

**REQUEST FOR PROPOSALS**

**TECHNICAL ASSISTANCE FOR THE**

**GREEN LOCOMOTIVE TECHNOLOGIES PROJECT IN MEXICO**

**Submission Deadline: 4:00 PM**

**LOCAL TIME (MEXICO CITY, MEXICO)**

**JANUARY 15, 2015**

**Submission Place:**

**Dr. Iker de Luisa Plazas**

**Director General**

**Asociación Mexicana de Ferrocarriles, A.C.**

**Alfonso Esparza Oteo 144, Oficina 702**

**Col. Guadalupe Inn, Deleg. Alvaro Obregón**

**México, D.F. C.P. 01020**

**MEXICO**

**Phone: + (52-55) 5661-0325**

**SEALED PROPOSALS SHALL BE CLEARLY MARKED AND RECEIVED PRIOR TO THE TIME AND DATE SPECIFIED ABOVE. PROPOSALS RECEIVED AFTER SAID TIME AND DATE WILL NOT BE ACCEPTED OR CONSIDERED.**

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## **Section 1: INTRODUCTION**

The U.S. Trade and Development Agency (USTDA) has provided a grant in the amount of US\$590,358 to the Asociación Mexicana de Ferrocarriles, A.C. (“AMF”) (the “Grantee”) of Mexico in accordance with a grant agreement dated September 12, 2014 (the “Grant Agreement”) to fund technical assistance (“Technical Assistance”) for the Green Locomotive Technologies Project (the “Project”). This Technical Assistance will allow the Grantee to promote the adoption of advanced motive power technologies throughout Mexico’s freight locomotive fleet to reduce air emissions and increase fuel efficiency. The Grant Agreement is attached at Annex 4 for reference. The Grantee is soliciting technical proposals from qualified U.S. firms to provide expert consulting services to perform the Technical Assistance.

### **1.1 BACKGROUND SUMMARY**

Founded in 2005, the Asociación Mexicana de Ferrocarriles, A.C. is the national industry association of freight and passenger railroad stakeholders. As the Grantee for this Technical Assistance, the AMF will work closely with its member companies during the Technical Assistance and will lead Project implementation in collaboration with its stakeholders.

In 2012, Mexico’s freight railroads operated a total of 1,231 diesel-electric locomotives. Many older, lower horsepower and less efficient freight locomotives remain in service, creating an opportunity to improve operating efficiency and reduce air pollution through locomotive replacement, rebuilding, or retrofitting. There is also an opportunity to modernize Mexico’s fleet of railcar movers and switching locomotives.

The Technical Assistance will assist the AMF and its member companies in their efforts to adopt modern motive power technologies to improve the efficiency of the country’s freight locomotives, while at the same time lowering air emissions. The Technical Assistance will evaluate the technical, economic, financial, environmental, and regulatory aspects of locomotive upgrades in Mexico’s freight rail transportation industry. The Technical Assistance will focus on the latest innovations in diesel locomotives, including freight locomotives that comply with stringent air emissions criteria, hybrid power locomotives, and generator set locomotives with advanced control systems that allow the locomotive to produce variable power. The Technical Assistance will also assess the use of advanced auxiliary power units to retrofit older freight locomotives, emissions control systems, idle reduction technologies, computerized remote monitoring systems, information systems and software for asset management, and voice/data communications systems. To spur investments in freight locomotive and motive power modernization, the Technical Assistance will examine the potential development of federal- and state-level government incentive programs in Mexico. In addition, the Technical Assistance will identify potential pilot programs in Mexico that could demonstrate the capabilities of advanced non-diesel motive power fuels, such as liquefied natural gas.

Portions of a background Definitional Mission report are provided for reference in Annex 2.

## 1.2 OBJECTIVE

The objective of the Green Locomotive Technologies Technical Assistance is to promote the adoption of advanced motive power technologies throughout Mexico's freight locomotive fleet to reduce air emissions and increase fuel efficiency.

The Terms of Reference ("TOR") for this Technical Assistance are attached as Annex 5.

## 1.3 PROPOSALS TO BE SUBMITTED

Technical proposals are solicited from interested and qualified U.S. firms. The administrative and technical requirements as detailed throughout the Request for Proposals ("RFP") will apply. Specific proposal format and content requirements are detailed in Section 3.

The amount for the contract has been established by a USTDA grant of US\$590,358. **The USTDA grant of \$US590,358 is a fixed amount. Accordingly, COST will not be a factor in the evaluation and therefore, cost proposals should not be submitted.** Upon detailed evaluation of technical proposals, the Grantee shall select one firm for contract negotiations.

## 1.4 CONTRACT FUNDED BY USTDA

In accordance with the terms and conditions of the Grant Agreement, USTDA has provided a grant in the amount of US\$590,358 to the Grantee. The funding provided under the Grant Agreement shall be used to fund the costs of the contract between the Grantee and the U.S. firm selected by the Grantee to perform the TOR. The contract must include certain USTDA Mandatory Contract Clauses relating to nationality, taxes, payment, reporting, and other matters. The USTDA nationality requirements and the USTDA Mandatory Contract Clauses are attached at Annexes 3 and 4, respectively, for reference.

## **Section 2: INSTRUCTIONS TO OFFERORS**

### **2.1 PROJECT TITLE**

The Project is called the “Green Locomotive Technologies Project.”

### **2.2 DEFINITIONS**

Please note the following definitions of terms as used in this RFP.

The term "Request for Proposals" means this solicitation of a formal technical proposal, including qualifications statement.

The term "Offeror" means the U.S. firm, including any and all subcontractors, which responds to the RFP and submits a formal proposal and which may or may not be successful in being awarded this procurement.

### **2.3 DEFINITIONAL MISSION REPORT**

USTDA sponsored a Definitional Mission to address technical, financial, sociopolitical, environmental, and other aspects of the proposed Project. Portions of the report are attached at Annex 2 for background information only. Please note that the TOR referenced in the report are included in this RFP as Annex 5.

### **2.4 EXAMINATION OF DOCUMENTS**

Offerors should carefully examine this RFP. It will be assumed that Offerors have done such inspection and that through examinations, inquiries, and investigation they have become familiarized with local conditions and the nature of problems to be solved during the execution of the Technical Assistance.

Offerors shall address all items as specified in this RFP. Failure to adhere to this format may disqualify an Offeror from further consideration.

Submission of a proposal shall constitute evidence that the Offeror has made all the above mentioned examinations and investigations, and is free of any uncertainty with respect to conditions which would affect the execution and completion of the Technical Assistance.

### **2.5 PROJECT FUNDING SOURCE**

The Technical Assistance will be funded under a grant from USTDA. The total amount of the grant is not to exceed US\$590,358.

## **2.6 RESPONSIBILITY FOR COSTS**

Offeror shall be fully responsible for all costs incurred in the development and submission of the proposal. Neither USTDA nor the Grantee assumes any obligation as a result of the issuance of this RFP, the preparation or submission of a proposal by an Offeror, the evaluation of proposals, final selection, or negotiation of a contract.

## **2.7 TAXES**

Offerors should submit proposals that note that in accordance with the USTDA Mandatory Contract Clauses, USTDA grant funds shall not be used to pay any taxes, tariffs, duties, fees, or other levies imposed under laws in effect in the Host Country.

## **2.8 CONFIDENTIALITY**

The Grantee will preserve the confidentiality of any business proprietary or confidential information submitted by the Offeror, which is clearly designated as such by the Offeror, to the extent permitted by the laws of the Host Country.

## **2.9 ECONOMY OF PROPOSALS**

Proposal documents should be prepared simply and economically, providing a comprehensive yet concise description of the Offeror's capabilities to satisfy the requirements of the RFP. Emphasis should be placed on completeness and clarity of content.

## **2.10 OFFEROR CERTIFICATIONS**

The Offeror shall certify (a) that its proposal is genuine and is not made in the interest of, or on behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with, and agreement of, any undisclosed group, association, organization, or corporation; (b) that it has not directly or indirectly induced or solicited any other Offeror to put in a false proposal; (c) that it has not solicited or induced any other person, firm, or corporation to refrain from submitting a proposal; and (d) that it has not sought by collusion to obtain for itself any advantage over any other Offeror or over the Grantee or USTDA or any employee thereof.

## **2.11 CONDITIONS REQUIRED FOR PARTICIPATION**

Only U.S. firms are eligible to participate in this tender. However, U.S. firms may utilize subcontractors from the Host Country for up to 20 percent of the amount of the USTDA grant for specific services from the TOR identified in the subcontract. USTDA's nationality requirements, including definitions, are detailed in Annex 3.

## **2.12 LANGUAGE OF PROPOSAL**

All proposal documents shall be prepared and submitted in English.

## **2.13 PROPOSAL SUBMISSION REQUIREMENTS**

The Cover Letter in the proposal must be addressed to:

**Dr. Iker de Luisa Plazas**  
**Director General**  
**Asociación Mexicana de Ferrocarriles, A.C.**  
**Alfonso Esparza Oteo 144, Oficina 702**  
**Col. Guadalupe Inn, Deleg. Alvaro Obregón**  
**México, D.F. C.P. 01020**  
**MEXICO**  
**Phone: + (52-55) 5661-0325**

**An original printed copy, three (3) hard copies, and an electronic copy (PDF file preferred) of your proposal must be received at the above address no later than 4:00 PM (local time in Mexico City, Mexico), on January 15, 2015.**

Proposals may be either sent by mail, overnight courier, or hand-delivered. Whether the proposal is sent by mail, courier, or hand-delivered, the Offeror shall be responsible for actual delivery of the proposal to the above address before the deadline. Any proposal received after the deadline will be returned unopened. The Grantee will promptly notify any Offeror if its proposal was received late.

Upon timely receipt, all proposals become the property of the Grantee.

## **2.14 PACKAGING**

The original and each copy of the proposal must be sealed to ensure confidentiality of the information. The proposals should be individually wrapped and sealed, and labeled for content including the name of the project and designation of "original" or "copy number x." The original printed copy, three (3) hard copies, and the electronic copy should be collectively wrapped and sealed, and clearly labeled, including the contact name and the name of the project.

Neither USTDA nor the Grantee will be responsible for premature opening of proposals not properly wrapped, sealed, and labeled.

## **2.15 OFFEROR'S AUTHORIZED NEGOTIATOR**

The Offeror must provide the name, title, address, telephone number, e-mail address, and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

## **2.16 AUTHORIZED SIGNATURE**

The proposal must contain the signature of a duly authorized officer or agent of the Offeror empowered with the right to bind the Offeror.

## **2.17 EFFECTIVE PERIOD OF PROPOSAL**

The proposal shall be binding upon the Offeror for ninety (90) days after the proposal due date, and the Offeror may withdraw or modify this proposal at any time prior to the due date upon written request, signed in the same manner and by the same person who signed the original proposal.

## **2.18 EXCEPTIONS**

All Offerors agree by their response to this RFP announcement to abide by the procedures set forth herein. No exceptions shall be permitted.

## **2.19 OFFEROR QUALIFICATIONS**

As provided in Section 3, Offerors shall submit evidence that they have relevant past experience and have previously delivered advisory, feasibility study, technical assistance, and/or other services similar to those required in the TOR, as applicable.

## **2.20 RIGHT TO REJECT PROPOSALS**

The Grantee reserves the right to reject any and all proposals.

## **2.21 PRIME CONTRACTOR RESPONSIBILITY**

Offerors have the option of subcontracting parts of the services they propose. The Offeror's proposal must include a description of any anticipated subcontracting arrangements, including the name, address, and qualifications of any subcontractors. USTDA nationality provisions apply to the use of subcontractors and are set forth in detail in Annex 3. The successful Offeror shall cause appropriate provisions of its contract, including all of the applicable USTDA Mandatory Contract Clauses, to be inserted in any subcontract funded or partially funded by USTDA grant funds.

## **2.22 AWARD**

The Grantee shall make an award resulting from this RFP to the best qualified Offeror, on the basis of the evaluation factors set forth herein. The Grantee reserves the right to reject any and all proposals received.

## **2.23 COMPLETE SERVICES**

The successful Offeror shall be required to (a) provide local transportation, office space, and secretarial support required to perform the TOR if such support is not provided by the Grantee; (b) provide and perform all necessary labor, supervision, and services; and (c) in accordance with best technical and business practice, and in accordance with the requirements, stipulations, provisions, and conditions of this RFP and the resultant contract, execute and complete the TOR to the satisfaction of the Grantee and USTDA.

## **2.24 INVOICING AND PAYMENT**

Deliverables under the contract shall be delivered on a schedule to be agreed upon in a contract with the Grantee. The Contractor may submit invoices to the designated Grantee Project Director in accordance with a schedule to be negotiated and included in the contract. After the Grantee's approval of each invoice, the Grantee will forward the invoice to USTDA. If all of the requirements of USTDA's Mandatory Contract Clauses are met, USTDA shall make its respective disbursement of the grant funds directly to the U.S. firm in the United States. All payments by USTDA under the Grant Agreement will be made in U.S. currency. Detailed provisions with respect to invoicing and disbursement of grant funds are set forth in the USTDA Mandatory Contract Clauses attached in Annex 4.

### **Section 3: PROPOSAL FORMAT AND CONTENT**

To expedite proposal review and evaluation, and to assure that each proposal receives the same orderly review, all proposals must follow the format described in this section.

Proposal sections and pages shall be appropriately numbered and the proposal shall include a Table of Contents. Offerors are encouraged to submit concise and clear responses to the RFP. Proposals shall contain all elements of information requested without exception. Instructions regarding the required scope and content are given in this section. The Grantee reserves the right to include any part of the selected proposal in the final contract.

The proposal shall consist of a technical proposal only. A cost proposal is NOT required because the amount for the contract has been established by a USTDA grant of US\$590,358, which is a fixed amount.

Offerors shall submit one (1) original printed copy, three (3) hard copies, and one (1) electronic copy of the proposal. Proposals received by fax cannot be accepted.

Each proposal must include the following:

- Transmittal Letter,
- Cover/Title Page,
- Table of Contents,
- Executive Summary,
- Firm Background Information,
- Completed U.S. Firm Information Form,
- Organizational Structure, Management Plan, and Key Personnel,
- Technical Approach and Work Plan, and
- Experience and Qualifications.

Detailed requirements and directions for the preparation of the proposal are presented below.

#### **3.1 EXECUTIVE SUMMARY**

An Executive Summary should be prepared describing the major elements of the proposal, including any conclusions, assumptions, and general recommendations the Offeror desires to make. Offerors are requested to make every effort to limit the length of the Executive Summary to no more than five (5) pages.

#### **3.2 U.S. FIRM INFORMATION**

A U.S. Firm Information Form in .pdf fillable format is attached at the end of this RFP in Annex 6. The Offeror must complete the U.S. Firm Information Form and include the completed U.S. Firm Information Form with its proposal.

### **3.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND KEY PERSONNEL**

Describe the Offeror's proposed project organizational structure. Discuss how the project will be managed including the principal and key staff assignments for this Technical Assistance. Identify the Project Manager who will be the individual responsible for this project. The Project Manager shall have the responsibility and authority to act on behalf of the Offeror in all matters related to the Technical Assistance.

Provide a listing of personnel (including subcontractors) to be engaged in the project, including both U.S. and local subcontractors, with the following information for key staff: position in the project; pertinent experience, curriculum vitae; other relevant information. If subcontractors are to be used, the Offeror shall describe the organizational relationship, if any, between the Offeror and the subcontractor.

A manpower schedule and the level of effort for the project period, by activities and tasks, as detailed under the Technical Approach and Work Plan shall be submitted. A statement confirming the availability of the proposed Project Manager and key staff over the duration of the project must be included in the proposal.

### **3.4 TECHNICAL APPROACH AND WORK PLAN**

Describe in detail the proposed Technical Approach and Work Plan (the "Work Plan"). Discuss the Offeror's methodology for completing the project requirements. Include a brief narrative of the Offeror's methodology for completing the tasks within each activity series. Begin with the information gathering phase and continue through delivery and approval of all required reports.

Prepare a detailed schedule of performance that describes all activities and tasks within the Work Plan, including periodic reporting or review points, incremental delivery dates, and other project milestones.

Based on the Work Plan, and previous project experience, describe any support that the Offeror will require from the Grantee. Detail the amount of staff time required by the Grantee or other participating agencies and any work space or facilities needed to complete the Technical Assistance.

### **3.5 EXPERIENCE AND QUALIFICATIONS**

Provide a discussion of the Offeror's experience and qualifications that are relevant to the objectives and TOR for the Technical Assistance. If a subcontractor(s) is being used, similar information must be provided for the prime and each subcontractor firm proposed for the project. The Offeror shall provide information with respect to relevant experience and qualifications of key staff proposed. The Offeror shall include letters of commitment from the individuals proposed confirming their availability for contract performance.

As many as possible but not more than six (6) relevant and verifiable project references must be provided for each of the Offeror and any subcontractor, including the following information:

- Project name,
- Name and address of client (indicate if joint venture),
- Client contact person (name/ position/ current phone and fax numbers),
- Period of Contract,
- Description of services provided,
- Dollar amount of Contract, and
- Status and comments.

Offerors are strongly encouraged to include in their experience summary primarily those projects that are similar to the Technical Assistance as described in this RFP.

#### **Section 4: AWARD CRITERIA**

Individual proposals will be initially evaluated by a procurement selection committee of representatives from the Grantee. The committee will then conduct a final evaluation and completion of ranking of qualified Offerors. The Grantee will notify USTDA of the best qualified Offeror, and upon receipt of USTDA's no-objection letter, the Grantee shall promptly notify all Offerors of the award and negotiate a contract with the best qualified Offeror. If a satisfactory contract cannot be negotiated with the best qualified Offeror, negotiations will be formally terminated. Negotiations may then be undertaken with the second-most qualified Offeror, and so forth.

The selection of the Contractor will be based on the following criteria and their corresponding assigned weights:

1. Technical Experience (40 points): Offeror's experience in conducting technical assistance or feasibility studies on (or Offeror's experience in managing the implementation of) similar projects involving railroad motive power. Offeror's understanding of the newest technologies in this field, particularly advanced technologies that reduce emissions or improve energy efficiency. Offeror's inclusion of key staff with direct experience in the management of locomotive operations, maintenance and repair, or manufacturing, notably personnel having held such responsibilities for freight rail operations.
2. Technical Approach and Work Plan (25 points): Adequacy, soundness, and thoroughness of the Offeror's proposed Technical Approach and Work Plan.
3. Policy and Program Experience (15 points): Offeror's experience in analysis and development of rail transportation or environmental statutes, regulations, and policy. Offeror's familiarity with Mexico's governance structures and the processes and procedures for developing, funding, and managing public programs.
4. Regional Experience (15 points): Offeror's familiarity with the rail sector in Mexico, including local and international conditions, regulations, and requirements. Offeror's relevant and recent project experience in Mexico.
5. Spanish Language Capabilities (5 points): Offeror's experience and ability to work in the Spanish language.

Proposals that do not include all requested information may be considered non-responsive.

Price will not be a factor in Contractor selection.

**A N N E X 1**

**FEDBIZOPPS ANNOUNCEMENT**

Dr. Iker de Luisa Plazas  
Director General  
Asociación Mexicana de Ferrocarriles, A.C.  
Alfonso Esparza Oteo 144, Oficina 702  
Col. Guadalupe Inn, Deleg. Alvaro Obregón  
México, D.F. C.P. 01020  
MEXICO  
Phone: + (52-55) 5661-0325

Solicitation Number: 2014-51030A  
Mexico: Green Locomotive Technologies Technical Assistance

POC: Jennifer Van Renterghem, USTDA, 1000 Wilson Boulevard, Suite 1600,  
Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009, Email:  
[RFPQuestions@ustda.gov](mailto:RFPQuestions@ustda.gov).

The Grantee (the Asociación Mexicana de Ferrocarriles, A.C.) invites submission of qualifications and proposal data (collectively referred to as the "Proposal") from interested U.S. firms that are qualified on the basis of experience and capability to develop a Technical Assistance for the Green Locomotive Technologies Project in Mexico.

The objective of the Technical Assistance is to promote the adoption of advanced motive power technologies throughout Mexico's freight locomotive fleet to reduce air emissions and increase fuel efficiency.

The Technical Assistance will assist the Grantee and its member companies in their efforts to adopt modern motive power technologies to improve the efficiency of the country's freight locomotives, while at the same time lowering air emissions. The Technical Assistance will evaluate the technical, economic, financial, environmental, and regulatory aspects of locomotive upgrades in Mexico's freight rail transportation industry. The Technical Assistance will focus on the latest innovations in diesel locomotives, including freight locomotives that comply with stringent air emissions criteria, hybrid power locomotives, and generator set locomotives with advanced control systems that allow the locomotive to produce variable power. The Technical Assistance will also assess the use of advanced auxiliary power units to retrofit older freight locomotives, emissions control systems, idle reduction technologies, computerized remote monitoring systems, information systems and software for asset management, and voice/data communications systems. To spur investments in freight locomotive and motive power modernization, the Technical Assistance will examine the potential development of federal- and state-level government incentive programs in Mexico. In addition, the Technical Assistance will identify potential pilot programs in Mexico that could demonstrate the capabilities of advanced non-diesel motive power fuels, such as liquefied natural gas.

The U.S. firm selected will be paid in U.S. dollars from a \$590,358 grant to the Grantee from the U.S. Trade and Development Agency ("USTDA").

A detailed Request for Proposals ("RFP"), which includes requirements for the Proposal, the Terms of Reference, and portions of a background Definitional Mission report are available from USTDA, at 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901. To request the RFP in PDF format, please go to:

<https://www.ustda.gov/businessopps/rfpform.asp>.

Requests for a mailed hardcopy version of the RFP may also be faxed to the Information Resource Center ("IRC"), USTDA at 703-875-4009. In the fax, please include your firm's name, contact person, address, and telephone number. Some firms have found that RFP materials sent by U.S. mail do not reach them in time for preparation of an adequate response. Firms that want USTDA to use an overnight delivery service should include the name of the delivery service and your firm's account number in the request for the RFP. Firms that want to send a courier to USTDA to retrieve the RFP should allow one hour after faxing the request to USTDA before scheduling a pick-up. Please note that no telephone requests for the RFP will be honored. Please check your internal fax verification receipt. Because of the large number of RFP requests, USTDA cannot respond to requests for fax verification. Requests for RFPs received before 4:00 PM will be mailed the same day. Requests received after 4:00 PM will be mailed the following day. Please check with your courier and/or mail room before calling USTDA.

Only U.S. firms and individuals may bid on this USTDA-financed activity. Interested firms, their subcontractors and employees of all participants must qualify under USTDA's nationality requirements as of the due date for submission of qualifications and proposals and, if selected to carry out the USTDA-financed activity, must continue to meet such requirements throughout the duration of the USTDA-financed activity. All goods and services to be provided by the selected firm shall have their nationality, source, and origin in the U.S. or host country. The U.S. firm may use subcontractors from the host country for up to 20 percent of the USTDA grant amount. Details of USTDA's nationality requirements and mandatory contract clauses are also included in the RFP.

Interested U.S. firms should submit their Proposal in English directly to the Grantee by **4:00 PM (local time in Mexico City, Mexico) on January 15, 2015**, at the above address. Evaluation criteria for the Proposal are included in the RFP. Price will not be a factor in contractor selection, and therefore, cost proposals should NOT be submitted. The Grantee reserves the right to reject any and/or all Proposals. The Grantee also reserves the right to contract with the selected firm for subsequent work related to the project. The Grantee is not bound to pay for any costs associated with the preparation and submission of Proposals.

**A N N E X 2**

**PORTIONS OF BACKGROUND DEFINITIONAL MISSION REPORT**

**CONFIDENTIAL VERSION**

**CONTRACTOR'S FINAL REPORT  
DEFINITIONAL MISSION (DM): FOR MÉXICO  
RAIL SECTOR PROJECT**

**Contract Number: CO201351207**

Submitted May 19, 2014 by



**SENECA**

**The Seneca Group LLC**

500 New Jersey Avenue, NW, Fourth Floor • Washington, DC 20001

Phone: 202-783-5861 • Fax: 202-783-6096 • Web site: [www.seneca-llc.com](http://www.seneca-llc.com)



This report was funded by the U.S. Trade and Development Agency (USTDA), an agency of the U.S. Government. The opinions, findings, conclusions, or recommendations expressed in this document are those of the author(s) and do not necessarily represent the official position or policies of USTDA. USTDA makes no representation about, nor does it accept responsibility for, the accuracy or completeness of the information contained in this report.

1000 Wilson Boulevard • Suite 1600 • Arlington, VA 22209-3901  
Phone: 703-875-4357 • Fax: 703-875-4009 • Web site: [www.ustda.gov](http://www.ustda.gov)



## **The U.S. Trade and Development Agency**

The U.S. Trade and Development Agency (USTDA) helps companies create U.S. jobs through the export of U.S. goods and services for priority development projects in emerging economies. USTDA links U.S. businesses to export opportunities by funding project planning activities, pilot projects, and reverse trade missions while creating sustainable infrastructure and economic growth in partner countries.

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## INTRODUCTION

In June of 2013 the Seneca Group LLC (Seneca) was awarded contract order number TDA-CO201351207 “Definitional Mission (DM): for México - Rail Sector Projects.” The project kick-off meeting with Country Manager Keith Eischeid was held on Monday August 26th and Seneca personnel traveled to México October 18<sup>th</sup> through the 27<sup>th</sup> to meet in person with local officials and executives to develop project concepts. These meetings resulted in development of two draft project proposals. Dr. Iker de Luisa Plazas, General Director of the Asociación Mexicana de Ferrocarriles (AMF) served as the host for the DM team and accompanying U.S. government officials during the field visit to México.

