of ZE trucks in CO₂, efficiency, and air pollutant standards (including in the EU, China, U.S., and California)
  - Summarize and compare zero-emission mandate programs for medium- and heavy-duty vehicles in development (California, China) through 2019; discuss principles for design and implementation
  - Discuss and compare financial incentives for zero-emission trucks in major markets, including fiscal policies such as fuel taxes and road tolls
    - Identify opportunities to phase down incentives as trucks near cost-of-ownership parity and approach broader market commercialization
  - Catalog and discuss local regulations and nonfinancial benefits for zero-emission trucks in major markets around the world, including:
    - Ultra-low and zero-emission zones
    - Exemptions from delivery restrictions
    - Relaxation of highway weight limits
    - Curb access policies
  - Catalog and discuss regional initiatives and funding for major zero-emission truck projects, including EU-level and multi-country projects, demonstrations, and fiscal support (e.g., Alternative Fuel Infrastructure Directive, Connecting Europe Facility funding, Electric Vehicle Delivery Post)
  - Overview of infrastructure standards government programs to support infrastructure, and cost-sharing options with private sector

- Practical steps to move ZEVs to wide-scale commercialization (3-5 pages)
  - Discuss importance of collective government target setting (e.g., for possible ZEV Alliance announcement, and multi-group event at COP) to set clear signal for markets, with examples of current announcements and comparisons to other sectors
  - Identify market enabling policy and regulatory opportunities to accelerate the transition to zero-emission freight for different markets, applications, and vehicle types
  - Summarize guidance for smart use of incentives (financial and non-financial) based on analysis
  - Provide recommendations to ensure growing availability of infrastructure and low-cost electricity or hydrogen (cost-sharing, public-private partnership, regulations)

**Project Timeline and Engagement Steps**
This project timeline is set by the schedule in Table 1 below. The secretariat (International Council on Clean Transportation) expects to notify the selected consultant by early March and sign a contract for this work with the consultant by the end of March. There are several critical dates related to this project. A January 14th ZEV Alliance meeting will serve as a project kickoff with ZEV Alliance members to discuss priorities, approaches, and related activities for the focus area; the Secretariat will share results of this meeting with the consultant. The consultant’s work would primarily be done from March through September. An informal discussion between the consultant and interested ZEV Alliance members will offer an opportunity to further refine the project scope, tentatively scheduled for April 7. The consultant would provide a briefing on early findings on a June 9th teleconference with ZEV Alliance members, who may provide feedback to incorporate into the report. A preliminary draft report would be submitted to the secretariat by July 15th and a draft final report to the ZEV Alliance members by August 14th.

The secretariat will serve as the project manager to help coordinate with the consultant and meet ZEV Alliance member expectations throughout the project. This includes assisting in collecting and managing ZEV Alliance member input. The engagement also includes short monthly project management check-in calls with the consultant and secretariat from March through November. Following the draft report submission to the ZEV Alliance members by August 14th, the members will have two weeks to review the draft. The consultant would incorporate input, with support from the secretariat, by September 25, at which point the report would be submitted for final publication and design layout steps. Ideally, the report would be released at an event in fall 2020 (for example, at New York Climate Week, COP26, or a member-hosted event. The report will be made publicly available at the ZEV Alliance page (see publications), and its findings publicized via a public webinar.

Table 1. Timeline for proposed 2020 ZEV Alliance project

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X = major project milestone; / = interim milestone with the secretariat

**Evaluation Criteria for Proposals**

Evaluation of submitted proposals will be based on the following six criteria.

(1) Commitment to complete the scope of work (Maximum 2.5 pages)

The selected consultant must commit to completing all elements of the research report, engagement with the secretariat and members of the ZEV Alliance, and presentations. Simply copying the above “Project elements” text within the proposal is sufficient, including any additional proposed supporting actions, and the rationale for excluding or
modifying any of the scope elements.

The consultant should also suggest which 3-4 applications or segments they would choose for thorough analysis in the “Assessment of technological commercialization progress” portion of the scope above.

(2) Commitment to the project timeline (Maximum 1 page)

The selected consultant must commit to meeting the specified project timeline. The commitment can be satisfied by copying the “Project timeline” table and text above into the proposal, along with a description of the consultant’s internal process, use of internal milestones and contingency planning to quickly troubleshoot issues, method for updating and working with the secretariat, and any additional steps needed to ensure the project timeline is met.

(3) Prerequisite technical and policy experience (Maximum 1 page)

- The selected consultant must provide sufficient evidence that it has the prerequisite technical and policy expertise and experience to complete the proposed work by:
  - Sharing links to exactly four public reports authored by the consultant that are most directly related to this work; and
  - Summarizing (in up to 150 words for each public report) how each report relates to this proposed project.

(4) Staff management plan (Maximum 1 page)

- Identify up to three key individual staff members who will work on this project, and for each:
  - Describe (in 300 words or less for each member) their individual roles in completing the work elements above and why they are well suited for the work; and
  - Include the curriculum vitae for the principal investigator who will be the primary contact and responsible for executing the project (max. 3 pages, separate document).

(5) Knowledge sharing and outreach (Maximum 1 page)

- The selected consultant must commit to presenting the findings of the work at a public webinar.
- The proposal should provide ideas and a process to release and publicize the report in a way that will maximize knowledge sharing by:
  - Suggesting venues where a launch event could take place; and
  - Advising the ZEV Alliance members on actions they could take to continue promoting and sharing the findings of the report with relevant stakeholders.
- The proposal should provide examples of past consultant experiences communicating related work.

(6) Additional value-add (Maximum 1 page)

- Please name any additional tools, data, case studies, or project experience the consultant can offer in the field to advance the overall project objectives in a unique or exceptional way (limit of 500 words).
**Budget**

- The maximum allotted compensation for the proposed work is $60,000 (total, including all taxes and fees). **Any proposals exceeding this amount will be not be eligible for consideration.**
- Please provide a high-level overview of your budget (e.g., amount to be spent on staff time, subcontractors, travel, software and data purchases, etc.) Also include preferred payment timing to match the project timeline and milestones (300 words maximum).

**Format, References and Submission**

We emphasize the importance of succinct proposals. Proposals should be between five and eight pages in length and submitted in Word format using 11- or 12-point font. **Proposals exceeding 8 pages will not be accepted.** (We view the ideal proposal as one that is clearly written and longer than 6 pages).

Please include two references that can personally attest to the consultant’s experience in successfully executing similar projects, ideally on a similar topic. A complete submission should include: (1) the proposal in Word format of 5-8 pages; (2) the principle investigator’s curriculum vitae of up to 3 pages; and (3) contact information for two professional references.

The proposal should be submitted to secretariat@zevalliance.org by **no later than February 18.** If potential bidders express initial interest in submitting a proposal by February 10, the secretariat will email any potential updates to this Request for Proposals. The secretariat may answer or ask questions for clarification, but is not obligated to respond to inquiries.