

Annex I

Terms of Reference

These terms of reference (“Terms of Reference”) in this Annex I set forth the terms, conditions, provisions and specifications for the performance of the feasibility study (“Study”) for the benefit of the Ministry of Energy and Mines (the “Client”). _____ (the “Contractor”) shall perform the Study in accordance with these Terms of Reference pursuant to this Contract between the Contractor and the Client, of which Contract this Annex I is a part.

The Contractor’s performance of the Study must comply with the entirety of these Terms of Reference, and any modification of or deviation from these Terms of Reference must be approved in writing by USTDA in accordance with the procedures for amendments or other modifications under this Contract. The Contractor acknowledges and agrees that (i) any performance by the Contractor of work not included in, or not in compliance with, these Terms of Reference, or any failure by the Contractor to perform any work set forth under these Terms of Reference (in compliance with those terms), will be ineligible for approval or payment, absent an amendment or other modification in accordance with such procedures, and (ii) failure to obtain prior written approval from USTDA for any modifications or deviations from these Terms of Reference may result in forfeiture of payment for work performed that is not in compliance with these Terms of Reference and/or a significant delay in payment of the final invoice.

Study Objective

The objective of the Study is to assist the Client in assessing site selection and the infrastructure requirements for a liquified natural gas (“LNG”) terminal, regasification terminal, power plant, transmission line, and related equipment in the province of Monte Cristi, near the municipality of Pepillo Salcedo. The Study will allow the Client to evaluate the technical, economic, and financial feasibility of the Project.

General Considerations

The Contractor shall undertake a quality control review process, including a technical and editorial review, of all deliverables and documents submitted to the Client to ensure readability, accuracy, and consistency. All deliverables and documents shall be submitted in draft form to the Client for review and comment prior to finalization. The deliverables specified in these Terms of Reference shall serve to keep the Client informed about the Contractor’s work on the Study and to ensure that the Contractor’s work is performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement (per Clause G of Annex II of the Grant Agreement). All deliverables shall be submitted in English, unless otherwise indicated.

Phase I

Task 1: Kick-Off Meeting, Document Request, and Work Plan Development

No later than one month after Contract approval, the Contractor shall travel to the Dominican Republic to meet with the Client and other stakeholders (as identified by the Client) to kick-off the Study and visit potential Project sites and their surrounding areas. The Contractor shall develop and deliver a draft work plan for the Study to the Client no less than one week prior to the kick-off meeting. The work plan shall include the schedule of tasks and key resources to be deployed, as well as a communications plan. The work plan shall also include a document list that the Contractor requires from the Client.

The objectives of the kick-off meeting are to:

- a) Confirm the Client's objectives for the Study and for Project implementation;
- b) Review the timing of key milestones for Study and Project development;
- c) Review the tasks to be performed by the Contractor;
- d) Identify the key Client representatives with whom the Contractor shall work;
- e) Identify information that can be made available to the Contractor to complete the Study;
- f) Review specific tasks requiring Client assistance, including providing details of the existing and planned power plant projects, power generation needs, existing power purchase agreements, and preliminary site studies. The Client shall provide to the Contractor any preliminary studies of the proposed Project sites that it has collected, including site descriptions, site conditions, aerial photos, descriptions of neighboring activities, coastal and/or river conditions, and environmental conditions. Also, the Client shall assist the Contractor in meeting with key Dominican government officials to access critical Project-related data. This government-held data may include nautical traffic studies, bathymetry studies, adjoining property ownership records, environmental reports, and similar government-held information;
- g) Agree on the preferred means of communicating throughout the Study;
- h) Agree on the format of monthly reports and other forms of Study-related deliverables and communications, as well as the deliverable receipt and deliverable acceptance certificates required by the Client (separate and apart from the invoice certifications required under Clause G of Annex II of the Grant Agreement); and
- i) Agree on a final work plan for the Study.

Deliverable #1 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 1.

Task 2: LNG Market Analysis, LNG Supply, Transport Capacity, and Commercial Terms

Subtask 2.1 Document Review

The Contractor shall conduct detailed research on the global LNG market, with the focus on sources of supply, new and future LNG export terminal projects, current and future demand,

competing LNG regasification terminal projects (including the existing LNG terminal on the south coast of the Dominican Republic), and new vessel constructions and retirements. The Contractor shall also research the regional LNG market. On the supply side, the Contractor shall review in detail the developments in the Atlantic Basin LNG market, focusing on the Caribbean and Latin America, United States, West Africa, and the Middle East. This review shall include:

- a) Overview of LNG pricing in the region and globally;
- b) An overview of the logistics and transportation infrastructure for sourcing LNG;
- c) Identification of existing and expected future supply of LNG globally, especially new export terminals projects, and contractual agreements (as available); and
- d) New LNG supply ventures, including LNG terminals, bunkering projects, and emerging trading companies focusing on the Atlantic Basin.

Subtask 2.2 Electricity Market Assessment

The Contractor shall conduct a detailed analysis on the Host Country electricity market, with a focus on sources of supply, new and future power generation projects, demand forecast, competing power generation projects (including existing power plants), and power plant constructions and retirements. In addition, the Contractor shall research the demand market, including the distribution companies ("DISCOS") and the non-regulated market (comprised of large users 1 megawatt and above).

The Contractor shall obtain demand growth estimates from the Client and other Dominican government and utility sources. The Client shall support the Contractor in the collection of relevant data. The Contractor shall also research the status of the fuel oil and diesel generation units and the potential for them to be converted to gas, taking into account the location, age, and size of the generating units to define the likely and possible generating units that could be converted to gas. The Contractor shall review their findings with the Client, and based on demand growth, conversions, and non-power opportunities, the Contractor shall prepare a gas demand forecast through 2030.