## PROJECT PORTFOLIO ASSESSMENT

The project concepts presented to the Contractor for potential development in the contract Terms of Reference and during the kick-off meeting for this Definitional Mission were general in scope and were as follows:

<b>Proposed Project</b>	<b>Status</b>	<b>Estimated U.S. Origin Export Potential</b>
1. Railroad equipment in México. Potential for growth and efficiencies.	Supported by Host Country officials for USTDA grant request. Budget, terms of reference and schedule drafted.	Potentially Significant
2. Energy sector and railroads in México.	Success of a project and subsequent U.S.-origin exports highly dependent upon elaboration and implementation of energy sector reforms.	Potentially Significant but Premature
3. Environmental economics and railroads in México.	Supported by Host Country officials for USTDA grant request. Budget, terms of reference and schedule drafted.	Potentially Significant
4. National railroad training center.	Supported by Host Country officials for USTDA grant request but a lower priority than other concepts. Budget, terms of reference and schedule not drafted.	Very Limited

During the field visit topics of security for railroad personnel, cargo and equipment and cross-border railroad operations were brought up by several interviewees. While project profiles were not developed to address these items, they may serve as areas for future exploration with potential host country project sponsors. These topics are described in some more detail in the DM narrative section.

## MÉXICO: COUNTRY BACKGROUND

México is a country covering more than 1.96 million square kilometers with a population of more than 116.2 million. Located in North America it is bordered on the north by the United States of America (3,141 kilometers) and in the south by Belize (250 kilometers) and Guatemala (962 kilometers). México has both Pacific and Atlantic coastlines totaling 9,330 kilometers.



Figure 1: Map of México<sup>1</sup>

## MÉXICO'S FREIGHT RAILROAD SYSTEM

The Mexican railway sector plays a significant role in the nation's economy. It is a critical mode of transport particularly for freight traffic, notably in the sectors that require bulk cargoes to be moved with the most efficiency possible over great distances internally, and to and from the country as exports and imports.

México's rail system construction began in the 1860's. By the early 20<sup>th</sup> century, over 15,000 kilometers had been built and were operated under various concession and operation arrangements, mostly with foreign investors. In 1909, Mexican president Porfirio Diaz nationalized several main lines through creation of Ferrocarriles Nacionales de México (FNM). Following the Mexican Revolution, the remaining lines were absorbed into FNM. México embarked on decades of significant investment in FNM, paralleled with growing operational losses which became unsustainable. In the mid-1990's the railroad sector was restructured,

<sup>1</sup> (United States Central Intelligence Agency, 2013)

accumulated debt absorbed by the state, and the national constitution modified to enable commercialization of the railroad system.

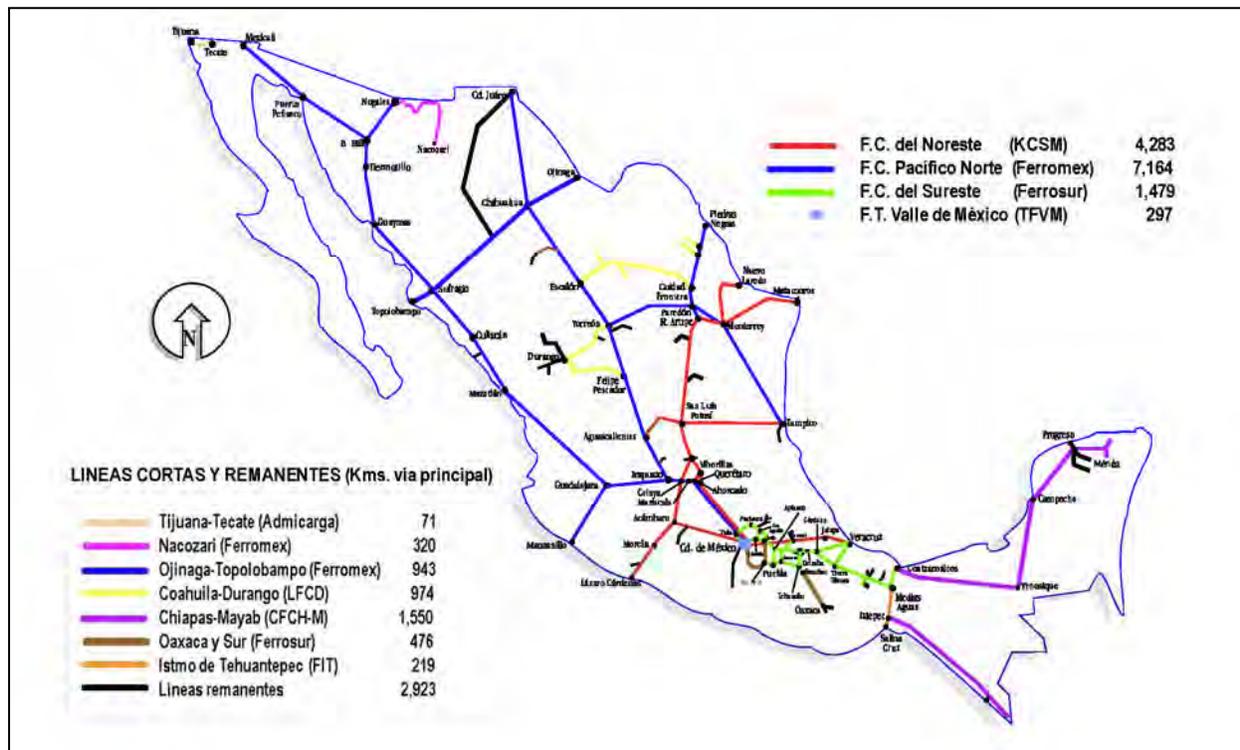


Figure 2: The Railroad Network of México in 2012

The government chose to partially privatize the system in 1996 by opening a competition for long-term concessions of regional, vertically-integrated networks. In 1997, intercity rail passenger services were largely suspended. Following some shifts and consolidation among concessionaires, two dominant railroad operators emerged: Grupo México’s Ferromex/Ferrosur (FM) and Kansas City Southern de México (KCSM). The short-line Ferrocarril del Istmo de Tehuantepec (FIT) remained in government hands for strategic reasons. The southern network of the Ferrocarril Chiapas-Mayab (FCCM) was concessioned in 1999 to U.S. firm Genesee & Wyoming, Inc. (G&W). After severe hurricane damage in 2005, which damaged some 287 kilometers of line, G&W terminated its operation in 2007 and sold FCC to a Mexican company in 2009. Currently, FIT is administering this network to perform a recapitalization and in anticipation of completion of government negotiations with a new concessionaire. The terminal railroad in México City, Ferrocarril y Terminal del Valle de México (Ferrovalle), is commonly operated through a joint company held by the two major concessionaires FM and KCSM. Two U.S. freight railroad companies are significant shareholders in these companies, Union Pacific Railroad (26%) and Kansas City Southern (100%), respectively.

The restructuring and privatization of the sector has largely achieved the Mexican government's policy goals. With the exception of the southern network, the freight railroad concessions have been commercially successful. Freight rail volume has grown steadily and significantly since privatization. The concessionaires have improved customer service significantly and continue to invest steadily in the infrastructure and rolling stock of the system. Freight activity has increased from 52 million tons transported to 111 million in 2012, and from 41 billion ton-kilometers transported to 79 billion in the same period. The locomotive fleet dropped from a peak of 1,400 units prior to privatization, to 1,160 in 2009, rising again to 1,238 in 2012. The average horsepower per unit of the fleet has risen from 2,696 to 3,354 over the same period as the concessionaires have invested in new, more powerful locomotives.

In its five-year investment plan through 2018, the Mexican government has proposed several significant federally-funded projects in the railroad sector for both passenger and freight, as follows:

#### **Intercity passenger rail: 3 Projects**

- CG-094: Construction of the High-Speed Train from Querétaro to Ciudad México
- CG-243: Stage 1 of the Construction of the Trans-Peninsular Train from Mérida, Yucatán to Punta Venado, Quintana Roo
- CG-263: Stage 1 of the Construction of the Intercity Train from Ciudad México to Toluca

#### **Freight rail: 8 Projects**

- CG-029: Freight Rail Branch, Aguascalientes - Guadalajara
- CG-073: Tunnel to Enable the Freight Rail Route Change to Colima
- CG-159: Construction of the Railway Bypass (Libramiento) in Coatzacoalcos, Veracruz
- CG-195: Construction of the Railway Bypass (Libramiento) in Celaya, Guanajuato
- PEF 2013: Urban Freight Rail Line Improvements (Convivencia) in Ciudad Juárez, Chihuahua
- PEF 2013: Urban Freight Rail Line Improvements (Convivencia) in Juan Palomar, Jalisco
- PEF 2013: Construction of the Railway Bypass (Libramiento) in Matamoros and Border Crossing at Tamaulipas
- P.E: Relocation of the Durango Rail Station and its Connections with the Durango Intermodal Terminal

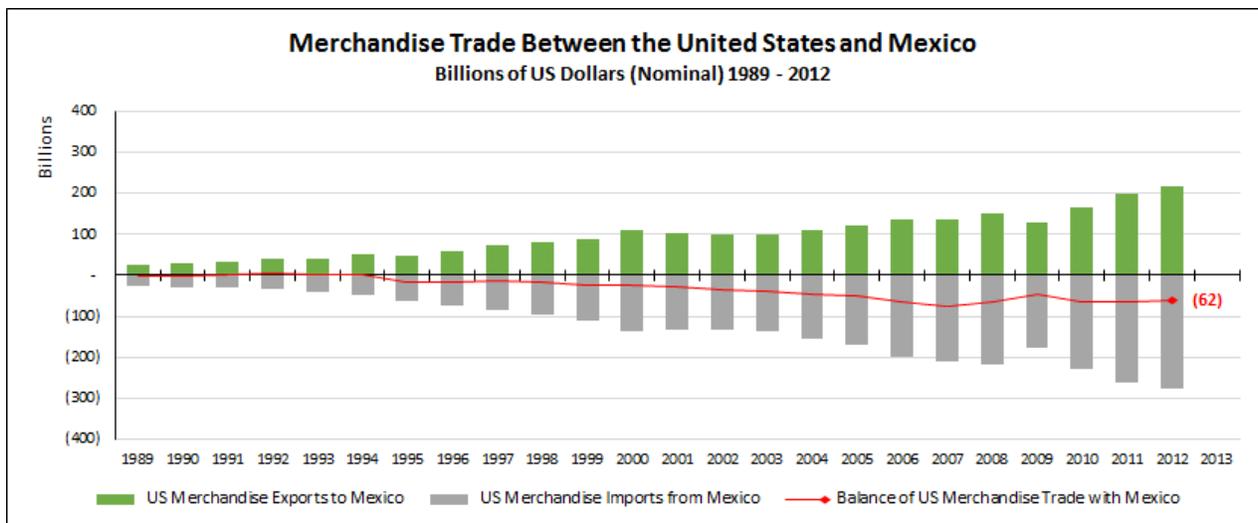
#### **Signaling & Communication: 1 Project**

- P.E: Urban Rail Signal Improvements (National Scope)

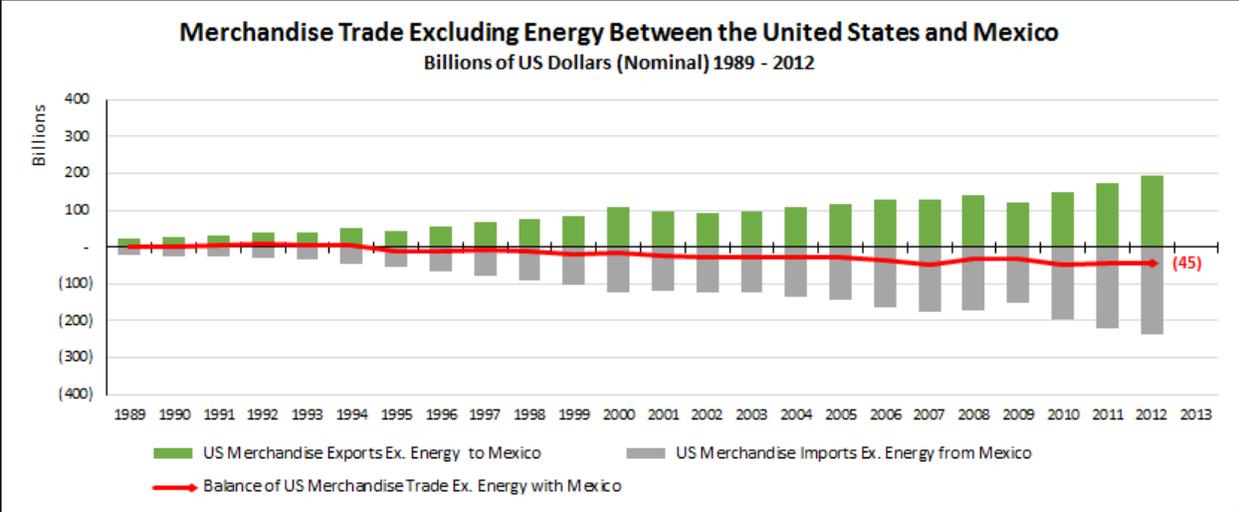
There will also be a range of multimodal connectivity and port projects that will positively impact the freight rail system by improving its interchange with other modes of transportation and presenting new opportunities for increasing rail traffic.

## UNITED STATES – MÉXICO TRADE AND RAILROAD SECTOR MERCHANDISE

Over the past two decades, the value of merchandise trade between the United States and México has increased substantially in nominal figures. While overall net exports have trended negatively in the aggregate, this masks a wide range of discrete product sectors where the U.S. has demonstrated strong competitiveness and growth in net exports.

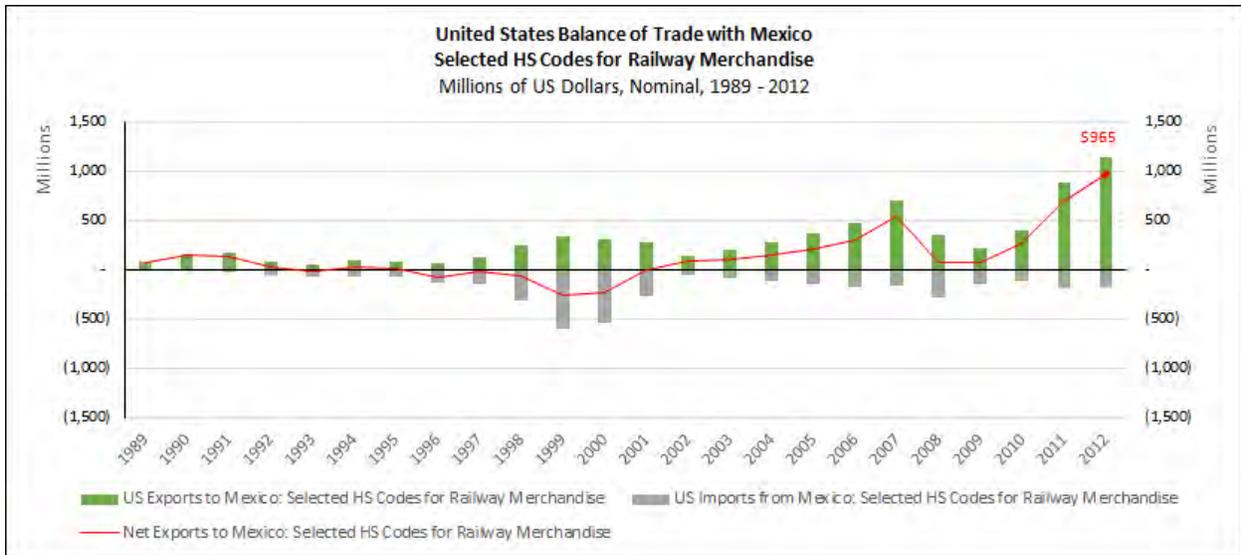


**Figure 3: Merchandise Trade between the United States and México 1989 – 2012**



**Figure 4: U.S. Merchandise Trade with México Ex. Energy 1989-2012**

In terms of merchandise related to railroad transportation, the perspective is different from the aggregate. While the value is a relatively small percentage of total trade, the United States has maintained a growing and positive balance of trade with México in this sector. Since 2002, net exports have risen to nearly \$1 billion by 2012. The basket of merchandise analyzed includes rolling stock such as railcars, locomotives, and track maintenance machinery; signaling and communications equipment; and infrastructure components such as cross-ties and railway track components. México is an important market for major U.S. suppliers and the major freight railroads in México both have shareholdings and active management participation by U.S. railroads. GE, EMD/Progress Rail, Trackmobile, Union Tank Car, Greenbrier, and Trinity Railcar all have permanent and robust operations in México.



**Figure 5: U.S. Trade with México for Railway Merchandise 1989 - 2012**

Finally, this Definitional Mission considered certain railway cargoes carried in hopper, tank, and boxcars as potential export beneficiaries from the proposed projects, such as energy, food and agricultural products, and chemicals.

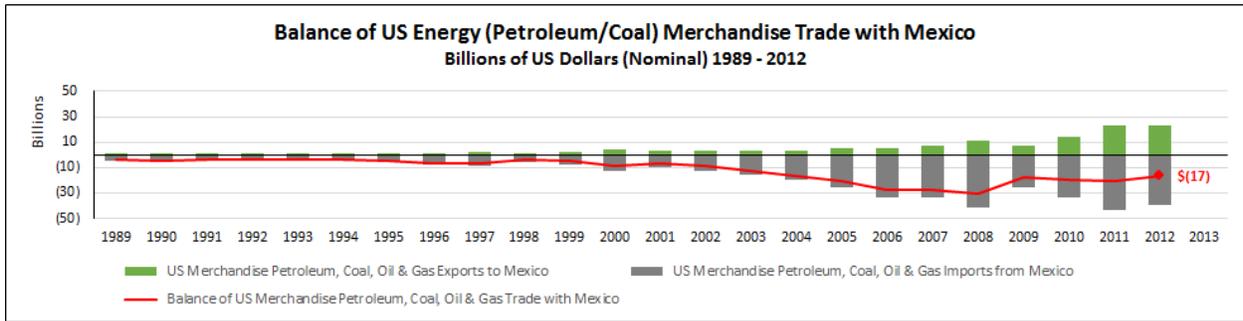
The volume of trade for food and agricultural products is substantially larger than for transportation products and nearly twice as beneficial to the United States as compared to rail transportation products, with a steady and positive trade balance reaching \$1.6 billion in 2012.



**Figure 6: U.S. Trade with México for Food and Agricultural Merchandise 1989 - 2012**

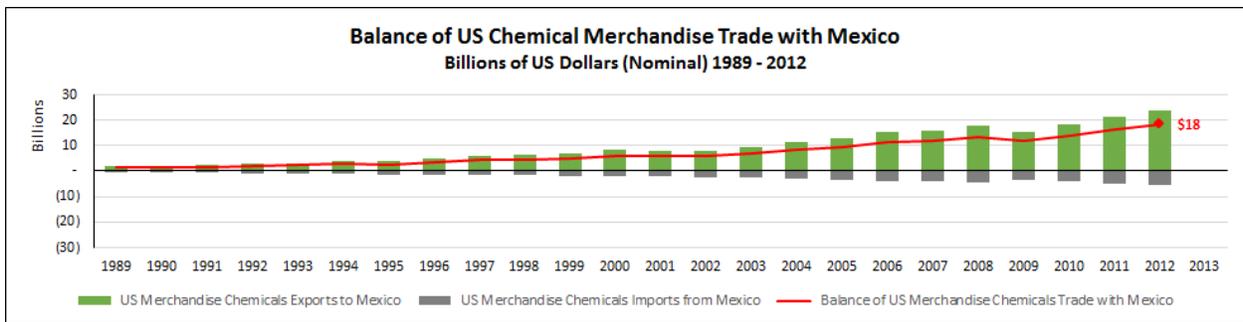
The export markets for energy products are negative but improving for the United States, with a steady increase in U.S. exports. Much of this consists of refined products shipped south from México, often derived from Mexican crude oil brought into the Gulf Coast region by ship. This dynamic has the potential to change significantly as shale oil and gas production continues to rise

in the U.S. and may be paralleled by outcomes of the energy reform activity in México that could impact their production scale and geography.



**Figure 7: U.S. Energy Merchandise Trade with México 1989 - 2012**

Finally, the trade in chemicals is a positive export scenario for the United States. Chemicals merchandise has grown strongly and steadily over two decades and reached net exports of \$18 billion in 2013.



**Figure 8: U.S. Chemical Merchandise Trade with México 1989 - 2012**

# PROJECT 1 – MOTIVE POWER

## ABOUT LOCOMOTIVES

Locomotives are the self-contained motive power vehicles used on railways to move loads in the form of passenger and freight cars. Modern locomotives also provide compressed air for braking systems, as well as electric power (mostly for passenger applications) to support functions on the cars being pulled. Originally powered by steam, by the early twentieth century railroads were converting to petroleum engine and **straight electric** powered locomotives. Straight electric locomotives receive power from lines adjacent to the right of way, typically overhead **catenary** or electrified **third rails**. **Diesel locomotives** must use a transmission system to transfer energy from the diesel engine **prime mover** to **traction motors** located in the trucks (wheel assemblies) that drive the wheels. There are several variants of diesel locomotive power transmission systems used in locomotives including **diesel-hydraulic**, **diesel-mechanical**, and **diesel-electric**.

Today in the United States, motive power for essentially all freight and most intercity passenger traffic is provided by diesel-electric locomotives. The exception is Amtrak's passenger service on the Northeast Corridor from Washington to Boston, which is fully electrified with an overhead catenary system. Commuter rail systems in the U.S. use either straight electric or diesel-electric locomotives. Light and heavy rail transit systems, such as Washington DC's WMATA or the New York City Subway, typically use electric multiple units (EMUs) which are self-powered passenger cars utilizing catenary or third-rail electric power sources. Diesel Multiple Units (DMUs) are also in service, an example being the Capital Metro system in Austin, Texas that was recently inaugurated. Globally, straight electric locomotives are more popular than in the U.S., and are used for both passenger and freight locomotives. In particular, straight electric is preferred for higher speed passenger rail service.

Diesel-electric locomotives are either DC or AC, referring to the electricity current type provided by the generator (powered by the prime mover) to the traction motors (powering the wheels).

Locomotives are generally divided into major categories based on function, primarily **switching (shunting) locomotives** and **road locomotives**. A switching locomotive is designed to move smaller blocks of wagons relatively short distances often within classification yards and terminals. They can be recognized by their smaller size and cabs designed to give operators clear fields of view in multiple directions. A road locomotive is designed to haul significant numbers of cars some long distance, is typically much larger than a switcher and usually provides the operator with a field of view generally forward from one end of the unit. There is a wide variation of both types, with some overlap such as for road switchers, which may serve both functions, particularly on smaller railroads. Switchers range in power from a few hundred horsepower to over 2000 HP in some cases. Road locomotives generally range in power from over 1,000 HP up to 6,000 HP. Multiple road locomotives may be used to pull a train, either daisy-chained adjacently or distributed throughout the consist and managed by a **distributed**

**power** and control system, such as GE's Locotrol. **Passenger locomotives** differ from freight locomotives in that they typically provide less starting **tractive effort** as they are pulling lighter loads, and are designed to sustain higher speeds and more abrupt acceleration and deceleration. Passenger locomotives generally provide head-end power, a separate engine and generator to deliver electricity to the passenger cars. Locomotives are also distinguished by their wheel arrangements, that is, the number and order of powered and unpowered wheels. Most locomotives have either four or six axles. Mining operations have their own special types of industry specific locomotives. There also exist various types of **railcar movers** for small scale switching activity. Many freight terminals have fixed **railcar loading/unloading systems** installed, which pull or push railcars through a loading/unloading process. Major U.S. suppliers of locomotives include General Electric, EMD/Progress Rail (Caterpillar), Wabtec Motive Power, Brookville Equipment Corporation, National Railway Equipment Corporation, Railserve, and RJ Corman Railroad Group.

The newest innovations in U.S. diesel locomotives in revenue service include units complying with U.S. EPA stringent Tier III emissions criteria, locomotives utilizing **hybrid power** systems, and "**genset**" locomotives with assemblies of multiple smaller prime movers and generators with sophisticated control systems, allowing the locomotive to produce only the power necessary for the activity at hand. The latest generation of locomotives in testing by major manufacturers will meet the strictest EPA emissions standard of Tier IV. Locomotives fueled wholly or partially with liquefied natural gas are in pilot operation on the major freight railroads. **Auxiliary power units** retrofit older locomotives and enable prime movers to be powered down, particularly in colder climates, rather than idling for long periods. Computerized **remote monitoring systems** improve locomotive health and operational efficiency monitoring and allow unit tracking. Sophisticated **information systems and software for asset management** optimize maintenance and repair activities, improving availability, performance and lifespan, and reducing maintenance and capital costs. Locomotives will also have a **voice/data communications system** and often will include cab signaling or other sophisticated **train control hardware and software**, depending upon the signaling and traffic control system in place where they operate. Increasingly, they also include event recorders and cameras for safety and security functions.

Diesel-electric locomotives typically have a service lifespan of 20-25 years before rebuilding, assuming regular maintenance and some component replacement. Upon reaching that age, they are either replaced with brand new units or may undergo some level of rebuilding, which typically involves stripping the vehicle to the chassis and replacing most major components. Replaced units are typically sold to another smaller railroad or third party and then undergo rebuilding. Rebuilding for larger railroads is less common today as rapid technological developments in locomotive design and performance, as well as more stringent regulations, have made the economics of purchasing newer, higher horsepower locomotives more compelling.

A technology in widespread implementation in North America (but not yet in México) are **remote control systems** for locomotives. These are primarily used within terminals and yards

for switching and loading/unloading, enabling a single employee to operate a locomotive remotely from outside the cab. These systems enable labor efficiencies, which also improves safety by reducing the personnel present in proximity to the heavy moving equipment and enabling the operator to have a bird’s-eye view of the locomotive’s movements from a better vantage point than from within the cab.

There is another category of motive power known as **railcar movers**. These are smaller vehicles, most of which have hi-rail capability, meaning they can operate on rubber tires on roads or lower steel wheels and operate on the rails. In North America railcar movers typically are diesel powered and have horsepower levels in the low hundreds. Railcar movers are commonly used in shipper facilities or small terminals to move or switch small numbers of railcars. Examples of this technology are the products provided by U.S. firm Trackmobile LLC, illustrated. Some terminals will utilize fixed winch or indexing systems for moving railcars in limited applications. Finally, there is another category of propelled equipment used on freight railways which are maintenance of way vehicles. These can range from very small machines performing specific limited functions, such as just tamping of ballast, to entire trains of equipment linked together performing sophisticated, large-scale actions on sections of track up to wholesale replacement of the infrastructure in single passes to include the tracks, ballast, rail, and fastening equipment. **Hi-rail vehicles** are conventional road vehicles, often pickup trucks, which can lower steel wheels to operate on rail tracks. These are used commonly for inspection activity and maintenance personnel transportation.



