

REQUEST FOR PROPOSALS

FEASIBILITY STUDY FOR THE

SALVADOR WASTEWATER ENERGY AND OPERATIONAL EFFICIENCY

Submission Deadline: **4:00PM**
LOCAL TIME
October 30, 2015

Submission Place: César Silva Ramos
Technical and Planning Director
Avenida Alphaville, 199, Loteamento Alphaville Salvador
Centro Empresarial Carlos Fabrício L. Costa, Alphaville I
Salvador, Bahia CEP 41701-015, Brazil

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.

N.B.: Any and all questions pertaining to the RFP should be sent to:
RFPQuestions@ustda.gov

REQUEST FOR PROPOSALS

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Section 1: INTRODUCTION

The U.S. Trade and Development Agency (USTDA) has provided a grant in the amount of US\$651,640 to the Empresa Baiana de Águas e Saneamento S.A. (the “Grantee”) in accordance with a grant agreement dated August 18, 2015 (the “Grant Agreement”). The objective of this Feasibility Study is to evaluate the technical, economic and financial feasibility of implementing various energy efficiency modernizations in the larger Salvador metropolitan area wastewater treatment system. 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 Feasibility Study.

1.1 BACKGROUND SUMMARY

The state of Bahia, located in northeast Brazil, is the country’s fourth most populous state, with a population of 14.7 million. Its capital, Salvador, has a population of 2.9 million. Embasa is the primary water supply and wastewater treatment company in the state, and the state government of Bahia is its majority shareholder. Embasa provides services to over 84% of the cities and towns in the state, operating 441 water treatment facilities and 285 wastewater treatment plants. Currently, the majority of Embasa’s wastewater treatment plants do not utilize disinfection technologies, tertiary treatment systems or installations for odor control. Embasa has few mechanical dewatering systems, and sludge treatment and disposal have been a concern for the company. Wishing to upgrade its service quality, Embasa invested \$1.4 billion in its water wastewater networks in the last ten years. Between 2007 and 2014, the company has doubled the number of access points to the wastewater network.

The U.S. Contractor selected to carry out this Feasibility Study would evaluate existing operations and make recommendations for improved energy efficiency and reliability at the following sites: the Rio Vermelho Preliminary Treatment Plant, the Salvador Sewage System Pump Stations, and the Salvador larger metropolitan area tributary sewage systems. The modernizations at the three sites will increase the operational and energy efficiency of Embasa’s operations, reducing the company’s energy demand and improving the quality of the treated wastewater.

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

1.2 OBJECTIVE

The objective of this Feasibility Study is to evaluate the technical, economic and financial feasibility of implementing various energy efficiency modernizations in the larger Salvador metropolitan area wastewater treatment system. The Terms of Reference (TOR) for this Feasibility Study 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\$651,640. **The USTDA grant of \$US651,640 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\$651,640 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 Salvador Wastewater Energy and Operational Efficiency.

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 Feasibility Study.

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 Feasibility Study.

2.5 PROJECT FUNDING SOURCE

The Feasibility Study will be funded under a grant from USTDA. The total amount of the grant is not to exceed US\$651,640.

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 and in Portuguese. Offerors should submit one copy in English, one copy in Portuguese, and an electronic copy of both versions on a flash drive. Annex VI does not need to be translated into Portuguese.

2.13 PROPOSAL SUBMISSION REQUIREMENTS

The **Cover Letter** in the proposal must be addressed to:

César Silva Ramos
Technical and Planning Director
Avenida Alphaville, 199, Loteamento Alphaville Salvador
Centro Empresarial Carlos Fabrício L. Costa, Alphaville I
Salvador, Bahia CEP 41701-015, Brazil

An English and Portuguese version of your proposal, as well as an electronic copy of each version on a flash drive, must be received at the above address no later than 4:00PM, on October 30, 2015. Please call or e-mail Cristina Peleteiro (cristina.peleteiro@embasa.ba.gov.br; Tel. +55 (71) 3360-2261) once your proposal is en route.

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

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 "English" or "Portuguese". The English and Portuguese copies 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 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 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\$651,640, which is a fixed amount.

Offerors shall submit one (1) English and (1) Portuguese version of the proposal, as well as an electronic copy of both versions on a flash drive. Annex VI does not need to be translated into Portuguese. 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 Feasibility Study. 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 Feasibility Study.

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 Feasibility Study.

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 Feasibility Study. 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 Feasibility Study 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:

Professional Qualifications and Relevant Project Experience (20% + 20%) - Bidders shall propose a project team that will be fully qualified to execute the entire scope of the Feasibility Study. The proposed staff should have strong qualifications in wastewater utility operations, including energy efficiency.

(20 Percent) - The proposed staff should include:

- An experienced project manager with a master's degree in sanitary/civil/mechanical/electrical engineering or other relevant fields, and at least 10 years of professional experience in related works from at least three (3) international projects;
- An experienced and qualified sanitary/civil/environmental/electrical engineer with a minimum of a bachelor of science degree and with at least 10 years of experience in water sector utility energy efficiency and operational effectiveness evaluation and design;
- An experienced and qualified financial/economic expert with at least 10 years of experience in the evaluation of water sector utility infrastructure and system costs and financial planning, preferably in emerging markets.

(20 Percent) - The qualified bidder will be expected to provide evidence of satisfactorily executing at least five (5) similar projects within the past 10 years. The reference projects should be of similar size (i.e., \$500 K or larger) and complexity (i.e. multi-tasks, addressing all critical project development steps) to the proposed one. Project details for each example should be provided.

Proposed Work Plan (45%) - Bidders shall demonstrate a thorough understanding of all of the TOR tasks. Their approach to execute the tasks should be in agreement with the generally accepted engineering methods used in the water and wastewater sectors. The work plan should be detailed and responsive to the requirements presented in the TOR and should prove value-added in the implementation phase of the Project.

International + Host Country Experience (15%) - Bidders are encouraged to list their international wastewater treatment project and consulting experience. The ideal Bidder will have successfully completed at least three (3) similar projects overseas by the time of bid evaluations, preferably one of them being in Brazil.

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

Price will not be a factor in contractor selection.

ANNEX 1

César Silva Ramos
Technical and Planning Director
Avenida Alphaville, 199, Loteamento Alphaville Salvador
Centro Empresarial Carlos Fabrício L. Costa, Alphaville I
Salvador, Bahia CEP 41701-015, Brazil
Phone: 55 (71) 3360-2261

USTDA Activity Number 2015-51023 Salvador Wastewater Energy and Operational Efficiency Project

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.

Salvador Wastewater Energy and Operational Efficiency Project

The Grantee 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 feasibility study to evaluate the technical, economic and financial feasibility of implementing various energy efficiency modernizations in the larger Salvador metropolitan area wastewater treatment system..

The *Empresa Baiana de Águas e Saneamento* (“Embasa”) is the primary water supply and wastewater treatment company in the state, and the state government of Bahia is its majority shareholder. Embasa provides services to over 84% of the cities and towns in the state, operating 441 water treatment facilities and 285 wastewater treatment plants. Currently, the majority of Embasa’s wastewater treatment plants do not utilize disinfection technologies, tertiary treatment systems or installations for odor control. Embasa has few mechanical dewatering systems, and sludge treatment and disposal have been a concern for the company. Wishing to upgrade its service quality, Embasa invested \$1.4 billion in its water wastewater networks in the last ten years. Between 2007 and 2014, the company has doubled the number of access points to the wastewater network. This feasibility study will complement these previous efforts and help Embasa to continue to improve its quality of service and reduce energy demand at its facilities.

The U.S. firm selected to carry out the feasibility study will evaluate existing operations and make recommendations for improved energy efficiency and reliability at the following sites: the Rio Vermelho Preliminary Treatment Plant, the Salvador Sewage System Pump Stations, and the Área Petrolífera and Litoral Norte Sewerage Systems. Specifically, at the Rio Vermelho Preliminary Treatment Plant, the U.S. firm will investigate actions to upgrade and replace antiquated automation system components; improve the energy efficiency of pumping stations; install an odor control treatment system; replace the mechanical grinders (comminutors), grit removal systems, and screening systems; and replace two high performance motor sets. The U.S. firm will then assess the Salvador Sewage System Pump Stations and determine whether Embasa should update, supplement, or replace the automation system; install 34 variable

frequency drives (VFD); install odor control systems at ten of the largest stations; replace 170 high performance pump motor sets; and/or implement grit removal unit systems at the four largest pump stations. Finally, the U.S. firm will evaluate various smaller sewage networks in the Área Petrolífera and Litoral Norte Sewage Systems, which feed into the metropolitan Salvador area. The study will assess and make recommendations to replace or install automation systems, odor control systems, grit removal systems, sludge thickening and dewatering systems, and ultraviolet disinfection systems.

The U.S. firm selected will be paid in U.S. dollars from a \$651,640 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 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 one copy of the Proposal in English and Portuguese, as well as an electronic copy of each proposal on a flash drive, directly to the Grantee by 4:00PM October 30, 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.

ANNEX 2

Definitional Mission Draft Report

BRAZIL: WATER AND WASTEWATER UTILITY ENERGY EFFICIENCY AND POWER GENERATION DEFINITIONAL MISSION

FEDERATIVE REPUBLIC OF BRAZIL

A report submitted to the
United States Trade and Development Agency
1000 Wilson Boulevard
Arlington, Virginia

Submitted by
Performance Technology, Inc.
P.O. Box 1778
Lewiston, Maine 04240
Telephone/Fax (207) 795-0510
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March, 2015



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.

Mailing and Delivery Address: 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901
Phone: 703-875-4357 – Fax: 703-875-4009 – Web site:

Federative Republic of Brazil

WATER AND WASTEWATER UTILITY ENERGY EFFICIENCY AND POWER GENERATION

Definitional Mission Preliminary Draft Report

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1

EXECUTIVE SUMMARY

The United States Trade and Development Agency (USTDA) has determined that the implementation of energy-related water sector projects in the Federative Republic of Brazil (Brazil) may provide business opportunities for U.S. companies who are able to provide the services, equipment and technologies for those projects. As a result, USTDA sponsored a Brazil Water Sector Reverse Trade Mission (RTM) from May 11 to May 21, 2014 that was intended to allow representatives of a number of Brazilian water sector utilities to meet with prospective U.S. equipment and service suppliers. The RTM also provided an opportunity for representatives of the participating utilities to visit water and wastewater treatment facilities in several U.S. locations that utilize various advanced technologies that may be applicable to existing water and energy situations in Brazil.

To further investigate U.S. export opportunities in Brazil, USTDA then commissioned a Definitional Mission (DM) to evaluate whether it is in USTDA's best interests to provide funding support for any of the water supply and wastewater management projects proposed by the RTM participants. Performance Technology Inc. (PerformTech) was selected to undertake the DM on behalf of USTDA. As an integral part of the DM, a PerformTech field team traveled to Brazil from July 14 to August 5, 2014 to meet with potential project sponsors and other private and public stakeholders who may have a technical, financial or regulatory role in implementing the projects that USTDA may support. Based on the DM fieldwork and subsequent evaluation of information gathered during the field work, PerformTech has concluded that:

1. All of utilities engaged during the RTM and DM are capable of developing and securing financing for the major water sector projects which may serve as sources of U.S. service and technology exports.
2. All of the 17 projects proposed by the 7 engaged utilities for USTDA support are technically sound projects that can enhance the technical and economic function of utilities. As a result of the technical intent of the RTM and DM, many of the projects proposed by the engaged utilities focused on improving their energy efficiency or increasing power availability while increasing their overall operational effectiveness.
3. A number of the proposed projects sought USTDA support in the direct evaluation of U.S. advanced technologies in specific project development or operational applications such as the proposed value engineering study with CEDAE.
4. Any project financing provided by the Brazilian National Bank (BNDES) may create an impediment to achieving full U.S. export potential as a result of local content prerequisite conditions that are aimed at supporting Brazilian industry.
5. Export potential to be realized from any projects supported by USTDA will be determined by the deployment of the subject systems and technologies throughout each utility's treatment facilities and, also, throughout the Brazilian water sector participants with similar technology applications.

As a result of the above findings and conclusions, PerformTech is recommending that USTDA support three projects including the following:

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3. **EMBASA: Energy Efficiency and Operational Improvement Feasibility Analysis** - Based on the information presented in Section 7 of this Definitional Mission report, PerformTech recommends that USTDA consider funding for the requested Feasibility Analysis. The anticipated cost of the evaluation, as shown on page 84 of this report, is US\$ 651,640. PerformTech recommends that EMBASA serve as the project grantee for USTDA grant purposes. The estimated total investment (cost of equipment and installation) of the energy efficiency and operational effectiveness elements in the specific (current) projects assessed as part of the USTDA Feasibility analysis is US\$19.8 million, of which US\$ 15.2 million is estimated to be export potential, In contrast, if similar projects are extrapolated for full deployment of the target systems and equipment throughout all of the EMBASA facilities, the total investment cost (cost of equipment and installation) is US\$ 60.7 million and the export potential associated with the intended project outcomes is estimated to be approximately US\$ 46.7 million. It should again be noted that other opportunities for the wastewater treatment technology application and export will likely be realized at other water sector utilities and companies in Brazil.

2

DEFINITIONAL MISSION BACKGROUND AND SETTING

2.1 Introduction

The United States Trade and Development Agency (USTDA) has determined that the implementation of energy-related water sector projects in the Federative Republic of Brazil (Brazil) may provide business opportunities for U.S. companies who are able to provide the services, equipment and technologies for those projects. As a result, USTDA sponsored a Brazil Water Sector Reverse Trade Mission (RTM) that allowed representatives of a number of Brazilian water sector utilities to meet with prospective U.S. equipment and service suppliers. The RTM also provided opportunities for the Brazilian participants to visit water and wastewater treatment facilities in several U.S. locations that utilize various advanced technologies that may be applicable to existing water and energy situations in Brazil. This RTM occurred from May 11 to May 21, 2014 and included presentations and roundtable discussions with representatives of U.S. companies, financial institutions and regulators. The RTM also included an opportunity for the Brazilian utility representatives to present their priority projects to USTDA and the participating U.S. service and technology suppliers.

To further investigate export opportunities in Brazil, USTDA then commissioned a Definitional Mission (DM) to evaluate whether it is in USTDA's best interests to provide funding support for any of the water supply and wastewater management projects proposed by the RTM participants. Performance Technology Inc. (PerformTech) was selected to undertake the DM on behalf of USTDA. As an integral

part of the DM, a PerformTech field team traveled to Brazil from July 14 to August 5, 2014 to meet with project sponsors and other private and public stakeholders who may have a technical, financial or regulatory role in implementing any of the projects that USTDA may support. Meetings with the water sector utilities were intended to review their project proposals and gather relevant information that would allow PerformTech to evaluate the technical, institutional and financial characteristics of the proposed projects. During the DM field work, PerformTech's technical team was able to work with project proponents to reformulate their project proposals so that they would better fit USTDA criteria for funding support. Meetings were held with various utilities in the locations shown in Figure 1. Due to the geographical extent of the various project locations, some meetings were undertaken by individual members of the PerformTech technical team that then worked to consolidate their



individual observations and findings.

The intent of the DM evaluation was to determine whether the projects proposed by the targeted Brazilian utilities are a high priority in Brazil and that they meet the basic USTDA funding objectives of supporting U.S. exports. The DM was also intended to define existing development conditions in Brazil that affect the prospects and implementation process and timing for the proposed projects. This report presents the result of the DM fieldwork and subsequent project evaluations.

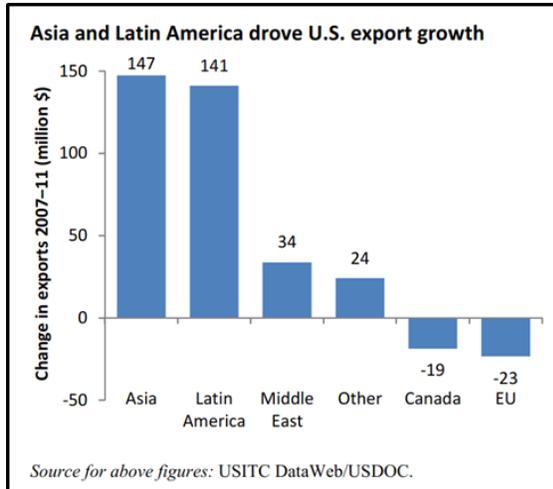
2.2 The Brazilian Economy

The Federative Republic of Brazil is the 7th largest economy in the world (and Latin America's largest) and is the fifth largest country in the world in terms of land mass and population (with a population of about 197 million people). By 2020, Brazil is projected to be the 5th largest consumer market in the world, ahead of France and the United Kingdom. Currently, Brazil is viewed as a highly competitive and industrialized country often compared to the developed world. The historical economic and demographic transformation of Brazil has resulted in a high and rapid level of urbanization such that, by 2010, Brazil's municipalities accounted for about 87% of the country's population. While the population growth of Brazil's largest cities has leveled off in recent years, the country's smaller cities have continued to grow and gain population. Generally, all of Brazil's urban area institutions have been struggling to provide sufficient and effective public services including those related to water supply and wastewater management. This creates a situation where many Brazilian water sector utilities are faced with the need to improve their overall efficiencies and effectiveness as well as increase their service coverage to accommodate growing populations in expanding urban and metropolitan areas. The need to expand service coverage particularly relates to locales populated by Brazil's urban poor. This has created a significant social driver for the expansion of water sector services. In turn, this becomes one of the factors why the targeted utilities are seeking to increase their effectiveness by enhancing their energy-related situations and reducing the overall costs of operations.

In recent decades, Brazil has improved its macroeconomic stability through significant growth in the country's agricultural, mining, manufacturing, and services sectors. Foreign investors have been attracted to Brazil because of its strong historical economic growth and high interest rates. During the past decade, the country has adopted policies that sought to control inflation and promote economic growth. Currently, there is a high level of urban infrastructure development activity that was stimulated by Brazil's hosting of the 2014 FIFA World Cup and the upcoming 2016 Olympics in Rio de Janeiro. As a result, the government of Brazil has allocated about US\$32 billion to economic packages aimed at infrastructure development which includes the water sector. This investment has stimulated water sector utilities to seek the means for enhancing their existing services and expand to meet future service requirements.