The Contractor shall forecast the LNG volumes needed to support the Project's power plant build-out. Based on that forecast, the Contractor shall prepare a preliminary plan for LNG delivery and storage requirements.

Subtask 2.3 LNG Market Assessment

The Contractor shall prepare an LNG supply and demand forecast that focuses on the new and emerging suppliers, as well as the global and regional demand for LNG. The supply forecast shall be based on announced and planned future projects, and shall outline the rationale for the forecast and the planned future projects. The demand forecast shall incorporate all announced and anticipated future projects. The Contractor shall incorporate optimistic, pessimistic, and base cases in their forecast and outline the rationale for each case. The Contractor shall analyze the competitive LNG market and LNG suppliers to determine LNG supply capacity and availability from each LNG supply project.

For likely Atlantic Basin supply sources, the Contractor shall collect specifications on the LNG supply, including gross heating value, composition, and contaminants. The Contractor shall seek information from suppliers and trading companies as appropriate.

Subtask 2.4 LNG Price Forecast

The Contractor shall prepare an LNG price forecast three years out on a quarterly basis, based on macroeconomic trends and the supply and demand forecasts. The Contractor shall incorporate supply growth estimates in the price forecast, as well as new market entrants on the demand side. The Contractor shall also incorporate new projects and projected project development delays in the supply growth estimates. The Contractor shall also research regional pricing and the LNG price index that would apply in the Caribbean market. The Contractor shall also estimate the impact of longer-term, large-scale projects on LNG availability and shall indicate where there may be periods of supply shortage, based on the market assessment.

The Contractor shall collect information regarding LNG freight and shipping insurance costs for the delivery of LNG to the Dominican Republic, as well as LNG prices offered by various potential suppliers.

Subtask 2.5 LNG Transport Capacity

The Contractor shall evaluate the option for LNG bunkering in the region and determine how that option may impact the Project's LNG terminal component. The Contractor shall analyze the global LNG tanker fleet to identify the class of vessels that would be capable of supplying the Project initially and throughout the power plant build-out. The Contractor shall outline specific technical issues that may hinder access for various types of vessels that could supply the LNG terminal.

Subtask 2.6 Commercial Terms

The Contractor shall meet with at least 10 LNG suppliers, including international oil companies, national oil companies, LNG terminal operators, and LNG brokers and traders from the United States, the Caribbean, and elsewhere to define the market interest in supplying LNG to the Project. The Contractor shall define the commercial opportunities with the possible suppliers as it relates to long-term contract commitments, selling strategy (spot versus long-term), and storage and tolling options. The Contractor shall request draft contract terms from the interested suppliers. The Contractor shall also prepare an assessment of the supply options for the Project during the commissioning phases and after completion of the power plant build-out, as well as for existing power plants in the Dominican Republic.

Subtask 2.7 Arbitrage, Storage, and Price Risk Mitigation Measures

Based on the discussions with the potential suppliers, the Contractor shall prepare a briefing document for the Client outlining the potential to utilize U.S. gas storage capabilities for price arbitrage and other measures to reduce price risk during periods of high LNG prices. The briefing document shall also outline the options for long-term storage of gas in the United States for hedging during periods of price spikes.

Deliverable #2 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 2.

Task 3: Technical Site Scoping Comparison and Site Assessment

The Contractor shall assess the viability of the primary Project site at Monte Cristi. The Project site footprint shall incorporate the proposed LNG terminal, regasification terminal, power plant, and supporting infrastructure. The Client shall provide the Contractor with existing Project-related studies, data, and industry contacts. The Contractor shall collect and review the relevant Host Country national, provincial, and municipal requirements for design standards and technical specifications related to the Project.

The Contractor shall prepare a design parameters memo. The memo shall outline the key design parameters for a new LNG terminal, including metocean, environmental factors, operability, access, safety, and security. The Contractor shall visit the Project site to review specific site issues.

The Contractor shall address the following technical issues:

1. Assessment of the suitability of the Project site for an LNG terminal (including onshore/offshore storage and regasification units), considering the following factors:
 - a. Marine environment and operations;
 - b. Land and coastline availability and suitability for development;
 - c. Berth and terminal concept;
 - d. Port infrastructure and operations;
 - e. Connectivity to regasification terminal and storage units;
 - f. Potential for overland pipe conveyance corridors from the LNG terminal to gas distribution infrastructure or directly to the power plant; and
 - g. Environmental concerns.
2. Evaluation of the requirements to connect the LNG terminal via gas pipeline to existing major fuel-fired power plants:
 - a. Topography;
 - b. Possible pipeline routes;
 - c. Rights of way;
 - d. Land acquisition issues; and
 - e. Capacity, characteristics, and volumetric analysis of the existing or planned gas grid distribution infrastructure (based on available information) to determine its ability to receive and transport new natural gas volumes.
3. Access to customers: market assessment to integrate with the current and future power plants.
4. Existing supporting infrastructure and maintenance services: assessment of the needs for supporting infrastructure to support the LNG terminal and pipeline (e.g., sources of fresh water, utility services, road access, maintenance services, and labor).
5. Community support: assessment and mitigation of any local community concerns.

The Contractor shall prepare a preliminary evaluation of the Project site and shall assess the following:

1. Total capital expenditure (“CAPEX”) to complete the Project (at this stage, these assessments should be done at a planning level);
2. Schedule risk assessment: evaluation of the overall implementation timeline risks for the proposed Project site, including the anticipated length of time to secure necessary permits, design, and construction at each location involved in the Project. The Contractor shall address the following issues that may cause delays:
 - a. Land acquisition;
 - b. Environmental permitting;
 - c. Near-shore development, including harbor or breakwater development, dredging, moorings, floating storage regasification units (“FSRUs”), and offshore pipelines; and
 - d. Pipeline construction.
3. Operational expenditure (“OPEX”) for the life of the Project;
4. Annual LNG sales;
5. Environmental and social impacts;
6. The Project site’s long-term suitability to meet phased capacity expansion targets; and
7. Host Country government and community support for the Project site.