**Figure 13: Trackmobile VIKING Railcar Mover**

## PROJECT DESCRIPTION

The envisioned timeframe for this study and subsequent implementation is as follows:

TIME →

<b>Phase 1: USTDA</b>	<b>Phase 2: Government of México/Railroad Companies</b>
Feasibility Study	Implementation
2014	2015 - 2025

## PROJECT SPONSOR CAPABILITIES AND COMMITMENT

The sponsor of this project would be the Asociación Mexicana de Ferrocarriles (AMF). The AMF is México’s national railroad trade association representing all the major freight and passenger rail industry stakeholders and key suppliers. The Board of Directors as of 2013 was as follows:

- Dr. José G. Zozaya Delano, KCSM (**Presidente AMF**)
- Lic. Rogelio Velez, Ferromex-Ferrosur
- Lic. Lorenzo Reyes Retana, Ferromex-Ferrosur
- Ing. Erich Wetzel, Ferrovalle
- Ing. Lázaro Rodríguez, Ferrocarril Coahuila-Durango
- Ing. Gustavo Baca, Ferroistmo
- Rosalyn Wilson, Coordinadora Comité de Ferrocarriles Extranjeros
- Edward Hamberger, Association of American Railroads
- Ing. Maximiliano Zurita, Ferrocarriles Suburbanos
- Ing. Adolfo Joel Ortega Cuevas, STC
- Rubén Eduardo Venadero Medinilla, STE
- Ing. Javier de la Garza Vidal, Metrorrey
- Dr. Lauro Beck Molina, Coordinador Cap. II.- Ferrocarriles de Pasajeros
- Ing. Alberto G. Escofet Cedeño, Presidente Cap. III.- Proveedores Ferroviarios
- Ing. Benjamín De la Garza Saracho, Coordinador Comité de Infraestructura
- Philip Tetley, Coordinador Comité de Consultores
- Ing. Luis Huerta, Coordinador Comité Mecánico

The AMF is a small organization with perhaps 3 – 4 full time staff including the Director, Dr. de Luisa. They maintain permanent office space in Colonia Guadalupe Inn in the south-central area of México City. Although a sister organization to the U.S.-based Association of American Railroads, AMF is much smaller than the AAR, which has a much longer history, a large staff and provides a wide range of shared services to the railroads such as public affairs, conference management, and government relations, as well as technical standards setting, equipment and facility certifications, and technical testing. AAR also provides complex shared information technology and financial tasks including equipment tracking and monitoring and interline accounting services, directly supporting key railroad operations. AMF's role, though growing, is focused on policy and advocacy within México and the operation of an annual conference and tradeshow. The AMF's space would be slightly cramped for a team of more than a few people to work out of for an extended period, but is equipped with necessary utilities and facilities to be a feasible base of operations for a smaller group of consultants.

During our field visit, it was apparent that Dr. de Luisa has the confidence of his Board, all of whom knew him quite well and who provided access to our team in response to our meeting requests. All our meetings involved top executives at the different railroads. Dr. de Luisa also demonstrated a breadth of contacts within the industry outside of the railroads, to include shippers, government officials, and major suppliers. This network of relationships is perhaps the most important asset a sponsor could bring to bear to support the execution of a USTDA-funded

activity as the consultant team would require access to key operating officials, executives, and officials in order to complete their Project successfully.

During our visit, we discussed with Dr. de Luisa the governance structure of a USTDA-funded activity. He indicated his role would be to support and facilitate a consultant team. An appropriate steering committee would be established by the AMF, consisting of railroad and industry executives, to perform the official review and acceptance of deliverables. Our assessment is that this could be a viable structure to enable a successful USTDA-funded activity. It would ensure that the major private companies in the industry are supportive of the effort. These companies are also the primary buyers of U.S. exports in the rail sector. At kickoff of any USTDA-funded activity, the roles and responsibilities between the AMF and Mexican government stakeholders, if any, should be clearly established. Depending on the project, this would probably include officials from SCT but also potentially officials from other Ministries (such as SEMARNAT and SENER) who would feel the project is within some aspect of their jurisdiction. Some of the proposed study tasks are making recommendations for actions that are within the responsibility of the government – such as railway and environmental policy changes and public funding. Accordingly, to enable an activity with the best chance of implementation there will need to be an effective structure in place that enables necessary communication and participation between both public and private sector actors.

## **IMPLEMENTATION FINANCING**

The primary buyers in an implementation scenario for this project would be the major freight rail concessionaires of México, including Ferromex, Kansas City Southern de México, the jointly owned Ferrovial, Ferrocarril del Istmo de Tehuantepec and Ferrocarril Chiapas-Mayab. These companies directly purchase or lease mainline and yard switching locomotives, which are basic capital equipment necessary to perform their operations.

Conglomerate **Grupo México** owns railroads **Ferromex** and **Ferrosur** through its Infraestructura y Transportes de México (ITM) group. U.S. Class I freight railroad Union Pacific Railroad owns 26% of the company. In 2012, the group had 28,934 direct employees, over \$10 billion in gross revenue, capital expenditures of over \$2 billion and very healthy net earnings of \$2.4 billion. \$1.7 billion of revenue came from railroad transportation activity and \$259 million was spent on capital investments in rolling stock and infrastructure. This company has favorable access to large scale financing through both debt and equity. Grupo México is a regular issuer of long-term debt securities (over 20 years in term) and is rated BBB by S&P. The firm is the fourth most traded share on the Mexican Stock Exchange (BMV) and fourth in market capitalization. The company's market share for rail transportation in México is 64%. ITM has programmed \$531 million in capital expenditures for its fiscal year 2013, focused on track capacity investments such as passing sidings.

Kansas City Southern de México is the second major private freight rail concessionaire. It is owned by the Kansas City Southern Railway Company (KCSR), a Class I U.S. freight railroad that also owns the Panama Canal Railway Company. KCSR had revenue of \$2.2 billion in 2012 and net income of \$379.4 million. The company holds an investment grade rating and is a regular issuer of long-term debt instruments, as well as being traded on the New York Stock Exchange. The firm has ready access to large scale debt and equity financing at favorable terms. KCSR's capital investments have increased from \$287 million in 2010 to \$495 million in 2011 to \$540 million in 2012. Of this, they spent \$245 million on locomotives and \$95 million on railcars and maintenance equipment.

These two major freight concessionaires are engaged in an aggressive program of investment in their rolling stock fleets, focusing on replacing their oldest mainline locomotives with new higher-horsepower units. Both still have substantial portions of their locomotives that are old, low-efficiency, high emissions units, which were originally acquired by the national Mexican railway and then transferred to FM and KCSM as part of the concession. Slightly less than half of Ferromex's locomotive fleet (369 units) are units over 30 years old. Approximately 80% of KCSM's fleet of 371 locomotives complies with an EPA Tier. However most of these units are several tiers behind the U.S. locomotive fleets which would make them candidates for upgrades to improve energy efficiency and reduce emissions.

The second group of buyers would be a range of individual shippers purchasing smaller switching locomotives and railcar movers for use on their small, private yards and terminal tracks as well as the smaller "short line" and regional railroads of México. These entities vary in sizes. In total they account for 82 road and switching locomotives, approximately 500 railcar movers, and an unknown number of switching locomotives. They would be expected to purchase equipment with cash, using bank credit, and potentially government lending and guarantee facilities. The ability to fund and finance equipment purchases will vary significantly among these buyers. They differ from the railroads in that they will likely purchase equipment in individual or small lot transactions, whereas the two large railroads will purchase in volumes and receive more favorable terms from vendors and financiers. Many of these buyers are more constrained in their resources and accordingly are more likely to operate fully depreciated assets as long as possible, in this case older, less-efficient, and more polluting motive power. One important candidate in this category is Ferrovalle, which has more than 30 locomotives, most of them older, less efficient models, with operations centralized in México City.

This project is unique in that the objective is to create a government funding stream that would incentivize investments that would otherwise not happen until some indefinite point in the future. Therefore, successful implementation of this project would require a decision by the government of México and/or sub-sovereigns, to authorize and appropriate funds for such a program. Without a government incentive, the railroads would be expected to generally continue with their baseline investment program in locomotives, that is, a program defined purely by the business case rather than one where they receive an incentive to invest in a manner that generates

additional public benefits. In the absence of a resulting government incentive program, the findings of the study might lead the railroads in México to engage in some acceleration of locomotive replacement and rebuilding, perhaps at five to ten percent of the projected investments generated by a full implementation.

The **U.S. Export-Import Bank** is a regular provider of risk protection, working capital, credit and term financing to support U.S. export sales to México. Ex-Im’s activity in México has risen steadily over the past five years. México is second only to the United States in terms of exposure for the Bank, which was \$9.5 billion as of FY 2012. All of Ex-Im’s support instruments are available based on the current Country Limitation Schedule. U.S. manufacturers of locomotives (such as GE) have utilized Ex-Im’s products for transactions with México before and will likely do so in the future.

Ex-Im	Cumulative	FY 2012	FY 2011	FY 2010	FY 2009	FY 2008	Chart
Loans	\$ 1,850,589,801	\$ -	\$ 300,000,000	\$ 500,589,801	\$ 1,050,000,000	\$ -	
Guarantees	\$ 6,324,373,891	\$ 2,487,611,779	\$ 1,030,288,397	\$ 1,266,769,276	\$ 341,961,721	\$ 1,197,742,718	
Insurance	\$ 1,722,388,939	\$ 338,226,137	\$ 377,438,235	\$ 467,089,795	\$ 301,237,508	\$ 238,397,264	
<b>Total</b>	<b>\$ 9,897,352,631</b>	<b>\$ 2,825,837,916</b>	<b>\$ 1,707,726,632</b>	<b>\$ 2,234,448,872</b>	<b>\$ 1,693,199,229</b>	<b>\$ 1,436,139,982</b>	
<i>Exposure</i>		\$ 9,508,998,345	\$ 8,332,754,195	\$ 8,313,136,770	\$ 7,786,092,512	\$ 7,246,881,860	

**Figure 14: U.S. Ex-Im Bank México Exposure Trends**

The Overseas Private Investment Corporation (OPIC) provides financial products, such as loans and guaranties; political risk insurance; and support for investment funds, to help U.S. businesses expand into emerging markets. In particular, OPIC’s loans, guaranties, and political risk insurance could be of use to support U.S. exporters of rail equipment associated with implementation. OPIC is actively providing its products to support activities in México.

## U.S. EXPORT POTENTIAL

The export potential considers two categories of potential investments: new locomotives, and rebuilds. A successful implementation would lead the purchasers to accelerate these investments in order to meet current demand and expected growth.

Our scenario is based on an investment timeframe of 10 years, beginning in 2014. The scenario relies on several basic assumptions. First, the USTDA feasibility study occurs in 2014. Second, the Mexican government responds favorably to the findings and proceeds to implementation, creating a program in 2015. Third, beginning in 2016, the buyers change their behavior and begin to increase their expenditures.

The table below contains the demand assumptions:

BASELINE	IMPLEMENTATION
<p><u>KCSM</u> 10 new locomotives replacing old per year 3 new locomotive per year to accommodate growth 4 rebuilds per year.</p>	<p><u>KCSM</u> 12 new locomotives replacing old per year 3 new locomotive per year to accommodate growth 6 rebuilds per year</p>
<p><u>Ferromex</u> 18 new locomotives replacing old per year. 4 new locomotives per year to accommodate growth. 8 rebuilds per year.</p>	<p><u>Ferromex</u> 20 new locomotives replacing old per year 4 new locomotives per year to accommodate growth 12 rebuilds per year</p>
<p><u>Ferrovale</u> This operation is capital-constrained (cost operation). 1 rebuild every other year. 1 new locomotive replacing old every other year. 1 new locomotive every 3 years to accommodate growth.</p>	<p><u>Ferrovale</u> This operation is capital-constrained (cost operation). 2 rebuilds per year 1 new locomotive per year replacing old 1 new locomotive every 3 years to accommodate growth</p>
<p><u>Ferrocarril Chiapas-Mayab</u> This concession is capital-constrained. 1 new locomotive every 2 years to accommodate growth 1 rebuild every two years No replacements</p>	<p><u>Ferrocarril Chiapas-Mayab</u> This concession is capital-constrained. 1 new locomotive every 2 years to accommodate growth 1 rebuild each year 1 new locomotive replacing old every 3 years</p>
<p><u>Coahuila-Durango</u> This is a short line 1 new locomotive every 2 years to accommodate growth 1 rebuild every 2 years No replacements</p>	<p><u>Coahuila-Durango</u> This is a short line 1 new locomotive every 2 years to accommodate growth 1 rebuild every year 1 new locomotive replacing old every 3 years</p>
<p><u>Shippers and Terminals</u> 2 new switchers per year for growth 2 switcher rebuilds per year 0 switcher replacements per year 8 new railcar movers per year for growth 6 replacements of old railcar movers per year</p>	<p><u>Shippers</u> 2 new switchers per year for growth 3 switcher rebuilds per year 1 switcher replacement every 2 years 8 new railcar movers per year for growth 10 replacements of old railcar movers per year</p>

The general projection assumptions are as follows.

- The Mexican government acts upon the study findings – identifying sufficient public benefits to support investment. The calculated cost to the government of México to implement the incentive program at a 60% applicant matching rate is less than \$10 million per year on average. Given the scale of México’s investments in transportation infrastructure and emissions/pollution reduction programs, we believe this is a realistic amount of government investment.
- Implementation impact on exports begins in 2016. There is no ramp-up period as the projected 40% incentive encourages rapid utilization of the program by motive power owners.
- Fleet ratio of switchers to road locomotives is 1:4 for the line-haul roads.

- Based on historical purchase patterns and a projected CAGR in ton-kilometers transported per annum of 2.9%, we estimate that Mexican buyers in the aggregate will invest in roughly ten new locomotive units per year on average in order to accommodate expected growth in rail traffic.
- The USTDA project implementation does not generate new rail traffic demand. The USTDA impact on exports is through replacement and rebuilds of old units. Accordingly, new units (fleet growth) exports are not attributed to project implementation.
- Over the ten-year projection period, compared to the baseline projected expenditures, Mexican buyers replace 46 more locomotives, rebuild 73 more locomotives, and replace an additional 32 more railcar movers than they otherwise would.
- Average cost for a new road locomotive is \$2.3 million and \$1.75 million for a switching locomotive. The ratio of U.S.-origin content to foreign for new locomotives sold to México is 7:3.
- Average cost to rebuild a road locomotive is \$900,000 and for a switcher \$600,000. The ratio of U.S. to foreign content for rebuilt locomotives sold to México is 7:3.
- The average cost for new railcar movers is \$227,500. The ratio of U.S.-origin to foreign content for new railcar movers is 90:10.
- Railcar movers will not be rebuilt. Only new units will be purchased to replace old units or to increase overall capacity.
- A discount rate of 10% is used.

Based on these assumptions we believe that a successful implementation would conservatively have the potential to result in an increase of U.S.-origin exports to México of at least **\$71 million** over the ten-year projection period, net of the grant amount and discounted to the present value.

It is possible that the Mexican government would not create an incentive program following the study. We do believe that the process and findings of the study would still provide motive power owners with information sufficient to justify increasing their investment in replacements and rebuilds. Given the substantial potential benefits in terms of maintenance and fuel cost savings and improvements in operations, 15% of the successful implementation amount is a reasonable estimate, or **\$10.7 million**.

A key assumption of this estimate is that the railroads will engage in additional investment each year of implementation that they otherwise would defer beyond the projection timeline. Accordingly, the per annum projected increase in capital expenditure was cross-checked with the most recent capital budgets of KCS and FM for reasonability. For illustration this would imply a willingness by FM to add in a given year approximately 2% to its capital spending and KCS ½ of 1% additional capital spending. We think the motive power owners would be very willing to conduct this level of additional spending in order to leverage government support to speed up fleet replacement and rebuilding, generating both public and private benefits.

## FOREIGN COMPETITION AND MARKET ENTRY ISSUES

México is an important market for U.S. companies and the major motive power manufacturers are long established with a tradition (as in the U.S.) of the larger freight operators splitting their fleet purchases between Progress Rail/EMD and GE. Trackmobile has a strong position as a provider of railcar movers. Foreign companies are very active in México in the provision of maintenance services for freight motive power and in the provision of rolling stock and support services for transit and light rail, as follows:

- **Bombardier** of Canada has been operating in México for over 20 years. It is a major provider of equipment and services to passenger rail clients such as STC México City, Metro de Monterrey, and SITEUR of Guadalajara. 60% of STC's railcars are Bombardier manufacture. Its first major production facility was opened in Sahagún, Hidalgo in 1992, followed by another factory in Querétaro in 2005, with smaller facilities in Huehuetoca, Hidalgo for wire harnesses. Bombardier has served as a sub-contractor for Progress Rail for assembly of rolling stock. Including Bombardier Aerospace, the company employs a well-educated workforce of over 3,000 persons and its facilities are state-of-the-art.
- **Alstom** of France has a strong presence in México, most prominently in the electricity and energy sector. Since 1967, it has been a major supplier of infrastructure services, rolling stock, traction power, and signaling and communication systems for STC in México City. Their major shop is located in Guadalajara. In the freight rail sector, Alstom provides track and locomotive maintenance services for the major concessionaires KCSM, FM, and FV and built the traffic control center for Ferromex. It is the contract operator for all of FV's locomotive maintenance.
- **Vossloh** of Germany is a provider of rail infrastructure and trolley buses for STC México City and has provided GA-DE 900 AS switching locomotives to the Mexican market. Vossloh has the potential to be a serious competitor to U.S. companies in the motive power space. They are a competitive provider of switchers and mainline diesel-electric locomotives globally.
- **Siemens** of Germany is very active in México in the power generation, transmission, and distribution markets, for over 116 years. It is not very active in transportation, but has expressed strong interest in participation in the pending passenger rail projects proposed by the Mexican government. Siemens has the potential to be a serious competitor to U.S. companies in the motive power space, they are a competitive provider of switchers and mainline diesel-electric locomotives globally.

Chinese and Russian providers of rail transportation equipment do not appear to have significant activity in the México market as of yet. In October 2013, a high-level Chinese government and

investment group met with officials in México. Chinese involvement in rail development projects was reportedly one of the topics of discussion.

## **DEVELOPMENTAL IMPACT**

### **Primary Developmental Benefits**

**Infrastructure:** An implementation resulting from this proposed activity has the potential to support more efficient use of infrastructure in México. More efficient and modern motive power will increase the capacity of existing rail infrastructure by enabling the transportation of more cargo with fewer locomotives and crews. Enhancements to the efficiency and capacity of railways supports diversion of traffic from roads to rail, a much more efficient mode in terms of fuel consumption and manpower per ton transported. Trucks heavier weights cause greater damage to roads, creating another significant benefit in terms of infrastructure maintenance costs whenever modal diversion is enabled.

**Human Capacity Building:** The newest motive power units are extremely sophisticated items of equipment with sophisticated control and monitoring systems. Purchases of these units necessitate training of the workforce in operation and maintenance of these systems which transfers high level skills to employees.

**Technology Transfer:** An implementation would introduce the newest motive power units and system rebuilds incorporating sophisticated items of equipment, control and monitoring systems.

**Productivity Improvements:** An implementation would improve productivity in terms of equipment and personnel. The newest generations of locomotives are generally able to haul more and heavier railcars with fewer units and using less fuel to do so. Any modal diversions created by these efficiency improvements take many trucks and their crews off the road per each train operated. The newer motive power also creates substantial savings in maintenance with longer intervals between overhauls and monitoring systems that reduce breakdowns, thus improving locomotive utilization.

**Market-Oriented Reforms:** This activity and an associated implementation are not expected to have a significant effect in terms of market-oriented reforms.

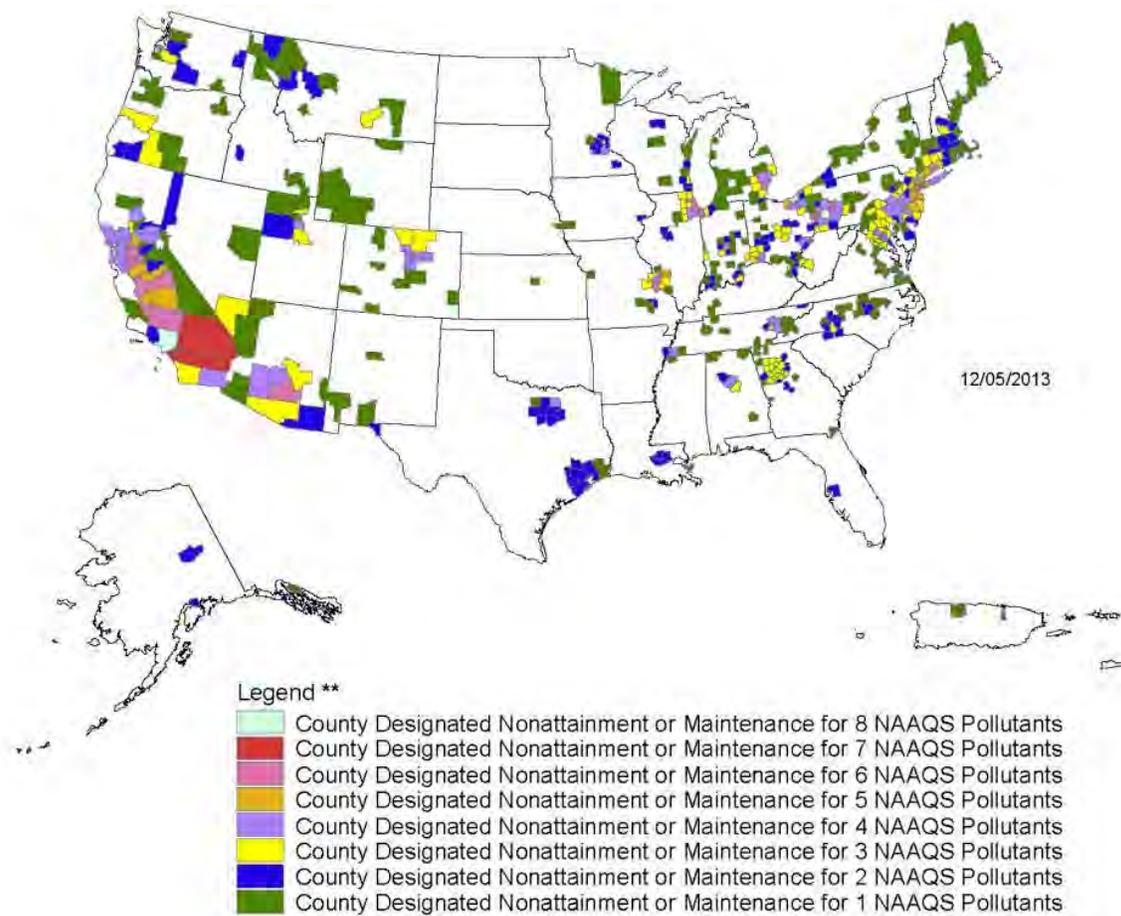
### **Alternatives**

The alternative scenario to this activity and a subsequent implementation is that the railroads and other owners of motive power will continue with their current investment trends. They will continue to invest regularly in motive power and steadily upgrade their fleets over time, but not at the rate of investment that would occur in the presence of an incentive program. Companies will seek to utilize some portion of their oldest motive power as long as they can in order to extract as much revenue out of fully depreciated equipment as possible. Locomotives can be

operated in excess of fifty years if the owner is willing to accept the relative decrease in efficiency and increased difficulty in maintaining the units over time. It is quite common to see units of this age still in service in developing regions, such as Africa, and parts of the Former Soviet Union.

## **IMPACT ON THE ENVIRONMENT**

Performance of this activity and a subsequent implementation would have a direct and positive impact on the environment. The newest motive power units produce substantially less air pollution, providing very significant reductions in the most harmful contaminants: particulate matter; hydrocarbons, CO, NO<sub>x</sub>; and CO<sub>2</sub>. Emissions reductions between an EPA Tier I and a Tier III locomotive can exceed 75%. As can be seen in the map below from the U.S. EPA, the U.S.-México border area has a significant swath of designated air pollution problem areas. These could potentially benefit from implementation activity at rail terminal areas on the Mexican side of these border regions.



**Figure 15: U.S. EPA Non-Attainment Areas**

## **IMPACT ON U.S. LABOR**

Neither the proposed feasibility study project nor implementation is expected to:

- a. Incentivize any company currently located in the U.S. to relocate outside of the U.S. or to incentivize any such firm to reduce employment because U.S. production is being replaced by production outside the U.S.
- b. Violate internationally recognized workers' rights.
- c. Directly assist establishing or expanding production of any commodity for export by any country other than the United States, if the commodity is likely to be in surplus on world markets at the time the resulting productive capacity is expected to become operative and if the assistance will cause substantial injury to United States producers of the same, similar, or competing commodity.

## QUALIFICATIONS

A pro-forma team to conduct this Feasibility Study might be composed as follows:

<u>No.</u>	<u>Position</u>	<u>Min. Years Experience</u>
01.	Team Leader and Project Manager	20
02.	Mechanical/Locomotive Expert	20
03.	Business/Economic Analyst	10
05.	Legal and Regulatory Expert	10
06.	Local Legal and Regulatory Expert 1	10
07.	Local Legal and Regulatory Expert 2	10

This is only a personnel framework developed for budgeting purposes. The team proposed by a bidder could differ and still be effective. We suggest the following evaluation criteria be considered for evaluating proposals to perform this activity:

- 1. Technical Experience (40 points):** Firm and team experience in feasibility studies on, or management of implementation of, similar projects involving railroad motive power. Demonstrable understanding of the newest technologies in this field, particularly advanced technologies that reduce emissions or improve energy efficiency. Inclusion of senior individuals with direct experience in the management of locomotive operations, maintenance and repair, or manufacturing is key, notably personnel having held such responsibilities for freight operations.
- 2. Work Plan and Methodology (20 points):** Adequacy of the proposed work plan and suggested overall approach in responding to the Terms of Reference. Soundness and thoroughness of the technical approach and work plan detailed in the proposal and the overall quality of the presentation should be evaluated. The proposal should provide an organization chart of key personnel with their qualifications and a staffing schedule for each key activity.
- 3. Policy and Program Experience (20 points):** Firm and team experience in analysis and development of rail transportation or environmental statutes, regulations and policy. Demonstrated familiarity with México's governance structures and the processes and procedures for developing, funding and managing public programs.
- 4. Regional Experience (20 points):** Firm and team's familiarity with the railway sector in México including local and international conditions, regulations and requirements. The firm experience (or the experience of key personnel) should include significant relevant projects successfully carried out in México within the past five years.