2.3 United States Water Sector Export Potential to Brazil

The United States is one of the leading global exporters of water and wastewater treatment equipment with an estimated \$1.8 billion in equipment and parts exported in 2011. The U.S. trade surplus was \$548 million in 2011 and U.S. exports were about 17% of global exports of water sector equipment (excluding parts). U.S. exports to Latin America rose by 75% during the time period between 2007 and 2011 with Mexico and Chile accounting for the largest share of this increase. Overall, the Latin American region has a significant share of U.S. exports as shown in Figure 2 which presents the U.S. global export distribution for the period from 2007 to 2011. Historical export rates to the Latin American region help to support



the prospects of increasing energy related water sector technologies and services exports to the region.

Further, the overall water and wastewater market size in Brazil is significant. Figure 3 shows a comparison of Brazilian water sector market size to that of other countries including those in Latin America.

However, the emerging economic strength of Brazil and government actions to support local suppliers shall likely influence the prospects and impediments to importing U.S. technologies and services into Brazil. This is a factor that shall need to be closely investigated in any consultancies that may be supported by USTDA funding.

Figure 2 - Change in U.S. Exports from 2007 to 2011 In 2012, the U.S. was Brazil’s second largest source of imports with 14.6% of total worldwide imports behind China and followed by Argentina, Germany, and South Korea. During that year, U.S. merchandise exports to Brazil totaled \$43.7 billion which was up 1.8% from 2011. During the same period, U.S. imports from Brazil were \$32.1 billion which was up 1.1% from 2011. The U.S. continues to enjoy a positive trade balance relationship with Brazil. In addition, the U.S. Foreign Commercial Service reports that there is an increasing demand for effluent treatment and energy/water saving technologies in Brazil, as well as for the specialized consulting services associated with these technologies. The projects evaluated during this DM can help to fulfill a segment of that demand.

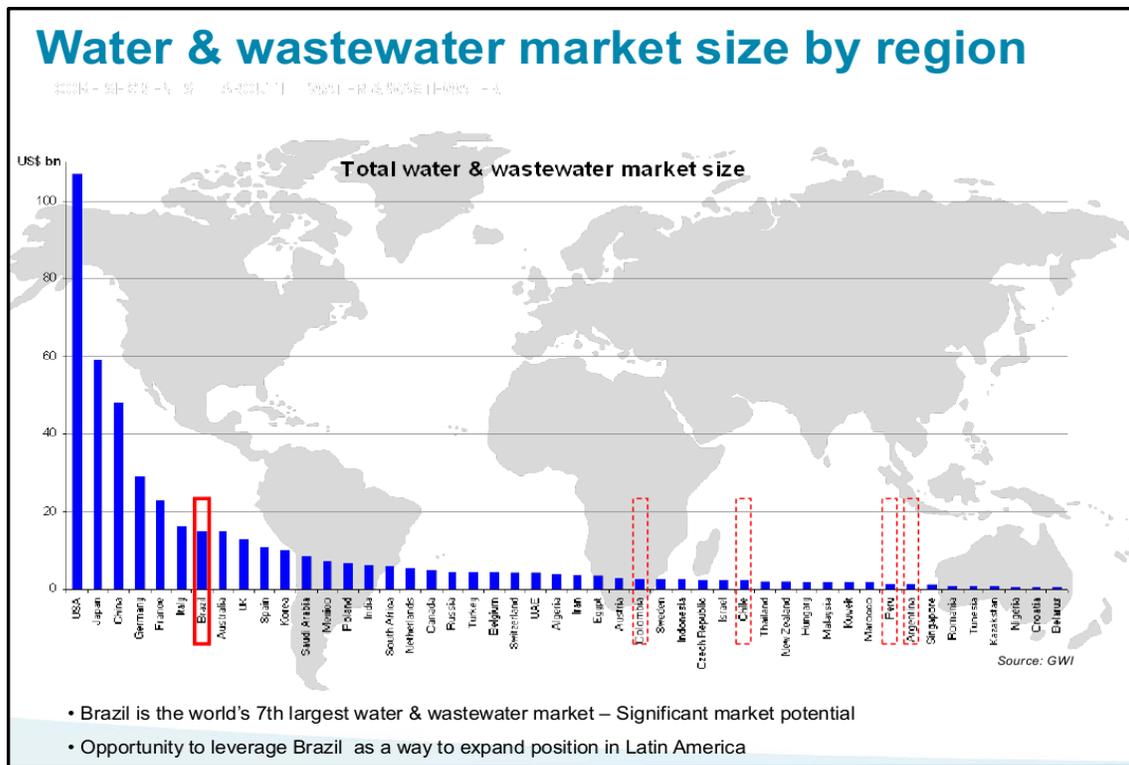


Figure 3 - Regional Water Sector Market Size

Figure 4 presents a general characterization of the Brazilian water and wastewater treatment market and also identifies some of the companies that U.S. suppliers shall need to compete against for water sector work in Brazil.

Water and Wastewater Treatment Equipment Market: Key Market Measurements (Brazil), 2010 and 2015										
Market Measurement	Industrial Water		Industrial Waste Water		Municipal Water		Municipal Waste Water		Total Market	
Total Revenues	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015
(\$ Million)	213.4	287.8	317.4	497.3	70.4	91.7	94	167.8	695.2	1044.6
Top End-user Segments	Oil and gas, petrochemicals, mining, pulp and paper				Small and medium sized agglomerations and nutrient sensitive areas					
Degree of Competition	High		High		Medium		Medium		Medium-High	
Top Market Participants	Enfil, Centroprojekt, Veolia Water Solutions and Technologies Haztec, Dedini Engineering (Paques), Siemens Water Technologies; Degremont; Tecotec; Perenne									
CAGR: 2010-2015 (%)	6.2		9.4		5.4		12.3		8.5	

Note: All figures are rounded; the base year is 2010. Source: Frost & Sullivan

Figure 4 - Estimated Brazilian Water Sector Market Value

2.4 Current Water Sector Conditions in Brazil

There are about 35 million cubic kilometers of fresh water on the earth. However, about 70% of this fresh water is captured in Arctic and Antarctic ice and snow or as permanent snow cover in mountainous regions. Globally, water demand is increasing as the worldwide population continues to grow with water use expanding at more than twice the rate of population growth. Urbanization is a major factor in future water demand projections. By 2030, the World Health Organization estimates that 60% of the world's population will live in cities. Currently, nearly all of the world's megacities are already facing water stress conditions that place significant pressure on water sector service providers (including utility service providers in Brazil) to increase their access to water, increase their overall service delivery efficiency and prevent water contamination through the effective management of wastewater.

Brazil has extensive water resources with approximately 12% of worldwide available freshwater resources. However, while general water availability in Brazil is high, the arid northeastern region of the country has only 3% of the country's water resources, but almost 30% of the population. Water stressed regions also exist in the south of Brazil which also has a large proportion of Brazil's urban population. Recent and periodic drought conditions have created situations where municipalities in Brazil were required to ration water and drought situations influence energy availability for operation of water and wastewater treatment facilities because of the strong dependency on hydropower generation sources. This was a situation faced by a number of Brazilian municipalities in 2014.

Brazil has a well-developed water sector where water supply and wastewater management functions are available for most of Brazil's population and commercial/industrial entities. Currently, it is estimated that over 98% of Brazil's population has access to an effective water supply while 79% has access to effective wastewater collection and treatment services. Service coverage is highest in urban areas where 87% of the Brazilian population live. Urban service coverage is 100% for water and 85%

for sanitation services (In sanitation, 53% of the population has access to sewerage systems while the remainder is served by on-site systems.)

The utilities that participated in the RTM and that were engaged during this DM are well-established companies and state institutions that provide services in a number of Brazil's major urban areas. In providing these services, these utilities have developed major water and wastewater treatment facilities through significant and ongoing major investments. The utilities that participated in the RTM are among the 26 state companies and over 1500 municipalities that provide water services as well as over 4500 municipalities that provide sanitation services. The current state of Brazil's water sector infrastructure development and service coverage is a function of significant achievements in recent decades including:

1. A high priority focus on service quality and coverage,
2. A functioning national system to finance sector infrastructure,
3. A high level of cost recovery (when compared to other countries) and
4. The utilization of a number of innovative technical and financial approaches to support the sector.

However, water sector service providers in Brazil still face significant challenges. Among these challenges is the need to expand service coverage to the extensive number of poor Brazilians living in urban slums (favela) and rural areas. Other service delivery challenges include the periodic droughts that affect major portions of the country, a high level of water pollution (especially in the southeast region of the country) and a low proportion of collected wastewater that is actually treated to an effective international standard prior to discharge.

In recent years, over 140 Brazilian cities were required to ration water during one of the worst extensive and prolonged droughts that the country has experienced with some neighborhoods in major urban areas only receiving water once every three days. Drought conditions have also affected energy supply situations in Brazil because of the country's heavy reliance on hydroelectric power generation that is dependent on drought influenced rainfall and surface water flows. (This energy-related effect provides an important development driver for the energy effectiveness and power generation projects proposed by the RTM participants and investigated during this DM.)

2.5 The Brazil Water Sector Institutions and Utilities

The water sector in Brazil has gradually evolved over time with changes largely due to political, economic, social and cultural factors that are external to the sector. Until 1968, municipalities were primarily responsible for providing water related services through municipal water and drainage companies that utilized varied financial and administrative structures and processes. As a result, service effectiveness and coverage was random and low. Generally, the sector lacked sufficient institutional structure and capacity to plan and finance increases in service coverage as well as increases in water and wastewater treatment effectiveness. In 1968, the government of Brazil adopted the National Water Supply and Sanitation Plan (PLANASA) which resulted in the creation of a number of new institutions including 27 state owned water and sanitation companies. PLANASA was the first federal government water and sanitation initiative in Brazil and, by 1971, state water and sanitation companies were established in each of the Brazilian states. PLANASA also led to the development of the National Housing Bank (Banco Nacional de Habitacao – BHN) which provided financing for sector infrastructure enhancements.

As a result of Brazil's continued economic growth and the opportunity for government subsidized interest rates on loans through the BHN, utility services were then able to rapidly expand with the result that service coverage for urban residents increased significantly to the current high levels. As is the case in many countries with emerging economies, the pace of expanding water supply service coverage exceeded that for the provision of sanitation services. This was primarily due to the lower relative cost of water supply infrastructure investments compared to what was required in wastewater management. Also, there is typically a better opportunity for quicker return on investments in water supply investments due to the extent of revenues derived from metered water charges. As is also typical in other countries, most of the investment during this high growth period was concentrated in the larger urban areas within Brazil (and, internally, within the more affluent and central locales of those urban areas). During this sector high growth period, a significant number of Brazil's municipalities also granted 20 to 30 year concessions to state owned companies while about 1800 municipalities continue to provide services directly through their own institutions or indirectly through municipal companies created for this purpose.

PLANASA was formally abolished in 1992 thereby making it more difficult for state governments to continue financing their state water company needs. As a result, a number of state governments adopted varying development strategies during the 1990s to continue improving and expanding their service base as their population-derived demand increased. These various strategies included the granting of concessions to private sector companies (as was the case in Rio de Janeiro) or taking steps to strengthen the structural independency of the state companies. By necessity, this transitional period also led to diversification in the source of funds utilized for service provision and expansion. This, in turn, led to the introduction of private investors into capital positions within some of the service providers as well as the practice of contracting local private operators to provide system management services.

In 2007, the government of Brazil implemented a new federal water and sanitation law (Lei 11.445/07: Lei Federal do Saneamento Básico) aimed at further increasing investments in the water sector to provide greater access to water and sanitation services. Coincidentally, the government also announced the implementation of a new general development initiative (Program for Acceleration of Growth (PAC)) intended to stimulate major investments in all forms of public infrastructure including highways, airports, ports, as well as the energy and water sectors. This program created a significant financial impetus for water sector development projects and significantly improved the quality of the services that were provided. Under the second phase of the program (PAC II), the Government of Brazil expected to spend about US\$470 billion in developing the country's energy generation and distribution system, roads, railroads, ports, and airports as well as stadiums (as it prepared for the World Cup in 2014 and prepares for the 2016 Olympics.)

The Brazilian federal government also adopted a National Sanitation Plan (PLANSAB) that is intended to provide universal access to potable drinking water by 2023 and universal access to sanitation in urban areas by 2033. The plan is also intended to achieve a 33% coverage level in terms of the amount of wastewater actually treated after collection. (These targeted investment vehicles may help to support the development of the proposed projects evaluated during this DM.)

According to the Brazilian constitution, municipalities are legally responsible for providing water and sanitation services. However, state water sector companies currently exist in 25 of Brazil's 27 states. These state companies are responsible for water supply services in about 3,887 municipalities with a total population of about 103 million people (approximately 75% of Brazil's urban population with water connections). The state companies are also responsible for sewerage services in 893 municipalities with a total population of 45 million people. The state water and sanitation companies are listed below and

the companies that were engaged during this DM (and that were also participants in the RTM) are presented in bold text within the listing.

AGESPISA Águas e Esgotos do Piauí S.A.
 CAEMA Companhia de Saneamento Ambiental do Maranhão
 CAER Companhia de Águas e Esgotos de Roraima
 CAERD Companhia de Águas e Esgotos de Rondônia
 CAERN Companhia de Águas e Esgotos do Rio Grande do Norte
 CAESA Companhia de Água e Esgotos do Amapá
CAESB Companhia de Saneamento Ambiental do Distrito Federal
 CAGECE Companhia de Água e Esgoto do Ceará
 CAGEPA Companhia de Água e Esgoto da Paraíba
 CASAL Companhia de Saneamento de Alagoas
 CASAN Companhia Catarinense de Águas e Saneamento
CEDAE Companhia Estadual de Águas e Esgotos (of the Rio de Janeiro State)
 CESAN Companhia Espírito Santense de Saneamento
 COMPESA Companhia Pernambucana de Saneamento
 COPASA Companhia de Saneamento de Minas Gerais
 CORSAN Companhia Riograndense de Saneamento (of Rio Grande do Sul State)
 COSANPA Companhia de Saneamento do Pará
 DEPASA Departamento Estadual de Pavimentação e Saneamento (of Acre State)
 DESO Companhia de Saneamento de Sergipe
EMBASA Empresa Baiana de Águas e Saneamento S.A.
 SABESP Companhia de Saneamento Básico do Estado de São Paulo
SANEAGO Saneamento de Goiás S.A.
 SANEATINS Companhia de Saneamento do Tocantins
 SANEPAR Companhia de Saneamento do Paraná
 SANESUL Empresa de Saneamento do Mato Grosso do Sul S.A.

Since 1996, 65 municipalities in 10 states (Rio de Janeiro, São Paulo, Paraná, Espírito Santo, Mato Grosso and Pará, among others) have signed concession contracts with private service providers either to provide only water services, only sewer services or both. The remaining utilities engaged during the DM are concessionaires operating under these contractual arrangements. Further information related to the engaged state companies and concessionaires (as well as information regarding the specific projects that they proposed for USTDA support) are presented in the Section 3 - Project Identification and Initial Screening of this DM report.

2.6 The Energy Situation in Brazil

Energy management and cost is one of the critical operational elements faced by each of the water sector entities engaged during the RTM and the DM. According to the United States Energy Information Administration (EIA), Brazil is the ninth largest energy consumer in the world and the third largest in the western hemisphere (behind the United States and Canada). Brazil's total energy consumption has increased by almost a third over the last decade primarily due to the country's sustained economic growth.

EIA statistics show that Brazil is the 10th largest energy producer in the world. Because of Brazil's abundant natural resources (water, natural gas, oil, sunshine, wind, minerals, etc.), energy generation in Brazil is characterized by its renewable sources that have contributed a significant share to the

country's generating capacity. The Brazilian energy sector is strongly dominated by small and large hydropower systems with additional important contributions from biomass from sugar cane agribusinesses and wind power. In recent years, thermal power stations have played a growing role in providing electricity during peak demand periods and during droughts when water levels in reservoirs are low thereby reducing hydroelectric generation capacity. Thermal power plants in Brazil are fueled with biomass, natural gas, petroleum derivatives (residual fuel oil, refinery gas, etc.), nuclear and coal. The mix of power generation sources in Brazil is shown in Figure 5.

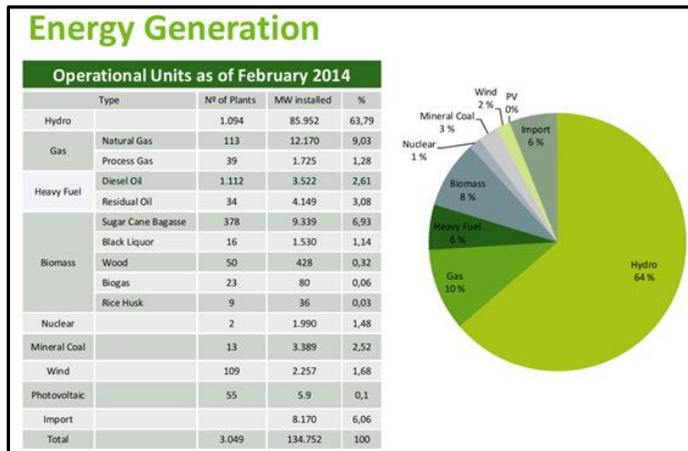


Figure 5 - Current Power Generation Sources in Brazil

In 2014, Brazil experienced its second-driest January in 80 years. Because of this, the water levels in reservoirs throughout Brazil dropped to below an estimated 37% of storage capacity. (Under normal conditions, hydropower reservoirs are filled during the December to March rainy season in Brazil and depleted during the dry southern winter months.) To compound the 2014 drought situation, energy consumption has continued to grow with 10% more energy used throughout the country in January 2014 than in the same month in 2013. Additionally, peak demand in Brazil reached a record high 86 GW in February 2014.