If at any time during this task, the Contractor determines there is a significant issue with the primary Project site that would prevent or seriously impact the Project, the Contractor shall submit its concerns in writing to the Client and USTDA. If after reviewing the concerns, the Client and USTDA determine the issues to be valid, USTDA will issue an implementation letter, and the Contractor shall repeat Task 3 for the back-up Project site. The back-up Project site shall only be assessed if the primary Project site is not viable.

Deliverable #3 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 3.

Upon completion of Tasks 1, 2, and 3, the Client will assess the results of Phase I in consultation with the Contractor and USTDA and will determine if completing Phase II of the Study is warranted. Upon receipt and review of the Client’s determination, USTDA will issue an implementation letter confirming the Client’s decision, it being understood that USTDA reserves the right to terminate the Study if USTDA determines that it is not appropriate or desirable to proceed to Phase II. If Phase II is eliminated from the Study, then Tasks 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 would be eliminated from the Terms of Reference, and the Contractor would proceed to complete Task 14, which would be performed in reference to the work completed in Phase I of the Study.

Phase II

Task 4: Detailed Site Investigation

Subtask 4.1 Systems Integration

The Contractor and the Client shall define, at a minimum, the proposed locations for the LNG terminal, LNG storage area, power plant area (adjacent to the LNG terminal), major roads, utility corridors, and other major building areas. The Contractor shall define the connection requirements between the LNG storage terminal and the power plant or pipeline, including specific technical requirements, such as pump stations, pipe sizes, gas delivery pressure, the possible range of gas compositions, and backflow. The gas demand requirements of the power plant (including volumes, pressures, and moisture requirements) shall be considered as the base case scenario for the Project's financial model to be developed in Task 7.

Subtask 4.2 Preliminary Site Plan

The Contractor shall develop a preliminary site plan in block diagrams formatted to scale. The Contractor shall ensure the site plan includes, at a minimum, the proposed locations for the LNG terminal, LNG storage area, power plant area (adjacent to the LNG terminal), major roads, utility corridors, and other major buildings. The Contractor shall review the site plan with the Client and shall incorporate the Client's comments.

Subtask 4.3 Preliminary Technical Analysis and Meetings with Relevant Authorities

The Client shall provide the Contractor with all existing studies, data, and industry contacts that the Client has developed in researching the Project. The Contractor shall review this information, and other relevant publicly available information, including the geotechnical aspects, topography, hydro-meteorology of the Project site, adjoining landholdings, and nautical traffic leading to the Project site. The Contractor shall collect relevant documentation on prior land uses at the Project site, neighboring land uses, and maritime traffic. The Contractor is responsible for collecting any additional information not provided by the Client that is required to complete the preliminary technical analysis.

The Contractor shall meet with Dominican government agencies and local authorities responsible for construction, nautical channels, and environmental protection at the Project site. The Contractor shall seek relevant site information, regulatory guidance, and permission to conduct studies at the selected Project site. The Client shall confirm the list of relevant authorities for the Contractor to meet with and shall provide letters of introduction as appropriate. The relevant Dominican government agencies and local authorities include the following, among others:

- a. Comisión Nacional de Energía
- b. Superintendencia de Electricidad
- c. Corporación Dominicana de Empresas Eléctricas Estatales
- d. Empresa Distribuidora de Electricidad del Norte
- e. Empresa Distribuidora de Electricidad del Sur

- f. Empresa Distribuidora de Electricidad del Este
- g. Empresa de Transmisión Eléctrica Dominicana
- h. Empresa de Generación Hidráulica Dominicana
- i. Ministerio de Hacienda
- j. Ministerio de Medio Ambiente y Recursos Naturales
- k. Ministerio de Industria y Comercio y Mypimes
- l. Ministerio de Economía Planificación y Desarrollo
- m. Ministerio de Defensa
- n. Armada de Republica Dominicana
- o. Cuerpo de Bomberos de Republica Dominicana
- p. Liga Municipal Dominicana
- q. Ayuntamiento de Castañuelas
- r. Ayuntamiento de Palo Verde (Distrito Municipal)
- s. Ayuntamiento de Guayaban
- t. Ayuntamiento de Hatillo Palma (Distrito Municipal)
- u. Ayuntamiento de Villa Elisa (Distrito Municipal)
- v. Ayuntamiento de Cana Chapetón (Distrito Municipal)
- w. Ayuntamiento de Las Matas de Santa Cruz
- x. Ayuntamiento de Pepillo Salcedo (Manzanillo)
- y. Ayuntamiento de Santa María (Distrito Municipal)
- z. Ayuntamiento de San Fernando de Montecristi
- aa. Ayuntamiento de Villa Vásquez

In addition, the Contractor shall collect and review Host Country and international safety, transportation, and storage guidelines for LNG terminals and LNG storage facilities, which may include a review of a broad scope of existing reports and data related to specific safety guidelines for LNG terminal siting and operations. The Contractor shall review the following documents and guidelines regarding LNG terminal development:

- NFPA 59A - Standard for the Production, Handling, and Storage of Liquefied Natural Gas (2013 edition);
- EN 1473:2007 - Installation and Equipment for LNG - Design of Onshore Installations;
- Seveso III Directive EU Directive 2012/18/EU;
- USCG - Guidance Related to Waterfront LNG Facilities – Including Information on assessing the Suitability of Waterways for LNG Marine Traffic;
- Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk – SIGTTO;
- Guidance on performing a risk assessment in the design of onshore LNG installations including the ship/shore interface – ISO draft 116901;
- LNG Operations in Port Areas – SIGTTO;
- BS EN 13645:2002 - Installations and equipment for LNG – Design of onshore installations;
- U.S. 33 CFR Part 127 – Waterfront Facilities Handling LNG and LHG;
- Port Marine Safety Code of the UK, Merchant Shipping Acts;
- Site Selection and Design for LNG Ports and Jetties (IP No. 14) – SIGTTO; and
- LNG Overview – U.S. Federal Energy Regulatory Commission.