## **RECOMMENDATIONS**

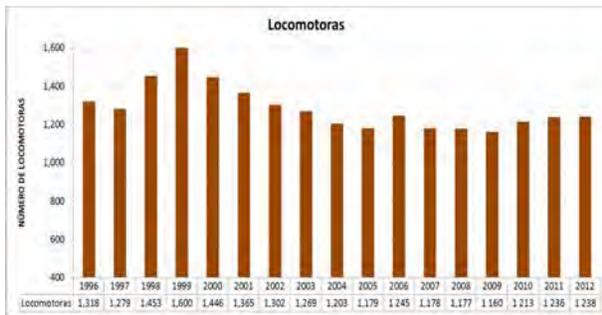
We recommend that USTDA proceed to finance this proposed study for the budget of \$590,357.60. Both the government of México and the freight railroads share the goals of improving the efficiency of motive power and reducing emissions. Both are investing substantial sums into capital expenditures in the sector which demonstrates their commitment to development. The proposed project would support Mexican strategic national goals in the area of greenhouse gas emission reductions. It would also advance México's efforts to harmonize its practices with the United States in various areas, in this case by bringing the Mexican locomotive fleet closer to emissions and efficiency parity. The proposed project explores feasibility of establishing in México equivalents to incentive programs that are well established and successful in the United States at the state and federal level. This will provide government stakeholders an ability to reach out to their U.S. peers for practical input that may support their taking steps towards implementation. An implementation would also have a positive impact on emissions reduction not just in México but also selected border areas where Mexican emissions can impact U.S. pollution levels. Finally, an implementation has a high probability of benefitting U.S. motive power exporters in the medium term who are well established in the Mexican market and who are global industry leaders in high-efficiency, low-emission motive power solutions. The potential export multiplier resulting from every \$1 of grant funding of this project is estimated at \$18 at the low end and \$120 at the high end.

## **TERMS OF REFERENCE (TOR)**

### **Purpose and Objective of the Activity**

#### **Background**

In 2012 México's freight railroads operated a total of 1,231 diesel-electric locomotives between main line and yard service. The major companies have invested increasing amounts in new locomotives in past years, increasing average unit power by nearly 500 horsepower and achieving a steady increase in fuel efficiency as measured in ton-kilometers transported per liter of fuel. As these gains have slowed there remains potential for improvement. Many older, lower horsepower, and less efficient locomotive models still remain in service in the railroad fleets, creating an opportunity for meaningful improvements in operating efficiency and pollution reduction through retrofit, rebuild, or replacement. Outside of the freight railroad companies there is also a fleet of railcar movers and small switching locomotives numbering as much as 1,000 units, with perhaps two-thirds of that in operation. Many of these units are also older, less efficient, and generate relatively high levels of emissions.



Evolution of the Mexican Freight Locomotive Fleet



Evolution of Average Locomotive Horsepower

Ferrocarril	2007	2008	2009	2010	2011	2012	Gain (Loss)	Graph
KCSM	386	390	372	372	368	371	(15)	
Ferromex	592	582	582	631	632	631	39	
Ferrosur	125	125	125	125	148	147	22	
Coahuila-Durango	22	22	22	22	22	22	-	
TFVM	31	31	31	31	31	31	-	
Chiapas-Mayab	22	24	26	30	33	26	4	
ADMICARGA	-	-	2	1	2	3	3	
<b>Total</b>	<b>1,178</b>	<b>1,174</b>	<b>1,160</b>	<b>1,212</b>	<b>1,236</b>	<b>1,231</b>	<b>53</b>	

#### Locomotive Fleet Evolution by Operator between 2007 and 2012

The freight railroads are major consumers of fuel in México, burning 738 million liters (195 million gallons) of diesel in 2012 or approximately 4% of annual national consumption. Fuel is the largest variable operating cost for the freight railroads (29% of operating costs for Ferromex in 2012) and diesel fuel prices have risen by nearly 250% since 1999. Government subsidy policies have shielded fuel users from some sharpness in price fluctuations, but have not halted the overall rise. U.S. Class I railroads have achieved an increase in units of freight transported per unit of fuel of over 16%, compared to Mexican railroads improvement of only 9% since 2001. Increased fuel efficiency strongly supports the financial health of the operating railroads, reducing operating costs and enabling allocation of resources to capital investments that will improve service, supporting economic development, as well as attracting traffic from road to rail, a more efficient mode.

As with other heavily industrialized countries, air pollution is an area in which the government continually seeks improvement. This is of particular concern in the major urban areas such as México City and the commercial centers along the U.S.-México border, where concentrations of locomotive traffic can exacerbate existing air pollution problems. The General Law on Climate Change passed in 2012, elaborated by the current National Strategy on Climate Change of 2013, establishes a framework of objectives for emissions mitigation, reduction, and energy efficiency.

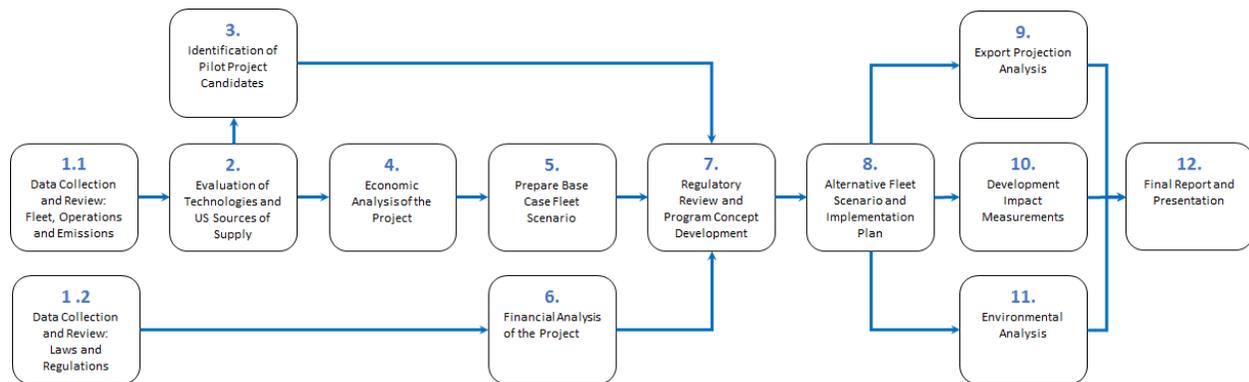
The focus of this activity is vehicle and/or on-board systems, with the understanding that some of these systems will be integrated with wayside facilities or components for management, monitoring, maintenance, or provision of fuel.

## Activity Objective

The objective of this activity is to work with stakeholders in México to study the feasibility of establishing a public program to incentivize investments in freight railroad motive power that will create both public and private benefits. The study would quantify the need for investments in motive power to improve efficiency and reduce emissions, illustrating the costs and benefits. It would provide Mexican decision-makers with information to support a funding decision, including scale and potential benefits. It will provide a framework for measuring the public benefits to be generated by proposed investments, and a basic outline of a statutory and regulatory structure concept for officials to evaluate and begin to work with. An implementation would result in public-private investments in México in motive power that will create meaningful reductions in pollution and improvements in energy efficiency that will create measurable positive benefits to railroad operators and customers and to the public at large.

## Task Flow and Schedule

The diagram below illustrates the precedent relationships and expected general flow of data between the study tasks:



**Figure 16: Project 1 Anticipated Task Data Flow**

The graphic illustrates the expected task durations and deliverable milestones over the course of the activity. This exhibit is provided in larger scale in the appendices.

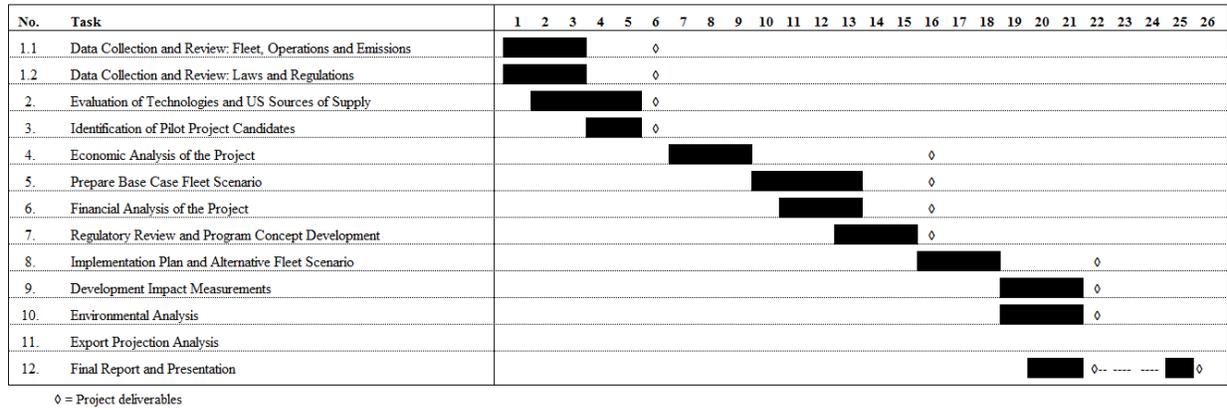


Figure 17: Project 1 Anticipated Task Schedule (Weeks)

## 1. Data Collection and Review

Through a combination of research, interviews, and field visits, the Contractor shall gather initial data necessary to support execution of the Study. As part of this task the Contractor shall meet with representatives of the following entities to brief them on the scope and objective of the study, to identify counterparts as necessary to assist or participate in study activities, and to present initial data requests.

- México’s major operating freight railroad companies: Ferromex and Ferrosur; Kansas City Southern de México; Ferrocarril del Istmo de Tehuantepec; Ferrovalle, and; Línea Coahuila-Durango.
- Secretaría de Comunicaciones y Transportes (SCT).
- Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) and its monitoring and research group, the Instituto Nacional de Ecología y Cambio Climático (INECC).
- Secretaría de Energía and its Comisión Nacional para el Uso Eficiente de la Energía (CONUEE).
- The World Resources Institute-funded non-governmental organization CTS EMBARQ México.
- Other federal, state and municipal bodies as appropriate.

### 1.1 Data Collection and Review: Fleet, Operations and Emissions

The Contractor shall:

- Assemble a Microsoft Excel-based inventory of the current motive power fleet of México’s freight rail system to include owner, operator, unit manufacturer, model, year of manufacture, year of most recent rebuild, engine type and horsepower and other pertinent data. The Contractor shall categorize the fleet as best practicable according to emissions profile in accordance with the U.S. EPA’s system for locomotives of Tiers 0 – 4. The

inventory shall include both freight operating company mainline (road) and switching locomotives. The Contractor shall attempt to include a representative sample of customer (shipper)-owned locomotives as well as railcar movers.

- Collect from relevant regulatory agencies databases on levels of monitored pollutants in México by geographic region to include emissions relevant to railroad diesel motive power such as hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NOx) and particulate matter (PM).
- Assemble data describing any differences between motive power diesel fuel composition as relevant to emissions and efficiency in México as compared to the United States.
- Assemble historical data on the density of train operations in México by segments of railway infrastructure and relevant geographic regions.
- Assemble historical data on the annual spending on fuel by rail fleet operators including sources and commercial arrangements.

### ***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **1.2 Data Collection and Review: Laws and Regulations**

The Contractor shall collect and review:

- The national laws, regulations and standards in México covering:
  - Air quality standards, monitoring and management instruments and emissions reductions programs including the “Normas Mexicanas de Calidad del Aire,” and the “Ley General de Cambio Climático,” as well as México City’s “Plan Verde” program.
  - The design and operation of railroad motive power in México and any that may apply to exhaust emissions control and efficiency of railroad motive power.
  - The composition of diesel fuel used in railroad motive power applications.
- Selected national level laws, regulations and policy documents relevant to transportation project benefit-cost analysis in México and the United States, to include methodologies and unit values for assignment of costs to the public of vehicular air pollution.
- The most recent Notice of Funding Availability for the U.S. Federal National Infrastructure Investments Program (TIGER) and associated guidance provided on Benefit-Cost Analysis.
- The laws, regulations and standards in the United States as follows:

- Related to railroad locomotive emissions including Title 40 Code of Federal Regulations Part 1033, “Control of Emissions from Locomotives,” as administered by the U.S. Environmental Protection Agency.
- Associated with the Federal Congestion Mitigation and Air Quality (CMAQ) Program administered by the U.S. Department of Transportation.
- Associated with the Federal Diesel Emissions and Reduction Act (DERA) Program administered by the U.S. Environmental Protection Agency.
- Associated with the State of Texas Emissions Reduction Plan (TERP) as overseen by the Texas Commission on Environmental Quality.
- Associated with the Carl Moyer Memorial Air Quality Standards Attainment Program as administered by the California Environmental Protection Agency.

The Contractor shall compare and contrast current status of air pollution and energy efficiency regimes in México and the United States relevant to locomotive diesel engines. The key features of the major governmental programs in the United States incentivizing investments in railroad motive power that are suitable for adoption in México shall be identified. Significant funding programs in México that may be used or adapted for this purpose - or serve to complement such a new program - shall be identified. The Contractor shall identify medium and long term plans for evolution of emissions standards and regulations in México and any required harmonization between U.S. and Mexican regimes. The permitted levels and current measurements of different controlled emissions of diesel emissions components in México shall be identified by state or other relevant sub-national region.

***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

**2. Evaluation of Technologies and U.S. Sources of Supply**

The Contractor shall perform a comprehensive survey of relevant product offerings by U.S. providers of goods and services related to freight rail motive power. This shall include manufacturers and remanufacturers of new road and switching locomotives and railcar movers, suppliers of goods and services associated with rebuilding and manufacturers of retrofit technology designed to improve efficiency and/or reduce emissions. The latter may include a range of technologies such as idle reduction, control and monitoring systems and emissions capture devices. Offerings including alternative fuels such as natural gas and hybrid/battery solutions shall be considered. Evaluation of supplier offerings shall take into account variances in standard diesel fuel compositions between the United States and México that might reduce their nominal effectiveness, such as different levels of sulfur. The Contractor shall profile the companies surveyed including experience in the Mexican market and the workforce and facilities

that would serve México, points of contact and an assessment of how each company would need to engage to take advantage of the envisioned implementation. This will include an evaluation of the extent to which each company would be providing its final product from the United States or through a Mexican installation or entity. The Contractor shall identify the major non-U.S. competitors active in México in this sector and identify their major facilities, freight rail clients and competing offerings of goods and services, indicating competitive advantages over the U.S. companies, if any.

The approximate upfront costs for the offerings shall be identified as well lifecycle costs such as service, support, parts and maintenance and disposal. The approximate national origin of the value of goods and services for the different supplier offerings shall be determined. For each offering the report shall identify if the solution has previously been provided in México by the supplier. Current and proposed plans for manufacturing, remanufacturing, assembly, maintenance, field service and support shall be identified for the evaluated offerings for México.

#### ***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

### **3. Identification of Pilot Project Candidates**

The Contractor shall seek to identify U.S. suppliers with a potential interest in performing USTDA-funded pilot projects in México providing new motive power, rebuilds or retrofits to enable field evaluation of the potential of the products to create emissions reduction or fuel efficiency benefits and operational performance. The Contractor shall work with interested suppliers on developing up to three basic frameworks of sole-source proposal outlines for pilot projects for USTDA funding. The Contractor will review with interested companies the USTDA policies on eligibility, cost-sharing and success fees and also template grant agreements and contracts. The Contractor shall identify significant U.S. suppliers in the Mexican market who declined and seek reasons for their lack of interest and identify any considerations which would make USTDA sole-source projects more compelling.

#### ***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **4. Economic Analysis of the Project**

The Contractor shall, in consultation with appropriate railroad personnel, elaborate the basic business case frameworks and considerations supporting decisions for replacement, rebuild or retrofit of their motive power. This quantitative analysis shall describe the desired balances between operating efficiencies and cost savings versus the expected costs of the investment categories: new locomotives, rebuilds and retrofits. Cost analysis shall consider expenditures for planning and development of the investments. Practices for staggering of rebuilds and replacement in order to avoid capital expenditure bubbles and gaps in operational capacity shall be considered. This task shall include operator/owner expectations from the perspective of cash flow analysis and life cycle cost analysis (LCCA) for the different categories of investments and the trade-offs between them, to include implications for maintenance, support and disposal costs. Based on the data gathered and analyses the Contractor shall develop a framework of subsidy ranges that would be necessary, if any, to incentivize the owners to accelerate planned programs to replace, rebuild or retrofit different categories of units in their motive power fleets in recognition of the corresponding public benefits in reduction of emissions and fuel consumption. The Contractor shall indicate any tax considerations from the operator/owner perspective that materially affect the decision to make this investment.

### ***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **5. Prepare Base Case Fleet Scenario**

The Contractor shall prepare a projection of the “base case” evolution of the freight rail motive power fleet in México in the form of an elaboration of the Excel-based motive power roster. This analysis will project the fleet makeup considering likely significant investments in replacement, rebuilding and significant retrofits of motive power over a future period of 11 years, the year of the study being the first year. This analysis shall be based upon information provided by motive power operators taking into account historical and projected investments by the operating companies including normal periodic rebuild programs and rail freight traffic demand. Based on the data collection in the first task, an analysis shall be made of the projected benefits in the areas of emissions reductions and energy efficiency. The benefits shall be calculated in terms of emissions and fuel consumption reductions achieved each year during the projection period. In this task the Contractor shall also prepare an analysis of the areas of greatest air pollution concern in México cross referenced with the projection of different levels of freight rail locomotive activity and the operating areas of the different categories of freight rail motive power. The Contractor shall identify its estimate of the number of locomotives that reasonably

can be expected to be replaced or rebuilt over the projection period if attractive financial and other conditions are available.

### ***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **6. Financial Analysis of the Project**

The Consultant shall identify and evaluate the availability of the different sources of debt and equity financing presently available to support replacement, rebuild or retrofit of railroad motive power in the context of an implementation scenario. These would be sources that could serve to complement incentives to be provided under a new program in order to permit an economically attractive investment case. This activity shall include discussions with the operators, private providers of financing, the U.S. Export-Import Bank, OPIC, the North American Development Bank, USAID, the Inter-American Development Bank and Mexican public entities at the federal, state and municipal levels including relevant offices within SEMARNAT, SENER and SCHP. This analysis should highlight conditions that would minimize the need for subsidies to achieve a reasonably attractive return on the projected investment. It should also identify any impediments to such financing or tax considerations that could be addressed in structuring this opportunity.

### ***Task Deliverable***

*Upon completion of the task the Contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **7. Regulatory Review and Program Concept Development**

Based on findings in the previous tasks, the Contractor shall elaborate the fundamental framework of a program to incentivize the replacement, rebuild or retrofit of motive power to achieve defined emissions reduction and energy efficiency targets. The Contractor will review existing legal and regulatory frameworks and evaluate potential structures for incentives to include direct state or federal grants, beneficial tax structures or minor adjustments within the operating concession agreements or public financing programs. A benefit-cost analysis-based structure shall be proposed that could be used for officials to evaluate proposals for funding or incentives under such a new program. The Contractor shall identify basic statutory and regulatory changes that would be required to implement the described program and evaluation methodology. Draft language suitable for introducing the concept to the appropriate government entities shall be prepared at the levels of statute, regulation, policy and a pro forma application

document as appropriate. Any potential legal or regulatory barriers to implementation of the new program will be identified and an evaluation made of whether/how they can be overcome.

### ***Task Deliverable***

*Upon completion of the task the contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **8. Implementation Plan and Alternative Fleet Scenario**

The Contractor shall identify and analyze the steps necessary for the relevant government entities to evaluate, elaborate and implement the proposed new incentive program. A pro forma schedule will be developed for this process identifying the key stakeholders and outlining legislative, regulatory, policy, and administrative steps. The process for establishing and budgeting funding shall be clearly mapped out. An equivalent activity shall be performed for a pro forma state or municipal level incentive program if determined to be appropriate based on stakeholder discussions. The structure of government sponsors and supporters necessary to bring such a program from concept into reality shall be described, addressing roles of the different branches of government.

The Contractor shall then develop an “Implementation Case” version of the motive power fleet evolution projection considering the projected timing of program implementation, the scale and attractiveness of the model incentive programs(s) and railroad operational considerations in terms of fleet and capital investment management. This alternative fleet scenario shall correspond to the term of the fleet base case, 11 years including the year of the Study.

### ***Task Deliverable***

*Upon completion of the task the contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **9. Development Impact Measurements**

The Contractor shall compare the two fleet evolution scenarios, quantify the difference between them, and measure the potential development impact over the projection period. The Contractor shall evaluate the potential benefits in emissions reductions and energy efficiency gains between the two scenarios. This analysis shall include a discounted net present value (NPV) of the projected benefits expressed in U.S. dollars based on projected motive power fuel costs in México and on U.S. federal government accepted values for the cost of emissions components (HC, NO<sub>x</sub>, PM, and CO) as well as any Mexican government accepted values. Discounting shall be performed at both 7% and the rate accepted by the Mexican federal government for

government investment program analysis. If the projection scenario implies that the implementation will clearly support railroad operational and capacity improvements enabling truck traffic diversions to rail that would otherwise not have occurred in the base case, then these avoided emissions and fuel expenditures may be claimed and incorporated into the analysis.

The Contractor shall organize and address the potential benefits that accrue based on the following development categories. For each relevant metric the Contractor shall recommend measurement or assessment methodologies and data that can be collected over the defined projection period to enable USTDA and México to validate that development occurred. An implementation does not need to result in benefits in all or even more than one category, but all significant benefits shall be identified.

- **Infrastructure:** The Contractor shall list all hard and/or soft infrastructure that may be created/improved given a successful implementation, explaining how the USTDA activity could directly lead to the infrastructure development. Provide expected timeline and reason the new/improved infrastructure is needed.
- **Human Capacity Building:** The Contractor shall identify if the implementation is expected to create 10 or more new jobs in the host country or help retain jobs that would otherwise be lost, or, create an activity that provides training to 10 or more people in the host country. It is not an assumption that new jobs/ training will be provided because infrastructure/technology transfer is occurring. Specify how many people are currently employed, how many people will need to be hired/trained, and expected timeline for the employment decisions. If training, explain how the activity will directly enhance the value of labor.
- **Technology Transfer and Productivity Enhancement:** The Contractor shall identify if the implementation is expected to introduce a new product/technology that will improve operations of a host country's current system/ process/ operation. It is not a project that has technology transfer without measurable efficiency gains. Specify the technology/ system/ operation that will be transferred and productivity improvement that will be gained. Provide the measurable ways in which productivity will be improved, the estimated improvement(s) and expected timeline.
- **Environment:** The Contractor shall identify if the implementation is expected to lead to measurable environmental benefits, such as mitigating environmental impact resulting from infrastructure development, rehabilitating environmental damage, mitigating impacts to ecosystems, replacing equipment with greener technologies. Environmental mitigation/benefits must be a significant feature of the activity and project and the Contractor must specify how the activity will improve the host country environment, providing measurable data or specific gains and expected timeline during which they will be achieved.
- **Other:** The Contractor shall identify other potential achievements of implementation, such as:

- Government Transparency or Revenue Generation: An activity that improves the public’s ability to understand government actions or improve government tax/revenue collection.
- Health Benefits: An activity that has noticeable and measurable health gains for the community surrounding or impacted by the project.
- Replication or Spin-off Projects: An activity that is likely to be duplicated or stimulate related projects, magnifying the initial benefits and impact.
- Safety and/or Security: An activity leading to improved safety and/or security for the host country or population affected by the project. This is not safety/security of the project itself, rather an impact beyond the implementation of the project that could lead to additional safety/security.

## **10. Environmental Analysis**

The Contractor shall evaluate the anticipated impact on the environment of an implementation. Potential significant negative environmental impacts of the project shall be identified, and if found, mitigation strategies suggested. This analysis shall conform to impact analysis requirements of the Host Country, the U.S. government and multilateral lending agencies. The Contractor shall outline a high-level plan for any formal environmental impact analysis that would be required to bring the project through the implementation stage, and identify work that would be required by the project sponsor following the completion of the USTDA study but prior to implementation. This task is not execution of a full impact analysis. It is rather to identify the potential requirement for such, identify potential major impacts, and identify the general scope, scale and schedule that would be required for fulfillment of the identified legal obligations and potential major mitigation steps required prior to implementation.

### ***Task Deliverable***

*Upon completion of the task the contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **11. Export Projection Analysis**

The Contractor shall compare the two fleet evolution scenarios and quantify the expenditure difference between them to project the potential U.S.-origin export gain. This analysis shall consider both products and services for a scenario including new locomotives, rebuilds and selected equipment retrofits. The analysis shall be based on approximate values for the different categories of investments based on interviews with U.S. suppliers and Mexican operators and shall consider the likely sourcing of materials and labor in the United States versus México and other nations. A discounted net present value of the projected difference shall be calculated. The analysis shall incorporate the projected value of the goods and services associated with the

investments from a life-cycle cost analysis perspective, not simply the initial up-front cost of the replacement, rebuild or retrofit. To provide context and scale this task shall incorporate an analysis of the relevant historical and projected exports under the appropriate categories for trade between México and the United States.

### ***Task Deliverable***

*Upon completion of the task the contractor shall provide a detailed written report describing the work performed and findings. This report shall be presented to the Grantee for review and comment.*

## **12. Final Report and Presentation**

The Contractor shall prepare a comprehensive final report integrating together the prior deliverables into a coherent, integrated set of documents. The findings shall be presented to selected stakeholders to include representatives of the operating railroads and relevant Host Country public agencies.