Because of the major energy concerns created by situations such as those described above, the government of Brazil is expected to invest about US\$ 235 billion in renewables and biofuels within next 10 years. In addition, tariff levels for sold energy increased from about US\$ 45/MWh in 2012 to US\$ 60/MWh in 2013. According to the Government's Power Expansion Plan for 2011-2021, the per capita electricity consumption in Brazil is expected to increase from 2.4 MWh/capita in 2011 to 3.5 MWh/capita in 2020. To meet this increasing demand, the Power Expansion Plan states that future capacity development will focus on hydroelectric and renewable resources while relying on thermal power sources only when necessary.

A new National Power Expansion Plan was published in 2013, which sought to define Brazil's energy demands through 2050. This plan estimates that the energy generation capacity in Brazil will increase from 116.5 GW in 2011 to 182.4 GW in 2021 with approximately 33.2 GW derived from hydropower sources, 22.4 GW from other renewable sources (wind, biomass and small hydropower plants), 8.9 GW from thermal power and 1.4 GW from nuclear plants. This will require investments of about US\$ 90 billion (55% for hydropower and 45% for renewable energy). (The need to make these investments to assure future power capacity may provide a basis for governmental support related to the potential use of biogas derived as a byproduct of wastewater treatment as an energy source. Each such application will help to reduce the amount of electricity required from the national grid for wastewater treatment plant operations.)

Brazil's third nuclear power plant (Angra III) is currently under construction and, when operational in 2016, will add 1,405 MW of generation capacity to the 2,007 MW electricity already generated by the two other nuclear power plants in operation within Brazil. One of the driving factors for developing this nuclear plant was a need to reduce the dependence on hydropower sources because of the periodic drought conditions influencing Brazil's assured power capacity. (Ultimately, this is the same driving

factor that has led the water sector utilities engaged in this DM to be interested in increasing their energy efficiency and internal power generation.)

Historically, the national government maintained a substantial role in Brazil’s power sector with almost total control until the 1990s. In 1996, Brazil began a sector privatization process that resulted in the establishment of the National Electric Energy Agency (ANEEL). However, energy shortages in 2000 and 2001 (again due to drought conditions) stalled this privatization process. Currently, the bulk of Brazil’s principal generation assets remain under government control with a state-owned holding company (Electrobras) assuming a dominant position in the electricity market.

2.7 The Water Sector’s Relationship to Energy Matters in Brazil

Water sector infrastructure (that treats and distributes drinking water or that collects and treats wastewater) is energy-intensive. This makes energy matters very important in the viability and effectiveness of service providers. Accordingly, a common theme among the utilities engaged in the RTM and DM is the need to investigate various means for increasing sector energy efficiency or assuring sufficient energy for operational and development purposes. Success in developing these means can result in direct benefits to the service provider customers through lowered operational energy costs which can affect water service charges. Water sector energy efficiency programs can also derive a number of non-energy benefits including the reduction of the need for treatment chemicals and a deferral (or reduction) of capital expenses for service expansion or enhancement. While energy issues can affect both the water supply and wastewater management aspects of the water sector, the following presents an example of the manner by which wastewater collection and treatment is affected.

Wastewater infrastructure generally consists of three principal components including: 1) collection systems (sewers and pumping stations), 2) treatment plants (primary, secondary, and advanced), and 3) effluent disposal. Primary treatment process design is generally consistent where all wastewater

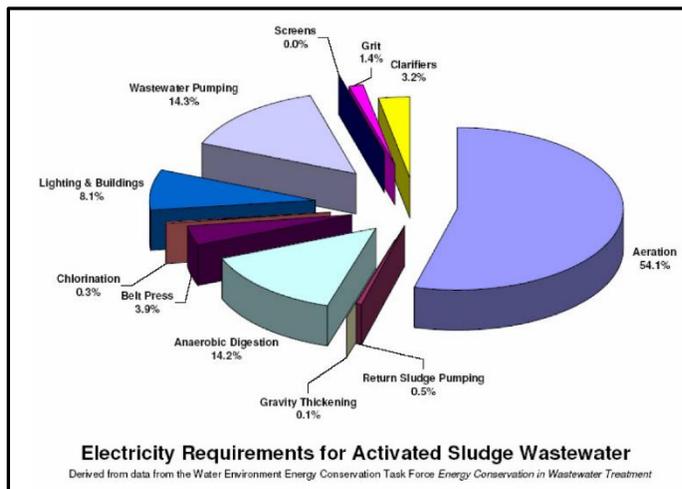


Figure 6 - Typical Activated Sludge Electricity Utilization

treatment plants need to collect, filter and remove solid matter from incoming wastewater streams. However, secondary treatment process designs can vary significantly. (Many Brazilian wastewater treatment plants have only primary treatment.) The most common secondary designs utilize biological processes to remove or treat organic material remaining after primary treatment. Since aerobic bacterial action requires oxygen to function, this is normally provided through some form of aeration system. The most common types of aeration-based processes are activated sludge, aerated lagoons, oxidation ditch/extended aeration plants, and trickling filter which all provide the means for introducing oxygen into contact with the wastewater undergoing the biological treatment process. Of these biological treatment process designs, activated sludge processes (with aeration powered by fans and motors) are the most energy-intensive. For example, in a typical activated sludge based treatment plant, the aeration system represents about 55% of a plant’s electricity use while pumping represents an additional 15% of the total. The share of electricity

requirements at a typical activated sludge treatment facility is shown in Figure 6. All of the functions reflected in this chart are candidates for improved energy efficiency programs that seek to reduce energy use and cost. (This will be the basis for one of the recommended projects described later in this DM report.)

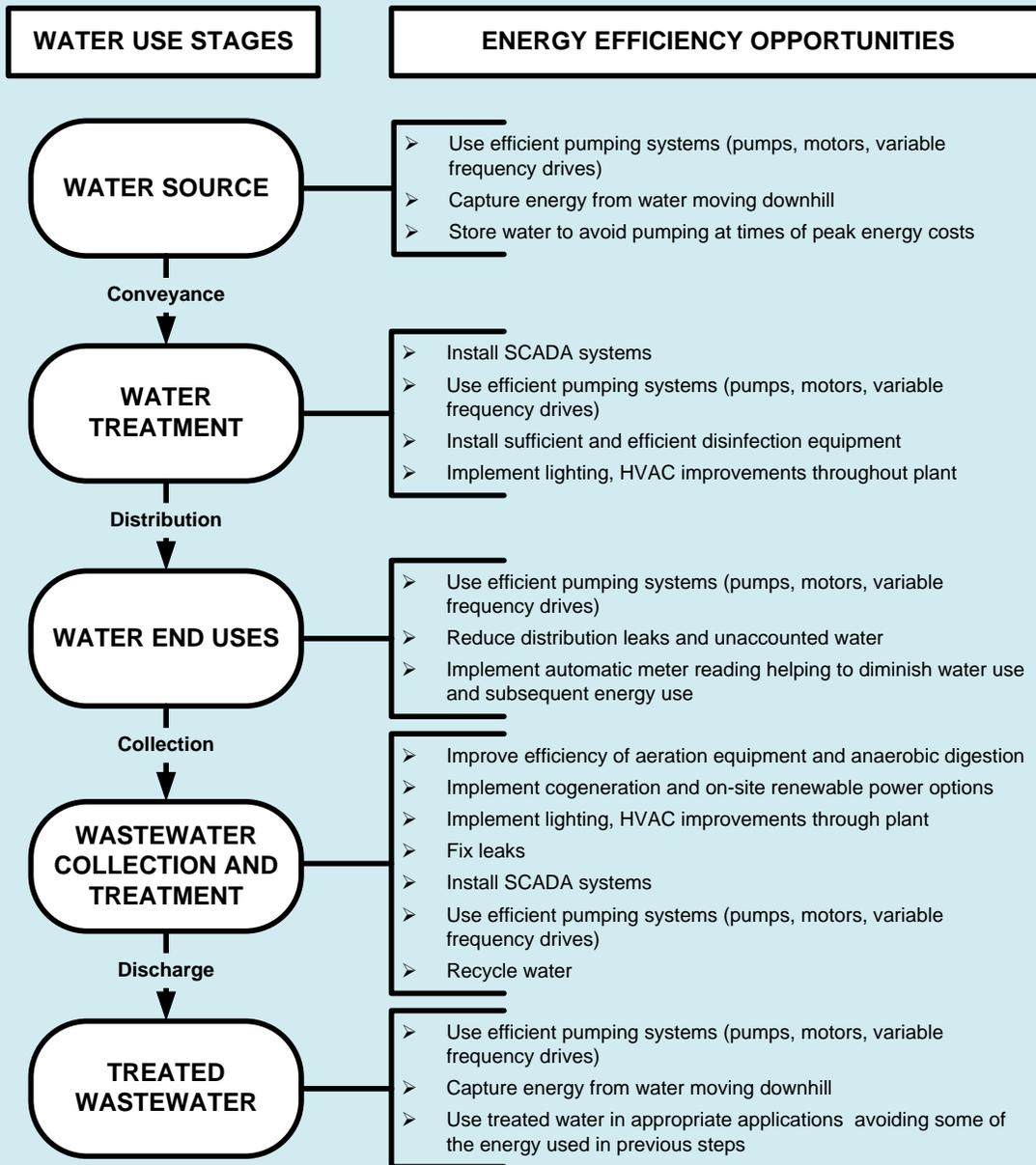
Studies have shown that most wastewater treatment plants can reduce their energy requirements (and costs) by up to 30% or more through energy efficiency measures and treatment process modifications such as those defined in the various proposals received from the utilities engaged in this DM.

Conceptually, water sector utility energy savings can be derived in a number of ways including initiatives to:

- **Optimize system processes** – For example, modifying pumping and aeration systems and implementing monitoring and control systems through SCADA (Supervisory Control and Data Acquisition) systems can increase the energy efficiency of operations. The Electric Power Research Institute (EPRI) estimates that drinking water facilities can save about 5-15% in energy use through the use of adjustable speed drives and high-efficiency motors and drives and 10-20% through process optimization and the use of SCADA control systems. In wastewater facilities, EPRI estimates that 10-20% energy savings are possible through process optimization.
- **Upgrade to more efficient equipment and systems** - Pumps and other equipment that are utilized beyond their useful life will normally operate below their optimal efficiency. In addition, water loss through old or deteriorating water distribution systems can affect energy situations since leaking distribution mains require more energy to deliver water to the end user. Similarly, leaking sewer mains allow groundwater to infiltrate the piping system and increase the flow of clean, uncontaminated water to wastewater treatment plants thereby increasing the hydraulic loading and operational cost of the treatment process.
- **Improve energy management** - Enhancing the means for monitoring and controlling energy utilization within water sector operations and facilities can provide an increased sensitivity to the means for reducing energy consumption and, as a result, costs. The use of automatic control systems can help enhance energy efficiency by optimizing process and equipment functions.
- **Generate usable energy through internal sources** – Throughout the world, many water sector utilities are generating energy on-site to offset purchased electricity. A number of wastewater treatment locations that utilize this approach were observed by the Brazilian utility participants during the RTM. Beyond efficiency measures, these water sector utilities are reducing their energy costs by recovering energy from treatment biogas sources and using the collected biogas to generate electricity, heat the plant and, in some cases, sell electricity back to the grid. (Many of the utilities engaged during the DM are seeking USTDA assistance for this type of project.)

Examples of energy efficiency opportunities within the entire cycle of managing water are shown in Figure 7 of the following page. In addition to a utility's internal perspectives related to energy reliability and cost, there are other co-benefits associated with utility energy efficiency project outcomes. For example, reducing the amount of energy utilized by the water sector or creating new internal power sources can help to reduce the need for creating new power generation capacity within Brazil while also helping to reduce the emissions of local and global pollutants such as greenhouse gas (GHG) emissions that may be derived through anaerobic treatment processes. (The high methane content of biogas generated in some wastewater treatment processes makes generated biogas a significant GHG emission.)

Figure 7
Water Sector Energy Efficiency Assessment Factors



3

PROJECT IDENTIFICATION AND INITIAL SCREENING

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4

GENERAL CONDITIONS AND BASIS FOR PROJECT RECOMMENDATIONS

There are a number of general conditions in Brazil that apply to each of the reviewed and shortlisted projects. The following describes those general aspects and conditions that may affect the viability and prospects of the evaluated projects. This information also forms the basis for PerformTech's recommendations concerning USTDA support as presented in Section 9.

4.1 Project Development Drivers and Processes

The development process for water sector projects in Brazil (or in any location) is a function of conventional development drivers that motivate utilities to implement service expansion or enhancement projects. A development driver is any factor that creates or fuels an activity. In the water sector, this can include a number of conventional factors that are usually in the control of various entities directly involved (water and wastewater service providers, regulators, etc.) or tangential (financial institutions, etc.) to the actual process of providing water sector services or developing new processes and infrastructure. The following presents PerformTech's view of the relevant development drivers in Brazil and an assessment of their current status in supporting the implementation of the identified water sector projects.

- **Regulatory** – The regulatory driver is based on the mandate and enforcement of laws, rules and regulations for all types of water sector activities and facilities. A strong regulatory driver based on an effective legal framework and rigid enforcement will compel required actions by responsible stakeholders in their roles as water sector service providers. An example of a regulatory driver is the need for utilities to meet minimum water and wastewater treatment standards. The regulatory and planning framework that currently exists in Brazil provides a sufficient regulatory driver for necessary actions to develop effective water and wastewater management programs. In addition, PerformTech believes that the overall regulatory structure in Brazil does not impede the implementation of projects that could evolve from USTDA support. This would potentially apply to other regulatory requirements for selling electricity from biogas generation systems if all of the derived energy is not consumed internally.
- **Economic** – The economic driver is based on possible economic gain that can be derived from an action or project. For example, the development of internal power generation capabilities using biogas already produced during wastewater treatment may help to significantly reduce operational costs. The high cost (and reliability of supply) of electricity in Brazil creates a strong economic driver for any projects that are aimed at improving energy efficiency or developing new internal sources of energy. PerformTech believes that this is the strongest development driver fueling the interest of the engaged utilities in the biogas power generation project or in other initiatives aimed at improving energy efficiency and cost. The economic driver will also be an important element in the CEDAE value engineering project since their intent of utilizing advanced U.S. technologies is to possibly achieve operational cost savings in addition to increased treatment effectiveness.
- **Political** – The political driver is based on the actions of local, regional and national leaders in their support of effective public service processes and facilities. The extensive infrastructure investments

planned by the Government of Brazil in the near future are based on a strong political driver aimed at improving environmental and water sector service conditions throughout the country. The upcoming 2016 Olympics (and the recent 2014 World Cup) strengthen the political driver where government leaders have dedicated significant financial resources for enhancing various service functions including those provided by the water sector utilities in the locales affected by these two events. PerformTech believes that the existing national political driver contributes to the prospects for all of the evaluated projects.

- **Environmental** – The environmental driver is based on the prospects of negative environmental and health effects due to substandard water or wastewater management processes and facilities. The need for increasing the level of wastewater treatment throughout Brazil helps to strengthen the environmental driver in protecting natural resources and the health of Brazil’s population. To be effective, the environmental driver usually works in conjunction with the regulatory driver in that enforceable regulations often become the compelling factor in investments made to enhance treatment effectiveness and resulting environmental protection. The need to improve wastewater treatment processes from primary to secondary or advanced treatment levels strengthens the environmental driver. The environmental driver is particularly strong in relationship to wastewater streams that are currently discharged with no or limited treatment. The environmental driver is relevant to the evaluated projects since all of the utilities are seeking to optimize their current services and facility functions to allow service coverage expansion and improvement of treatment results.
- **Social** – The social driver for water sector projects is based on the response of people to the function and service coverage of existing water sector processes and facilities. For example, public outcry due to a lack of water and wastewater service delivery to urban poor and rural locales in Brazil’s major cities can create a strong social driver for water sector service expansion. The social view of water sector service delivery can have a significant impact on the strength of the political driver as a result of the need for improved services.

Based on the above, PerformTech believes that there are sufficient driving factors to support the implementation of all of the 17 projects proposed by the seven utilities engaged in this DM. Further, this will apply to the three recommended USTDA initiatives that will assist projects that will, likely, be implemented in the near term. Further, PerformTech believes that the compelling driver for the recommended projects will be the economic driver where significant cost savings can be achieved a result of their implementation particularly as they relate to energy efficiency and resulting cost savings.

4.2 Project Sponsor Capabilities and Commitments

Each of the engaged utilities are major water sector entities in Brazil that have established a sound track record for planning, implementing and operating water and wastewater services and facilities. Basically, USTDA provided an initial grantee screening for the DM process as a result of its recent RTM which helped assure PerformTech that each of the utilities engaged during the DM would be viable candidates for USTDA assistance. In addition, the representatives of the various utilities that interacted with the PerformTech technical team during the DM field work demonstrated sound technical and project management capacity that will help assure successful development of any project that may evolve from consultancies supported by USTDA. Given the nature of the proposed projects that USTDA could support, PerformTech believes that each of the engaged utilities is committed to improve their operating conditions through greater efficiencies and other means for decreasing the cost of service delivery and, in particular, energy costs.

4.3 Factors Influencing U.S. Export Potential

The key aspect of USTDA's interest in supporting water sector projects in Brazil is the prospect that their support will create opportunities for technology and service export from the United States to Brazil. The United States is the world's largest producer (and consumer) of environmental technologies. U.S. environmental goods and services are viewed to be an important component of the U.S. economy. (A number of U.S. companies have already established a physical and business presence in Brazil by opening offices in the country. In addition, a number of the U.S. companies contacted during this DM indicated a strong interest in seeking business in Brazil.)