Based on the above documents and guidelines, the Contractor shall assess the following issues:

- Safety distance from LNG terminal and LNG pipelines to adjacent buildings, industrial zones, and local residential areas;
- Safety distance from unloading arm at the jetty for loading/unloading operations;
- Safety distance between moored LNG carriers and between moored carriers and a passing ship; and
- Safety distance of LNG carriers and other cargo vessels when moving in the channel.

With respect to Host Country legislation and regulations related to LNG, the Contractor shall review the following laws and regulations, at a minimum:

- Ley No. 112-00, Tributaria de Hidrocarburos, de fecha 19 del mes de noviembre del año 2000;
- Ley No. 7128 sobre Tanques de Combustibles, de fecha 9 de junio del año 1948;
- Decreto No. 307-01 que aprueba el Reglamento para la Aplicación de la Ley Tributaria de Hidrocarburos, No. 112-00, de fecha 2 del mes de marzo del año 2001;
- Decreto No. 264-07, que declara de interés nacional el uso del gas natural, para su interés social, económico y medio ambiental, de fecha 22 del mes de mayo del año 2007;
- Resolución No. 01-08 de fecha 3 de enero del año 2008, emitida por el MIC, que expide el Reglamento que establece los Procedimientos para el Otorgamiento de Licencias para las Actividades Relacionadas con la Comercialización de Gas Natural;
- Resolución No. 121-07, de fecha 16 de agosto del año 2007, emitida por el MIC, establece el Reglamento que regula el Decreto No. 264-07, en lo concerniente al uso del Gas Natural Vehicular, cuyo objeto es promover y desarrollar su uso, regular el expendio de GNV, los Talleres y los Equipos de Conversión Vehicular a GNV;
- Resolución No. 33-08, de fecha 28 de marzo del año 2008, emitida por el MIC, establece las tarifas a pagar por los servicios de otorgamiento de Licencias relacionadas con el desarrollo de las actividades de comercialización del Gas Natural; and
- Pending Host Country legislation regulating the LNG and electrical generation sectors.

The Contractor shall also collect specific vessel class details to define the requirements for LNG transfer from ship-to-shore and the requirements for moorings and cargo transfer mechanism height. Vessel design changes (length, width, and draft) shall be accounted for in this effort. The Contractor shall evaluate future trends in vessel design and LNG cargo and transfer equipment.

For Subtasks 4.4, 4.5, and 4.6, the Contractor shall propose survey scope, methods, quantities (e.g., number of sample locations, boreholes, measurement sites, grid-scale), standards to be applied, and schedule for executing the field assessments. Before commencing each assessment, the Contractor shall submit to the Client its specific plans for the assessments, which shall include the following:

- a) The scope of the assessment;
- b) Quantities (e.g., number of sample locations, boreholes, measurement sites, grid scale.);
- c) Specific sample locations;
- d) Field and laboratory assessment methods;

- e) Field and laboratory equipment;
- f) Measurement methods and criteria;
- g) Assessment staff;
- h) Quality control measures;
- i) Safety measures;
- j) Required permits;
- k) Environmental management plan; and
- l) Restoration plan.

The Contractor shall obtain approval from the Client prior to initiating the field assessments. The Contractor shall ensure that the survey and assessment methods defined for Subtasks 4.4, 4.5, and 4.6 be conducted in compliance with national and local building codes relating to quality control and maintenance of construction works, including but not limited to:

- a) Establish and approve the construction survey objectives and execution plan;
- b) Manage the quality of the construction survey; and
- c) Inspect, grant acceptance, and approval of the technical construction survey results.

In addition, the Client shall provide the Contractor with the relevant regulations and recommendations regarding the standards that should be included in all assessments.

Subtask 4.4 Geotechnical Assessment

The Contractor shall undertake a geotechnical assessment to provide the guidance necessary to complete the basic design for the LNG terminal, power plant, and storage facility. The geotechnical assessment shall be of sufficient scope and scale to define the layout optimization and land area required for the LNG terminal, power plant, and storage facilities. The geotechnical assessment shall include:

- a) A review and analysis of available documents obtained either from the Client or commercial sources, on-site geology, engineering geology and earthquakes, aerial photographic maps, and satellite images of the Project site and surrounding area;
- b) Subsurface characterization through soil borings: the Contractor shall utilize national and international building standards for defining the number and depth of borings at the Project site, which shall be mutually agreed to by the Contractor and Client; and
- c) Laboratory and field tests of boring samples and boreholes.

The Contractor shall prepare a geotechnical assessment report, which shall include the following:

- a) Analysis and assessment of the physio-mechanical properties of the foundation soil, which shall describe the uniformity of the subsurface conditions supporting the required process units, building foundations, and heavy pavement sections;
- b) Recommendations of specific foundation concepts best suited for the Project site, including, but not limited to, foundation types (such as spread footings or pile foundation), soil improvement requirements, and any backfill zones;

- c) Identification and assessment of the site geotechnical risks and recommended mitigation measures; and
- d) Definition of the possible earthquake risk, including micro-seismic earthquake risks and proposed risk mitigation measures for seismic hazards related to the design of on-shore and marine structures and the potential for subsurface liquefaction during seismic events.

Subtask 4.5 Topographic and Bathymetric Surveys

The Contractor shall conduct topographic and bathymetric surveys at the proposed onshore and offshore parameters of the Project site (extending outward from the site property lines) to support the definition of the proposed shipping channel and surrounding areas to support the study and design of the LNG terminal, storage facility, berthing, and expected shipping lane. The technical requirements for the survey work shall comply with the current Host Country regulations, codes, and standards, which shall be provided by the Client.