### ***Task Deliverable***

*The Contractor shall prepare and provide to the Grantee and to USTDA a Final Report in accordance with Clause \_\_\_ of Annex II of the Grant Agreement. Each of the above tasks in this Terms of Reference must be distinctly set forth in the Final Report in a substantive and comprehensive manner, and shall include all corresponding deliverables. The Final Report shall contain an executive summary. In addition to any other required deliverables in accordance with Clause \_\_\_ of Annex II of the Grant Agreement, the Contractor shall provide both the grantee and USTDA with a Public Version of the Final Report on CD-ROM. The CD-ROM version of the Final Report shall include:*

- Adobe Acrobat readable copies of all documents;*
- Source files for all drawings in AutoCAD or Visio format,*
- Source files for all geospatial products in ArcGIS format and;*
- Source files for all documents in MS Office 2007 or later formats (note: these files may be provided in equivalent readable formats.)*

*Included as part of the deliverable shall be any Microsoft PowerPoint or other presentation files, to include notes and exhibits, used to present the Study conclusions to stakeholders. All deliverables for all tasks shall be provided in both the English and Spanish language.*

## **STUDY BUDGET, SCHEDULE & CONTACTS**

Attached as Appendix 1:

- Annex III: Required Budget Format
- Annex IV: Task Completion Schedule
- Annex V: Budget Narrative

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# **APPENDICES (PROJECT BUDGETS, SCHEDULES AND CONTACTS)**

## **1. PROJECT 1 – MOTIVE POWER**

Annex III: Proposed Project Budget<sup>2</sup>

Annex IV: Proposed Project Schedule

Annex V: Budget Narrative

## **2. PROJECT 2 – FREIGHT RAILCARS**

Annex I: Impact on U.S. Labor Statement\*

Annex II: USTDA Nationality Requirements for the DM Contractor\*

Annex III: Proposed Project Budget

Annex IV: Proposed Project Schedule

Annex V: Budget Narrative

## **3. MASTER LIST OF ALL DM CONTACTS**

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<sup>2</sup> The annex numbering accounts for the following mandatory legal attachments from USTDA for the contract.

Annex I: Impact on U.S. Labor Statement

Annex II: USTDA Nationality Requirements for the DM Contractor

**Annex III: Required Budget Format**  
**Feasibility Study for a Program to Incentivize Railroad Motive Power Efficiency Improvements and Emissions Reductions**  
**Host Country: México Project Sponsor: Asociación Mexicana de Ferrocarriles A. C.**

**DIRECT LABOR COSTS**

TOR Task	TOR Task Name	Primary Contractor (Employee) Labor		
		Position	Total Person Days	Daily Rate* =
1.1 Data Collection and Review: Fleet, Operations and Emissions		01. Project Manager and Team Leader	6.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	6.00	\$ 1,400.00
		03. Business/Economic Analyst	6.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
1.1 Data Collection and Review: Laws and Regulations		01. Project Manager	4.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	4.00	\$ 1,400.00
		03. Business/Economic Analyst	2.00	\$ 1,200.00
		04. Legal and Regulatory Expert	12.00	\$ 1,600.00
2. Evaluation of Technologies and US Sources of Supply		01. Project Manager	6.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	10.00	\$ 1,400.00
		03. Business/Economic Analyst	4.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
3. Identification of Pilot Project Candidates		01. Project Manager	8.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	8.00	\$ 1,400.00
		03. Business/Economic Analyst	4.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
4. Economic Analysis of the Project		01. Project Manager	10.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	10.00	\$ 1,400.00
		03. Business/Economic Analyst	8.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
5. Prepare Base Case Fleet Scenario		01. Project Manager	8.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	8.00	\$ 1,400.00
		03. Business/Economic Analyst	6.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
6. Financial Analysis of the Project		01. Project Manager	2.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	2.00	\$ 1,400.00
		03. Business/Economic Analyst	10.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
7. Regulatory Review and Program Concept Development		01. Project Manager	8.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	6.00	\$ 1,400.00
		03. Business/Economic Analyst	4.00	\$ 1,200.00
		04. Legal and Regulatory Expert	14.00	\$ 1,600.00
8. Implementation Plan and Alternative Fleet Scenario		01. Project Manager	8.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	8.00	\$ 1,400.00
		03. Business/Economic Analyst	6.00	\$ 1,200.00
		04. Legal and Regulatory Expert	6.00	\$ 1,600.00
9. Development Impact Measurements		01. Project Manager	4.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	4.00	\$ 1,400.00
		03. Business/Economic Analyst	8.00	\$ 1,200.00
		04. Legal and Regulatory Expert	0.00	\$ 1,600.00
10. Environmental Analysis		01. Project Manager	5.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	4.00	\$ 1,400.00
		03. Business/Economic Analyst	0.00	\$ 1,200.00
		04. Legal and Regulatory Expert	5.00	\$ 1,600.00
11. Export Projection Analysis		01. Project Manager	4.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	4.00	\$ 1,400.00
		03. Business/Economic Analyst	8.00	\$ 1,200.00
		04. Legal and Regulatory Expert	2.00	\$ 1,600.00
12. Final Report and Presentation		01. Project Manager	12.00	\$ 1,500.00
		02. Sr. Mechanical/Locomotive Expert	12.00	\$ 1,400.00
		03. Business/Economic Analyst	10.00	\$ 1,200.00
		04. Legal and Regulatory Expert	8.00	\$ 1,600.00
<b>TOTALS:</b>			<b>294.00</b>	<b>\$ 414,300.00</b>

TOR Task	TOR Task Name	Non-Employee Labor		
		Position	Total Person Days	Daily Rate** =
1.1 Data Collection and Review: Fleet, Operations and Emissions		Local Legal and Regulatory Expert: Transportation/Rail	6.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	6.00	\$ 500.00
1.2 Data Collection and Review: Laws and Regulations		Local Legal and Regulatory Expert: Transportation/Rail	14.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	14.00	\$ 500.00
2. Evaluation of Technologies and US Sources of Supply		Local Legal and Regulatory Expert: Transportation/Rail	4.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	0.00	\$ 500.00
3. Identification of Pilot Project Candidates		Local Legal and Regulatory Expert: Transportation/Rail	0.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	0.00	\$ 500.00
4. Economic Analysis of the Project		Local Legal and Regulatory Expert: Transportation/Rail	0.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	0.00	\$ 500.00
5. Prepare Base Case Fleet Scenario		Local Legal and Regulatory Expert: Transportation/Rail	0.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	0.00	\$ 500.00
6. Financial Analysis of the Project		Local Legal and Regulatory Expert: Transportation/Rail	6.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	6.00	\$ 500.00
7. Regulatory Review and Program Concept Development		Local Legal and Regulatory Expert: Transportation/Rail	12.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	16.00	\$ 500.00
8. Implementation Plan and Alternative Fleet Scenario		Local Legal and Regulatory Expert: Transportation/Rail	8.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	8.00	\$ 500.00
9. Development Impact Measurements		Local Legal and Regulatory Expert: Transportation/Rail	6.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	6.00	\$ 500.00
10. Environmental Analysis		Local Legal and Regulatory Expert: Transportation/Rail	2.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	8.00	\$ 500.00
11. Export Projection Analysis		Local Legal and Regulatory Expert: Transportation/Rail	0.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	0.00	\$ 500.00
12. Final Report and Presentation		Local Legal and Regulatory Expert: Transportation/Rail	12.00	\$ 500.00
		Local Legal and Regulatory Expert: Environmental	12.00	\$ 500.00
<b>TOTALS:</b>			<b>146.00</b>	<b>\$ 73,000.00</b>
<b>TOTAL DIRECT LABOR COSTS:</b>				<b>\$ 487,300.00</b>

**OTHER DIRECT COSTS:**

Purchased Services/Contracts***	Tasks	TOTAL COST
Technical Interpreter (Simultaneous) at \$300/day for 39 days	Supporting field visits	\$ 8,250.00
Translation services	Supporting translation of research and deliverables and communications from/to Spanish	\$ 4,000.00

Travel	Trips	Trip Cost	TOTAL COST
International Coach Flight R/T USA - Mexico - USA	12.00	\$ 750.00	\$ 9,000.00
Airport Transfers per International R/T	12.00	\$ 200.00	\$ 2,400.00
Domestic Coach Flights within Mexico	42.00	\$ 250.00	\$ 10,500.00
Airport transfers per flight within Mexico	22.00	\$ 70.00	\$ 1,540.00
Travel	Trip Days	Per Diem Rate	TOTAL COST
Per diem in Mexico, D.F.	116.00	\$ 362.00	\$ 41,992.00
Per diem in Monterrey	35.00	\$ 257.00	\$ 8,995.00
Per diem in Guadalajara	35.00	\$ 240.00	\$ 8,400.00
Travel Telecommunications per day per person	186.00	\$ 18.00	\$ 3,348.00
Van + driver for local transport per Day	33.00	\$ 125.00	\$ 4,125.00
Other	Units	Cost	TOTAL COST
Black & White Copies	2856.00	\$ 0.05	\$ 142.80
Color Copies	1224.00	\$ 0.20	\$ 244.80
Courier Fees	3.00	\$ 40.00	\$ 120.00

<b>TOTAL OTHER DIRECT COSTS:</b>		<b>\$ 103,057.60</b>
<b>TOTAL COSTS (DIRECT LABOR COSTS + OTHER DIRECT COSTS):</b>		<b>\$ 590,357.60</b>
<b>TOTAL HOST COMPANY COST SHARE:</b>	0% (If applicable)	\$ -
<b>PROPOSED USTDA GRANT:</b>		<b>\$ 590,357.60</b>

\* Primary Contractor (Employee) Labor Costs = Salary + Overhead + Benefits (no fee or profit)  
 \*\* Non-Employee Labor Cost = Salary + Overhead + Reasonable Fee or Profit  
 \*\*\* Purchased Services/Contracts may include engineering drawings, lab work, surveys, translation, etc., which would not be included in Non-Employee Labor Cost above.

**Annex IV: Task Completion Schedule (Weeks)**  
*Feasibility Study for a Program to Incentivize Railroad Motive Power Efficiency Improvements and Emissions Reductions*  
**Host Country:** México      **Project Sponsor:** Asociación Mexicana de Ferrocarriles A. C.

No.	Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1.1	Data Collection and Review: Fleet, Operations and Emissions	█	█	█	█		◊																				
1.2	Data Collection and Review: Laws and Regulations	█	█	█	█		◊																				
2.	Evaluation of Technologies and US Sources of Supply			█	█	█	█	◊																			
3.	Identification of Pilot Project Candidates				█	█	◊																				
4.	Economic Analysis of the Project							█	█	█	█	█	█	█	█	█	◊										
5.	Prepare Base Case Fleet Scenario										█	█	█	█	█	█	◊										
6.	Financial Analysis of the Project										█	█	█	█	█	█	◊										
7.	Regulatory Review and Program Concept Development												█	█	█	█	◊										
8.	Implementation Plan and Alternative Fleet Scenario																█	█	█	█	█	█	█	█	█	█	◊
9.	Development Impact Measurements																				█	█	█	█	█	█	◊
10.	Environmental Analysis																				█	█	█	█	█	█	◊
11.	Export Projection Analysis																										
12.	Final Report and Presentation																					█	█	█	█	█	◊

◊ = Project deliverables

**Annex V: Budget Narrative**

**Feasibility Study for a Program to Incentivize Railroad Motive Power Efficiency Improvements and Emissions Reductions**

**Host Country:** México

**Project Sponsor:** Asociación Mexicana de Ferrocarriles A. C.

<b>Item</b>	<b>Sources/Assumptions/Basis</b>	<b>Unit</b>	<b>Unit Cost</b>
Per diem in Mexico, D.F.	U.S. Department of State Foreign Per Diem Rate effective as of 04/01/2013	Calendar Day	\$ 362.00
Per diem in Monterrey	U.S. Department of State Foreign Per Diem Rate effective as of 01/01/2009	Calendar Day	\$ 257.00
Per diem in Guadalajara	U.S. Department of State Foreign Per Diem Rate effective as of 06/01/2011	Calendar Day	\$ 240.00
International Coach Flight R/T USA - Mexico - USA	Average of flight quotes on www.americanairlines.com accessed on 11/8/13	R/T	\$ 750.00
Airport Transfers per International R/T	Contractor experience	Per R/T	\$ 200.00
Domestic Coach Flights within Mexico	Average of flight quotes on www.expedia.com accessed on 11/8/13	Flight	\$ 250.00
Airport transfers per flight within Mexico	Contractor experience \$35 x 2	Per Flight	\$ 70.00
Van + driver for local transport per Day	Contractor estimate	Per Day	\$ 125.00
Black & White Copies	Contractor experience	Page	\$ 0.05
Color Copies	Contractor experience	Page	\$ 0.20
Travel Telecommunications per day per person	Estimated average hotel internet, mobile voice and data costs per field day.	Per Diem	\$ 18.00
Courier Fees	Contractor experience	Each	\$ 40.00
Team Leader	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 1,500.00
Mechanical/Locomotive Expert	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 1,400.00
Business/Economic Analyst	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 1,200.00
Legal and Regulatory Expert	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 1,600.00
Local Legal and Regulatory Expert 1: Transport	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 500.00
Local Legal and Regulatory Expert 2: Environment	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 500.00
Technical Interpreter (Simultaneous)	Contractor estimate (See Worksheet: Rates Analysis)	Workday	\$ 250.00
Technical Translator (Cost per page)	Contractor estimate	Per Page	\$ 2.00

**United States Trade & Development Agency Definitional Mission: Mexico Rail Sector Project**  
**Host Country: México Project Sponsor: Asociación Mexicana de Ferrocarriles A. C.**  
**DM Report Annex: Contacts**

Category	Title	First Name	Last Name	Company/Organization	Professional Title	Address 1	Address 2	City	State/Province	Postal Code	Country	Fax	Telephone	Telephone 2	E-mail Address	Web Page
Host Country Project Sponsor	Dr.	Iker	de Luisa Plazas	Asociación Mexicana de Ferrocarriles A. C.	Director General	Alfonso Esparza Oteo 144, Ofna 702	Guadalupe Inn, Deleg. A. Obregón	Ciudad México	DF	CP 1020	México		+52 (55) 5661-0325	+52 (55) 5662-5852	ikerdeluisa@amf.org.mx	<a href="http://www.amf.org.mx">http://www.amf.org.mx</a>
US Government Official	Ms.	Wanda	Barquin	U.S. Embassy – Commercial Service	Commercial Officer	Liverpool 31	Colonia Juarez	Ciudad México	DF	CP 6600	México		+52 (55) 5140-2638		Wanda.Barquin@trade.gov	<a href="http://export.gov/mexico/">http://export.gov/mexico/</a>
US Government Official	Mr.	Adrián	Orta	U.S. Embassy – Commercial Service	Asesor Commercial	Liverpool 31	Colonia Juarez	Ciudad México	DF	CP 6600	México	+52 (55) 5566-1111	+52 (55) 5140-2619		Adrian.Orta@trade.gov	<a href="http://export.gov/mexico/">http://export.gov/mexico/</a>
US Government Official	Mr.	Keith	Eischeid	U.S. Trade and Development Agency	Country Manager - Mexico and Central America	1000 Wilson Boulevard, Suite 1600		Arlington	VA	22209-3920	United States of America	(703) 875-4009	(703) 875-4357		KEischeid@ustda.gov	<a href="http://www.ustda.gov">http://www.ustda.gov</a>
Contractor Personnel	Mr.	Larry	McCaffrey	UniRail LLC	President	130 East End Avenue #14B		New York	NY	10028	United States of America	(646) 349-2624	(212) 753-7782		lrmccaffrey@unirail.com	
Contractor Personnel	Mr.	Richard	Sherman	The Seneca Group LLC	Senior Associate	500 New Jersey Avenue NW	Fourth Floor	Washington	DC	20001	United States of America	(202) 783-5861	(202) 783-6096		rsherman@seneca-llc.com	<a href="http://www.seneca-llc.com">http://www.seneca-llc.com</a>
US Government Official	Mr.	David	Ross	U.S. Trade and Development Agency	Program Evaluation Manager	1000 Wilson Boulevard, Suite 1600		Arlington	VA	22209-3920	United States of America	(703) 875-4009	(703) 875-4357		dross@ustda.gov	<a href="http://www.ustda.gov">http://www.ustda.gov</a>
US Government Official	Ms.	Heather	Connell	U.S. Trade and Development Agency	LAC Research Analyst	1000 Wilson Boulevard, Suite 1600		Arlington	VA	22209-3920	United States of America	(703) 875-4009	(703) 875-4357		hconnell@ustda.gov	<a href="http://www.ustda.gov">http://www.ustda.gov</a>
US Government Official	Mr.	Stephen	Alley	U.S. Embassy – Commercial Service	Deputy Senior Commercial Officer	Liverpool 31	Colonia Juarez	Ciudad México	DF	CP 6600	México	+52 (55) 5705-7434	+52 (55) 5140-2602		Steve.Alley@trade.gov	<a href="http://export.gov/mexico/">http://export.gov/mexico/</a>
US Exporter/Supplier	Ms.	Kristen	Brown	RJ Corman Railroad Group	Director of Business Development	2011 Peninsula Drive		Erie	PA	16506	United States of America		(814) 835-2212 ext. 321		kristen.brown@rjcorman.com	<a href="http://www.rjcorman.com/railpower.html">http://www.rjcorman.com/railpower.html</a>
US Exporter/Supplier	Mr.	Miguel	Viveros	Union Tank Car Company (UTLX)	Sales Representative	Lote F 19-A Parq. Ind. Ferropuerto		Celaya	Guanajuato	CP 38158	México		+52 (01) 442-242-3208	+52 (442) 215-1292	viveros@utlx.com	<a href="http://www.utlx.com">http://www.utlx.com</a>
US Exporter/Supplier	Mr.	Ralph	Przybyszewski	Trackmobile LLC	Senior Project Engineer	1602 Executive Drive		LaGrange	GA	30240	United States of America		(706) 884-6651 ext. 235		ralphski@trackmobile.com	<a href="http://www.trackmobile.com">http://www.trackmobile.com</a>
US Exporter/Supplier	Mr.	Howard	Bush	Progress Rail Services	Senior Vice President for International Sales	1600 Progress Drive P.O. Box 1037		Albertville	AL	35950	United States of America		(800) 476-8769		hbush@PROGRESSRAIL.com	<a href="http://www.progressrail.com/">http://www.progressrail.com/</a>
US Government Official	Mr.	David	Fiore	Export-Import Bank of the United States	Director of Transportation and Rail	811 Vermont Avenue, N.W.		Washington	DC	20571	United States of America		(202) 565-3551		david.fiore@exim.gov	<a href="http://www.exim.gov/">http://www.exim.gov/</a>
US Exporter/Supplier	Mr.	Paul	Brown	Trinity Industries, Inc.	Director of Sales & Marketing	2525 Stemmons Freeway		Dallas	TX	75207	United States of America		(214) 631-4420		paul.brown@trin.net	<a href="http://www.trin.net/">http://www.trin.net/</a>
US Exporter/Supplier	Ms.	Rhonda	Scia	GE Transportation	Executive Assistant to Mr. Dave Tucker	4901 Belfort Road Suite 150		Jacksonville	FL	32256	United States of America	(904) 212-1413	(904) 470-1090		rhonda.scia@ge.com	<a href="http://www.getransportation.com/">http://www.getransportation.com/</a>
US Exporter/Supplier	Mr.	Kirby	Roseveare	National Railway Equipment Co.	Director of International Sales	908 Shawnee	PO Box 1416	Mt. Vernon	IL	62864	United States of America	(618) 241-9274	(618) 241-9270		k.roseveare@nationalrailway.com	<a href="http://www.nationalrailway.com">http://www.nationalrailway.com</a>
US Exporter/Supplier	Mr.	Chad	Gibson	Railsolve, Inc.	Operations Lead	1691 Phoenix Blvd. Suite 250		Atlanta	GA	30349	United States of America		770-996-6838		chadgibson@railsolve.biz	<a href="http://www.railsolve.biz/">http://www.railsolve.biz/</a>
US Exporter/Supplier	Mr.	T.	Mahoney	Railsolve, Inc.	LEAF Program Manager	1691 Phoenix Blvd. Suite 250		Atlanta	GA	30349	United States of America		(404) 661-8390		tmahoney@railsolve.biz	<a href="http://www.railsolve.biz/">http://www.railsolve.biz/</a>
US Exporter/Supplier	Mr.	Chris	Rhoades	Brookville Equipment Corporation	Director of Sales	175 Evans Street		Brookville	PA	15825	United States of America	(814) 849-2010	(814) 849-6039	(814) 849-2000	crhoades@brookvillecorp.com	<a href="http://www.brookvillecorp.com">http://www.brookvillecorp.com</a>
US Exporter/Supplier	Mr.	Brian	Comstock	The Greenbrier Companies	General Manager	One Centerpointe Drive, Suite 200		Lake Oswego	OR	97035	United States of America		(503) 684-7000		Sales.Info@gbrc.com	<a href="http://www.gbrc.com/">http://www.gbrc.com/</a>
US Exporter/Supplier	Mr.	Lorenzo	Reffreger	Servicios Corporativos GATX, S.C.	Vice President, Mexico Regional Sales	Ruben Dario #281-18		Colonia Bosques de Chapultepec	Ciudad México	DF	CP 11580	México		+52 (55) 5283-1233	lorenzo.refreger@gatx.com	<a href="http://www.gatx.com">http://www.gatx.com</a>
US Exporter/Supplier	Mr.	Brandon	Shafer	GE Transportation	Senior Project Manager	2901 E Lake Rd		Erie	PA	16531	United States of America				Brandon.Shafer@ge.com	<a href="http://www.getransportation.com/">http://www.getransportation.com/</a>
Host Country Government Official	Ing.	Eliseo	Herrera Villalobos	Secretaria de Comunicaciones y Transportes	Director General de Regulacion Tecnica Ferroviaria, Direccion General de Transporte	Nueva York No 115, 6 piso	Col. Napoles, Delegacion Benito Juarez	Ciudad México	DF	CP 03810	México		+52 (55) 5011-6477		eliseo.herrera@sct.gob.mx	<a href="http://www.sct.gob.mx/">http://www.sct.gob.mx/</a>
Host Country Government Official	Dr.	David G.	Carrillo Murillo	Secretaria de Comunicaciones y Transportes	Director de Corredores Multimodales y Logistica, Direccion General de Transporte Ferroviario y	Nueva York No 115, 2 piso	Col. Napoles, Delegacion Benito Juarez	Ciudad México	DF	CP 03810	México		+52 (55) 5011-6537		dcarrill@sct.gob.mx	<a href="http://www.sct.gob.mx/">http://www.sct.gob.mx/</a>
Host Country Project Sponsor	Sr.	Erich	Wetzel	Ferrovalle	Director General	Av. mario Colin s/n, Esq. Ceylan	Col. Valle Ceylan, Tlalnepantla, Delegacion Benito Juarez	Ciudad México	DF	CP 54150	México		+52 (55) 5333-8881		ewetzel@ferrovalle.com.mx	<a href="http://www.ferrovalle.com.mx">http://www.ferrovalle.com.mx</a>
Host Country Project Sponsor	Lic.	Alfonso	Gomez Lima	Ferrovalle	Counselor	Av. mario Colin s/n, Esq. Ceylan	Col. Valle Ceylan, Tlalnepantla, Delegacion Benito Juarez	Ciudad México	DF	CP 54150	México		+52 (55) 5333-8715		alfonso_gomez@ferrovalle.com.mx	<a href="http://www.ferrovalle.com.mx">http://www.ferrovalle.com.mx</a>
US Government Official	Ms.	Dorothy	Lutter	U.S. Embassy – Commercial Service	Ministra Consejera para Asuntos Comerciales	Liverpool 31 Colonia Juarez		Ciudad México	DF	CP 6600	México	+52 (55) 5705-0065	+52 (55) 5140-2607		dorothy.lutter@trade.gov	<a href="http://export.gov/mexico/">http://export.gov/mexico/</a>
Host Country Government Official	Ing.	Odon	de Buen Rodriguez	Comision Nacional para el Uso Eficiente de la Energia (CONUEE)	Director General	Rio Lerma no. 302	Colonia Cuauhtemoc, Delegacion Cuauhtemoc	Ciudad México	DF	CP 06500	México		+52 (55) 3000-1000		odon.debuen@conuee.gob.mx	<a href="http://www.conuee.gob.mx">http://www.conuee.gob.mx</a>
Host Country Project Sponsor	Sr.	Juan Carlos	Miranda Hernandez	Ferromex	Director de Planeacion y Proyectos	Bosque de Ciruelos 99	Col. Bosque de las Lomas	Ciudad México	DF	CP 11700	México	+52 (55) 5246-3819	+52 (55) 5246-3838		jmiranda@ferromex.com	<a href="http://www.ferromex.com.mx/">http://www.ferromex.com.mx/</a>
Host Country Project Sponsor	Ing.	Gustavo Baca	Villanueva	Ferrocarril del Istmo de Tehuantepec SA de CV	Director General	Avenida Eugenia No. 197 Piso 5-B	Col. Narvarte, Del. Benito Juarez	Ciudad México	DF	CP 03020	México		+52 (55) 5682-2403		gbaca@ferroistmo.com.mx	<a href="http://www.ferroistmo.com.mx/">http://www.ferroistmo.com.mx/</a>
US Exporter/Supplier	Sr.	Elie	Cohen	ITISA (Trackmobile Dealer)	Gerente de Ventas	Rio Tiber #78	Col. Cuauhtemoc	Ciudad México	DF	CP 06500	México		+52 (55) 1500-8500 ext. 8509		ecohen@itisa.com.mx	<a href="http://www.itisa.com.mx">http://www.itisa.com.mx</a>
Host Country Project Sponsor	Sr.	Rogelio	Velez	Ferromex	Chief Executive Officer	Bosque de Ciruelos 99	Col. Bosque de las Lomas	Ciudad México	DF	CP 11700	México	+52 (55) 5246-3709	+52 (55) 5246-3914		rvelez@ferromex.com.mx	<a href="http://www.ferromex.com.mx/">http://www.ferromex.com.mx/</a>
US Exporter/Supplier	Sr.	Mauro	Soto	Electromotive Diesel (EMD)	General Manager Sales & Marketing, Mexico	24986 West 150th Court		Olathe	KS	66061	United States of America	(913) 884-8526	(913) 884-8523		Mauro_Soto@EMDiesels.com	<a href="http://www.emdiesels.com">http://www.emdiesels.com</a>
US Exporter/Supplier	Sr.	Carlos E.	Vidaurreta	GE Transportation	TST Leader, North of LA	Emerson No. 150 Suite 301	Colonia Polanco	Ciudad México	DF	CP 11550	México		+52 (55) 5545-4298		carlos.vidaurreta@ge.com	<a href="http://www.getransportation.com/">http://www.getransportation.com/</a>
US Exporter/Supplier	Sr.	Isaac	Franklin	Ferromex	Director General de Finanzas y Administracion	Bosque de Ciruelos 99	Col. Bosque de las Lomas	Ciudad México	DF	CP 11700	México		+52 (55) 5246-3892		ifranklin@ferromex.com	<a href="http://www.ferromex.com.mx/">http://www.ferromex.com.mx/</a>
Host Country Project Sponsor	Sr.	Jose Luis	Fuente Pochat	Camera Nacional de la Industria Molinera de Trigo	Presidente Ejecutivo	Insurgentes Sur No. 826, 6 Piso	Colonia del Valle	Ciudad México	DF	CP 03100	México	+52 (55) 5543-1814	+52 (55) 5523-2387		jfuentes@canimolt.org	<a href="http://www.canimolt.org">http://www.canimolt.org</a>
Host Country Project Sponsor	Sr.	Felipe	de Javier Pena Duenas	Camera Nacional de la Industria Molinera de Trigo	Vicepresidente Ejecutivo	Insurgentes Sur No. 826, 6 Piso	Colonia del Valle	Ciudad México	DF	CP 03100	México	+52 (55) 5523-6554	+52 (55) 5523-2387		felipedejavier@canimolt.org	<a href="http://www.canimolt.org">http://www.canimolt.org</a>
Host Country Project Sponsor	Sr.	Ruben Antonio	Gonzalez Fragoso	Camera Nacional de la Industria Molinera de Trigo	Coordinador de Relaciones Institucionales	Insurgentes Sur No. 826, 6 Piso	Colonia del Valle	Ciudad México	DF	CP 03100	México	+52 (55) 5543-1814	+52 (55) 5523-2387		ruben.gonzalez@canimolt.org	<a href="http://www.canimolt.org">http://www.canimolt.org</a>
Host Country Project Sponsor	Ing.	Luis Alberto	Nuñez Santander	Pemex Refinacion	Gerencia de Coordinacion de Operaciones	Av. Marina Nacional No. 329, Torre Ejecutivo, Piso 24	Colonia Petroleos Mexicanos	Ciudad México	DF	CP 11311	México		+52 (55) 1944-8399		luis.alberto.nunez@pemex.com	<a href="http://www.pemex.com/">http://www.pemex.com/</a>
Host Country Project Sponsor	Sr.	Lorenzo	Reyes Retana	Ferromex	Director General de Operacion	Bosque de Ciruelos 99	Col. Bosque de las Lomas	Ciudad México	DF	CP 11700	México		+52 (55) 5246-3700 ext. 3429		lreyes@ferromex.com.mx	<a href="http://www.ferromex.com.mx">http://www.ferromex.com.mx</a>
Host Country Government Official	Dr.	Victor Manuel	Sanchez Cabrera	San Juan del Rio Universidad Tecnologica	Rector	Av. La Palma No. 125	Col. Vista Hermosa	San Juan del Rio	Queretero	CP 76800	México		+52 (427) 129-2000 ext. 234		vsanchez@utsjr.edu.mx	<a href="http://www.utsjr.edu.mx">http://www.utsjr.edu.mx</a>
Host Country Government Official	Dr.	Marco Antonio	Zamora Antunano	San Juan del Rio Universidad Tecnologica	Director de Investigacion, Desarrollo Tecnologico y Posgrado	Av. La Palma No. 125	Col. Vista Hermosa	San Juan del Rio	Queretero	CP 76801	México		+52 (427) 129-2000 ext. 227		mzamora@utsjr.edu.mx	<a href="http://www.utsjr.edu.mx">http://www.utsjr.edu.mx</a>
Host Country Government Official	Sr.	Fidencio	Diaz Mendez	San Juan del Rio Universidad Tecnologica	Director de la Division Mecatronica y Tecnologias de la Informacion y Comunicacion	Av. La Palma No. 125	Col. Vista Hermosa	San Juan del Rio	Queretero	CP 76802	México		+52 (427) 129-2000 ext. 254		fdiazm@utsjr.edu.mx	<a href="http://www.utsjr.edu.mx">http://www.utsjr.edu.mx</a>
Host Country Government Official	Sr.	Marcelo	Antonio	San Juan del Rio Universidad Tecnologica	Secretario Academico	Av. La Palma No. 125	Col. Vista Hermosa	San Juan del Rio	Queretero	CP 76803	México		+52 (427) 129-2000 ext. 259		avelazquez@utsjr.edu.mx	<a href="http://www.utsjr.edu.mx">http://www.utsjr.edu.mx</a>