The historical trade relationship between the United States and Brazil can serve as a good indication that water sector business opportunities can be a strong source of exports from U.S. suppliers. The export potential associated with the evaluated water sector projects is primarily a function of three important factors including:

- 1. Technical nature of individual projects** - The highly technical nature and desired outcomes of individual advanced water and wastewater treatment processes determines the specific systems and technologies that will be used for their implementation. The energy related water sector technologies utilized at the U.S. facilities visited by the Brazilian RTM participants are not generally available in Brazil and they define the potential export opportunities of similar systems to Brazil.
- 2. Local competition for supply of services and equipment** - The frequent use of a particular technology or approach in any country will often lead to the development of local supply sources which, in turn, ultimately diminishes the need for imported technologies and services from foreign suppliers. To this point, water sector advanced treatment and energy generation facilities have not been implemented in Brazil with the result that many of the required systems and components are not currently available from local sources. However, the strong economic and industrial base in Brazil and the technical sophistication and capabilities of the Brazilian water sector utilities may ultimately lead to the development and availability of locally sourced technology, equipment and services of the type required for future similar advanced treatment applications. Because of its state of development, Brazil currently has strong water and wastewater utilities with a good record of innovation and effective technology application. However, local availability of advanced technologies is not expected to be the case in the near term for implementation of the projects that are the basis for the work recommended for USTDA support. Potential local competition that may claim to be comparable to the function of the U.S. technologies is strengthened by import restrictions such as local content requirements or import tariffs in Brazil. Such impediments need to be closely considered by U.S. suppliers in their pursuit of work in Brazil. The proposed USTDA support for projects recommended in this DM report can help to create a better understanding of the manner by which these impediments can be overcome to realize the U.S. exports related to the recommended projects.
- 3. Foreign competition for supply of services and equipment** - United States service and equipment suppliers must often compete with suppliers from other countries. The import/export position of the U.S. and other foreign suppliers in any country can be a significant factor in determining whether United States suppliers will be successful in providing services and equipment for proposed projects. This will be a major factor in defining the export potential for water sector projects in Brazil. This issue is also important since many foreign companies who compete with U.S. firms may be assisted by their governments in an aggressive financial manner to further their ability to secure technology sales and exports. In some cases, foreign environmental technology firms enjoy

substantial government support for their overseas ventures and U.S. environmental technology companies often find it very difficult to compete with these firms. However, Brazil and the United States are major trading partners which helps support the prospects for U.S. companies to compete with other foreign suppliers. In addition, the U.S. Exim Bank can provide assistance to the target projects as a means for offsetting foreign competition. (A description of U.S. Exim Bank programs that may be applicable to the recommended projects is presented in Annex 2 of this DM report.

PerformTech's estimate of U.S. export potential realized from the recommended projects will be presented in the sections of the report that relate specifically to the recommended projects.

4.4 Foreign Competition and Market Entry Issues

This section of the DM report seeks to define and evaluate foreign competition and market entry issues that United States suppliers will face if they are to be successful in deriving sales from water sector projects in Brazil. Key challenges to U.S. suppliers will include the following factors:

1. Trade Barriers
 - a. Market tariffs on imported goods and services
 - b. Licensing and import requirements including local content requirements
 - c. Preferential procurement processes (particularly in government purchases)
 - d. Intellectual property rights
2. Competitiveness Factors
 - a. Coordinated government support for competitors
 - b. Availability and source of project finance (which, in some cases, may place restrictions of import)
 - c. Intense international competition from well qualified companies

The United States Foreign Commercial Service (FCS) has reported the following regarding water sector trade prospects in Brazil:

Trade barriers affect exports: Tariff and nontariff barriers (e.g., local-content requirements) may hinder the growth of U.S. exports to certain markets. More than 60% of countries had applied tariff rates of 5% or more on water filtration and purification equipment in 2011, including substantially higher rates in some countries (e.g., 7.5% to 10% in India and 14% in Brazil).

Competitive global market: U.S. producers face significant competition from manufacturers in the European Union (EU) and elsewhere. For example, U.S. producers lost market share in Canada to producers from the EU and Japan, with the U.S. share of Canadian imports of water filtration and purification equipment and parts falling from 78% in 2007 to 58% in 2011. Germany's global exports of equipment (excluding parts) exceeded U.S. exports by \$28 million in 2011.

Government procurement policies in Brazil will likely apply to water sector purchases by government entities and state-owned companies. While Bid Law 8666 stipulates an open competitive process for major government procurements that are open to international suppliers, it also establishes price as the principal factor in selecting suppliers. This law applies to most government procurements (excluding information technology and telecommunications based procurements). An important element of USTDA supported consultancies will be to demonstrate that U.S. water sector technologies will offer superior results thereby defining a technical specification for the targeted technology applications that cannot be provided from Brazilian sources.

Procurement processes in Brazil are also influenced by other government and institutional policies that give preference in public procurements to companies that produce in Brazil. The intent of this policy is to generate and sustain employment while also contributing to technology development within the country. This policy emerged after the 2008/9 economic crisis. At that time, Brazil was faced with a large international trade deficit and a shrinking industrial sector. Because of this, the Brazilian government decided that the level of competitiveness of Brazilian companies should be protected and increased in order to sustain jobs and stimulate economic growth within the country. In 2011, this preference policy was incorporated into Brazil's National Economic Policy (Plano Brasil Maior). (The textile, clothing and footwear industries were the first to benefit from the policy when, in November 2011, the Ministry of Development, Industry and Commerce implemented an 8 percent preference margin for Brazilian-made goods in these sectors when bidding on government contracts.) From this period on, protection and development of local manufacturing capabilities and capacity became a key point in Brazil's economic policy. Government procurement is just one of thirty-five provisions within the policy intended to support Brazilian exporters and protect domestic producers. Local content requirements in Brazil derived through the policy will be a key issue that will need to be considered in realizing U.S. exports to Brazil from USTDA support. Brazil uses mostly indirect mechanisms to require a stipulated level of local content. These mechanisms include the following:

- Subsidized financing through BNDES (Brazil Development Bank) where BNDES establishes local content requirements as a condition of its financing.
- Tax breaks for companies achieving a specified level of local content.
- Quotas for preferential purchases of locally-manufactured goods in government tenders.
- Self-adopted policy in companies strongly tied to the government such as the power utility (Petrobras) for example.

The mechanism that is the most relevant to the proposed water sector projects is the conditions associated with BNDES financing since BNDES financing is utilized by many of the engaged utilities as a means of implementing their development projects.

4.5 Development Impacts

Brazil's strong economy (when compared to other national economies in Latin America) and growing urban centers have created a number of important development issues that must be addressed if the country's economy is to continue growing and making progress in dealing with its urban issues. A foundation to addressing those issues is the need for effective public services including those provided by the water sector. Accordingly, projects that are intended to support water supply and wastewater management service providers will be important to Brazil's future. National development requires sufficient good quality water to meet societal needs and requires a clean environment that is not threatened by ineffective wastewater management. Therefore, PerformTech believes that all of the proposed water sector projects evaluated during this DM (if determined to be economically and technically viable) will have a significant positive development impacts both at the national and local levels. All of the proposed projects will serve to either expand or enhance water sector services. In particular, the three recommended USTDA interventions will be important in supporting possible outcomes that will help to increase the energy and cost effectiveness of the targeted utility locations. Based on the expected success of supported outcomes, the application of the technical approaches defined by the three USTDA support initiatives will help to increase the viability of other utilities and locations by replication.

USTDA Development Impact Factors - The proposed Terms of Reference developed for any study or other initiative funded by USTDA will include a requirement that the U.S. consultant or contractor secured through USTDA funding assistance define the development impacts of the subject projects and their intended outcomes. Development impact categories typically considered by USTDA include those associated with: 1) infrastructure, 2) market-oriented reform, 3) human capacity building, and 4) technology transfer and productivity improvement. Because of the nature of water sector projects, three of these standard development impacts (infrastructure, human capacity building, and technology transfer and productivity improvement) are expected to apply. PerformTech believes that all of the projects proposed for USTDA consideration will have a positive local and national development impact in Brazil based on the aforementioned criteria irrespective of whether U.S. service and technology suppliers are involved. This is based on the following general findings and conclusions related to the standard development impact factors:

- **Infrastructure** - The implementation of any project to increase water sector viability and effectiveness will provide a sound infrastructure base in an important environmental and development sector. The projects supported by USTDA will help optimize the technical and economic function of the utilities participating in the USTDA initiative. This can have a major impact on the overall public service and environmental conditions in individual project service areas through better water and wastewater management as well as providing a major beneficial impact on the general environmental conditions of people in the region that benefit from the project results. By interpolation, the lessons learned from the resulting projects, if successful, can be replicated in other locales thereby increasing the influence of the USTDA assistance.
- **Human Capacity Building** - The implementation of advanced energy-related technologies in Brazil is expected to include training in operational/maintenance techniques that will increase the technical capability of the utility's operating staff. PerformTech expects that the staff involved in operating and maintaining the systems derived from USTDA supported work will be Brazilian. PerformTech's observations during the DM interactions with the target utilities lead to a conclusion that utility personnel may already have sufficient technical capacity to operate, maintain and manage the resulting systems.
- **Technical Transfer and Productivity Improvement** - The implementation and sustained operation/maintenance of advanced biogas related energy generation and wastewater treatment systems is a technically complex process that will require technology transfer to Brazil since such facilities have not yet been extensively utilized in the country. Similarly, the value engineering study proposed for CEDAE's New Guandu water treatment facility design may introduce new U.S. technologies that will help to increase the productivity and effectiveness of water sector service providers throughout Brazil.

4.6 Impact on the Environment

The nature of water supply and wastewater management infrastructure is such that any project intended to improve the viability of water sector service processes and facilities in Brazil will have positive impacts on the environment. The implementation of advanced technologies that comply with sound international standards and that have been developed under stringent environmental compliance criteria such as that utilized in the U.S. and E.U. will inherently have a beneficial impact on the Brazilian environment where similar standards have yet to be adopted. In particular, the development of biogas power generation systems at Brazilian wastewater treatment plants can have a significant environmental benefit through the reduction of GHG emissions as a means of contributing to

climate change mitigation processes. Biogas is comprised principally of methane which is a major greenhouse gas (with a unit impact about 14 times that of carbon dioxide). The thermal processes inherent to using biogas from wastewater treatment plant anaerobic processes achieve the important benefit of eliminating methane emissions while also generating power for internal use or sale thereby reducing GHG emissions from conventional generation sources.

PerformTech believes that there may be very limited negative environmental impacts that could result from the physical implementation of the proposed projects particularly as they relate to construction or retrofit activities at of existing facilities. Any building and site construction project will create minor negative environmental effects such as dust and erosion. However, PerformTech believes that these negative impacts can be effectively and easily mitigated through sound design, construction and operating procedures.

4.7 Impact on U.S. Labor

Increasing the level of exports to Brazil for implementation of the supported projects will have a beneficial impact on U.S. labor by creating or sustaining the jobs that are required to produce the exportable materials. Today, an extensive number of U.S. companies, from large multinational businesses to small start-up manufacturers, have the products, services, and technologies that address increasingly complex environmental standards and provide proven, cost-effective, and reliable solutions to environmental problems including the issues that the Brazilian utilities are seeking to address. In the United States, environmental technology design, fabrication and manufacture are high-wage, high-growth industries where a high proportion of the companies involved are small businesses. Earlier this year, the International Trade Administration (ITA) reported that:

Jobs supported by exports were 11.3 million in 2013, up 1.6 million since 2009 (Table 1). This is the greatest number of jobs supported by exports for the period 1993-2013. In 2013, every billion dollars of U.S. exports supported 5,590 jobs. Increases in export prices and labor productivity continue to drive down the number of jobs supported per billion dollars of exports. Increases in jobs supported by goods exports account for approximately two-thirds of the total 1.6 million gains in jobs supported by exports since 2009.

The ITA's analysis of the unit value per job of U.S. exports has been utilized as a basis for estimating the impact on U.S. jobs that may result from the export outcomes that could be realized through the USTDA supported interventions. A summary of the ITA analysis on this unit export value is presented in Annex 3 which shows that \$178,884 in exports support one U.S. job based on 2013 export data. This value was utilized by PerformTech as the basis for calculating the job impacts associated with the export potential that may be realized as a result the funding support provided by USTDA. The individual value of export potential for the recommended USTDA support activities is further evaluated in the following sections of this report which present the specific aspects of each recommended activity. (It is important to note that the definition of export potential utilized in this DM evaluation is based on the source of manufacture for the exported systems and equipment. For example, some U.S. companies will actually manufacture equipment and systems in foreign countries. If not manufactured in the U.S., a U.S. company's equipment and systems would not be used to determine export potential since manufacturing and support jobs are a primary prerequisite.)

5

Biogas Power Generation Scoping Assessment

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6

COMPANHIA ESTADUAL de AGUAS e ESGOTOS (CEDAE) VALUE ENGINEERING STUDY

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7

EMBASA: ENERGY EFFICIENCY AND OPERATIONAL IMPROVEMENT FEASIBILITY ANALYSIS

7.1 Project Background

The Project shall undertake efficiency evaluations of various systems and equipment within the largest sewerage system of Salvador and six smaller sewerage systems within the city's greater metropolitan area. EMBASA operates and maintains 285 sewerage systems including a number of smaller condominiums and residential scale systems.

Salvador's population is about 2.88 million people while the population of the entire state of Bahia is 13.5 million people. Salvador's sewerage system serves about 80% of the city's population and user fee revenues from sewerage services represents approximately 70% of the company revenues. EMBASA's intended energy efficiency and operational development actions in Salvador shall clearly generate social, economic and environmental positive impacts and shall serve as a model for application of the evaluated actions in other EMBASA locales.

The Salvador sewerage system has two ocean outfalls: Rio Vermelho and Jaguaribe, which discharge 8.3 m³/sec and 3.0 m³/sec, respectively. Collected sewage flows through the sewage collection network, pumping stations, interceptors and the preliminary treatment plant prior to discharge via the ocean

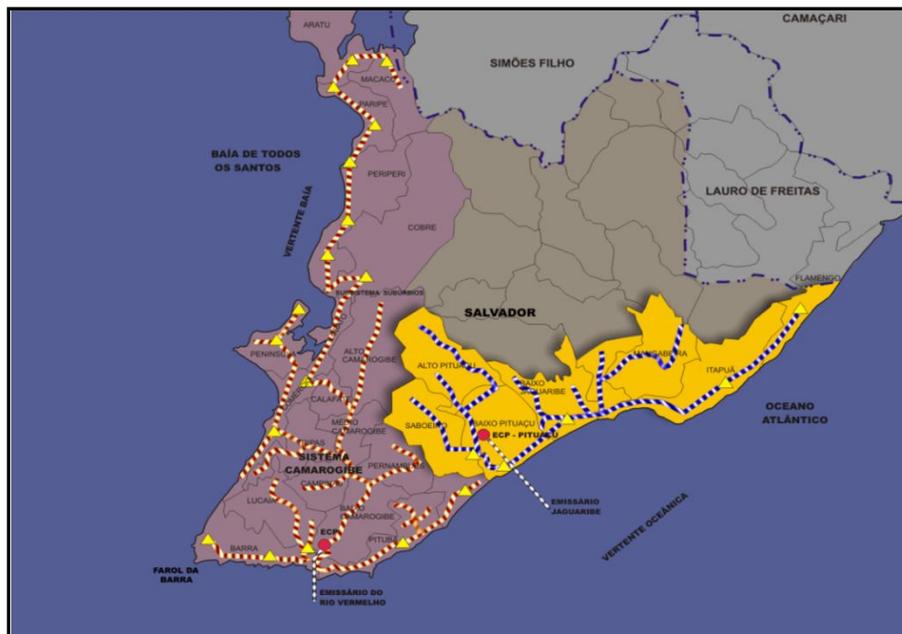


Figure 11 - Overview of Salvador Sewerage system

outfalls. The general configuration of the Salvador sewerage system is presented in Figure 12.

Rio Vermelho Preliminary Treatment Plant - The Rio Vermelho Ocean Disposal System preliminary treatment system was upgraded in 1998 and now includes: five mechanical grinders (or comminutors), five screw pumps, four grit removal units, 12 mechanical screens, seven centrifugal pumps for effluent pumping, one electrical substation of 69 KV, five frequency inverters, and two odor control treatment systems. All these unit operations need operational improvements in order to enhance their energy efficiency and operating effectiveness.

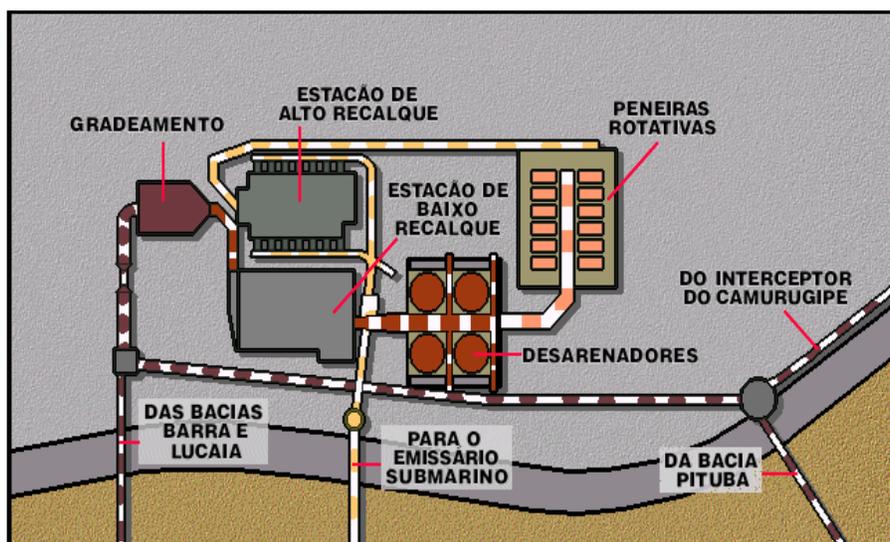


Figure 12 - Ocean Disposal Preliminary Treatment Plant

The recommended project will investigate actions to: upgrade and replace of antiquated automation system components; improve the energy efficiency of pumping stations by installing two frequency inverters (variable frequency drives or VFDs) at the preliminary treatment plant; install an odor control treatment system at the preliminary treatment plant; replace two high performance pump motor sets; and evaluate and replace the comminutors, grit removal and screening systems at the preliminary treatment plant.