The Contractor shall ensure that the surveys include the following:

- a) Collection and analysis of Client-provided and publicly available topographic and geodetic data, and cadastral maps of the site and relevant surrounding areas. The Contractor shall coordinate with the Client and local experts (such as local contractors and others who have done previous topographical and bathymetric studies of the site and shipping channel). The site topographic maps shall be of sufficient detail to allow for site planning and review.
- b) Establish a geodetic control point network for mapping, topographic survey, and other survey activities. The accuracy of the horizontal control point shall be equivalent to a first-order traverse point. The network shall be connected to class IV triangulation points by using a suitable GPS device and with a static measurement method.
- c) The class IV leveling shall be used to measure the elevation of first-order traverse points. The vertical control network shall be connected to at least two state class III elevation points available in the area.
- d) The topographical mapping shall be at a scale of 1:1000 with a contour lines interval of 0.5 meters. The mapping boundary shall cover the onshore and riverbed areas for the LNG terminal, storage facility, berthing, and expected shipping channel.
- e) The engineering geodetic survey supporting the engineering geological assessment and hydrographic survey shall include positioning and geodetic connecting excavations (boreholes), geophysical, flood trace points and other points, and measurement of hydraulic sections.

The Contractor shall prepare a topological and bathymetric survey report, which shall provide a complete and detailed description of works performed, data processed, calculations, and results achieved.

Subtask 4.6 Hydro-Meteorological Assessment

The Contractor shall conduct a hydro-meteorological assessment at the Project site to support the study and design of the LNG terminal, storage facility, berthing, and the expected shipping lane. The hydro-meteorological assessment shall include the following:

- a) Based on data collected from the Client and publicly-available sources, the Contractor shall update and analyze hydro-meteorological data available for the Project site, in sufficient detail to define hydro-meteorological characteristics and flooding potential;
- b) The Contractor shall measure to verify the prior data and update (as appropriate) the hydrographic cross-sections and add additional ones. Utilizing the prior data and newly collected data, the Contractor shall assess the rate of sedimentation at the areas of interest to the Project;
- c) The Contractor shall conduct a tidal survey to ensure vessel access and ship channel requirements at the Project site, including the capture of any seasonal variations.
- d) The Contractor shall calculate hydro-meteorological parameters and sediment factors related to the port construction and expected shipping lane; and
- e) The Contractor shall assess the ship channel dredging requirements.

The Contractor shall prepare the hydro-meteorological assessment report, which shall provide a complete and detailed description of works performed, data processed, calculations completed, and results achieved. The report shall also include site flood potential, tidal variations on the shoreline, sediment rates, and ship channel dredging requirements.

Deliverable #4 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 4. The Contractor shall also prepare and submit the following drawings:

1. The general layout of the LNG terminal at the Project site;
2. The natural topography of the LNG terminal and port at the Project site;
3. Arrangement plan of the geotechnical assessment boreholes;
4. Comparison of alternatives for the siting of the LNG terminal and storage facility; and
5. Geological section, photos of drilling cores, seabed cross-section, and profile.

Task 5: Basic Design of LNG Terminal

Subtask 5.1 Basic Design

The Contractor shall compare technical options for the LNG terminal, including onshore and offshore-based terminals, and shall propose the best option for LNG terminal and storage facility for approval by the Client. The Contractor shall develop the basic design of the LNG terminal and storage facility. The Contractor shall ensure that the designs meet the Project objectives of providing sufficient capability to supply natural gas to the power plant, abide by national requirements and building codes, include design parameters to synchronize operation with the power plant, and meet safety and productivity standards for LNG terminals as described in the various guidance documents reviewed in Subtask 4.3. The basic design shall comprise definitions and descriptions of major equipment and drawings for the following:

- a) The technologies and equipment to be used for the LNG terminal, LNG storage, supporting infrastructure and civil works, port infrastructure, port civil works, and service vessels;

- b) The major plant unit locations, process flowsheet, layout of the process and supporting infrastructure, and direction of the process flow;
- c) Calculation and selection of LNG receiving jetty and navigation channel with applicable standards;
- d) Calculation of the quantitative risk assessment to define the safety distances;
- e) Conceptual pipeline network sketch and preliminary calculations;
- f) Major equipment list, including sizes and types;
- g) Updated site plan, plant layout, and elevation drawing showing relative sizes and main structures;
- h) Plan for connection of utility infrastructure inside and outside the LNG terminal;
- i) Fire and explosion prevention and firefighting plan and guidelines;
- j) Design basis, calculations, and material and energy balances;
- k) Applied standards and technical regulations for preparing the basic design; and
- l) Construction solutions and plans.

Subtask 5.2 Supporting Information

The Contractor shall prepare the following supporting information:

- a) Human resources plan, including LNG terminal management organization chart and staffing plan;
- b) Port operations plan, including definition of recommended LNG tanker delivery schedule, service vessel needs, and safety plan for deliveries;
- c) Process safety risk assessment, including risk identification, assessment of risk impact, and risk mitigation measures;
- d) The LNG loss rate in transportation, storage, and regasification; and
- e) Incident statistics that have occurred at LNG terminals around the world.

Deliverable #5 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 5.

Task 6: Power Plant Technical Analysis, Power Purchase Agreement and Project Impact on the Dominican Republic's Generation Expansion Plan

Subtask 6.1 Power Plant Technical Analysis

The Contractor shall review the requirements for the power plant, as defined in the market assessment. The Contractor shall evaluate potential technologies for the power plant, primarily focused on load characteristics, efficiency, capital and operating costs, and environmental characteristics, and shall recommend the optimal technology and plant configuration option to the Client. To conduct this evaluation, the Contractor shall develop a simplified evaluation model for comparing different technology options using the levelized cost of electricity as an evaluation criterion. After approval of the recommended technology and configuration option by the Client, the Contractor shall develop a preliminary design package for the power plant. The preliminary design package shall be based on the latest natural gas electricity generation technology. The

preliminary design shall include, at a minimum, the conceptual design of the power plant, gas supply lines, and substations.