**United States Trade & Development Agency Definitional Mission: Mexico Rail Sector Project**  
**Host Country: México Project Sponsor: Asociación Mexicana de Ferrocarriles A. C.**  
**DM Report Annex: Contacts**

Category	Title	First Name	Last Name	Company/Organization	Professional Title	Address 1	Address 2	City	State/Province	Postal Code	Country	Fax	Telephone	Telephone 2	E-mail Address	Web Page
Host Country Government Official	Dr.	Hector	Arreola Soria	Secretaria de Educacion Publica Subsecretaria de Educacion	Coordinador General	Francisco Petrarca 321, Piso 10	Col. Chapultepec Morales, Delegacion Miguel Hidalgo	Ciudad México	DF	CP 11570	México		+52 (55) 3601-1620		coordinador@cguf.sep.gob.mx	<a href="http://www.sep.gob.mx/">http://www.sep.gob.mx/</a>
US Government Official	Ms.	Lisa	Almodovar	U.S. Environmental Protection Agency Office of International and	Directora del Programa Ambiental México-Estados Unidos	U.S. Environmental Protection Agency Office of International and Tribal Affairs		Washington	DC	20460	United States of America		(202) 564-6401		almodovar.lisa@epa.gov	<a href="http://www2.epa.gov/border2020">http://www2.epa.gov/border2020</a>
US Exporter/Supplier	Mr.	Hugh	Hamilton	Republic Transportation Systems, Inc.	Sales Manager	P.O. Box 1236		Greenville	SC	29602-1236	United States of America	(864) 271-5254	(864) 271-4000		hhamilton@republicocomotive.com	<a href="http://www.republicocomotive.com">http://www.republicocomotive.com</a>
US Exporter/Supplier	Mr.	Al	Lullman	American Railcar Industries	Sr. Vice President Sales	100 Clark Street		St. Charles	MO	63301	United States of America		(636) 940-6160		alullman@americanrailcar.com	<a href="http://www.americanrailcar.com/">http://www.americanrailcar.com/</a>
US Exporter/Supplier	Mr.	Les	Wood	FreightCar America	Managing Director - International Sales	Two North Riverside Plaza	Suite 1300	Chicago	IL	60606	United States of America	(312) 928-0890	(312) 928-1053		lwood@freightcar.net	<a href="http://freightcaramerica.com/">http://freightcaramerica.com/</a>
US Exporter/Supplier				Wabtec MotivePower		4600 Apple Street		Boise	ID	83716	United States of America	(208) 947-4800	(412) 825-1872		motivepowerinc@wabtec.com	<a href="http://www.motivepower-wabtec.com/">http://www.motivepower-wabtec.com/</a>
US Exporter/Supplier	Mr.	George	Mavungu	Coldtrain	Manager - Director of Marketing	6600 College Boulevard	Suite 310	Overland Park	KS	66211	United States of America		(913) 491-0050		george@rrlx.com	<a href="http://www.icoldtrain.com/">http://www.icoldtrain.com/</a>

**A N N E X 3**

**USTDA NATIONALITY REQUIREMENTS**



**U.S. TRADE AND DEVELOPMENT AGENCY**  
**Arlington, VA 22209-3901**

**NATIONALITY, SOURCE, AND ORIGIN REQUIREMENTS**  
*[As of January 17, 2014]*

The purpose of USTDA's nationality, source, and origin requirements is to ensure the maximum practicable participation of American contractors, technology, equipment and materials in the prefeasibility, feasibility, and implementation stages of a project.

**USTDA STANDARD RULE (GRANT AGREEMENT STANDARD LANGUAGE):**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and professional services funded by USTDA under the Grant Agreement:

- (a) the Contractor must be a U.S. firm;
- (b) the Contractor may use U.S. subcontractors without limitation;
- (c) employees of U.S. Contractor or U.S. subcontractor firms shall be U.S. citizens, non-U.S. citizens lawfully admitted for permanent residence in the United States or non-U.S. citizens lawfully admitted to work in the United States, except as provided pursuant to subpart (d) below;
- (d) up to twenty percent (20%) of the USTDA Grant amount may be used to pay for services performed by (i) Host Country subcontractors, and/or (ii) Host Country nationals who are employees of the Contractor;
- (e) a Host Country subcontractor may only be used for specific services from the Terms of Reference identified in the subcontract;
- (f) subcontractors from countries other than the United States or Host Country may not be used;
- (g) goods purchased for performance of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and

(h) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions.

**NATIONALITY:**

1) Application

A U.S. firm that submits a proposal must meet USTDA's nationality requirements as of the date of submission of the proposal and, if selected, must continue to meet such requirements throughout the duration of the USTDA-funded activity. These nationality provisions apply to all portions of the Terms of Reference that are funded with the USTDA grant.

2) Definitions

A "U.S. firm" is a privately owned firm that is incorporated in the U.S., with its principal place of business in the U.S., and which is either (a) more than 50% owned by U.S. citizens and/or non-U.S. citizens lawfully admitted for permanent residence in the United States, or (b) has been incorporated in the U.S. for more than three (3) years prior to the issuance date of the request for proposals; has performed similar services in the U.S. for that three (3) year period; employs U.S. citizens in more than half of its permanent full-time positions in the U.S.; and has the existing capability in the U.S. to perform the work in question.

A partnership that is organized in the U.S., has its principal place of business in the U.S., and is more than 50% owned by U.S. citizens and/or permanent residents, qualifies as a "U.S. firm".

A nonprofit organization, such as an educational institution, foundation, or association, also qualifies as a "U.S. firm" if it is incorporated in the U.S. and managed by a governing body, a majority of whose members are U.S. citizens and/or permanent residents.

**SOURCE AND ORIGIN:**

Definitions

"Source" means the country from which shipment is made.

"Origin" means the place of production, through manufacturing, assembly or otherwise.

*Questions regarding these nationality, source and origin requirements may be addressed to the USTDA Office of General Counsel.*

*Version 01.17.2014*

**A N N E X 4**

**USTDA GRANT AGREEMENT,  
INCLUDING MANDATORY CONTRACT CLAUSES**

MEX 2014-51030A  
DIA (12)  
**RECEIVED**  
SEP 15 2014  
PF  
U.S. TRADE AND DEVELOPMENT AGENCY  
LOS (C3)  
GC (EE)  
Exec Assn (SU)  
RD (NY)  
CM (KE)  
Fin & Prof (A)  
Grant Admin (PD)  
PIS (AA)

## GRANT AGREEMENT

This Grant Agreement is entered into between the Government of the United States of America, acting through the U.S. Trade and Development Agency ("USTDA"), and the Asociación Mexicana de Ferrocarriles, A.C. ("Grantee"). USTDA agrees to provide the Grantee under the terms of this Grant Agreement US\$590,358 ("USTDA Grant") to fund the cost of goods and services required for technical assistance ("TA") on the proposed Green Locomotive Technologies project ("Project") in Mexico ("Host Country").

### 1. USTDA Funding

The USTDA Grant to be provided under this Grant Agreement shall be used to fund the costs of a contract between the Grantee and the U.S. firm selected by the Grantee ("Contractor") under which the Contractor will perform the TA ("Contract"). Payment to the Contractor will be made directly by USTDA on behalf of the Grantee with the USTDA Grant funds provided under this Grant Agreement.

### 2. Terms of Reference

The terms of reference for the TA ("Terms of Reference") are attached as Annex I and are hereby incorporated by reference into this Grant Agreement. The TA will examine the technical, financial, environmental, and other critical aspects of the proposed Project. The Terms of Reference for the TA shall also be included in the Contract.

### 3. Standards of Conduct

USTDA and the Grantee recognize the existence of standards of conduct for public officials and commercial entities in their respective countries. Therefore, USTDA, the Grantee, and the Contractor shall not directly or indirectly provide, offer or promise to provide money or anything of value to any public official in violation of any United States or Host Country laws relating to corruption or bribery.

### 4. Grantee Responsibilities

The Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support.

### 5. Contract Matters and USTDA's Rights as Financier

#### (A) Grantee Competitive Selection Procedures

Selection of the U.S. Contractor shall be carried out by the Grantee according to its established procedures for the competitive selection of contractors with advance notice of the procurement published online through *Federal Business Opportunities*

✓  


([www.fedbizopps.gov](http://www.fedbizopps.gov)). Upon request, the Grantee will submit these contracting procedures and related documents to USTDA for information and/or approval.

**(B) USTDA's Right to Approve Contractor Selection**

The Grantee shall notify USTDA at the address of record set forth in Article 16 below upon selection of the Contractor to perform the TA. USTDA then shall notify the Grantee whether or not USTDA approves the Grantee's Contractor selection. Upon USTDA approval of the Grantee's Contractor selection, the Grantee shall notify in writing the U.S. firms that submitted unsuccessful proposals to perform the TA that they were not selected. The Grantee and the Contractor then shall enter into a Contract for performance of the TA.

**(C) USTDA's Right to Approve Contract Between Grantee and Contractor**

**(1) Contract**

The Grantee and the Contractor shall enter into a Contract for performance of the TA. The Grantee (or the Contractor on the Grantee's behalf) shall transmit to USTDA, at the address set forth in Article 16 below, photocopy of an English language version of the signed Contract or a final negotiated draft version of the Contract. USTDA then shall notify the Grantee and the Contractor whether or not USTDA approves the Contract.

**(2) Amendments and Assignments**

The Grantee or the Contractor may submit any proposed amendment to the Contract, including any proposed amendment to any annex thereto, or any proposed assignment of the Contract, to USTDA at the address set forth in Article 16 below. USTDA then shall notify the Grantee and the Contractor whether or not USTDA approves the proposed amendment or assignment.

**(D) USTDA Not a Party to the Contract**

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of the Contract and any amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any Contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of U.S. Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of funding the TA and shall not be construed as making USTDA a party to the Contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the Contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA

shall not bar the Grantee or USTDA from asserting any right they might have against the Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Grantee or USTDA.

**(E) Grant Agreement Controlling**

Regardless of USTDA approval, the rights and obligations of any party to the Contract or any subcontract thereunder must be consistent with this Grant Agreement. In the event of any inconsistency between the Grant Agreement and the Contract or any subcontract funded by the Grant Agreement, the Grant Agreement shall control.

**6. Disbursement Procedures**

**(A) USTDA Approval of Contract Required**

USTDA will make disbursements of USTDA Grant funds directly to the Contractor only after USTDA approves the Grantee's Contract with the Contractor.

**(B) Contractor Invoice Requirements**

The Grantee should request disbursement of funds by USTDA to the Contractor for performance of the TA by submitting invoices in accordance with the procedures set forth in the USTDA Mandatory Contract Clauses in Annex II.

**7. Effective Date**

The effective date of this Grant Agreement ("Effective Date") shall be the date of signature by both parties or, if the parties sign on different dates, the date of the last signature. In the event that only one signature is dated, such date shall constitute the Effective Date.

**8. TA Schedule**

**(A) TA Completion Date**

The completion date for the TA, which is May 31, 2015, is the date by which the parties estimate that the TA will have been completed.

**(B) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (i) no USTDA funds may be disbursed under this Grant Agreement for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (ii) no USTDA funds may be disbursed more than four (4) years after the Effective Date of the Grant Agreement.

## **9. USTDA Mandatory Contract Clauses**

All contracts funded under this Grant Agreement shall include the USTDA Mandatory Contract Clauses set forth in Annex II to this Grant Agreement. All subcontracts funded or partially funded with USTDA Grant funds shall include the USTDA Mandatory Contract Clauses, except for Clauses B(1), G, H, I, and S.

## **10. Use of U.S. Carriers**

### **(A) Air**

Transportation by air of persons or property funded under this Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

### **(B) Marine**

Transportation by sea of property funded under this Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

## **11. Nationality, Source, and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and professional services funded by USTDA under the Grant Agreement:

- (a) the Contractor must be a U.S. firm;
- (b) the Contractor may use U.S. subcontractors without limitation;
- (c) employees of U.S. Contractor or U.S. subcontractor firms shall be U.S. citizens, non-U.S. citizens lawfully admitted for permanent residence in the United States or non-U.S. citizens lawfully admitted to work in the United States, except as provided pursuant to subpart (d) below;
- (d) up to twenty percent (20%) of the USTDA Grant amount may be used to pay for services performed by (i) Host Country subcontractors, and/or (ii) Host Country nationals who are employees of the Contractor;
- (e) a Host Country subcontractor may only be used for specific services from the Terms of Reference identified in the subcontract;
- (f) subcontractors from countries other than the United States or Host Country may not be used;
- (g) goods purchased for performance of the TA and associated delivery services (e.g., international transportation and insurance) must have their nationality, source, and origin in the United States; and

(h) goods and services incidental to TA support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions.

USTDA will make available further details concerning these provisions upon request.

## **12. Taxes**

USTDA funds provided under this Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees, or other levies imposed under laws in effect in Host Country, except for taxes of a de minimis nature imposed on local lodging, food, transportation, or airport arrivals or departures. Neither the Grantee nor the Contractor will seek reimbursement from USTDA for taxes, tariffs, duties, fees, or other levies, except for taxes of a de minimis nature referenced above.

## **13. USTDA Project Evaluation**

The parties will cooperate to assure that the purposes of the Grant Agreement are accomplished. For five (5) years following receipt by USTDA of the Final Report, the Grantee agrees to respond to any reasonable inquiries from USTDA about the status of the Project. Inquiries will include, but not be limited to, whether the Final Report recommendations have been or will be used to implement the Project, anticipated Project implementation timeline, and likely source of financing. In addition, the Grantee agrees to notify USTDA any time the Grantee selects a new primary contact person for this Project during the five-year period referenced above.

## **14. Recordkeeping and Audit**

The Grantee agrees to maintain books, records, and other documents relating to the TA and this Grant Agreement adequate to demonstrate implementation of its responsibilities under this Grant Agreement, including the selection of contractors, receipt and approval of Contract deliverables, and approval or disapproval of Contractor invoices for payment by USTDA. Such books, records, and other documents shall be separately maintained for three (3) years after the date of the final disbursement by USTDA. The Grantee shall afford USTDA or its authorized representatives the opportunity at reasonable times to review books, records, and other documents relating to the TA and the Grant Agreement.

## **15. Representation of Parties**

For all purposes relevant to this Grant Agreement, the Government of the United States of America will be represented by the U.S. Ambassador to Host Country or USTDA and the Grantee will be represented by its Director General. The parties hereto may, by written notice, designate additional representatives for all purposes under this Grant Agreement.

## 16. Addresses of Record for Parties

Any notice, request, document, or other communication submitted by either party to the other under the Grant Agreement shall be in writing or through an electronic medium that produces a tangible record of the transmission, such as a facsimile or e-mail message, and will be deemed duly given or sent when delivered to such party at the following:

To: Asociación Mexicana de Ferrocarriles, A.C.  
Alfonso Esparza Oteo 144, Oficina 702  
Col. Guadalupe Inn, Deleg. A. Obregón  
México, D.F. 01020  
MEXICO

Phone: +(52-55) 5661-0325  
Fax: +(52-55) 5662-5852  
E-Mail: ikerdeluisa@amf.org.mx

To: U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009  
E-Mail: LAC@ustda.gov

All such communications shall be in English, unless the parties otherwise agree in writing. In addition, the Grantee shall provide the Commercial or Economic Section of the U.S. Embassy in Host Country with a copy of each communication sent to USTDA.

Any communication relating to this Grant Agreement shall include the following fiscal data:

Appropriation No.: 11 14/15 1001  
Activity No.: 2014-51030A  
Reservation No.: 2014251  
Grant No.: GH201451251

## 17. Implementation Letters

To assist the Grantee in the implementation of the TA, USTDA may, from time to time, issue implementation letters that will provide additional information about matters covered by this Grant Agreement. USTDA may also issue implementation letters to (i) extend the estimated completion date set forth in Article 8(A) above, or (ii) change the fiscal data set forth in Article 16 above. The parties may also use jointly agreed upon implementation letters to confirm and record their mutual understanding of matters covered by this Grant Agreement.

### **18. Grant Agreement Amendments**

Either party may submit to the other party at any time a proposed amendment to the Grant Agreement. A Grant Agreement amendment shall be effective only if it has been signed by both parties.

### **19. Termination Clause**

Either party may terminate this Grant Agreement by giving the other party written notice thereof. The termination of the Grant Agreement will end any obligations of the parties to provide financial or other resources for the TA, except for payments that may be made pursuant to Clause H of the USTDA Mandatory Contract Clauses set forth in Annex II to this Grant Agreement. This article and Articles 5, 12, 13, 14, and 21 of the Grant Agreement shall survive termination of the Grant Agreement.

### **20. Non-waiver of Rights and Remedies**

No delay in exercising any right or remedy accruing to either party in connection with the Grant Agreement shall be construed as a waiver of such right or remedy.

### **21. U.S. Technology and Equipment**

By funding this TA, USTDA seeks to promote the project objectives of the Host Country through the use of U.S. technology, goods, and services. In recognition of this purpose, the Grantee agrees that it will allow U.S. suppliers to compete in the procurement of technology, goods, and services needed for Project implementation.

### **22. Governing Law**

This Grant Agreement shall be governed by, and construed in accordance with, the applicable laws of the United States of America. In the absence of federal law, the laws of the State of New York shall apply.

### **23. Counterparts**

This Grant Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same agreement. Counterparts may be delivered via electronic mail or other transmission method and any counterpart so delivered shall be deemed to be valid and effective for all purposes.

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]**

IN WITNESS WHEREOF, the Government of the United States of America and the Asociación Mexicana de Ferrocarriles, A.C., each acting through its duly authorized representative, have caused this Grant Agreement to be signed in the English language in their names and delivered as of the day and year written below. In the event that this Grant Agreement is signed in more than one language, the English language version shall govern.

**For the Government of the United States of America**

**For the Asociación Mexicana de Ferrocarriles, A.C.**

By: [Signature]

By: [Signature]

Date: 9/12/2014

Date: 9/11/2014

Witnessed:

Witnessed:

By: [Signature]

By: [Signature]  
EXCLUSIVO DIRECTOR  
Asociación Mexicana de Ferrocarriles

**Annex I -- Terms of Reference**

**Annex II -- USTDA Mandatory Contract Clauses**

## Annex I

### **Terms of Reference**

#### Objective

The objective of the technical assistance (“TA”) for the Green Locomotive Technologies Project (“Project”) is to spur the adoption of advanced motive power technologies throughout Mexico’s freight locomotive fleet to reduce air emissions and increase fuel efficiency. The TA will allow the Asociación Mexicana de Ferrocarriles, A.C. (“Grantee”) to evaluate the technical, economic, financial, environmental, and regulatory aspects of motive power upgrades in Mexico’s freight rail transportation industry to help meet projected industry growth.

#### General Considerations for Deliverables and Documents

The U.S. firm selected by the Grantee to perform the TA (“Contractor”) shall undertake a quality control review process, including a technical and editorial review, of all deliverables and documents submitted to the Grantee to ensure readability, accuracy, and consistency. All deliverables and documents shall be submitted in draft form to the Grantee for review and comment prior to finalization. The interim deliverables specified in these Terms of Reference shall serve to keep the Grantee informed about the Contractor’s work on the TA and to ensure that the Contractor’s work is performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement (per Clause G of Annex II of the Grant Agreement). The Contractor shall submit monthly progress reports to the Grantee.

#### Activities

##### Task 1: Data Collection and Review

Through a combination of research, interviews, and field visits, the Contractor shall gather initial data necessary to support execution of the TA. As part of this task, the Contractor shall meet with representatives of the following entities to brief them on the scope and objective of the TA, to identify counterparts as necessary to assist or participate in TA activities, and to present initial data requests:

- Mexico’s major operating freight railroad companies: Ferromex and Ferrosur, Kansas City Southern de México, Ferrocarril del Istmo de Tehuantepec, Ferrovalle, and Línea Coahuila-Durango;
- Secretaría de Comunicaciones y Transportes (“SCT”);
- Secretaría de Medio Ambiente y Recursos Naturales (“SEMARNAT”) and its monitoring and research agency, the Instituto Nacional de Ecología y Cambio Climático (“INECC”);
- Secretaría de Energía (“SENER”), and its energy efficiency agency, the Comisión Nacional para el Uso Eficiente de la Energía (“CONUEE”);

- CTS EMBARQ México; and
- Other federal, state, and municipal entities, as appropriate.

#### Subtask 1.1: Data Collection and Review: Fleet, Operations, and Emissions

The Contractor shall:

- Assemble a Microsoft Excel-based inventory of the current motive power fleet of Mexico's freight rail system to include owner, operator, unit manufacturer, model, year of manufacture, year of most recent rebuild, engine type and horsepower, and other pertinent data. The Contractor shall categorize the fleet (as best as practical) according to emissions profile in accordance with the U.S. Environmental Protection Agency's ("EPA") system for locomotives of Tiers 0 – 4. The inventory shall include both freight operating company mainline locomotives (road locomotives) and switching locomotives. The Contractor shall attempt to include a representative sample of customer (shipper)-owned locomotives, as well as railcar movers;
- Collect, from relevant regulatory agencies, databases on levels of monitored pollutants in Mexico by geographic region to include emissions relevant to railroad diesel motive power, such as hydrocarbons ("HC"), carbon monoxide ("CO"), nitrogen oxides ("NOx"), and particulate matter ("PM");
- Assemble data describing any differences between motive power diesel fuel composition as relevant to emissions and efficiency in Mexico as compared to the United States;
- Assemble historical data on the density of train operations in Mexico by segments of railway infrastructure and relevant geographic regions; and
- Assemble historical data on the annual spending on fuel by rail fleet operators, including sources and commercial arrangements.