Salvador Sewerage System Pump Stations – For these elements of EMBASA system, the recommended project will investigate actions to: update, supplement or replace the automation system in 186 pumping stations; improve pumping stations energy efficiency by installing 34 VFDs; install odors control treatment systems at the ten largest pumping stations; replace 170 high performance pump motor sets; and evaluate and implement grit removal unit systems at the four largest pump stations.

Área Petrolífera and Litoral Norte Sewerage Systems – This project element will investigate other smaller sewerage systems tributary to the metropolitan Salvador area including systems located in the Ibero Star, Reta Atlântico, Praia do Forte, Barra do Pojuca, in Litoral Norte sector, and Ilha Ponta de Nossa Senhora, Ilha Bom Jesus dos Passos, in Área Petrolífera sector. For these elements of EMBASA system, the recommended project will investigate actions to: replace or install automation systems in current treatment plants and pump stations that would include the installation of four odor control treatment systems in the Área Petrolífera WWTPs; install a grit removal system at Dias D'Ávila pump station; install a sludge treatment system at the Ibero Star and Madre Deus WWTPs; and implement an ultraviolet disinfection at the Madre Deus WWTP.

7.2 Project Sponsor Commitments

Throughout PerformTech’s DM field and evaluation work, EMBASA has been the very responsive during the project evaluation process. In addition, EMBASA, like all of the other utilities engaged in the RTM and the DM is faced with the need to increase their energy efficiency and reduce overall costs. This will help them increase the effectiveness of their services and expand service availability. As a result, PerformTech believes that EMBASA has a strong commitment to improving and upgrading the systems referenced in the above project description.

7.3 U.S. Export Potential

The table below presents a summary of the types of equipment, quantities needed and estimated costs for the defined project which involves the sewerage system of Salvador and other six systems in Metropolitan area. The table also presents PerformTech’s estimate of U.S. export potential that may be realized through more extensive deployment in other systems and facilities operated by EMBASA.

Table 4				
EMBASA ENERGY EFFICIENCY AND OPERATIONAL EFFECTIVENESS PROJECT EXPORT POTENTIAL				
DESCRIPTION	CURRENT PROJECT		ALL EMBASA SYSTEMS	
	PROPOSED QUANTITY	EXPORT POTENTIAL (US\$)	POTENTIAL QUANTITY FOR ALL SYSTEMS	EXPORT POTENTIAL (US\$)
SALVADOR SEWERAGE SYSTEM				
PRELIMINARY TREATMENT PLANT				
Automation of operational plant using SCADA System, with 1200 input and output points	1	\$1,350,000	1	\$1,350,000
Substitution of frequency converters with voltage of 2.400V and power of 800CV	2	\$765,000	5	\$1,912,500
Installation of grit removal with flow of 1,6m ³ /sec	1	\$315,000	1	\$315,000
Substitution of pump motor set with voltage of 2.400V and power of 800CV, flow of 1,3m ³ /sec e pressure gauge height of 30mca	2	\$2,250,000	7	\$7,875,000
Substitution of rotating strainers set/dewatering presses with 1,75m diameter cylinder, mesh opening of 02 mm	2	\$450,000	12	\$2,700,000
Recovery/substitution of odor treatment system	1	\$900,000	1	\$900,000
		\$6,030,000		\$15,052,500
PUMPING STATIONS				
Automation of 186 pumping stations at Salvador Sewerage System, using SCADA system, with pump power ranging from 02 to 400CV	186	\$2,250,000	186	\$2,250,000
Installation of frequency converters on the main pump stations, with voltage of 380V	34	\$1,111,500	186	\$6,080,559
Installation of grit remove on the priority pumping stations	4	\$900,000	50	\$11,250,000
Substitution of pump motor sets on the smaller pumping stations	170	\$1,246,500	170	\$1,246,500
Installation of odor treatment systems at 10 bigger pumping stations in Salvador	10	\$900,000	30	\$2,700,000
		\$6,408,000		\$23,527,059
LITORAL NORTE AND AREA PETROLIFERA SEWERAGE SYSTEM				
Automation of WWTP (6 plants) and pumping stations with SCADA system. a) Litoral Norte systems: Ibero Star, Reta Atlântico, Praia do Forte and Barra do Pojuca; b) Area Petrolifera systems: Ilha Ponta de Nossa Senhora and Ilha Bom Jesus dos Passos	6	\$1,800,000	15	\$4,500,000
Installation of odor treatment systems at the peripheral systems units	4	\$675,000	10	\$1,687,500
Implementation of grit removal at Dias D'Ávila VI pumping station	1	\$90,000	5	\$450,000
Implementation of sludge treatment systems at Ibero Star and Madre de Deus WWTPs	1	\$180,000	6	\$1,080,000
Implementation of UV Desinfection at Madre de Deus WWTP	1	\$36,000	10	\$360,000
		\$2,781,000		\$8,077,500
TOTAL		\$15,219,000		\$46,657,059

Notes:

- 1 - Installation cost estimated at 30% of equipment cost shown above.
- 2 - Current project total cost - \$19,784,700
- 3 - All EMBASA systems total cost - \$60,654,176

7.4 Impact on U.S. Labor

Based on the above export potential and utilizing the ITA's analysis of the unit value per job of U.S. exports (\$178,884 of export for every U.S. job created or sustained), PerformTech estimates that the full export potential that may be realized by successful deployment of the system upgrades identified through the energy efficiency and operational effectiveness study throughout EMBASA's infrastructure base could positively affect about 85 to 261 jobs in the United States. Further exports derived from deployment of the project systems and equipment to other utilities in Brazil could increase this job impact substantially.

7.5 Justification for USTDA Support

As is the case with each of the initiatives recommended for USTDA support, PerformTech believes that the proposed EMBASA energy efficiency and operational effectiveness evaluation can help to

demonstrate the application of U.S. systems and equipment into a sewage management system in one of Brazil’s major urban centers. The primary justification for USTDA’s involvement in the proposed evaluations is to provide an opportunity to identify specific applications for U.S. technologies in an existing sewage management system that requires significant upgrade. This is also apt to provide additional opportunities for U.S. suppliers as EMBASA seeks to upgrade the treatment effectiveness of its facilities and expand service coverage of its sewerage system.

7.6 Energy Efficiency and Operational Effectiveness Study Terms of Reference

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7.7 Energy Efficiency and Operational Effectiveness Study Budget and Budget Narrative

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7.8 Energy Efficiency and Operational Effectiveness Task Completion Schedule

The Energy Efficiency and Operational Effectiveness Study is expected to be completed in 6 months upon execution of the study by the U.S. consultant selected by EMBASA. The anticipated task completion schedule is shown in the following page. It should be noted that the final task completion schedule will likely be presented by the Contractor in the Energy Efficiency and Operational Effectiveness inception report developed in Task 1 of the project Terms of Reference.

EMBASA: ENERGY EFFICIENCY AND OPERATIONAL IMPROVEMENT FEASIBILITY ANALYSIS												
Project Completion Schedule												
Work Tasks	Month 1				Month 2				Month 3			
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
TASK 1. PLAN, COORDINATE AND MANAGE FEASIBILITY ANALYSIS RESOURCES, SCHEDULE AND ACTIVITIES												
TASK 2. COMPLETE DOCUMENT REVIEW, KICK-OFF MEETING AND DETAILED WORK PLAN DEVELOPMENT												
TASK 3. REVIEW AND ASSESS CURRENT ENERGY AND OPERATIONAL SITUATIONS RELATED TO TARGET EMBASA INFRASTRUCTURE												
TASK 4. DEFINE OPTIMUM TECHNICAL CONFIGURATIONS FOR THE TARGET LOCATIONS												
TASK 5. DEVELOP OPINION OF COST FOR IDENTIFIED SYSTEMS AND EQUIPMENT												
TASK 6. PERFORM FINANCIAL AND REGULATORY ANALYSIS												
TASK 7. CONDUCT A DEVELOPMENT IMPACT ASSESSMENT												
TASK 8. CONDUCT A PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT												
TASK 9. PREPARE AND SUBMIT FINAL REPORT												
Work Tasks	Month 4				Month 5				Month 6			
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
TASK 1. PLAN, COORDINATE AND MANAGE FEASIBILITY ANALYSIS RESOURCES, SCHEDULE AND ACTIVITIES												
TASK 2. COMPLETE DOCUMENT REVIEW, KICK-OFF MEETING AND DETAILED WORK PLAN DEVELOPMENT												
TASK 3. REVIEW AND ASSESS CURRENT ENERGY AND OPERATIONAL SITUATIONS RELATED TO TARGET EMBASA INFRASTRUCTURE												
TASK 4. DEFINE OPTIMUM TECHNICAL CONFIGURATIONS FOR THE TARGET LOCATIONS												
TASK 5. DEVELOP OPINION OF COST FOR IDENTIFIED SYSTEMS AND EQUIPMENT												
TASK 6. PERFORM FINANCIAL AND REGULATORY ANALYSIS												
TASK 7. CONDUCT A DEVELOPMENT IMPACT ASSESSMENT												
TASK 8. CONDUCT A PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT												
TASK 9. PREPARE AND SUBMIT FINAL REPORT												

7.9 Potential United States Service and Equipment Suppliers

The following table presents a partial listing of United States companies that may be able to provide the services and systems necessary for the Project. These companies form the basis for the export potential to be derived from implementation of the subject project by EMBASA.

List of Potential Equipment Suppliers and Engineering Consultants				
BRAZIL - EMBASA ENERGY EFFICIENCY AND OPERATIONAL IMPROVEMENT FEASIBILITY ANALYSIS				
U.S. Firm Name	Address	Phone/Fax	Email	Product Information
Engineering Consultants				
Brown and Caldwell	201 North Civic Drive Walnut Creek, CA 94596	(925) 937-9010 (T) (925) 937-9026 (F)	www.browncaldwell.com	Full service engineering firm with international experience in water and wastewater sectors
Black & Veatch Corporation	11491 Lamar Avenue Overland Park, KS 66211	(913) 458-2000 (T) (913) 458-3100 (F)	www.bv.com	Full service engineering firm with international experience in water and wastewater sectors
CDM Smith	One Cambridge Place 50 Hampshire Street Cambridge, MA 02139	(617) 452-6000 (T) (617) 452-8212 (F)	www.cdmsmith.com	Full service engineering firm with international experience in water and wastewater sectors
CH₂M-Hill	9191 South Jamaica St. Englewood, CO 80112	(720) 286-2000 (T)	www.ch2m.com	Full service engineering firm with international experience in water and wastewater sectors
Greeley and Hansen	100 South Wacker Drive, Suite 1400 Chicago, IL 60606-4004	(312) 578-2306 (T) (312) 558-1006 (F)	www.greeley-hansen.com	Full service engineering firm with international experience in water and wastewater sectors
ICF International	1725 I Street, NW #1000 Washington, DC 20006	(202) 862-1200 (T) (202) 862-1144 (F)	www.icfi.com	Full service engineering firm with international experience in water and wastewater sectors
Jacobs Associates	465 California St. San Francisco, CA 94104	(415) 434-1832 (T) (415) 956-8502 (F)	www.jacobssf.com	Full service engineering firm with international experience in water and wastewater sectors
Malcolm Pirnie	104 Corporate Park Drive White Plains, NY 10602	(914) 694-2100 (T) (914) 641-2410 (F)	www.pirnie.com	Full service engineering firm with international experience in water and wastewater sectors
AECOM	701 Edgewater Drive Wakefield, MA 01880	(781) 246-5200 (T) (781) 245-0823 (F)	www.aecom.com	Full service engineering firm with international experience in water and wastewater

List of Potential Equipment Suppliers and Engineering Consultants				
BRAZIL - EMBSA ENERGY EFFICIENCY AND OPERATIONAL IMPROVEMENT FEASIBILITY ANALYSIS				
U.S. Firm Name	Address	Phone/Fax	Email	Product Information
				sectors
MWH Global	380 Interlocken Crescent Broomfield, CO 80021	(303) 416-4000 (T) (303) 416-4100 (F)	www.mwhglobal.com	Full service engineering firm with international experience in water and wastewater sectors
Parsons Engineering	100 W. Walnut Street Pasadena, CA 91124	(626) 440-2000 (T) (626) 440-6200 (F)	www.parsons.com	Full service engineering firm with international experience in water and wastewater sectors
Weston Solutions	1400 Weston Way West Chester, PA 19380	(610) 701-3000 (T) (610) 701-3124 (F)	www.westonsolutions.com	Full service engineering firm with international experience in water and wastewater sectors
Woodard & Curran	41 Hutchins Drive Portland, ME 04102	(207) 774-2112 (T) (207) 774-6635 (F)	www.woodardcurran.com	Full service engineering firm with international experience in water and wastewater sectors
Wright-Pierce Engineers	99 Main Street Topsham, Maine 04086	(207) 725-8721 (T) (207) 729-8484 (F)	www.wright-pierce.com	Full service engineering firm with international experience in water and wastewater sectors
Aeration Systems and Ancillary Equipment				
Aeration Industries Inc.	4100 Peavey Road Chaska, MN 55318	(612) 448-6789 (T) (612) 448-7293 (F)	www.aerationindustries.com	Aerators, blowers, manifolds, and instrumentation related to aeration
Aercor	6 Industrial Drive Sterling, MA 01564	(508) 422-7505 (T) (508) 422-7551	www.pollardwater.com	Integrated aeration systems for wastewater treatment
Aqua-Aerobic Systems, Inc.	6306 N. Alpine Rd. Rockford, IL 61130	(815) 654-2501 (T) (815) 654-2508 (F)	www.aqua-aerobic.com	Mechanical and diffused aeration systems for wastewater treatment
Environmental Dynamics, Inc.	5601 Paris Road Columbia, MO 65202	(573) 474-9456 (T) (573) 474-6988 (F)	www.wastewater.com	Mechanical and diffused aeration systems for wastewater treatment
EnviroQuip Inc.	P.O. Box 9069 Austin, TX 78728	(512) 834-6010 (T) (512) 834-6039 (F)	www.enviroquip-intl.com	Mechanical and diffused aeration systems for wastewater treatment
Hoffman and Lamson	200 Simko Blvd PO Box 130 Bentleyville, PA 15314	(724) 239-1500	www.hoffmanandlamson.com	Centrifugal Blowers
Infilco Degremont Inc.	P.O. Box 71390 Richmond, VA 23255	(804) 756-7600 (T) (804) 756-7643 (F)	www.degremont-technologies.com	Complete water and wastewater aeration systems
Johnson Controls	5757 N. Green Bay Ave Milwaukee, WI 53201	(414) 524-1200	Sandra.l.buettner@jci.com	Complete water and wastewater aeration controls as well as ancillary support
Jet Tech Inc. (Division of Siemens)	1051 Blake Ave Edwardville, KS 66113	(913) 422-7600 (T) (913) 422-7667 (F)	www.usfilter.com	Complete water and wastewater aeration systems
Lakeside Equipment	PO Box 8448 1022 E. Devon Ave. Bartlet, IL 60103	(708) 837-5640 (T) (708) 837-5647 (F)	www.lakeside-equipment.com	Mechanical and diffused aeration systems for wastewater treatment
Lightnin Aerators	135 Mt. Read Blvd. Rochester, NY 14611	(716) 436-5550 (T) (716) 436-5589 (F)	www.spxprocessequipment.com	Manufacturer of mixers and surface aerators
Mass Transfer Systems Inc.	100 Waldron Road Fall River, MA 02780	(508) 679-6770 (T)	www.mtsjets.com	Manufacturer of diffused aeration systems
Parkson	1401 W. Cypress Creek Ft. Lauderdale, FL 33309-1969	(888) PARKSON	www.parkson.com	Integrated aeration systems for wastewater treatment and package systems

List of Potential Equipment Suppliers and Engineering Consultants				
BRAZIL - EMBSA ENERGY EFFICIENCY AND OPERATIONAL IMPROVEMENT FEASIBILITY ANALYSIS				
U.S. Firm Name	Address	Phone/Fax	Email	Product Information
Philadelphia Mixers	1221 E. Main Street Palmyra, PA 18976	(717) 838-1341 (T)	www.philamixers.com	Provider of mixers and surface aerators for wastewater and water systems
Sanitaire WPC	9333 N. 49 th St Brown Deer, WI 53223	(414) 365-2200 (T) (414) 365-2210 (F)	www.sanitaire.com	Complete water and wastewater aeration systems
Zimpro (Division of Siemens)	301 W. Military Road Rothschild, WI 54474	(800) 826-1476 (T) (715) 355-3335	www.usfilter.com	Complete water and wastewater aeration systems
Chemical Feed Systems and Controls				
Acrison Inc.	20 Empire Blvd. Moonachie, NJ 07074	(201) 440-8300 (T) (201) 440-4939 (F)	www.acrison.com	Chemical feed pumps, conveyors and other associated equipment
Chemilizer	230 Commerce Drive Largo, FL 33770	(727) 518-1665 (T) (727) 559-8266 (F)	www.chemilizer.com	Non-electric chemical pumps and chemical injection systems
Digital Analysis	PO Box 95 Skaneateles, NY 13152	(315) 685-0760	www.digital_analysis.com	Chemical feed systems for water or wastewater systems
Fluid Dynamics Inc.	6595 Odell Place–Suite E Boulder, CO 80301	(303) 530-7300 (T)	www.dynablend.com	Chemical feed systems, particularly oriented at dry chemical systems
GPM Pumps	110 Gateway Drive Macon, GA 31210	(478) 471-7867 (T) (478) 476-9867 (F)	www.gpmpump.com	Chemical feed and water pumping equipment
Hydro Instruments	1501 W. Park Ave. Perkasie, PA 18949	(215) 453-3102 (T) (215) 453-3106 (F)	www.hydroinstruments.com	Chemical metering equipment, chlorination
LMI Milton Roy	8 Post Office Square Acton, MA 01720	(800) 564-1097 (T) (800) 327-7563 (F)	www.lmipumps.com	Chemical feed equipment and pumps and associated instrumentation
Merrick Industries Inc	10 Arthur Drive Lynn Haven, FL 32444	(800) 345-8440	www.merrick.com	Chemical pumping and instrumentation systems
PulsaFeeder, Inc.	2883 Brighton – Henrietta Town Line Rd. Rochester, NY 14623	(716) 292-8000 (T) (716) 424-5619 (F)	www.pulsa.com	Broad range of liquid and dry chemical feed equipment
Semblex, Inc.	1635 W. Walnut Road Springfield, MO 65806	(417) 866-1035 (T) (417) 866-0235 (F)	www.semblex.com	Chemical feed systems and instrumentation
Wallace & Tiernan (Division of Siemens)	25 Main Street Belleville, NJ 07109	(201) 759-8000 (T) (201) 759-0348 (F)	www.wtus.com www.water.siemens.com	Chemical feed systems and pumps and associated instrumentation
Disinfection Equipment				
Bailey-Fisher & Porter	125 E. Country Line Rd. Warminster, PA 18974	(215) 674-6000 (T) (215) 674-7183 (F)	www.ebpa.com	Chlorination equipment and instrumentation
Capital Controls Co.	3000 Advance Lane Colmar, PA 18915	(215) 897-4000 (T) (215) 997-4062 (F)	www.capitalcontrols.com	Chlorination equipment and instrumentation
Gardiner Equip. Co.	6911 Breen Road, B-1 Houston, TX 77806	(281) 999-5193 (T) (281) 999-5197 (F)	www.waterchamp.com	Chlorination and dechlorination systems
Infilco Degremont Inc	P.O. Box 71390 Richmond, VA 23255	(804) 756-7600 (T) (804) 756-7643 (F)	www.infilcodegremont.com	Chlorination systems, ozone treatment and UV disinfection systems
Norwalk Wastewater Equipment Co. (Norweco)	220 Republic Street Norwalk, OH 44857	(419) 668-4471 (T) (419) 663-5440 (F)	www.norweco.com	Dry chemical feed systems for chlorination and dechlorination