The preliminary design of the power plant shall include conceptual specifications for the following:

- Listing of the power plant's major equipment and systems, including basic technical characteristics and overall description of the power plant and gas and interconnecting transmission facilities;
- The power plant's conceptual heat and material balances, including efficiency and fuel consumption;
- The power plant conceptual plot plan, including a general arrangement of the principal equipment;
- The power plant conceptual main electrical one-line diagram;
- Conceptual electrical one-line diagram showing modification/expansion of the substation used as a connection point;
- Conceptual drawings showing the interconnection gas pipeline and interconnection transmission line routing on the area maps; and
- The plant narrative (also referred to as the "design basis document").

The plant narrative for the power plant shall contain the following sections:

- a. Executive summary
- b. System layouts with desirable configuration and alternatives, comparative advantages, and disadvantages
- c. Civil works
- d. Mechanical systems
- e. Electrical systems
- f. Control and instrumentation systems
- g. Water systems
- h. Fuel systems
- i. Effluent management systems
- j. Utilities and infrastructure
- k. Power evacuation system
- l. Hookups and interconnections
- m. Safety and environmental aspects
- n. Statutory requirements and clearances
- o. Stand-alone cost estimates (CAPEX and OPEX)
- p. Project implementation schedule
- q. Workforce requirement
- r. Gas pipe connection to adjacent LNG terminal

Subtask 6.2 Power Plant Equipment Commercial Terms

The Contractor shall meet with major U.S. power plant suppliers to define their potential interest in the Project. The Contractor shall describe the commercial situation with the potential suppliers

as it relates to long-term contract commitments, selling strategy (financing options), new technologies (hybrid), and interest in the Project. The Contractor shall seek draft contract terms from the interested suppliers. Given the number of options available to meet the generation requirements, the Contractor shall define the most appropriate power plant size to meet the baseload generation objectives of the power plant, recognizing seasonal variations in load demand. Based on the size of the generator, the Contractor shall seek commercial terms from at least three internationally known suppliers for gas power plants compatible with the Project.

Subtask 6.3 Power Purchase Agreement Commercial Terms

The Contractor shall prepare and present to the Client for approval a draft power purchase agreement based upon international best practices and intended to set forth the terms of, and to serve as a basis between the power plant and DISCOS concerning the sale of electricity. The draft power purchase agreement shall contain the following provisions:

1. Contract and service terms
2. Energy, capacity, and any other products included in the transaction
3. Testing for capacity and energy deliverability
4. Commencement of services (the initial delivery date)
5. Operational constraints
6. Delivery point
7. Electricity interconnection and transmission services
8. Gas interconnection
9. Compensation scheme (price of energy and capacity)
10. Billing and payment
11. Default events
12. Remedies of default events
13. Force majeure
14. Metering at the delivery point
15. Compliance with law, environmental risk, and indemnity
16. Credit requirements (as of the initial delivery date)
17. Confidentiality agreement
18. Dispute resolution

Subtask 6.4 Load Flow Analysis

The Contractor shall conduct a load flow study to determine if all interconnection equipment (principally cables, overhead lines, and power transformers) remain within their steady state thermal limits and that the voltage regulation across the network remains within thermal equipment ratings. The steady state load flow analysis shall take into account the existing Host Country power grid and the proposed power plant. This analysis shall include power system stability conditions and N+1 network reliability contingencies.

The Contractor shall:

- Request and review relevant transmission infrastructure conditions and capability data, including Host Country power production, substation inventory and capability, and cable transmission specifications and condition reports. The Contractor shall collect this information from the Client and from the regional electricity producers. The Client shall ensure this information is received by the Contractor in a suitable electronic format.
- Review the transmission system power system simulator for engineering (“PSS/E”) models and update them based on current data and future case scenarios.
- Perform power flow calculations to determine the transfer capability in steady state and single outage (N+1 reliability) conditions.
- Recommend ways to increase the transfer capability and voltage regulation in case of weaknesses in the system infrastructure.
- Assess the transmission system capability and identify potential weaknesses in the system when interconnecting the proposed power plant.
- If any overloads are found, the Contractor shall make recommendations for either upgrading the transmission network or curtailing generation.
- Analyze the impact that the proposed network upgrade to support the new power plant could have on the network performance in steady state.
- Analyze network security to determine strategies to maintain acceptable operating conditions in steady state, such as voltage regulation and thermal ratings under system intact condition, as well as during N+1 reliability contingencies.
- Recommend a schedule for the transmission upgrades, based on the proposed power plant.

Subtask 6.5 Fault Analysis

The Contractor shall perform a fault analysis and shall calculate the short-circuit current for every transmission bus in the system. The fault analysis study will help verify any bus fault currents that would exceed the current circuit breaker ratings on the future system, on the high-voltage (“HV”) side only. The fault analysis shall be performed for the existing system and the system with the proposed generation and transmission additions.

The Contractor shall review the sequence impedance data in the PSS/E model and update it accordingly. The Contractor shall calculate three phase and line-to-ground fault currents at every HV transmission bus.