#### Subtask 1.2: Data Collection and Review: Laws and Regulations

The Contractor shall collect and review the following:

- National and local laws, regulations, and standards in Mexico covering:
  - Air quality standards, monitoring and management instruments, and emissions reductions programs, including the "Normas Mexicanas de Calidad del Aire," and the "Ley General de Cambio Climático," as well as Mexico City's "Plan Verde" program;
  - The design and operation of railroad motive power in Mexico, and any that may apply to exhaust emissions control and efficiency of railroad motive power; and
  - The composition of diesel fuel used in railroad motive power applications.
- Selected national-level laws, regulations, and policy documents relevant to transportation project cost-benefit analysis in Mexico and the United States, to include methodologies and unit values for assignment of costs to the public of vehicular air pollution;
- The most recent "Notice of Funding Availability" for the U.S. Department of Transportation's National Infrastructure Investments (also known as TIGER Discretionary Grants), and the associated guidance on cost-benefit analyses;

- The laws, regulations, and standards in the United States, as follows:
  - Related to railroad locomotive emissions, including Title 40 Code of Federal Regulations Part 1033, "Control of Emissions from Locomotives," as administered by the EPA;
  - Associated with the Federal Congestion Mitigation and Air Quality ("CMAQ") Program administered by the U.S. Department of Transportation;
  - Associated with the Federal Diesel Emissions and Reduction Act ("DERA") Program administered by the EPA;
  - Associated with the State of Texas Emissions Reduction Plan ("TERP") as overseen by the Texas Commission on Environmental Quality; and
  - Associated with the Carl Moyer Memorial Air Quality Standards Attainment Program, as administered by the California Environmental Protection Agency.

The Contractor shall compare and contrast the current status of air pollution and energy efficiency regimes in Mexico and the United States relevant to locomotive diesel engines. The key features of the major governmental programs in the United States incentivizing investments in railroad motive power that may be suitable for adoption in Mexico shall be identified. Significant funding programs in Mexico that may be used or adapted for this purpose (or may serve to complement such a new program) shall be identified. The Contractor shall identify medium- and long-term plans for the evolution of emissions standards and regulations in Mexico and any potential alignment between the U.S. and Mexican regimes. The permitted levels and current measurements of diesel emissions in Mexico shall be identified by state or by other relevant sub-national region.

Interim Deliverable #1 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 1. This report shall be submitted to the Grantee for review and comment.

Task 2: Technology Review

The Contractor shall perform a comprehensive survey of relevant product offerings by U.S. providers of goods and services related to freight rail motive power. This shall include new road and switching locomotives and railcar movers, goods and services associated with rebuilding, and retrofit technologies designed to improve efficiency and/or reduce emissions. The latter may include a range of technologies such as idle reduction, control and monitoring systems, and emissions capture devices. Offerings including alternative fuels (such as natural gas) and hybrid/battery solutions shall be considered. The evaluation of supplier offerings shall take into account variances in standard diesel fuel compositions between the United States and Mexico that might reduce their nominal effectiveness, such as different levels of sulfur.

The approximate upfront costs for the offerings shall be identified, as well as life-cycle costs such as service, support, parts and maintenance, and disposal. The approximate national origin of the value of goods and services for the different supplier offerings shall

be determined. For each offering, the Contractor shall identify if the solution has previously been provided in Mexico by the supplier. Current and proposed plans for manufacturing, remanufacturing, assembly, maintenance, field service, and support shall be identified for the evaluated offerings for Mexico.

Interim Deliverable #2 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 2. This report shall be submitted to the Grantee for review and comment.

Task 3: Identification of Potential Pilot Projects

The Contractor shall consult with the Grantee and with U.S. suppliers to determine their potential interest in conducting pilot projects in Mexico to field-test new motive power, rebuild, or retrofit technologies designed to reduce emissions, improve fuel efficiency benefits, and maximize operational performance. An example of a potential pilot project would be to demonstrate the capabilities of advanced non-diesel motive power fuels, such as liquefied natural gas. The Contractor shall work with the Grantee and U.S. suppliers to develop no more than three basic outlines of prospective pilot projects.

Interim Deliverable #3 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 3. This report shall be submitted to the Grantee for review and comment.

Task 4: Economic Analysis

The Contractor shall, in consultation with the Grantee and its Mexican railroad member companies, develop the basic business case frameworks and considerations supporting decisions for the motive power replacement, rebuild, or retrofit. This quantitative analysis shall describe the desired balances between operating efficiencies and cost savings versus the expected costs of the investment categories (new locomotives, rebuilds, and retrofits). The cost analysis shall consider expenditures for the planning and development of the investments. The Contractor shall consider practices for the staggered roll-out of rebuilds and replacements in order to avoid capital expenditure bubbles and gaps in operational capacity. The Contractor shall include motive power fleet operator/owner expectations from the perspective of cash flow analysis and life-cycle cost analysis for the different categories of investments and the trade-offs between them, to include implications for maintenance, support, and disposal costs. Based on the data gathered and the analyses performed, the Contractor shall develop a framework of funding support ranges that could be needed to encourage motive power fleet operators/owners to accelerate programs to replace, rebuild, or retrofit different categories of units in their motive power fleets in recognition of the corresponding benefits in terms of reduced emissions and fuel consumption. The Contractor shall indicate any tax considerations from the motive power fleet operator/owner perspective that could materially impact the decision to make these investments.

Interim Deliverable #4 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 4. This report shall be submitted to the Grantee for review and comment.

Task 5: Base Case Fleet Scenario

The Contractor shall prepare a projection of the base case evolution of the freight rail motive power fleet in Mexico by developing an Excel-based motive power roster. This analysis shall project the fleet makeup considering the projected investments in motive power replacement, rebuilding, and retrofitting over an eleven-year period with the year of the TA as the base year. This analysis shall be based on information provided by motive power fleet operators/owners, taking into account historical and projected investments by the operating companies, including normal periodic rebuild programs and rail freight traffic demand. Based on the findings from Task 1, the Contractor shall analyze the projected benefits in the areas of emissions reductions and energy efficiency. The benefits shall be calculated in terms of the annual emissions and fuel consumption reductions achieved during the eleven-year period.

The Contractor shall also prepare an analysis to cross-reference high air pollution areas in Mexico with different levels of projected freight rail locomotive activity and the operating areas of the different categories of freight rail motive power. The Contractor shall estimate the number of locomotives that can reasonably be expected to be replaced, rebuilt, or retrofitted over the eleven-year period if the suitable financial conditions and other conditions are present.

Interim Deliverable #5 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 5. This report shall be submitted to the Grantee for review and comment.

Task 6: Financial Analysis

The Contractor shall identify and evaluate the availability of various sources of debt and equity financing to support the replacement, rebuild, or retrofit of railroad motive power in the context of an implementation scenario. This activity shall include discussions with the motive power fleet operators/owners, private financing sources, Export-Import Bank of the United States, Overseas Private Investment Corporation, North American Development Bank, Inter-American Development Bank, and Mexican public entities at the federal, state, and municipal levels (including SEMARNAT, SENER, and Secretaría de Hacienda y Crédito Público). The Contractor shall highlight the conditions for achieving an attractive return on investment that would minimize the need for potential incentive programs. The Contractor shall also identify any impediments to such financing or any tax considerations that could be addressed in structuring this Project.

Interim Deliverable #6 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 6. This report shall be submitted to the Grantee for review and comment.

Task 7: Regulatory Review and Potential Incentive Programs

Based on the findings from the previous tasks, the Contractor shall develop the framework of potential programs to incentivize the replacement, rebuild, or retrofit of motive power to achieve defined emissions reduction and energy efficiency targets. Utilizing and building upon the regulatory review conducted in Subtask 1.2, the Contractor shall evaluate potential incentive structures, including direct state or federal grants, beneficial tax structures, or minor adjustments within the operating concession agreements or public financing programs. The Contractor shall develop a proposed methodology, based on a cost-benefit analysis, to evaluate proposals for funding under the potential incentive programs. The Contractor shall identify basic statutory and regulatory changes that would be required to implement the potential incentive programs and their corresponding evaluation methodology. The Contractor shall prepare draft language suitable for introducing the concept to the appropriate government entities, including draft language for prospective laws, regulations, policies, and application documents. The Contractor shall identify any potential legal or regulatory barriers to the implementation of the potential incentive programs and shall make recommendations on how to overcome such barriers.

Interim Deliverable #7 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 7. This report shall be submitted to the Grantee for review and comment.

Task 8: Implementation Plan

The Contractor shall develop a projection of the implementation case evolution of Mexico's freight rail motive power fleet, taking into account railroad operational considerations in terms of fleet and capital investment management, as well as the anticipated timing of Project implementation and the anticipated scale and utilization of the potential incentive programs. This implementation case fleet scenario shall correspond to the eleven-year term of the base case fleet scenario developed in Task 5. The Contractor shall also identify and analyze the steps necessary for the relevant government entities at the federal, state, or municipal levels to evaluate, develop, and implement the proposed incentive programs. The Contractor shall develop a schedule that identifies the key stakeholders and outlines the key legislative, regulatory, policy, and administrative steps. The Contractor shall describe the structure of government sponsors and supporters necessary to bring the proposed incentive programs into reality. The Contractor shall also outline the process for establishing and budgeting the incentive program funds.

Interim Deliverable #8 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 8. This report shall be submitted to the Grantee for review and comment.

Task 9: Development Impact Assessment

The Contractor shall assess the developmental impacts associated with the Project and explain its methodology for measuring those impacts. The Contractor shall compare the two fleet evolution scenarios, quantify the difference between them, and measure the potential development impact over the projection period. The impacts considered must be relevant to the Project, *i.e.*, reasonably expected to flow from its implementation as outlined in the Study. Such impacts may include impacts in the following categories:

- *Infrastructure*: Potential developmental impacts in this category may include investments in rail infrastructure associated with Mexico's updated fleet of freight locomotives;
- *Human Capacity Building*: Potential developmental impacts in this category may include the number and type of local positions that would be created to implement, operate, and maintain the Project, as well as any specialized training that would be required;
- *Technology Transfer and Productivity Improvement*: Potential developmental impacts in this category may include the introduction of advanced motive power technologies that will improve current freight rail systems, processes, or operations in Mexico;
- *Environment*: Potential developmental impacts in this category may include measureable environmental benefits that may be derived from the Project, based on the findings from Task 10; and
- *Other*: Additional potential developmental impacts that may result from the Project, such as enhanced health benefits, replication or spin-off projects, or improved safety and security.

Interim Deliverable #9 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 9. This report shall be submitted to the Grantee for review and comment.

Task 10: Preliminary Environmental Impact Assessment

The Contractor shall conduct a preliminary review of the Project's environmental impact and environmental compliance with reference to local requirements and those of multilateral development banks (such as the World Bank and Inter-American Development Bank). This review shall identify potential positive and negative impacts, discuss the extent to which negative impacts can be mitigated, and develop plans for a full environmental impact assessment in anticipation of the Project moving forward to the implementation stage.

Interim Deliverable #10 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 10. This report shall be submitted to the Grantee for review and comment.

Task 11: U.S. Sources of Supply

Based on the findings from Task 2, the Contractor shall compile prospective U.S. sources of supply and U.S. manufacturers of goods and services related to freight rail motive power, including manufacturers and remanufacturers of new road and switching locomotives and railcar movers, suppliers of goods and services associated with rebuilding, and manufacturers of retrofit technologies designed to improve efficiency and/or reduce emissions. The Contractor shall profile the companies surveyed in Task 2, including their experience in the Mexican market and the workforce and facilities that would serve Mexico, points of contact, and an assessment of how each company could engage to take advantage of Project implementation. The Contractor shall evaluate the approximate national origin of materials, goods, and services from the United States to Mexico. Freight car sales shall be evaluated from a life-cycle perspective, including parts and services for maintenance and periodic rehabilitation. Historical trends and projections for backlogs for orders of the different types of railcars shall be analyzed. The major foreign competitors to U.S. firms in the Mexican market shall be identified and profiled to include competing offerings of goods and services, market share, clients, and strengths and weaknesses vis-à-vis U.S. firms.

Interim Deliverable #11 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 11. This report shall be submitted to the Grantee for review and comment.

Task 12: Final Report

The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference ("Final Report"). The Final Report shall be organized according to the above tasks, and shall include all deliverables and documents that have been provided to the Grantee. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement.

## Annex II

### USTDA Mandatory Contract Clauses

#### A. USTDA Mandatory Clauses Controlling

The parties to this Contract acknowledge that this Contract is funded in whole or in part by the U.S. Trade and Development Agency ("USTDA") under the Grant Agreement between the Government of the United States of America acting through USTDA and the Asociación Mexicana de Ferrocarriles, A.C. ("Client"), dated \_\_\_\_\_ ("Grant Agreement"). The Client has selected \_\_\_\_\_ ("Contractor") to perform technical assistance ("TA") for the Green Locomotive Technologies project ("Project") in Mexico ("Host Country"). The Client and the Contractor are the parties to this Contract, and they hereinafter are referred to collectively as the "Contract Parties." Notwithstanding any other provisions of this Contract, the following USTDA Mandatory Contract Clauses shall govern. All subcontracts entered into by Contractor funded or partially funded with USTDA Grant funds shall include these USTDA Mandatory Contract Clauses, except for Clauses B(1), G, H, I, and S. In addition, in the event of any inconsistency between the Grant Agreement and the Contract or any subcontract thereunder, the Grant Agreement shall be controlling.

#### B. USTDA as Financier

##### (1) USTDA Approval of Contract

This Contract, and any amendment thereto, including any amendment to any annex thereto, and any proposed assignment of this Contract, must be approved by USTDA in writing in order to be effective with respect to the expenditure of USTDA Grant funds. USTDA will not authorize the disbursement of USTDA Grant funds until the Contract conforms to modifications required by USTDA during the Contract review process and the Contract has been formally approved by USTDA. To make this review in a timely fashion, USTDA must receive from either the Client or the Contractor an English language version of a final negotiated draft Contract or a signed Contract to the attention of the General Counsel's office at USTDA's address listed in Clause M below.

##### (2) USTDA Not a Party to the Contract

It is understood by the Contract Parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of this Contract and amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The Contract Parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval

rights shall be made as a financier in the course of financing the TA and shall not be construed as making USTDA a party to the Contract. The Contract Parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the Contract Parties or the parties to any subcontract, jointly or separately; and in consideration of USTDA's role as financier, the Contract Parties further agree that USTDA's rights may be exercised without thereby incurring any responsibility or liability, in contract, tort, or otherwise, to the Contract Parties or the parties to any subcontract. Any approval or failure to approve by USTDA shall not bar the Client or USTDA from asserting any right they might have against the Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Client or USTDA.

### **C. Nationality, Source, and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and professional services funded by USTDA under the Grant Agreement:

- (a) the Contractor must be a U.S. firm;
- (b) the Contractor may use U.S. subcontractors without limitation;
- (c) employees of U.S. Contractor or U.S. subcontractor firms shall be U.S. citizens, non-U.S. citizens lawfully admitted for permanent residence in the United States or non-U.S. citizens lawfully admitted to work in the United States, except as provided pursuant to subpart (d) below;
- (d) up to twenty percent (20%) of the USTDA Grant amount may be used to pay for services performed by (i) Host Country subcontractors, and/or (ii) Host Country nationals who are employees of the Contractor;
- (e) a Host Country subcontractor may only be used for specific services from the Terms of Reference identified in the subcontract;
- (f) subcontractors from countries other than the United States or Host Country may not be used;
- (g) goods purchased for performance of the TA and associated delivery services (e.g., international transportation and insurance) must have their nationality, source, and origin in the United States; and
- (h) goods and services incidental to TA support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions.

USTDA will make available further details concerning these provisions upon request.

#### **D. Recordkeeping and Audit**

The Contractor and subcontractors funded under the Grant Agreement shall maintain, in accordance with generally accepted accounting procedures, books, records, and other documents, sufficient to reflect properly all transactions under or in connection with the Contract. These books, records, and other documents shall clearly identify and track the use and expenditure of USTDA funds, separately from other funding sources. Such books, records, and documents shall be maintained during the period of performance of work provided for by this Contract, and for a period of three (3) years after final disbursement by USTDA. The Contractor and subcontractors shall afford USTDA, or its authorized representatives, the opportunity at reasonable times for inspection and audit of such books, records, and other documentation.

#### **E. U.S. Carriers**

##### **(1) Air**

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

##### **(2) Marine**

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

#### **F. Workman's Compensation Insurance**

The Contractor shall provide adequate Workman's Compensation Insurance coverage for work performed under this Contract.

#### **G. Disbursement Procedures**

##### **(1) USTDA Approval of Contract**

Disbursement of Grant funds will be made only after USTDA approval of this Contract.

##### **(2) Payment Schedule Requirements**

A payment schedule for disbursement of Grant funds to the Contractor shall be included in this Contract. Such payment schedule must conform to the following USTDA requirements: (1) up to twenty percent (20%) of the total USTDA Grant amount may be used as a mobilization payment; (2) all other payments, with the exception of the final payment, shall be based upon Contract performance milestones;

and (3) the final payment may be no less than fifteen percent (15%) of the total USTDA Grant amount, payable upon approval by USTDA of a Final Report that has been (i) prepared and submitted in accordance with the requirements set forth in Clause I below, and (ii) approved in writing by the Client in the manner provided for by Clause G(3)(b)(iii) below. Invoicing procedures for all payments are described below.

### **(3) Contractor Invoice Requirements**

USTDA will make all disbursements of USTDA Grant funds directly to the Contractor. The Contractor must provide USTDA with an ACH Vendor Enrollment Form (available from USTDA) with the first invoice. The Client shall request disbursement of funds by USTDA to the Contractor for performance of the Contract by submitting the following to USTDA:

#### **(a) Contractor's Invoice**

The Contractor's invoice shall include reference to an item listed in the Contract payment schedule, the requested payment amount, and an appropriate certification by the Contractor, as follows:

##### **(i) For a mobilization payment (if any):**

“As a condition for this mobilization payment, the Contractor certifies that it will perform all work in accordance with the terms of its Contract with the Client. To the extent that the Contractor does not comply with the terms and conditions of the Contract, including the USTDA Mandatory Contract Clauses contained therein, it will, upon USTDA’s request, make an appropriate refund to USTDA.”

##### **(ii) For Contract performance milestone payments:**

“The Contractor has performed the work described in this invoice in accordance with the terms of its Contract with the Client and is entitled to payment thereunder. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA Mandatory Contract Clauses contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA.”

##### **(iii) For final payment:**

“The Contractor has performed the work described in this invoice in accordance with the terms of its Contract with the Client and is entitled to payment thereunder. Specifically, the Contractor has submitted the Final Report to the Client, as required by the Contract, and received the Client’s approval of the Final Report. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA Mandatory Contract Clauses

contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

**(b) Client's Approval of the Contractor's Invoice**

(i) The invoice for a mobilization payment must be approved in writing by the Client.

(ii) For Contract performance milestone payments, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement."

(iii) For final payment, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement. The Final Report submitted by the Contractor has been reviewed and approved by the Client."

**(c) USTDA Address for Disbursement Requests**

Requests for disbursement shall be submitted to the attention of the Finance Department at USTDA's address listed in Clause M below, or by e-mail to [invoices@ustda.gov](mailto:invoices@ustda.gov).

**H. Termination**

**(1) Method of Termination**

Either Contract Party may terminate this Contract upon giving written notice to the other party and USTDA. This notice shall be effective after either 30 days, or any other period set forth elsewhere in this Contract. Furthermore, this Contract shall terminate immediately upon notification of USTDA's termination of the Grant Agreement or the term of availability of any funds thereunder.

**(2) Ramifications of Termination**

In the event that this Contract is terminated prior to completion, the Contractor will be eligible, subject to USTDA approval, for payment for the value of the work performed pursuant to the terms of this Contract. Likewise, in the event of such termination, USTDA is entitled to receive from the Contractor all USTDA Grant funds previously disbursed to the Contractor (including but not limited to

mobilization payments) which exceed the value of the work performed pursuant to the terms of this Contract.

**(3) Survivability**

Clauses B, D, G, H, N, and S of the USTDA Mandatory Contract Clauses shall survive the termination of this Contract.

**I. USTDA Final Report**

**(1) Definition**

“Final Report” shall mean the Final Report described in the attached Annex I Terms of Reference or, if no such “Final Report” is described therein, “Final Report” shall mean a substantive and comprehensive report of work performed in accordance with the attached Annex I Terms of Reference, including any documents delivered to the Client.

**(2) Final Report Submission Requirements**

The Contractor shall provide the following to USTDA:

(a) One (1) complete hard copy of the Final Report for USTDA's records. This version shall have been approved by the Client in writing and must be in the English language. It is the responsibility of the Contractor to ensure that confidential information, if any, contained in this version be clearly marked. USTDA will maintain the confidentiality of such information in accordance with applicable law.

and

(b) One (1) hard copy of the Final Report suitable for public distribution (“Public Version”). The Public Version shall have been approved by the Client in writing and must be in the English language. As this version will be available for public distribution, it must not contain any confidential information. If the report in (a) above contains no confidential information, it may be used as the Public Version. In any event, the Public Version must be informative and contain sufficient Project detail to be useful to prospective equipment and service providers.

and

(c) Two (2) CD-ROMs, each containing a complete copy of the Public Version of the Final Report. The electronic files on the CD-ROMs shall be submitted in a commonly accessible read-only format. As these CD-ROMs will be available for public distribution, they must not contain any confidential information. It is the

responsibility of the Contractor to ensure that no confidential information is contained on the CD-ROMs.

The Contractor shall also provide one (1) hard copy of the Public Version of the Final Report to the Commercial or Economic Section of the U.S. Embassy in Host Country for informational purposes.

### **(3) Final Report Presentation**

All Final Reports submitted to USTDA must be paginated and include the following:

(a) The front cover of every Final Report shall contain the name of the Client, the name of the Contractor who prepared the report, a report title, USTDA's logo, and USTDA's address. If the complete version of the Final Report contains confidential information, the Contractor shall be responsible for labeling the front cover of that version of the Final Report with the term "Confidential Version". The Contractor shall be responsible for labeling the front cover of the Public Version of the Final Report with the term "Public Version". The front cover of every Final Report shall also contain the following disclaimer:

"This report was funded by the U.S. Trade and Development Agency (USTDA), an agency of the U.S. Government. The opinions, findings, conclusions or recommendations expressed in this document are those of the author(s) and do not necessarily represent the official position or policies of USTDA. USTDA makes no representation about, nor does it accept responsibility for, the accuracy or completeness of the information contained in this report."

(b) The inside front cover of every Final Report shall contain USTDA's logo, USTDA's address, and USTDA's mission statement. Camera-ready copy of USTDA Final Report specifications will be available from USTDA upon request.

(c) The Contractor shall affix to the front of the CD-ROM a label identifying the Host Country, USTDA Activity Number, the name of the Client, the name of the Contractor who prepared the report, a report title, and the following language:

"The Contractor certifies that this CD-ROM contains the Public Version of the Final Report and that all contents are suitable for public distribution."

(d) The Contractor and any subcontractors that perform work pursuant to the Grant Agreement must be clearly identified in the Final Report. Business name, point of contact, address, telephone and fax numbers, and e-mail address shall be included for Contractor and each subcontractor.

(e) The Final Report, while aiming at optimum specifications and characteristics for the Project, shall identify the availability of prospective U.S. sources of

supply. Business name, point of contact, address, telephone and fax numbers, and e-mail address shall be included for each commercial source.

(f) The Final Report shall be accompanied by a letter or other notation by the Client which states that the Client approves the Final Report. A certification by the Client to this effect provided on or with the invoice for final payment will meet this requirement.

(g) The Client, USTDA, and the Commercial and/or Economic Section(s) of the U.S. Embassy in Host Country shall have irrevocable, worldwide, royalty-free, non-exclusive rights to use and distribute the Final Report.

#### **J. Modifications**

All changes, modifications, assignments or amendments to this Contract, including the appendices, shall be made only by written agreement by the Contract Parties hereto, subject to written USTDA approval.

#### **K. TA Schedule**

##### **(1) TA Completion Date**

The completion date for the TA, which is May 31, 2015, is the date by which the Contract Parties estimate that the TA will have been completed.

##### **(2) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this Contract for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) no USTDA funds may be disbursed more than four (4) years after the Effective Date of the Grant Agreement.

#### **L. Business Practices**

The Contract Parties recognize the existence of standards of conduct for public officials and commercial entities in their respective countries. Therefore, the Contract Parties shall fully comply with all United States and Host Country laws relating to corruption or bribery. For example, the Contractor and its subcontractors shall fully comply with the requirements of the Foreign Corrupt Practices Act, as amended (15 U.S.C. §§ 78dd-1 et seq.). Each Contract Party agrees that it shall require that any agent or representative hired to represent it in connection with the TA will comply with this paragraph and all laws which apply to activities and obligations of that Contract Party, including, but not limited to, those laws and obligations referenced above.

**M. USTDA Address and Fiscal Data**

Any communication with USTDA regarding this Contract shall be sent to the following address and include the fiscal data listed below:

U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

Fiscal Data:

Appropriation No.: 11 14/15 1001  
Activity No.: 2014-51030A  
Reservation No.: 2014251  
Grant No.: GH201451251

**N. Taxes**

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees, or other levies imposed under laws in effect in Host Country, except for taxes of a de minimis nature imposed on local lodging, food, transportation, or airport arrivals or departures. Neither the Client nor the Contractor will seek reimbursement from USTDA for taxes, tariffs, duties, fees, or other levies, except for taxes of a de minimis nature referenced above.

**O. Export Licensing**

The Contractor and all subcontractors are responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.

**P. Contact Persons**

The Client designates the following person as the contact person for matters concerning this Contract:

Name: Dr. Iker de Luisa  
Title: Director General  
Phone: +(52-55) 5661-0325  
Fax: +(52-55) 5662-5852  
E-Mail: ikerdeluisa@amf.org.mx

The Contractor designates the following person as the contact person for matters concerning this Contract:

Name:  
Title:  
Phone:  
Fax:  
E-Mail:

If anyone designated by a Contract Party as a contact person ceases service as a contact person at any point during the ten-year period following the date of signing of this Contract, the Contract Party that had designated that contact person shall provide USTDA and the other Contract Party with the name and contact information of a replacement contact person.