List of Potential Equipment Suppliers and Engineering Consultants				
BRAZIL - EMBSA ENERGY EFFICIENCY AND OPERATIONAL IMPROVEMENT FEASIBILITY ANALYSIS				
U.S. Firm Name	Address	Phone/Fax	Email	Product Information
Ozonía North America	491 Edwards Ross Drive Elmwood Park, NJ 07407	(201) 794-3100 (T)	www.ozonia.com	Ozone systems and instrumentation
Sunlight Systems	Recently acquired by Wallace & Tiernan a subsidiary of US Filter	(201) 759-8000 (T) (201) 759-0348 (F)	www.wtus.com www.water.siemens.com	UV disinfection equipment
Trojan Technologies (A subsidiary of Danaher Corp, Wash, DC)	3020 Gore Road London, ON N5V 4T7	(519) 457-3400 (T) (519) 457-3030 (F)	www.trojanuv.com	UV disinfection equipment
Ultra Tech International	9454-9 Phillips Hwy. Jacksonville, FL 32256	(904) 292-1611 (T)		Chlorination systems
Wallace & Tiernan (Division of Siemens)	25 Main Street Belleville, NJ 07109	(201) 759-8000 (T) (201) 759-0348 (F)	www.wtus.com www.water.siemens.com	Chlorination equipment
Wedeco (Xylem)	14125 S. Bridge Circle Charlotte, NC 28273	(704) 716-7600 (T) (704) 295-9080 (F)	www.wedeco.com www.itt.com	UV and ozone disinfection systems
Meters and Instruments				
Millitronics	709 Stadium Drive Arlington, TX 76011	(817) 277-3543 (T) (817) 277-3894 (F)	www.milltronics.com	Water meters, level recorders, and instrumentation equipment
Polysonics	10335 Landsbury #300 Houston, TX 77099	(713) 530-0885 (T)	www.polysonics-corp.com	Ultrasonic flow meters
Wallace & Tiernan (Division of Siemens)	25 Main Street Belleville, NJ 07109	(201) 759-8000 (T) (201) 759-0348 (F)	www.wtus.com www.water.siemens.com	Water meters, blowers (including Turblex), instrumentation and chlorination equipment

8

IMPLEMENTATION FINANCING

8.1 THE FINANCIAL NATURE OF WATER SECTOR PROJECTS

As a result of its evaluation, PerformTech is recommending USTDA support for 3 projects which focus on specific technology applications in five of the utilities engaged during the RTM and DM. One of the principal issues commonly associated with developing environmental or water sector projects is the need to define the means by which a proposed project can be financed. A project's financing prospects are usually a function of the technical and economic merits of the project as well as the financial and management strength of its proponents. Generally, the utilities engaged during this DM are well-established institutions with a sound track record of developing and managing water sector functions and infrastructure.

Most state water and wastewater companies in Brazil are mixed public-private companies with the majority of shares owned by their respective state governments. Three companies (SABESP in São Paulo, Copasa in Minas Gerais and Sanepar in Paraná) have floated shares in the Brazilian stock market and one of them (SABESB) is also listed on the New York Stock Exchange. Some state companies operate under concession contracts with municipalities while others operate under the authority of their state governments. Participants in the RTM and engaged utilities in this DM investigation have demonstrated their capability of securing financing for their projects. While some of utilities have greater financial strength than others, PerformTech believes that each of utilities engaged in the DM is capable of securing financing for developing the projects that they have proposed for USTDA support.

However, in developing its recommendations, PerformTech believes that USTDA will be best served by supporting applications of specific technologies in the various situations presented by the engaged utilities. For example, the Value Engineering Study with CEDAE is intended to investigate prospects of replacing technologies and systems that are likely specified in a preliminary design of a new major water treatment facility with state-of-the-art systems that may be provided by U.S. suppliers. Another of the recommended projects is intended to undertake an evaluation of various systems and equipment aimed at improving the effectiveness and energy efficiency of EMBASA's existing wastewater management infrastructure in the Salvador metropolitan area. The third consultancy recommended for USTDA support is a Scoping Assessment that again focuses on the application of a specific technology where biogas from wastewater treatment anaerobic processes would be utilized to generate power. This third project shall evaluate biogas utilization opportunities for three of the engaged utilities who have all indicated that biogas utilization projects are a high priority for them.

From a financial standpoint, each of the three recommended support initiatives create a horizontal integration of export potential rather than a vertical integration where U.S. export potential would be viewed to be as a component of a major high cost infrastructure project. This creates a situation where the implementation of the technologies that may be required as a result of the three recommended initiatives shall be more closely focused on the direct procurement of specific technologies and equipment rather than on the overall larger scale financing that would be required for the construction of a new water or wastewater treatment facility. In the biogas power generation assessment and the EMBASA wastewater project, the utilities are expected to purchase the specific systems required for

retrofit into their existing facilities. This would create a financing situation that shall be at a much smaller scale than would be the case if they were constructing an entirely new wastewater or water treatment facility. Accordingly, utilities who are interested in buying specific systems and equipment are more apt to consider financing support programs such as those provided by the U.S. Ex-Im Bank.

8.2 GENERAL FINANCING CONDITIONS IN BRAZIL

From 2010 to 2012, the total investment in the water and wastewater subsectors in Brazil averaged about US\$ 3.4 billion per year. Further, The Brazilian National Sanitation Plan (PLANSAB), approved in December 2013, projected that further investments of about US\$ 6.8 billion per year would occur in the coming years. The ability to achieve this level of investment and financing is a function of a number of factors including strong government support for the water sector as well as an effective water-related tariff system that helps to ensure the sustainability of functions and facilities that are developed in the future. This is a key element to securing project financing from national and multinational banks who would view cost recovery as an important basis for achieving sustainability of the intended investment outcomes.

Water and sanitation tariffs in many Brazilian cities are relatively high compared to other Latin American cities. According to the Brazilian urban water and sanitation information system, the average water tariff charged by utilities participating in the information system (which provide water services to about 95% of Brazil's urban population) is about US\$ 0.68/m³ and the average sanitation tariff was US\$ 0.67/m³, for a combined total of US\$ 1.35/m³ for those connected to water and sewerage networks. This compares to tariff rates of US\$ 0.81/m³ in Chilean cities, US\$ 0.79/m³ in Argentine cities and US\$ 0.51/m³ in Peruvian cities. In addition, the 1:1 ratio of sanitation to water tariffs is also very high for Latin America and close to the relative ratio of the actual cost of water and wastewater related services. (In most other Latin American countries, sewerage tariffs are much lower than water tariffs.) The strength of this tariff structure supports the assumption that financing shall likely be available for the projects evaluated during this DM if they are determined to be technically and economically viable.

Historically, the majority of investments in water and sanitation in Brazil were financed from domestic sources, with some additional financing from international financial institutions. The federally owned Caixa Economica Federal Bank (Caixa) and the Brazilian Development Bank (BNDES) both play important roles in financing water supply and sanitation investments in Brazil. Loans from Caixa and BNDES are not made directly to utilities but to the states which, in turn, pass on the funds to the utilities as a non-reimbursable contribution to their capital. Loans to state governments from international financial institutions are also typically managed in this manner.

8.3 MULTINATIONAL/NATIONAL BANKS AND OTHER FINANCING SOURCES IN BRAZIL

Multinational banks, such as Inter-American Development Bank (IDB) and the World Bank Group (WBG), have been assisting their worldwide clients improve water sector governance, achieve water service financial sustainability, develop enhanced technical capacity, and increase financing availability in water and wastewater services.

Inter-American Development Bank – In addition to its work in financing water sector service improvements and expansion projects, the IDB has also been working with Latin American countries to improve energy efficiencies as a component to their development assistance in the water sector. For example, activities to improve Brazil's water sector energy efficiency have been supported by two 2007 IDB programs including the Sustainable Energy and Climate Change Initiative and the Water and

Sanitation Initiative. These programs were aimed at objectives to reduce utility operating costs and mitigate climate change effects through:

1. Technical assistance to develop energy efficiency plans
2. Investment loans to implement energy efficiency measures
3. Partnerships to share best practices
4. Knowledge dissemination to help water and wastewater service providers define energy cost savings that can be achieved.

The World Bank Group - The World Bank Group which includes the International Bank for Reconstruction and Development (IBRD - commonly known as the “World Bank”) and the International Finance Corporation (IFC), has provided financial assistance to both the public and private sectors in Brazil. The IBRD program in Brazil includes a sustainable development project under consideration that will work in the eight largest municipalities in Brazil to address, among other things, environmental issues such as water, sanitation and solid waste service provision. Investments supported by the IFC since 2003 are shown in Figure 12 below.

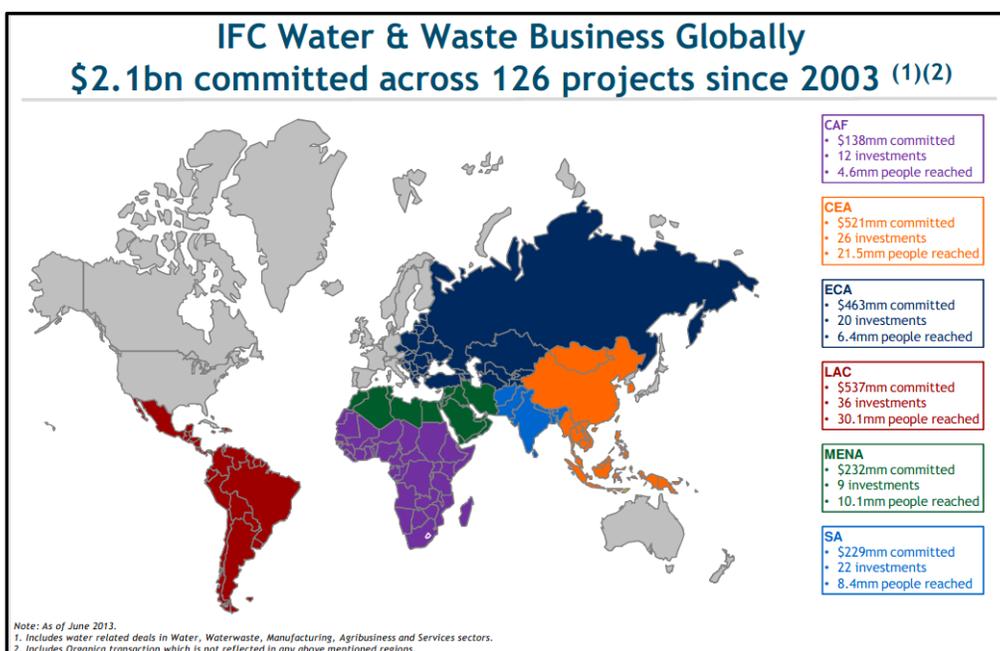


Figure 13 – IFC Water and Wastewater Global Investments

Because of its extensive experience and capabilities, the World Bank can assist in the development of sustainable water and related environmental management projects by helping to ensure that the needs and concerns of all parties are included in the development process. Through this assistance, the World Bank group often provides development assistance to assure that all aspects of proposed projects are properly considered to assure technical and economic viability as well as the sustainability of intended outcomes. In its funding assistance, the World Bank’s technical and regional expertise is usually applied to building local government capacity to develop and sustain supported projects. They also assist in the preparation of public-private partnerships and concession agreements, the conducting of transparent bidding processes, and ensuring the financial and technical viability of projects.

Banco Nacional de Desenvolvimento Econômico e Social (BNDES) - BNDES is the Brazilian Development Bank. As a wholly-owned federal government entity, BNDES is the main vehicle for implementing Brazil’s

investment policy by supporting the country's economic and social development. BNDES is provided with significant money from the national government to fund its operations and is the main financial support instrument in Brazil for investments in all economic sectors. Through its financing approach, BNDES provides subsidized low interest loan rates and is the principal source for long-term financing in Brazil. For many Brazilian companies, BNDES financing is critical to allow the purchase of new equipment. BNDES' financing is granted for products with local content (in value and weight) higher than 60% in most cases.

This is a critical element that must be considered in evaluating U.S. export potential for the identified projects. The fact that funding could be provided by the BNDES introduces an impediment for U.S. imports. The loans obtained through these banks require that 60% of the equipment be nationalized (provided by Brazilian companies, or by assembly of components manufactured elsewhere but assembled in Brazil). This requirement would seem to allow for Brazilian bank funding of equipment purchases as long as the imports do not exceed 40% of the project costs. If this is true then it is very likely that civil work, concrete, pipe, valves, electrical and other equipment or services provided by Brazilian companies would comprise 60% or more of the total project costs which would allow the remaining 40% of the project costs for equipment that may be manufactured somewhere outside of Brazil. This limitation may make other potential sources of financing support such as that provided by the U.S. Export-Import Bank important to realizing the U.S. export potential identified for the recommended projects.

8.4 UNITED STATES EXPORT-IMPORT BANK

The Export-Import Bank of the United States (Ex-Im Bank) is the official export credit agency of the United States. The Ex-Im Bank assists in financing export of U.S. goods and services to international markets through a variety of mechanisms, including direct loans, loan guarantees, and other credit enhancements. The Ex-Im Bank does not compete with private-sector lenders but provides export financing to fill gaps in trade financing. Through a variety of financing programs, Ex-Im Bank serves as an intermediary between U.S. exporters, lenders, and international buyers thereby helping to mitigate the risks of exporting to certain markets.

The Ex-Im Bank has several different programs available to support the export of environmentally beneficial goods and services which can include important technical components of water sector facilities. Under its normal environmental financing program, Ex-Im Bank offers short, medium and long-term support for transactions with the private sector, and short and medium-term support for public buyers. Capital equipment supported by EX-IM Bank's medium term loans or guarantees may have up to a seven year term or a maximum funding limit of US\$10 million. Long-term loans of up to ten years are also available for private sector borrowers. EX-IM Bank programs fit into four major categories including:

1. **Working Capital** - The Working Capital Guarantee Program significantly reduces a lender's risk on working capital loans made to creditworthy U.S. companies for export-related activities.
2. **Insurance** - EX-IM Bank offers a variety of export credit insurance policies to exporters and financial institutions to reduce repayment risks on foreign receivables due to political or commercial events. Policies may cover single or repetitive sales to single or multiple buyers. As determined by the product, repayment terms are available for short-term sales (up to 180 days, exceptionally 360 days) and medium-term sales (up to five years).
3. **Direct Loans** - Direct loans to foreign buyers enable exporters to overcome financing gaps and compete against foreign subsidized competition with the lowest interest rates allowed under

international guidelines. There are no size requirements for direct loans or loan guarantees to international buyers. Ex-Im Bank's loan guarantee will typically cover 85 percent of the U.S. content of the transaction. The international buyer is required to make a payment of at least 15 percent of the supply contract, for which payment can be borrowed from a lender or from the exporter, or paid with cash.

4. **Guarantees** - By reducing repayment risks, guarantees allow lenders to offer financing to exporters' foreign customers with fixed or floating competitive rates. Goods and services sold on repayment terms of one year or more are eligible for loans, guarantees, and insurance.

EX-IM Bank's financing programs are designed to help mitigate the risk for U.S. environmental companies and also offer competitive financing terms to international buyers for the purchase of U.S. made environmental goods and services. Ex-Im Bank's Environmental Exports Program, established in 1994, is a highly active portfolio exceeding \$3 billion. EX-IM Bank's active portfolio includes financing for U.S. exports of:

- Renewable energy equipment
- Energy efficiency technologies
- Wastewater treatment projects
- Air pollution technologies
- Waste management services
- Other various environmental goods and services

The means by which this assistance can be provided include products such as:

- Short-term working capital
- Export credit insurance
- Medium-term insurance
- Medium- to long-term loan guarantees
- Project and structured finance
- Long-term direct loans

EX-IM Bank has had a long working relationship with Brazil and has helped finance purchases for a wide range of sectors, including oil and gas, agriculture, transportation, telecommunications, and textiles. Further more detailed information related to U.S. EXIM's programs in the water sector and in Latin America is shown in Annex 2 of this report.