The Contractor shall prepare a steady state load flow and fault analysis report that includes the following sections:

- a) Objective
- b) Assumptions
- c) Load flow analysis on the existing and proposed network
- d) Fault analysis on the existing and proposed network
- e) Recommendation for system upgrades
- f) Analysis of how the power plant would impact the steady-state stability of the Host Country grid

g) All of the PSS/E models used in this task

Subtask 6.6: Grid Connection Cost Estimate

The Contractor shall prepare an order-of-magnitude cost estimate ($\pm 25\%$) for the recommended changes to the grid system. The estimates shall include major equipment cost estimates based on prior studies and vendor quotes (as needed). Costs shall be based on U.S. design, U.S. equipment, and related labor costs. Supporting infrastructure, controls, and other equipment shall be estimated based on a percentage of equipment cost or costs determined by prior studies. For transmission line estimates, the Contractor shall base the estimate on a standard per kilometer rate multiplied by the various line lengths. The Contractor shall add up the costs for each recommendation and then total the costs for the entire grid upgrade.

The Contractor shall prepare a switching single-line diagram for each type of substation. The single-line diagram shall depict major equipment only (control, protection relays, and schemes will not be shown on the single-line diagrams).

The cost estimates shall be based on grid connection costs as it relates to:

- Network upgrades;
- Additional substations; and
- Interconnections of the power facilities to the grid.

Subtask 6.7: Project Impact on the Dominican Republic Electrical Interconnected System Generation Expansion Plan

The Contractor shall review all information available provided by the Client on the Dominican Republic Generation Expansion Plan and the Client's analysis of the Host Country grid and the impacts of the power plant on the grid. The Contractor shall develop a strategy to incorporate the Project into the existing expansion plan with a new projection to 2030 that includes the impact of the Project on the system. The software used to develop the plan shall be of the latest generation available and shall take into consideration the variability of natural resources available for renewable energy.

The Contractor shall prepare a report of the impact of the power plant on the Host Country grid. This report shall take into account the stability and capability of the grid to interconnect with the power plant, the interconnection location, the impact of competing projects in the north of the Host Country, the regulatory requirements for 25 percent renewable energy by 2025, the expected cost of the Project, and the levelized cost of energy. The Contractor shall address each of these issues and incorporate specific project, social, and economic considerations in justifying the power plant.

The Contractor shall also include recommendations on the power plant business model, including fuel switching scenarios, whether dual fuel capability should be considered, impacts of fuel price sensitivities, expected operating rate, need for spinning reserve, and provide a rational justification for the implementation of the power plant project within the Dominican Republic context.

To assist the Contractor with the report, the Client shall provide the Contractor with the Non-Conventional Renewable Energy 2030 Strategy and shall assist them in meeting with experts within the Client and the power distribution sector who can assist them in obtaining the necessary information on the Dominican Republic power situation and expansion plans. The Client shall provide, or provide access to, all information needed by the Contractor to assess how to incorporate the power plant project into the Dominican Republic power expansion plans.

Deliverable #6 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 6.

Task 7: Project Economics and Financing Plan

Subtask 7.1 Project Economics and Financial Model

The Contractor shall develop an estimate of total investment cost for the LNG terminal, storage facilities, regasification terminal, power plant, pipelines, port, and ancillary support areas. The estimate shall include all equipment and services required for the engineering, procurement, construction, and startup of the Project. Total investment cost includes loss of value compensation, support, and relocation costs (if any); construction costs; equipment costs; project management costs; construction consultancy costs; other costs; and contingency costs (for unplanned construction work, unexpected construction issues, and cost escalation).

The Contractor shall develop and recommend the most appropriate financial model for the implementation and operation of the LNG terminal and power plant. The Contractor shall provide an estimate of start-up and annual costs, an estimate of the LNG volumes and storage capacity required to make the LNG terminal a viable project, and an estimate of the volume of electricity sales through the spot market and/or power purchase agreements. The Contractor shall ensure that the financial model considers costs for an LNG terminal and power plant of varying sizes, equipment configurations, and capacity/storage considerations, which shall provide a range of investment options for the Client.

The Contractor shall perform a life-cycle cost analysis (“LCCA”) of the Project, including all capital costs, installation costs, decommissioning costs, and forecasted annual operations and maintenance costs. Such costs shall include, but are not limited to, warranties, operation, maintenance, acquisition, installation, refurbishment, and disposal costs that could be encountered throughout the life of the Project. The analyses shall cover a 25-year timeframe and shall include net present value, payback period, and internal rate of return by applying varying sensitivities to major costs to develop best-case and worst-case scenarios.

Subtask 7.2 Financing Plan

The Contractor shall prepare a financing plan for the Project that recommends and justifies the optimal financial structure and mechanisms, policies for incentives, and Dominican Republic government support for Project implementation. The Contractor shall also prepare a Project financing prospectus for interested investors that contains all material information necessary to market the Project to interested investors and financiers.

The Contractor shall meet with the Client to define investment options, investment risk analysis, and prepare a summary presentation for use with financing entities and equity investors that shall set forth the ownership structure, including joint ventures and strategic development partners.

The Contractor shall assess which public and private financing organizations (such as the World Bank, Inter-American Development Bank, Export-Import Bank of the United States, and Overseas Private Investment Corporation) are interested in providing financing for Project implementation. This assessment shall include a financing plan and a financing strategy, including several approaches to securing financing for the Project, based on discussions with the Client, potential lenders, and potential equity providers.

The Contractor shall outline the rationale for the financing plan and financing strategy, and shall take into account a number of relevant factors including, but not limited to: (i) various debt/equity ratios; (ii) various interest rates and loan terms; (iii) various insurance rates; and (iv) various depreciation schedules. The Contractor shall also provide a recommendation for the most effective financing sources for the Project. The Contractor shall prepare a timeline and recommend a schedule for financing activities.

Deliverable #7 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 7.

Task 8: Regulatory and Legal Review

The Contractor shall review all Host Country laws, regulations, and standards impacting the Project and shall define specific regulatory-related tasks the Client will need to undertake to implement the Project. The Contractor shall also review relevant building codes and other regulations that may impact the Project.

Deliverable #8 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 8.