#### **Q. Liability**

This Contract may include a clause that limits the liability of the Contract Parties, provided that such a clause does not (i) disclaim liability for damages that are natural, probable, and reasonably foreseeable as a result of a breach of this Contract, or (ii) limit the total amount of damages recoverable to an amount less than the total amount disbursed to the Contractor pursuant to this Contract. If any clause included by the Contract Parties is inconsistent with either or both of these limitations, it shall be invalid and unenforceable to the extent of the inconsistency.

#### **R. Arbitration**

If the Contract Parties submit any dispute arising under this Contract for arbitration, the scope of any such arbitration shall be limited to the Contract Parties' rights and/or obligations under this Contract and may not extend to any right or obligation of USTDA. The arbitrator(s) shall not arbitrate issues directly affecting the rights or obligations of USTDA.

#### **S. Reporting Requirements**

The Contractor shall advise USTDA by letter as to the status of the Project on March 1st annually for a period of two (2) years after completion of the TA. In addition, if at any time the Contractor receives follow-on work from the Client, the Contractor shall so notify USTDA and designate the Contractor's contact point including name, telephone, fax number, and e-mail address. Since this information may be made publicly available by USTDA, any information which is confidential shall be designated as such by the Contractor and provided separately to USTDA. USTDA will maintain the confidentiality of such information in accordance with applicable law.

**A N N E X 5**

**TERMS OF REFERENCE  
(FROM USTDA GRANT AGREEMENT)**

## Annex I

### **Terms of Reference**

#### Objective

The objective of the technical assistance (“TA”) for the Green Locomotive Technologies Project (“Project”) is to spur the adoption of advanced motive power technologies throughout Mexico’s freight locomotive fleet to reduce air emissions and increase fuel efficiency. The TA will allow the Asociación Mexicana de Ferrocarriles, A.C. (“Grantee”) to evaluate the technical, economic, financial, environmental, and regulatory aspects of motive power upgrades in Mexico’s freight rail transportation industry to help meet projected industry growth.

#### General Considerations for Deliverables and Documents

The U.S. firm selected by the Grantee to perform the TA (“Contractor”) shall undertake a quality control review process, including a technical and editorial review, of all deliverables and documents submitted to the Grantee to ensure readability, accuracy, and consistency. All deliverables and documents shall be submitted in draft form to the Grantee for review and comment prior to finalization. The interim deliverables specified in these Terms of Reference shall serve to keep the Grantee informed about the Contractor’s work on the TA and to ensure that the Contractor’s work is performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement (per Clause G of Annex II of the Grant Agreement). The Contractor shall submit monthly progress reports to the Grantee.

#### Activities

##### Task 1: Data Collection and Review

Through a combination of research, interviews, and field visits, the Contractor shall gather initial data necessary to support execution of the TA. As part of this task, the Contractor shall meet with representatives of the following entities to brief them on the scope and objective of the TA, to identify counterparts as necessary to assist or participate in TA activities, and to present initial data requests:

- Mexico’s major operating freight railroad companies: Ferromex and Ferrosur, Kansas City Southern de México, Ferrocarril del Istmo de Tehuantepec, Ferrovalle, and Línea Coahuila-Durango;
- Secretaría de Comunicaciones y Transportes (“SCT”);
- Secretaría de Medio Ambiente y Recursos Naturales (“SEMARNAT”) and its monitoring and research agency, the Instituto Nacional de Ecología y Cambio Climático (“INECC”);
- Secretaría de Energía (“SENER”), and its energy efficiency agency, the Comisión Nacional para el Uso Eficiente de la Energía (“CONUEE”);

- CTS EMBARQ México; and
- Other federal, state, and municipal entities, as appropriate.

#### Subtask 1.1: Data Collection and Review: Fleet, Operations, and Emissions

The Contractor shall:

- Assemble a Microsoft Excel-based inventory of the current motive power fleet of Mexico's freight rail system to include owner, operator, unit manufacturer, model, year of manufacture, year of most recent rebuild, engine type and horsepower, and other pertinent data. The Contractor shall categorize the fleet (as best as practical) according to emissions profile in accordance with the U.S. Environmental Protection Agency's ("EPA") system for locomotives of Tiers 0 – 4. The inventory shall include both freight operating company mainline locomotives (road locomotives) and switching locomotives. The Contractor shall attempt to include a representative sample of customer (shipper)-owned locomotives, as well as railcar movers;
- Collect, from relevant regulatory agencies, databases on levels of monitored pollutants in Mexico by geographic region to include emissions relevant to railroad diesel motive power, such as hydrocarbons ("HC"), carbon monoxide ("CO"), nitrogen oxides ("NOx"), and particulate matter ("PM");
- Assemble data describing any differences between motive power diesel fuel composition as relevant to emissions and efficiency in Mexico as compared to the United States;
- Assemble historical data on the density of train operations in Mexico by segments of railway infrastructure and relevant geographic regions; and
- Assemble historical data on the annual spending on fuel by rail fleet operators, including sources and commercial arrangements.

#### Subtask 1.2: Data Collection and Review: Laws and Regulations

The Contractor shall collect and review the following:

- National and local laws, regulations, and standards in Mexico covering:
  - Air quality standards, monitoring and management instruments, and emissions reductions programs, including the "Normas Mexicanas de Calidad del Aire," and the "Ley General de Cambio Climático," as well as Mexico City's "Plan Verde" program;
  - The design and operation of railroad motive power in Mexico, and any that may apply to exhaust emissions control and efficiency of railroad motive power; and
  - The composition of diesel fuel used in railroad motive power applications.
- Selected national-level laws, regulations, and policy documents relevant to transportation project cost-benefit analysis in Mexico and the United States, to include methodologies and unit values for assignment of costs to the public of vehicular air pollution;
- The most recent "Notice of Funding Availability" for the U.S. Department of Transportation's National Infrastructure Investments (also known as TIGER Discretionary Grants), and the associated guidance on cost-benefit analyses;

- The laws, regulations, and standards in the United States, as follows:
  - Related to railroad locomotive emissions, including Title 40 Code of Federal Regulations Part 1033, "Control of Emissions from Locomotives," as administered by the EPA;
  - Associated with the Federal Congestion Mitigation and Air Quality ("CMAQ") Program administered by the U.S. Department of Transportation;
  - Associated with the Federal Diesel Emissions and Reduction Act ("DERA") Program administered by the EPA;
  - Associated with the State of Texas Emissions Reduction Plan ("TERP") as overseen by the Texas Commission on Environmental Quality; and
  - Associated with the Carl Moyer Memorial Air Quality Standards Attainment Program, as administered by the California Environmental Protection Agency.

The Contractor shall compare and contrast the current status of air pollution and energy efficiency regimes in Mexico and the United States relevant to locomotive diesel engines. The key features of the major governmental programs in the United States incentivizing investments in railroad motive power that may be suitable for adoption in Mexico shall be identified. Significant funding programs in Mexico that may be used or adapted for this purpose (or may serve to complement such a new program) shall be identified. The Contractor shall identify medium- and long-term plans for the evolution of emissions standards and regulations in Mexico and any potential alignment between the U.S. and Mexican regimes. The permitted levels and current measurements of diesel emissions in Mexico shall be identified by state or by other relevant sub-national region.

Interim Deliverable #1 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 1. This report shall be submitted to the Grantee for review and comment.

Task 2: Technology Review

The Contractor shall perform a comprehensive survey of relevant product offerings by U.S. providers of goods and services related to freight rail motive power. This shall include new road and switching locomotives and railcar movers, goods and services associated with rebuilding, and retrofit technologies designed to improve efficiency and/or reduce emissions. The latter may include a range of technologies such as idle reduction, control and monitoring systems, and emissions capture devices. Offerings including alternative fuels (such as natural gas) and hybrid/battery solutions shall be considered. The evaluation of supplier offerings shall take into account variances in standard diesel fuel compositions between the United States and Mexico that might reduce their nominal effectiveness, such as different levels of sulfur.

The approximate upfront costs for the offerings shall be identified, as well as life-cycle costs such as service, support, parts and maintenance, and disposal. The approximate national origin of the value of goods and services for the different supplier offerings shall

be determined. For each offering, the Contractor shall identify if the solution has previously been provided in Mexico by the supplier. Current and proposed plans for manufacturing, remanufacturing, assembly, maintenance, field service, and support shall be identified for the evaluated offerings for Mexico.

Interim Deliverable #2 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 2. This report shall be submitted to the Grantee for review and comment.

Task 3: Identification of Potential Pilot Projects

The Contractor shall consult with the Grantee and with U.S. suppliers to determine their potential interest in conducting pilot projects in Mexico to field-test new motive power, rebuild, or retrofit technologies designed to reduce emissions, improve fuel efficiency benefits, and maximize operational performance. An example of a potential pilot project would be to demonstrate the capabilities of advanced non-diesel motive power fuels, such as liquefied natural gas. The Contractor shall work with the Grantee and U.S. suppliers to develop no more than three basic outlines of prospective pilot projects.

Interim Deliverable #3 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 3. This report shall be submitted to the Grantee for review and comment.

Task 4: Economic Analysis

The Contractor shall, in consultation with the Grantee and its Mexican railroad member companies, develop the basic business case frameworks and considerations supporting decisions for the motive power replacement, rebuild, or retrofit. This quantitative analysis shall describe the desired balances between operating efficiencies and cost savings versus the expected costs of the investment categories (new locomotives, rebuilds, and retrofits). The cost analysis shall consider expenditures for the planning and development of the investments. The Contractor shall consider practices for the staggered roll-out of rebuilds and replacements in order to avoid capital expenditure bubbles and gaps in operational capacity. The Contractor shall include motive power fleet operator/owner expectations from the perspective of cash flow analysis and life-cycle cost analysis for the different categories of investments and the trade-offs between them, to include implications for maintenance, support, and disposal costs. Based on the data gathered and the analyses performed, the Contractor shall develop a framework of funding support ranges that could be needed to encourage motive power fleet operators/owners to accelerate programs to replace, rebuild, or retrofit different categories of units in their motive power fleets in recognition of the corresponding benefits in terms of reduced emissions and fuel consumption. The Contractor shall indicate any tax considerations from the motive power fleet operator/owner perspective that could materially impact the decision to make these investments.

Interim Deliverable #4 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 4. This report shall be submitted to the Grantee for review and comment.

Task 5: Base Case Fleet Scenario

The Contractor shall prepare a projection of the base case evolution of the freight rail motive power fleet in Mexico by developing an Excel-based motive power roster. This analysis shall project the fleet makeup considering the projected investments in motive power replacement, rebuilding, and retrofitting over an eleven-year period with the year of the TA as the base year. This analysis shall be based on information provided by motive power fleet operators/owners, taking into account historical and projected investments by the operating companies, including normal periodic rebuild programs and rail freight traffic demand. Based on the findings from Task 1, the Contractor shall analyze the projected benefits in the areas of emissions reductions and energy efficiency. The benefits shall be calculated in terms of the annual emissions and fuel consumption reductions achieved during the eleven-year period.

The Contractor shall also prepare an analysis to cross-reference high air pollution areas in Mexico with different levels of projected freight rail locomotive activity and the operating areas of the different categories of freight rail motive power. The Contractor shall estimate the number of locomotives that can reasonably be expected to be replaced, rebuilt, or retrofitted over the eleven-year period if the suitable financial conditions and other conditions are present.

Interim Deliverable #5 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 5. This report shall be submitted to the Grantee for review and comment.

Task 6: Financial Analysis

The Contractor shall identify and evaluate the availability of various sources of debt and equity financing to support the replacement, rebuild, or retrofit of railroad motive power in the context of an implementation scenario. This activity shall include discussions with the motive power fleet operators/owners, private financing sources, Export-Import Bank of the United States, Overseas Private Investment Corporation, North American Development Bank, Inter-American Development Bank, and Mexican public entities at the federal, state, and municipal levels (including SEMARNAT, SENER, and Secretaría de Hacienda y Crédito Público). The Contractor shall highlight the conditions for achieving an attractive return on investment that would minimize the need for potential incentive programs. The Contractor shall also identify any impediments to such financing or any tax considerations that could be addressed in structuring this Project.

Interim Deliverable #6 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 6. This report shall be submitted to the Grantee for review and comment.

Task 7: Regulatory Review and Potential Incentive Programs

Based on the findings from the previous tasks, the Contractor shall develop the framework of potential programs to incentivize the replacement, rebuild, or retrofit of motive power to achieve defined emissions reduction and energy efficiency targets. Utilizing and building upon the regulatory review conducted in Subtask 1.2, the Contractor shall evaluate potential incentive structures, including direct state or federal grants, beneficial tax structures, or minor adjustments within the operating concession agreements or public financing programs. The Contractor shall develop a proposed methodology, based on a cost-benefit analysis, to evaluate proposals for funding under the potential incentive programs. The Contractor shall identify basic statutory and regulatory changes that would be required to implement the potential incentive programs and their corresponding evaluation methodology. The Contractor shall prepare draft language suitable for introducing the concept to the appropriate government entities, including draft language for prospective laws, regulations, policies, and application documents. The Contractor shall identify any potential legal or regulatory barriers to the implementation of the potential incentive programs and shall make recommendations on how to overcome such barriers.

Interim Deliverable #7 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 7. This report shall be submitted to the Grantee for review and comment.

Task 8: Implementation Plan

The Contractor shall develop a projection of the implementation case evolution of Mexico's freight rail motive power fleet, taking into account railroad operational considerations in terms of fleet and capital investment management, as well as the anticipated timing of Project implementation and the anticipated scale and utilization of the potential incentive programs. This implementation case fleet scenario shall correspond to the eleven-year term of the base case fleet scenario developed in Task 5. The Contractor shall also identify and analyze the steps necessary for the relevant government entities at the federal, state, or municipal levels to evaluate, develop, and implement the proposed incentive programs. The Contractor shall develop a schedule that identifies the key stakeholders and outlines the key legislative, regulatory, policy, and administrative steps. The Contractor shall describe the structure of government sponsors and supporters necessary to bring the proposed incentive programs into reality. The Contractor shall also outline the process for establishing and budgeting the incentive program funds.

Interim Deliverable #8 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 8. This report shall be submitted to the Grantee for review and comment.

Task 9: Development Impact Assessment

The Contractor shall assess the developmental impacts associated with the Project and explain its methodology for measuring those impacts. The Contractor shall compare the two fleet evolution scenarios, quantify the difference between them, and measure the potential development impact over the projection period. The impacts considered must be relevant to the Project, *i.e.*, reasonably expected to flow from its implementation as outlined in the Study. Such impacts may include impacts in the following categories:

- *Infrastructure*: Potential developmental impacts in this category may include investments in rail infrastructure associated with Mexico's updated fleet of freight locomotives;
- *Human Capacity Building*: Potential developmental impacts in this category may include the number and type of local positions that would be created to implement, operate, and maintain the Project, as well as any specialized training that would be required;
- *Technology Transfer and Productivity Improvement*: Potential developmental impacts in this category may include the introduction of advanced motive power technologies that will improve current freight rail systems, processes, or operations in Mexico;
- *Environment*: Potential developmental impacts in this category may include measureable environmental benefits that may be derived from the Project, based on the findings from Task 10; and
- *Other*: Additional potential developmental impacts that may result from the Project, such as enhanced health benefits, replication or spin-off projects, or improved safety and security.

Interim Deliverable #9 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 9. This report shall be submitted to the Grantee for review and comment.

Task 10: Preliminary Environmental Impact Assessment

The Contractor shall conduct a preliminary review of the Project's environmental impact and environmental compliance with reference to local requirements and those of multilateral development banks (such as the World Bank and Inter-American Development Bank). This review shall identify potential positive and negative impacts, discuss the extent to which negative impacts can be mitigated, and develop plans for a full environmental impact assessment in anticipation of the Project moving forward to the implementation stage.

Interim Deliverable #10 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 10. This report shall be submitted to the Grantee for review and comment.

Task 11: U.S. Sources of Supply

Based on the findings from Task 2, the Contractor shall compile prospective U.S. sources of supply and U.S. manufacturers of goods and services related to freight rail motive power, including manufacturers and remanufacturers of new road and switching locomotives and railcar movers, suppliers of goods and services associated with rebuilding, and manufacturers of retrofit technologies designed to improve efficiency and/or reduce emissions. The Contractor shall profile the companies surveyed in Task 2, including their experience in the Mexican market and the workforce and facilities that would serve Mexico, points of contact, and an assessment of how each company could engage to take advantage of Project implementation. The Contractor shall evaluate the approximate national origin of materials, goods, and services from the United States to Mexico. Freight car sales shall be evaluated from a life-cycle perspective, including parts and services for maintenance and periodic rehabilitation. Historical trends and projections for backlogs for orders of the different types of railcars shall be analyzed. The major foreign competitors to U.S. firms in the Mexican market shall be identified and profiled to include competing offerings of goods and services, market share, clients, and strengths and weaknesses vis-à-vis U.S. firms.

Interim Deliverable #11 — The Contractor shall prepare a detailed written report describing the work performed and findings from Task 11. This report shall be submitted to the Grantee for review and comment.

Task 12: Final Report

The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference ("Final Report"). The Final Report shall be organized according to the above tasks, and shall include all deliverables and documents that have been provided to the Grantee. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement.

**A N N E X 6**

**U.S. FIRM INFORMATION FORM**



## USTDA-Funded Feasibility Study, Technical Assistance, or Training Grant

### U.S. Firm Information Form

This form is designed to enable the U.S. Trade and Development Agency ("USTDA") to obtain information about entities and individuals proposed for participation in USTDA-funded activities. Information in this form is used to conduct screening of entities and individuals to ensure compliance with legislative and executive branch prohibitions on providing support or resources to, or engaging in transactions with, certain individuals or entities with which USTDA must comply.

USTDA Activity Number [To be completed by USTDA]

Activity Type [To be completed by USTDA]	Feasibility Study	Technical Assistance	Other (specify)
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Activity Title [To be completed by USTDA]

Full Legal Name of U.S. Firm

Business Address (street address only)

Telephone		Fax		Website	
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Year Established (include any predecessor company(s) and year(s) established, if appropriate).  
Please attach additional pages as necessary.

Type of Ownership	Publicly Traded Company
	Private Company
	Other (please specify)

Please provide a list of directors and principal officers as detailed in Attachment A. Attached? (Not Applicable for U.S. Publicly Traded Company)	Yes
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If Private Company or Other (if applicable), provide a list of shareholders and the percentage of their ownership. In addition, for each shareholder that owns 15% or more shares in U.S. Firm, please complete Attachment B.

Is the U.S. Firm a wholly-owned or partially owned subsidiary?	Yes
	No

If so, please provide the name of the U.S. Firm's parent company(ies). In addition, for any parent identified, please complete Attachment B.

Is the U.S. Firm proposing to subcontract some of the proposed work to another firm?	Yes
	No

If yes, U.S. Firm shall complete Attachment C for each subcontractor. Attached?	Yes
	Not applicable

#### Project Manager

Name	Surname	
	Given Name	

Address

Telephone

Fax

Email

#### Negotiation Prerequisites

Discuss any current or anticipated commitments which may impact the ability of the U.S. Firm or its subcontractors to complete the Activity as proposed and reflect such impact within the project schedule.

Identify any specific information which is needed from the Grantee before commencing negotiations.

*U.S. Firm may attach additional sheets, as necessary.*

**U.S. Firm's Representations**

U.S. Firm shall certify to the following (or provide an explanation as to why any representation cannot be made):

1. U.S. Firm is a [check one]  Corporation  LLC  Partnership  Sole Proprietor  Other:  .  
 duly organized, validly existing and in good standing under the laws of the State of:  .  
 The U.S. Firm has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the USTDA Activity. The U.S. Firm is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. The U.S. Firm has included herewith, a copy of its Articles of Incorporation (or equivalent charter or document issued by a designated authority in accordance with applicable laws that provides information and authentication regarding the legal status of an entity) and a Certificate of Good Standing (or equivalent document) issued within 1 month of the date of signature below by the State of:  .  
 The U.S. Firm commits to notify USTDA and the Grantee if it becomes aware of any change in its status in the state in which it is incorporated. USTDA retains the right to request an updated certificate of good standing. **(U.S. publicly traded companies need not include Articles of Incorporation or Good Standing Certificate)**
3. Neither the U.S. Firm nor any of its directors and principal officers have, within the ten-year period preceding the submission of this proposal, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the U.S. Firm, nor any of its directors and principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the U.S. Firm. The U.S. Firm, has not, within the three-year period preceding the submission of this proposal, been notified of any delinquent federal or state taxes in an amount that exceeds US\$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The U.S. Firm has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself of its debts under any bankruptcy, insolvency or other similar law. The U.S. Firm has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.
7. The U.S. Firm certifies that it complies with USTDA Nationality, Source, and Origin Requirements and shall continue to comply with such requirements throughout the duration of the USTDA-funded activity. The U.S. Firm commits to notify USTDA and the Grantee if it becomes aware of any change which might affect U.S. Firm's ability to meet the USTDA Nationality, Source, and Origin Requirements.

*The U.S. Firm shall notify USTDA if any of the representations are no longer true and correct.*

U.S. Firm certifies that the information provided in this form is true and correct. U.S. Firm understands and agrees that the U.S. Government may rely on the accuracy of this information in processing a request to participate in a USTDA-funded activity. If at any time USTDA has reason to believe that any person or entity has willfully and knowingly provided incorrect information or made false statements, USTDA may take action under applicable law. The undersigned represents and warrants that he/she has the requisite power and authority to sign on behalf of the U.S. Firm.

Name		Signature	
Title			
Full Legal Name of U.S. Firm		Date	





**ATTACHMENT B**

**USTDA-Funded Feasibility Study, Technical Assistance, or Training Grant**

**U.S. Firm Information Form – Shareholder(s) and Parent Company(ies)**

If applicable, U.S. Firm provided a list of shareholders and the percentage of their ownership. This form shall be completed for each shareholder that owns 15% or more shares in U.S. Firm, as well as any parent corporation of the U.S. Firm (“Shareholder”). In addition, this form shall be completed for each shareholder identified in Attachment B that owns 15% or more shares in any Shareholder, as well as any parent identified in Attachment B.

USTDA Activity Number [To be completed by USTDA]	
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Activity Title [To be completed by USTDA]	
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Full Legal Name of U.S. Firm	
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Full Legal Name of Shareholder	
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Business Address of Shareholder (street address only)	
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Telephone number		Fax Number	
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Year Established (include any predecessor company(s) and year(s) established, if appropriate). Please attach additional pages as necessary.	
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Country of Shareholder’s Principal Place of Business	
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Please provide a list of directors and principal officers as detailed in Attachment A. Attached?	Yes
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Type of Ownership	Publicly Traded Company
	Private Company
	Other

If applicable, provide a list of shareholders and the percentage of their ownership. In addition, for each shareholder that owns 15% or more shares in Shareholder, please complete Attachment B.	
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Is the Shareholder a wholly-owned or partially owned subsidiary?	Yes
	No

If so, please provide the name of the Shareholder’s parent(s). In addition, for any parent identified, please complete Attachment B.	
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*Shareholder may attach additional sheets, as necessary.*



**ATTACHMENT C**

**USTDA-Funded Feasibility Study, Technical Assistance, or Training Grant**

**Subcontractor Information Form**

This form is designed to enable the U.S. Trade and Development Agency ("USTDA") to obtain information about entities and individuals proposed for participation in USTDA-funded activities. Information in this form is used to conduct screening of entities and individuals to ensure compliance with legislative and executive branch prohibitions on providing support or resources to, or engaging in transactions with, certain individuals or entities with which USTDA must comply.

USTDA Activity Number [*To be completed by USTDA*]

Activity Title [*To be completed by USTDA*]

Full Legal Name of Prime Contractor U.S. Firm ("U.S. Firm")

Full Legal Name of Subcontractor

Business Address of Subcontractor (street address only)

Telephone Number

Fax Number

Year Established (include any predecessor company(s) and year(s) established, if appropriate). Please attach additional pages as necessary.

**Subcontractor Point of Contact**

Name

Surname

Given Name

Address

Telephone

Fax

Email

**Subcontractor's Representations**

Subcontractor shall provide the following (or any explanation as to why any representation cannot be made), made as of the date of the proposal:

1. Subcontractor is a <i>[check one]</i>	<input type="checkbox"/> Corporation	<input type="checkbox"/> LLC	<input type="checkbox"/> Partnership	<input type="checkbox"/> Sole Proprietor	<input type="checkbox"/> Other
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duly organized, validly existing and in good standing under the laws of:  .

2. The subcontractor has all the requisite corporate power and authority to conduct its business as presently conducted, to participate in this proposal, and if the U.S. Firm is selected, to execute and deliver a subcontract to the U.S. Firm for the performance of the USTDA Activity and to perform the USTDA Activity. The subcontractor is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
3. Neither the subcontractor nor any of its directors and principal officers have, within the ten-year period preceding the submission of the Offeror's proposal, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the subcontractor, nor any of its directors and principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
5. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.
7. The Subcontractor certifies that it complies with the USTDA Nationality, Source, and Origin Requirements and shall continue to comply with such requirements throughout the duration of the USTDA-funded activity. The Subcontractor commits to notify USTDA, the Contractor, and the Grantee if it becomes aware of any change which might affect U.S. Firm's ability to meet the USTDA Nationality, Source, and Origin Requirements.

*The selected Subcontractor shall notify the U.S. Firm, Grantee and USTDA if any of the representations included in its proposal are no longer true and correct.*

Subcontractor certifies that the information provided in this form is true and correct. Subcontractor understands and agrees that the U.S. Government may rely on the accuracy of this information in processing a request to participate in a USTDA-funded activity. If at any time USTDA has reason to believe that any person or entity has willfully and knowingly provided incorrect information or made false statements, USTDA may take action under applicable law. The undersigned represents and warrants that he/she has the requisite power and authority to sign on behalf of the Subcontractor.

Name	<input type="text"/>	Signature	<input type="text"/>
Title	<input type="text"/>		
Full Legal Name of Subcontractor	<input type="text"/>	Date	<input type="text"/>