During the DM fieldwork discussions with the targeted utilities, there was significant interest in the programs currently available from Exim Bank as a potential means for implementing the energy efficiency and power generation systems evaluated during this DM. However, an important issue that may affect the ability of water sector utilities to finance projects that may result from the assessment and studies sponsored by USTDA is the pending reauthorization of Ex-Im Bank by Congress. Reauthorization is scheduled to be enacted upon in mid-2015 and there is considerable discussion about whether reauthorization should occur. Should reauthorization fail, this will preclude the utilization of any of Exim Bank's current programs.

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PROJECT EVALUATION SUMMARY AND RECOMMENDATIONS

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10

CONTACTS

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ANNEX 3



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

ANNEX 4

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 Empresa Baiana de Águas e Saneamento S.A. (“Grantee”). USTDA agrees to provide the Grantee under the terms of this Grant Agreement US\$651,640 (“USTDA Grant”) to fund the cost of goods and services required for a feasibility study (“FS”) on the proposed Salvador Wastewater Energy and Operational Efficiency (“Project”) in Brazil (“Host Country”).

1. USTDA Funding

The USTDA Grant to be provided under this Grant Agreement shall be used to fund the costs of an agreement of understanding between the Grantee and the U.S. firm selected by the Grantee (“U.S. Firm”) under which the U.S. Firm will perform the FS (“Agreement of Understanding”). Payment to the U.S. Firm 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 FS (“Terms of Reference”) are attached as Annex I and are hereby incorporated by reference into this Grant Agreement. The FS will examine the technical, financial, environmental, and other critical aspects of the proposed Project. The Terms of Reference for the FS shall also be included in the Agreement of Understanding.

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 U.S. Firm 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 U.S. Firm, such as local transportation, office space, and secretarial support.

5. Agreement of Understanding Matters and USTDA’s Rights as Financier

(A) Grantee Competitive Selection Procedures

Selection of the U.S. Firm shall be carried out by the Grantee according to its established procedures for the competitive selection of firms with advance notice of the procurement

published online through *Federal Business Opportunities* (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 U.S. Firm Selection

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

(C) USTDA’s Right to Approve Agreement of Understanding Between Grantee and U.S. Firm

(1) Agreement of Understanding

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

(2) Amendments and Assignments

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

(D) USTDA Not a Party to the Agreement of Understanding

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 Agreement of Understanding and any amendments thereto, including assignments, the selection of all firms, the Terms of Reference, the Final Report, and any and all documents related to any Agreement of Understanding 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 FS and shall not be construed as making USTDA a party to the Agreement of Understanding. 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 Agreement of Understanding 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 U.S. Firm, or relieve the U.S. Firm of any liability which the U.S. Firm 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 Agreement of Understanding or any subcontract thereunder must be consistent with this Grant Agreement. In the event of any inconsistency between the Grant Agreement and the Agreement of Understanding or any subcontract funded by the Grant Agreement, the Grant Agreement shall control.

6. Disbursement Procedures

(A) USTDA Approval of Agreement of Understanding Required

USTDA will make disbursements of USTDA Grant funds directly to the U.S. Firm only after USTDA approves the Grantee's Agreement of Understanding with the U.S. Firm.

(B) U.S. Firm Invoice Requirements

The Grantee should request disbursement of funds by USTDA to the U.S. Firm for performance of the FS by submitting invoices in accordance with the procedures set forth in the USTDA Mandatory Agreement of Understanding 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. FS Schedule

(A) FS Completion Date

The completion date for the FS, which is December 31, 2016, is the date by which the parties estimate that the FS 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 Agreement of Understanding Clauses

All contracts funded under this Grant Agreement shall include the USTDA Mandatory Agreement of Understanding 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 Agreement of Understanding 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 U.S. Firm must be a U.S. firm;
- (b) the U.S. Firm may use U.S. subcontractors without limitation;
- (c) employees of U.S. Firm 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 U.S. Firm;
- (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 FS 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 FS 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 U.S. Firm 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 FS and this Grant Agreement adequate to demonstrate implementation of its responsibilities under this Grant Agreement, including the selection of contractors, receipt and approval of Agreement of Understanding deliverables, and approval or disapproval of U.S. Firm 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 FS 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 Grantee will be represented by its Technical and Planning Director. 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: César Silva Ramos
Technical and Planning Director
Avenida Alphaville, 199, Loteamento Alphaville Salvador
Centro Empresarial Carlos Fabrício L. Costa, Alphaville I
Salvador, Bahia CEP 41701-015, Brazil

Phone: 55 (71) 3360.2208
E-Mail: cesar.ramos@embasa.gov.br

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 and isepulveda@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 15/16 1001
Activity No.: 2015-51023A
Reservation No.: 2015199
Grant No.: GH201551199

17. Implementation Letters

To assist the Grantee in the implementation of the FS, 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 FS, except for payments that may be made pursuant to Clause H of the USTDA Mandatory Agreement of Understanding 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 FS, 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.

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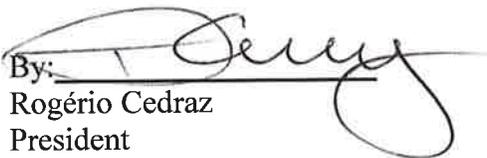
IN WITNESS WHEREOF, the Government of the United States of America and the Empresa Baiana de Águas e Saneamento, each acting through its duly authorized representative, have caused this Grant Agreement to be signed in the English language in their names and delivered as of the day and year written below. 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

By: 
Isabel Sepulveda
Country Manager, USTDA

Date: 18/08/2015

For the Empresa Baiana de Águas e Saneamento

By: 
Rogério Cedraz
President

Date: 18.08.15

Witnessed:

By: 
Rodrigo Mota
Country Representative, USTDA

Witnessed:

By: 
César Silva Ramos
Technical and Planning Director

Annex I -- Terms of Reference

Annex II -- USTDA Mandatory Agreement of Understanding Clauses

ANNEX 5

Annex I

Terms of Reference

Purpose and Background

This Terms of Reference (“TOR”) defines responsibilities and deliverables for a U.S. Firm (“U.S. Firm”) to successfully perform the Salvador Wastewater Energy and Operational Efficiency Feasibility Study (the “Project”) in Salvador, Brazil. The project sponsor is Empresa Baiana de Águas e Saneamento S.A. (“Embasa” or “Grantee”), the state-owned water and wastewater company in the state of Bahia. The purpose of this feasibility study is to evaluate the technical, economic and financial feasibility of implementing various energy efficiency modernizations in the Salvador and the larger Salvador metropolitan area wastewater treatment system. The feasibility study shall assess various systems within Embasa’s operations and make recommendations on equipment that will improve the energy and operational efficiency of these systems.

Embasa is the primary water supply and wastewater treatment company in the state of Bahia. Its capital, Salvador, has a population of 2.9 million. Embasa provides services to over 84% of the cities and towns in the state, operating 441 water treatment facilities and 285 wastewater treatment plants. Currently, the majority of Embasa’s wastewater treatment plants do not utilize disinfection technologies, tertiary treatment systems or installations for odor control. Embasa has few mechanical dewatering systems, and sludge treatment and disposal have been a concern for the company. Wishing to upgrade its service quality, Embasa invested \$1.4 billion in its water and wastewater networks in the last ten years. Between 2007 and 2014, the company has doubled the number of access points to the wastewater network.

Embasa is currently seeking the means to increase the effectiveness of its wastewater collection and treatment processes. Energy costs and availability as well as service delivery effectiveness have been ongoing issues associated with the operation of water and wastewater treatment facilities as well as other appurtenant systems (pumping stations, etc.) throughout Brazil. As a result, there is considerable interest in implementing advanced systems that can increase the energy and operational efficiency of existing water treatment and distribution systems as well as those associated with wastewater collection and treatment processes. This includes the use of higher grade automation systems that provide increased functional control while achieving greater energy efficiency. Through this feasibility study, the selected U.S. Firm shall focus on various systems operated by Embasa in the greater Salvador metropolitan area:

- Rio Vermelho Preliminary Treatment Plant
- Salvador Sewage System Pump Stations
- Salvador larger metropolitan area tributary sewage systems

Tasks

The U.S. firm shall provide sufficient staffing resources to achieve the following key feasibility study objectives:

1. Plan, coordinate and manage all feasibility study resources and delivery schedule to accomplish all activities stipulated in this TOR;
2. Travel to Brazil for a kick-off meeting with Embasa, complete a document/information review, and develop a work plan to achieve the project objectives;
3. Assess current energy usage and operational demands and prepare design requirements;
4. Define the optimum technical configurations for the target locations, conduct outreach to U.S. industry and prepare a report on U.S. sources of supply;
5. Develop an Opinion of Cost as it relates to the implementation the study recommendations;
6. Perform cost-benefit, financial and regulatory analyses as it relates to the implementation the study recommendations;
7. Conduct a development impact assessment as it relates to the implementation of study recommendations;
8. Conduct a preliminary environmental impact assessment as it relates to the implementation of study recommendations; and
9. Prepare and complete a feasibility study final report (“Final Report”).

This TOR anticipates that the U.S. firm shall participate in meetings with Embasa representatives and other relevant parties pertinent to the assessment by electronic communication, conference call and in person to collect and incorporate input from subject matter and situational experts and identify the appropriate means of accomplishing the feasibility study objectives and desired outcomes. The U.S. firm shall define alternatives, perform necessary technical and economic analyses and synthesize materials and knowledge into deliverables reports as identified below in order to present the feasibility study results to Embasa.

The U.S. Firm shall provide all deliverables and the Final Report in both English and Portuguese.

The Contractor shall travel to Brazil to gather information and perform requirements for the following subtasks:

- Task 2.1 – Kick-off meetings and site assessment
- Task 9.1 – Presentation of draft Final Report

The following presents the specific tasks and deliverables that the U.S. firm shall be required to complete to meet each of the stated feasibility study objectives:

TASK 1 - PLAN, COORDINATE AND MANAGE FEASIBILITY STUDY RESOURCES, SCHEDULE AND ACTIVITIES.

The U.S. firm shall effectively manage all required activities in order to accomplish the project objectives for the duration of this assignment. The U.S. firm's Project Manager shall be the primary point of contact for all matters related to the TOR and shall work closely with the designated Embasa representative in all aspects of the assessment. The U.S. firm shall be responsible for ensuring the technical and procedural quality of the deliverables to include, but not limited to, the following:

- Submission of required reports and invoices in a thorough and timely manner;
- Thoroughness and accuracy of all evaluations and deliverables including the feasibility study Final Report; and
- Effective quality assurance and control in all matters associated with the feasibility study and its deliverables.

Subtask 1.1 - Prepare and submit a feasibility study inception plan

The U.S. firm shall provide an inception plan to describe the project management activities to be undertaken in support of this Project. A detailed inception plan that defines the procedures the U.S. firm shall utilize in accomplishing the TOR tasks shall be submitted by the U.S. firm within two weeks of award of the contract. At a minimum, this shall include all logistical procedures as well as communication elements required to secure ongoing Embasa input and derive sufficient information to complete the feasibility study. Ongoing and regular communication with the designated Embasa representative is a necessary and key element of this study and the manner by which this communication is to occur shall be defined in the inception report. The inception report shall also include the travel plans and schedule by which the U.S. Firm will travel to Brazil for initial kick-off meetings with Embasa.

Task 1 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 1 including:

- Detailed Inception Plan

TASK 2 -KICKOFF MEETING AND DETAILED WORK PLAN DEVELOPMENT

Subtask 2.1 - Hold kick-off meetings and perform document review

Upon Embasa's approval of the inception plan, the U.S. firm's representatives shall travel to Brazil to meet with Embasa in order to: 1) gather relevant information necessary to complete the study; 2) review, discuss, and refine the overall strategy, scope, objectives, and deliverables of the feasibility study with the designated Embasa

representative; 3) define and clarify the roles and responsibilities of the U.S. Firm and Embasa with respect to all feasibility study activities; and 4) discuss the objectives of the study as well as its intended technical outcomes. The U.S. Firm shall conduct a document review of all relevant materials provided by Embasa related to the wastewater systems that will be assessed in the feasibility study.

Subtask 2.2 - Develop and submit detailed work plan to meet all feasibility study objectives

Based on the information gathered during the above task, the U.S. firm shall develop a detailed work plan for accomplishing all objectives and subsequent work tasks. The work plan shall define in detail all activities and schedules for completing the feasibility study tasks.

Task 2 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 2 including:

- Summary of kick-off meetings and document review
- Detailed work plan for the feasibility study

TASK 3 - ASSESS CURRENT ENERGY USAGE AND OPERATIONAL DEMANDS AND PREPARE DESIGN REQUIREMENTS

The feasibility study will investigate specific functions and systems related to the function of the various Embasa service locations as listed below. Specifically, the feasibility study will investigate the following elements:

- **Rio Vermelho Preliminary Treatment Plant** – This plant is located in the city of Salvador. The feasibility study shall, at a minimum, evaluate the:
 1. Upgrade and replacement of antiquated automation system components;
 2. Improvement of energy efficiency of pumping stations through the use of frequency inverters (variable frequency drives or VFDs) at the treatment plant;
 3. Installation of an odor control systems at the treatment plant;
 4. Replacement of high performance pump motor sets at the influent to the treatment plant; and
 5. Replacement of the comminutors (grinders), grit removal and mechanical screening systems at the facility.
- **Salvador Sewage System Pump Stations** - The feasibility study shall, at a minimum, evaluate the:
 1. Update or replacement of the existing automation system at 186 pumping stations;
 2. Improvement of pumping station energy efficiency through the use of 34 VFDs;

3. Installation of odor control treatment systems at Embasa's ten largest pumping stations;
 4. Replacement of 170 high performance pump motor sets; and
 5. Implementation of grit removal unit operations at the four largest pump stations.
- **Salvador larger metropolitan area tributary sewage systems** – Several wastewater systems make up the larger Salvador metropolitan area. This portion of the feasibility study will assess various facilities in different locations as described below:
 - *Área Petrolífera*: This system is located to the northwest of Salvador and includes facilities at Ilha Ponta de Nossa Senhora, Ilha Bom Jesus dos Passos, and Madre de Deus.
 - *Dias d'Ávila*: This system is located to the north of Salvador. It includes the Dias D'Ávila pump station and the Dias D'Ávila VI pump station.
 - *Litoral Norte*: This system is located along the coast to the northeast of Salvador and includes facilities at Ibero Star, Reta Atlântico, Praia do Forte, and Barra do Pojuca.

The feasibility study shall, at a minimum, evaluate the:

1. Replacement or installation of automation systems in the treatment plants and pump stations at the six following wastewater systems:
 - *Área Petrolífera*: Ilha Ponta de Nossa Senhora, Ilha Bom Jesus dos Passos
 - *Litoral Norte*: Ibero Star, Reta Atlântico, Praia do Forte, Barra do Pojuca;
2. Installation of odor control treatment systems in the Dias D'Ávila pump station, the Dias D'Ávila VI pump station, and the Madre de Deus pump station;
3. Installation of a grit removal system at the Dias D'Ávila VI pump station;
4. Installation of a sludge thickening and dewatering system at the Ibero Star and Madre de Deus wastewater treatment plants; and
5. Implementation of an ultraviolet (UV) disinfection system at the Madre Deus wastewater treatment plant.

This task seeks to define the existing technical conditions that affect the current energy efficiency and operational performance of the above referenced systems. This task shall be accomplished through the following subtasks:

Subtask 3.1 - Assess general and localized operational conditions affecting the function of the targeted Embasa infrastructure

Through this task, the U.S. firm shall define and evaluate the existing function of the target systems referenced above. This activity shall serve as the baseline for comparing the benefits (increased energy efficiency, improve functional reliability and effectiveness, cost savings, etc.) that shall be achieved through implementing the proposed systems and equipment. This shall serve as the basis for determining how existing issues may be addressed through the utilization of the technologies and systems identified above as potential assessment outcomes.

Through this task, the U.S. firm shall define the design flows and loadings associated with the specific infrastructure being investigated. This shall include both the existing flow characteristics as well as flow and loading projections based on Embasa's assessment of increased functional requirements in the future. Because most of the unit operations being evaluated are related to the headworks at preliminary treatment facilities, it is critical that a detailed analysis of peak flows is conducted as necessary. Further, the U.S. firm shall assess standards for having redundant pumps and equipment available, lead and lag pump cycling procedures, grit capture objectives, design velocities associated with the grit facilities, coarse and fine screen mesh sizing, grit and screenings washing and compaction requirements, and air handling and design air exchanges associated with the odor control facilities.

Subtask 3.2 - Prepare design requirements and anticipated system performance for each target location

The U.S. firm shall complete a detailed evaluation and preliminary definition of the technologies and systems that shall be required to achieve the energy efficiency and operational effectiveness objectives. This shall include all locations as defined above. The U.S. firm shall establish the influent flows and pollutant loads, identify the existing function of unit operations and the design criteria for successful performance, and outline other conditions that may influence the selection of new technology, systems and equipment to achieve the desired outcomes.

The U.S. firm shall review and evaluate each target location on a site by site basis. This evaluation shall include, but not be limited to: aerated grit chambers, Vortex chambers, climber screens, other band screens, biofilters for odor control, and chemical treatment processes for odor control. Recognizing that a large percentage of the upgrades shall entail retrofitting existing unit operations, the U.S. firm shall take into consideration limitations due to space restrictions, etc. that shall prevent certain technologies from being installed. This is particularly true for unit operations associated with headworks such as comminutors, mechanical screens, grit chambers and influent pumping systems that have been integrated into the original civil structures.

Task 3 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed

and findings from Task 3 including:

- Assessment of general and localized operational conditions
- Design requirements and system performance parameters for each evaluated location

TASK 4 - DEFINE THE OPTIMUM TECHNICAL CONFIGURATIONS FOR THE TARGET LOCATIONS AND CONDUCT OUTREACH TO U.S. INDUSTRY

This task seeks to identify the systems and equipment that shall accomplish the desired performance outcomes. This shall include the definition of the technical characteristics of required systems and equipment.

Subtask 4.1 - Complete detailed technical evaluation of options available for each application and prepare design specifications

Based on coordination and input from Embasa and on the specific conditions determined from the evaluation of the target locations and facilities, the U.S. firm shall define the optimal technical configuration and specifications for the proposed systems that achieve the optimum energy efficiency and operational effectiveness objectives of this study. The identification of these optimum technical configurations shall include consideration of all ancillary systems and components necessary to support the primary systems and equipment.

The U.S. firm shall perform a review of the overall impact of individual technology applications and configurations, including infrastructure, operational, and management factors for the target locations. The U.S. firm shall deliver a detailed technical analysis (including design characteristics and specifications) of the identified technical systems that shall include expected performance, energy requirements, operational/maintenance impacts, and necessary training protocols. This evaluation task shall also consider other required modifications that may be necessary to implement proposed systems at the target locations.

The U.S. firm shall ensure that the systems and technologies recommended for the target applications included the following:

- All technical requirements for integrating the recommended systems into Embasa's existing and future infrastructure development and management program;
- Step-by-step recommendations for carrying out the process of integrating the proposed systems or equipment into Embasa's ongoing operational requirements and existing site constraints.

Subtask 4.2 - Outreach to U.S. industry and preparation of U.S. Sources of Supply report

In accordance with USTDA's mandate, this study is designed to support U.S. private sector participation in Brazil's wastewater sector. Accordingly, the U.S. Firm shall play

a pivotal role in facilitating dialogue between Embasa and U.S. stakeholders, identifying opportunities for commercial cooperation, and initiating communication and other activities to maximize the potential for U.S. exports in relation to the Project. The U.S. Firm shall identify potential sources of equipment and services that can be procured competitively from U.S. vendors. The contractor shall contact each of these companies in the effort to ensure interest by as many pertinent U.S. suppliers as possible for the recommended projects. This may include meetings or presentations with U.S. companies to share information about the project opportunities with Embasa.¹ The U.S. Firm shall also ensure it shares technical knowledge concerning U.S. industry capabilities with the Embasa throughout the performance of the feasibility study.

The U.S. Firm shall then compile a report on such vendors and the equipment and services that each provides as well as preliminary estimates for the cost of their services and products relevant to the Project. This report shall include a) the possible U.S. sources of supply and/or services; b) a detailed description of relevant products, solutions and/or services to be provided; and c) contact information for the party or parties responsible for marketing/sales in the United States and in Brazil, if applicable.

Task 4 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 4 including:

- Technical configuration and design specifications for all required systems and equipment
- U.S. Sources of Supply report with contact information and summary of communication with prospective suppliers

TASK 5 - DEVELOP OPINION OF COST FOR IMPLEMENTING THE PROPOSED SYSTEMS AND EQUIPMENT

Based on the technical definition of the systems and equipment associated with the intended installations at the target locations, the U.S. firm shall develop a detailed opinion of cost associated with all work required to procure and install the identified systems.

Subtask 5.1 - Prepare a detailed cost estimate for all installations

The U.S. firm shall prepare a detailed cost estimate of all installations recommended in Task 4. At a minimum, this shall include all costs associated with procuring and installing the required systems and equipment including any modifications of existing infrastructure to accommodate the new systems and equipment. For all equipment that may be procured from foreign suppliers, the cost estimate shall include all costs associated with importing the equipment into Brazil for the defined application.

¹ The U.S. Firm shall ensure that no commercial confidential or other project information is shared that would give a U.S. company an unfair advantage.

Task 5 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 5 including:

- Cost estimates for implementing the recommended systems and equipment, including the costs of required upgrades to existing infrastructure and systems that may be necessary to accommodate the proposed new installations.

TASK 6 - PERFORM FINANCIAL AND REGULATORY ANALYSIS

The U.S. firm shall perform a financial and cost-benefit analysis related to the proposed systems and equipment as applicable to the desired outcomes at the specific target locations and facilities.

Subtask 6.1 - Complete a cost-benefit analysis and a business case for each application

The U.S. firm shall conduct a cost-benefit analysis and articulate the business case for the investment that may be required to implement the identified systems and equipment at the target locations. At a minimum, this shall include a comparative assessment of the net costs associated with the proposed applications in comparison to current costs experienced at each of the target locations and facilities. The U.S. firm shall identify the financial and economic factors that should be addressed to support decision-making relative to the prospective investments. This identification should be based on Embasa's anticipated means for procuring the systems and equipment defined through the assessment. The analysis shall include a life-cycle cost and benefit analysis based on financial parameters and schedules agreed to with Embasa.

Subtask 6.2 - Develop a financial model for best fit applications

The U.S. firm shall develop a separate financial model for each target location or facility category (pumping stations, treatment facilities, etc.) to analyze the internal rate of return (IRR) associated with the upgrade investments. The U.S. firm's analysis shall include, but not be limited to, capital costs and annual operating costs, as well as the projected energy savings (if applicable) to be achieved over a 15 to 20 year period. The U.S. firm shall clearly define and justify any assumption utilized in the financial evaluation, such as escalation or inflation rates utilized in the analysis.

Subtask 6.3 - Evaluate financing options through Embasa's current financing programs and other financial mechanisms

The U.S. firm shall also make recommendations regarding viable financing options. Specifically, the U.S. firm's analysis shall include, but not be limited to, the following financing alternatives:

- Internal funds from Embasa's resources;

- Combination of internal budget funds and private banks, including, but not limited to, local Brazilian private banks;
- Combination of the above and export credit financing from the United States Export-Import Bank; and
- The impact on financing restrictions should also be evaluated by the U.S. firm including, at a minimum, local content restrictions that may be associated with possible BNDES financing mechanisms used by Embasa.

Subtask 6.4 - Review regulatory requirements for deploying the feasibility study results

The U.S. firm shall conduct an analysis of the current and anticipated Brazilian laws, standards, and institutions that could impact the implementation of the proposed systems and equipment. In addition, the U.S. firm shall identify and assess any regulatory barriers that may impede the financing and implementation of the identified systems. The U.S. firm shall provide Embasa with options on how to avoid or mitigate any negative effects that such regulations may have on the proposed technology applications. In addition, the U.S. firm shall recommend actions to comply with all regulatory requirements which may include permitting requirements, regulations that impact environmental requirements, investment results, capital expenditure approvals, quality of service and supply standards, and any other regulatory issues that may have a meaningful impact on the evaluated systems and equipment.

Task 6 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 6 including:

- Cost-Benefit Analysis and Business Case
- Financial Model for implementing best fit applications
- Financial options evaluation
- Regulatory Analysis

TASK 7 - CONDUCT A DEVELOPMENT IMPACT ASSESSMENT

The U.S. firm shall assess the anticipated positive development impacts that may be generated by implementation of the identified energy efficiency and operational effectiveness improvements throughout Embasa's infrastructure base. The purpose of the development impact assessment is to provide USTDA and Embasa with a measurable indicator of development impacts that are likely to occur if the project is implemented according to the feasibility study recommendations. Specifically, the Contractor shall determine the baseline measurement and the expected outcome if feasibility study recommendations are implemented, for the following categories:

Sector	Category	Indicator	Description	Baseline*	Anticipated Outcome
Water and Environment	Promoting Environmental Benefit	Improved Wastewater and Sludge Treatment, and Water Quality Monitoring and Control	By improving motors, pumps, and screening systems, the wastewater and sludge would be treated at a higher quality level.	Approximately 751,060 cubic meters/day treated at current water quality standards.	To be determined by the U.S. Firm.
Energy and Power	Infrastructure Development and Efficiency Gains	Improved Power Delivery and Continuity of Service	By improving the energy efficiency at pump stations, replacing motors, or providing additional upgrades the utility would experience improved energy efficiency and energy savings.	The U.S. Firm will determine current energy usage.	To be determined by the U.S. Firm.

The Development Impact Assessment shall include an explanation of the methodology used for arriving at the baseline and anticipated outcome measurements. In addition to the above categories, USTDA will provide the full list of USTDA’s development impact indicators that the Contractor may choose to evaluate as appropriate.

Task 7 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 7 including:

- Development Impact Assessment

TASK 8 - CONDUCT A PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

Subtask 8.1 - Complete preliminary environmental impact assessment

The U.S. firm shall conduct a preliminary review of the anticipated environmental impacts of deploying the proposed systems and equipment determined to be technically and economically viable at the target locations. The preliminary environmental impact assessment shall consider compliance with international environmental performance standards required by international financial institutions such as the World Bank Group and local standards required by local Brazilian banks and regulatory agencies. The U.S. firm’s review shall identify potential negative impacts and discuss the extent to which they can be mitigated during installation and operation of the proposed systems and equipment. The U.S. firm shall also identify potential positive impacts of deploying any systems and equipment determined to be economically and technically viable in the target locations.

The U.S. firm shall determine the potential GHG mitigation benefits associated with the system deployments in the target locations. Methodology used for this GHG related assessment shall be consistent with commonly accepted sound practice methodology for evaluating GHG impacts of waste and energy management processes. The U.S. firm shall describe the methodology utilized for the GHG impact evaluation.

Task 8 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 8 including:

- Preliminary Environmental Impact Assessment including GHG impact assessment

TASK 9 - PREPARE AND SUBMIT FINAL REPORT

Subtask 9.1 - Prepare and submit the final report

The U.S. Firm 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.

The U.S. Firm shall prepare a draft Final Report and shall travel to Brazil to present the findings of the draft Final Report to Embasa. Comments from Embasa shall be incorporated into a final version of the Final Report.

The U.S. Firm shall provide the Public and Confidential versions of the Final Report to the Grantee in both English and Portuguese. The U.S. Firm will provide copies of the report on CD ROM and in hard copy.

Task 9 Deliverables

The U.S. firm shall prepare a detailed written report describing all the work performed and findings from Task 9 including:

- Final Report

Annex II

USTDA Mandatory Agreement of Understanding Clauses

A. USTDA Mandatory Clauses Controlling

The parties to this Agreement of Understanding acknowledge that this Agreement of Understanding 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 Empresa Baiana de Águas e Saneamento S.A. (“Client”), dated _____ (“Grant Agreement”). The Client has selected _____ (“U.S. Firm”) to perform the feasibility study (“FS”) for the Salvador Wastewater Energy and Operational Efficiency project (“Project”) in Brazil (“Host Country”). The Client and the U.S. Firm are the parties to this Agreement of Understanding, and they hereinafter are referred to collectively as the “Agreement of Understanding Parties.” Notwithstanding any other provisions of this Agreement of Understanding, the following USTDA Mandatory Agreement of Understanding Clauses shall govern. All subcontracts entered into by U.S. Firm funded or partially funded with USTDA Grant funds shall include these USTDA Mandatory Agreement of Understanding 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 Agreement of Understanding or any subcontract thereunder, the Grant Agreement shall be controlling.

B. USTDA as Financier

(1) USTDA Approval of Agreement of Understanding

This Agreement of Understanding, and any amendment thereto, including any amendment to any annex thereto, and any proposed assignment of this Agreement of Understanding, 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 Agreement of Understanding conforms to modifications required by USTDA during the Agreement of Understanding review process and the Agreement of Understanding has been formally approved by USTDA. To make this review in a timely fashion, USTDA must receive from either the Client or the U.S. Firm an English language version of a final negotiated draft Agreement of Understanding or a signed Agreement of Understanding 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 Agreement of Understanding

It is understood by the Agreement of Understanding Parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of this Agreement of Understanding 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 agreement of understanding funded under the Grant

Agreement. The Agreement of Understanding 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 FS and shall not be construed as making USTDA a party to the Agreement of Understanding. The Agreement of Understanding 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 Agreement of Understanding Parties or the parties to any subcontract, jointly or separately; and in consideration of USTDA's role as financier, the Agreement of Understanding Parties further agree that USTDA's rights may be exercised without thereby incurring any responsibility or liability, in agreement of understanding, tort, or otherwise, to the Agreement of Understanding 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 U.S. Firm, or relieve the U.S. Firm of any liability which the U.S. Firm 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 U.S. Firm must be a U.S. firm;
- (b) the U.S. Firm may use U.S. subcontractors without limitation;
- (c) employees of U.S. U.S. Firm 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 U.S. Firm;
- (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 FS 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 FS 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 U.S. Firm 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 Agreement of Understanding. 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 Agreement of Understanding, and for a period of three (3) years after final disbursement by USTDA. The U.S. Firm 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 U.S. Firm shall provide adequate Workman's Compensation Insurance coverage for work performed under this Agreement of Understanding.

G. Disbursement Procedures

(1) USTDA Approval of Agreement of Understanding

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

(2) Payment Schedule Requirements

A payment schedule for disbursement of Grant funds to the U.S. Firm shall be included in this Agreement of Understanding. 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 Agreement of Understanding 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) U.S. Firm Invoice Requirements

USTDA will make all disbursements of USTDA Grant funds directly to the U.S. Firm. The U.S. Firm 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 U.S. Firm for performance of the Agreement of Understanding by submitting the following to USTDA:

(a) U.S. Firm's Invoice

The U.S. Firm's invoice shall include reference to an item listed in the Agreement of Understanding payment schedule, the requested payment amount, and an appropriate certification by the U.S. Firm, as follows:

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

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

(ii) For Agreement of Understanding performance milestone payments:

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

(iii) For final payment:

“The U.S. Firm has performed the work described in this invoice in accordance with the terms of its Agreement of Understanding with the Client and is entitled to payment thereunder. Specifically, the U.S. Firm has submitted the Final Report to the Client, as required by the Agreement of Understanding, and received the Client’s approval of the Final Report. To the extent the U.S. Firm has not complied with the terms and conditions of the Agreement of Understanding, including the USTDA Mandatory Agreement of Understanding Clauses contained therein, it will, upon USTDA’s request, make an appropriate refund to USTDA.”

(b) Client's Approval of the U.S. Firm's Invoice

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

(ii) For Agreement of Understanding 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 U.S. Firm have been performed satisfactorily, in accordance with applicable Agreement of Understanding 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 U.S. Firm have been performed satisfactorily, in accordance with applicable Agreement of Understanding provisions and the terms and conditions of the USTDA Grant Agreement. The Final Report submitted by the U.S. Firm 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.

H. Termination

(1) Method of Termination

Either Agreement of Understanding Party may terminate this Agreement of Understanding 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 Agreement of Understanding. Furthermore, this Agreement of Understanding 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 Agreement of Understanding is terminated prior to completion, the U.S. Firm will be eligible, subject to USTDA approval, for payment for the value of the work performed pursuant to the terms of this Agreement of Understanding. Likewise, in the event of such termination, USTDA is entitled to receive from the U.S. Firm all USTDA Grant funds previously disbursed to the U.S. Firm (including but not limited to mobilization payments) which exceed the value of the work performed pursuant to the terms of this Agreement of Understanding.

(3) Survivability

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

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 U.S. Firm 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 U.S. Firm 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 U.S. Firm to ensure that no confidential information is contained on the CD-ROMs.

The U.S. Firm 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 U.S. Firm 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 U.S. Firm shall be responsible for labeling the front cover of that version of the Final Report with the term “Confidential Version”. The U.S. Firm 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 U.S. Firm 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 U.S. Firm who prepared the report, a report title, and the following language:

“The U.S. Firm certifies that this CD-ROM contains the Public Version of the Final Report and that all contents are suitable for public distribution.”

(d) The U.S. Firm 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 U.S. Firm 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 Agreement of Understanding, including the appendices, shall be made only by written agreement by the Agreement of Understanding Parties hereto, subject to written USTDA approval.

K. FS Schedule

(1) FS Completion Date

The completion date for the FS, which is December 31, 2016, is the date by which the Agreement of Understanding Parties estimate that the FS 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 Agreement of Understanding 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 Agreement of Understanding Parties recognize the existence of standards of conduct for public officials and commercial entities in their respective countries. Therefore, the Agreement of Understanding Parties shall fully comply with all United States and Host Country laws relating to corruption or bribery. For example, the U.S. Firm 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 Agreement of Understanding Party agrees that it shall require that any agent or representative hired to represent it in connection with the FS will comply with this paragraph and all laws which apply to activities and obligations of that Agreement of Understanding Party, including, but not limited to, those laws and obligations referenced above.

M. USTDA Address and Fiscal Data

Any communication with USTDA regarding this Agreement of Understanding 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 15/16 1001
Activity No.:	2015-51023A
Reservation No.:	2015199
Grant No.:	GH201551199

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 U.S. Firm 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 U.S. Firm 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 Agreement of Understanding:

César Silva Ramos
Technical and Planning Director
Avenida Alphaville, 199, Loteamento Alphaville Salvador
Centro Empresarial Carlos Fabrício L. Costa, Alphaville I
Salvador, Bahia CEP 41701-015, Brazil

The U.S. Firm designates the following person as the contact person for matters concerning this Agreement of Understanding:

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

If anyone designated by a Agreement of Understanding 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 Agreement of Understanding, the Agreement of Understanding Party that had designated that contact person shall provide USTDA and the other Agreement of Understanding Party with the name and contact information of a replacement contact person.

Q. Liability

This Agreement of Understanding may include a clause that limits the liability of the Agreement of Understanding 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 Agreement of Understanding, or (ii) limit the total amount of damages

recoverable to an amount less than the total amount disbursed to the U.S. Firm pursuant to this Agreement of Understanding. If any clause included by the Agreement of Understanding 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 Agreement of Understanding Parties submit any dispute arising under this Agreement of Understanding for arbitration, the scope of any such arbitration shall be limited to the Agreement of Understanding Parties' rights and/or obligations under this Agreement of Understanding 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 U.S. Firm 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 FS. In addition, if at any time the U.S. Firm receives follow-on work from the Client, the U.S. Firm shall so notify USTDA and designate the U.S. Firm'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 U.S. Firm and provided separately to USTDA. USTDA will maintain the confidentiality of such information in accordance with applicable law.

ANNEX 6



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 [<i>To be completed by USTDA</i>]							
Activity Type [<i>To be completed by USTDA</i>]		Feasibility Study		Technical Assistance		Other (specify)	
Activity Title [<i>To be completed by USTDA</i>]							
Full Legal Name of U.S. Firm							
Business Address (street address only)							
Telephone		Fax		Website			
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	
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		Date	
Full Legal Name of U.S. Firm			



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"/>