Task 9: Preliminary Environmental and Social Impact Assessment

Subtask 9.1 Preliminary Environmental and Social Impact Assessment

The Contractor shall conduct a review of the Project's environmental and social impact and compliance with the Equator Principles and with Host Country national, provincial, and local environmental laws. The Contractor review shall identify potential positive and negative environmental impacts, discuss the extent to which negative impacts can be mitigated, and develop plans for a full environmental impact assessment in anticipation of the Project moving forward to the implementation stage. The Contractor shall identify the required Host Country national and provincial government environmental approvals required for Project implementation.

The Contractor shall focus on the following:

- a) Project origin, Project owners, required Project approvals, and the methodology for the preliminary environmental and social impact assessment.
- b) Evaluation of technology and equipment selected for the Project, and any Project-related activities that could cause an impact on the environment.
- c) Assessment of the current status of the natural and socioeconomic environment at the Project site, shipping channel, and adjacent areas.
- d) Assessment and forecast of waste sources, and the Project's impact on the environment and community health.
- e) Assessment, forecast, and determination of measures for managing Project risks posed to the environment and community health.
- f) Waste disposal measures for maritime-related Project construction and operation, including for dredging residues and maritime vessel wastes.
- g) Measures for minimizing the impact of the Project on the environment and community health.
- h) Results of public consultation and public comment from affected groups, including neighboring businesses, farms, local non-governmental organizations, local municipalities, and provincial authorities.
- i) Environmental management and supervision programs.
- j) A budget estimate for the construction of environmental protection facilities and measures to be taken to minimize the environmental impact.
- k) Alternative measures to mitigate environmental impacts related to Project development.

Subtask 9.2 Climate Resiliency Assessment

The Contractor shall assess the anticipated climate-related impacts on the Project, including on the Project's technical, commercial, and environmental viability. The Contractor shall conduct the climate resiliency assessment based on publicly available information. At a minimum, the Contractor shall analyze the following potential climate-related impacts on the Project's viability:

- Increased variability of rainfall and wind;
- Sea-level rise, storm surges, and ocean acidification;
- Increased frequency of extreme weather events; and
- Increased temperature.

Based on this assessment, the Contractor shall provide recommendations of items the Client should include in the Project design and implementation to mitigate climate-related risks.

Deliverable #9 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 9.

Task 10: Development Impact Assessment

The Contractor shall assess the economic development impacts associated with Project implementation and shall detail the methodology for measuring those impacts. The development

impacts considered shall be relevant to the Project (i.e., reasonably expected to flow from its implementation as outlined in the Study) and the Contractor shall prepare a plan for monitoring these impacts during the useful life of the Project. The Contractor shall focus on the following development impact indicator:

| Sector | Category | Indicator | Description | Anticipated Outcome |
|------------------|---|---------------------|---|---------------------|
| Energy and Power | Infrastructure Development and Efficiency Gains | New Energy Capacity | If implemented, the Project would generate up to 600 megawatts of electricity in the Dominican Republic | Up to 600 megawatts |

Deliverable #10 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 10.

Task 11: U.S. Sources of Supply

The Contractor shall identify a list of potential U.S. companies that could provide the goods and services required to implement the Project. The list shall include (i) the possible U.S. sources of supply and/or services for the Project; (ii) a detailed description of relevant products, solutions, and/or services to be provided; and (iii) contact information for the party or parties responsible for marketing/sales in the Dominican Republic. The business name, point of contact, address, telephone number, and e-mail address shall be included for each identified party. The Contractor shall engage in discussions with relevant potential U.S. suppliers or service providers and analyze their interest in the Project. The Contractor shall notify the Client of which potential suppliers or service providers are interested in the Project. The Contractor shall estimate the value of potential export sales for each identified potential supplier to the Project, by product or service.

The Contractor shall provide U.S. sources of supply for the LNG terminal, storage facility, power plant, vessels, LNG supplies, and supporting infrastructure. The Contractor shall evaluate LNG supply options for the various phases of the Project and the overall LNG supply for 10 years after the initial commissioning of the LNG terminal.

Deliverable #11 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 11.

Task 12: Implementation and Construction Plan

The Contractor shall prepare an implementation plan, including a constructability analysis for the Project’s LNG terminal, storage facilities, and power plant. The Contractor shall identify key Project implementation factors, such as resource use requirements, land use requirements, selection of equipment and technology, use of labor, technical infrastructure, product consumption, implementation duration, site preparation, and environmental protection. The Contractor shall also identify other Project implementation factors, such as land acquisition, construction safety, fire safety and prevention, and other topics considered in such a Project.

The implementation and construction plan shall include, but not be limited to:

- a) Site construction requirements, including labor requirements, equipment, and schedule;
- b) The scope of the construction, including site, marine, and process systems;
- c) Technical definition and specification of the major equipment;
- d) The general layout for each of the Project phases;
- e) Proposed sources of materials and equipment;
- f) Plan to transport materials and equipment to the construction site;
- g) Main construction methods and specialized equipment;
- h) Infrastructure for construction (such as roads, power supply, and water supply);
- i) Environmental protection requirements during construction;
- j) High-level procurement plan strategy (preferably life-cycle costing/best value procurement), including recommended equipment selection guidelines for the Project;
- k) Estimate workforce requirements by skills category for operations;
- l) Estimates of construction requirements (e.g., excavation, leveling, concrete, steel structures);
- m) Training and education plans for operations and maintenance personnel;
- n) Master schedule of events synchronized with power plant development and commissioning schedule prepared in consultation with the Client (if applicable);
- o) Master construction schedule for each major process and infrastructure unit, including milestones;
- p) Project management plan, organization, and process; and
- q) Construction risk analysis.

The Contractor shall also prepare a set of recommendations regarding the Project development structure. The Contractor shall prepare a strengths, weaknesses, opportunities, and threats analysis of each possible development option for the Project, whether as a combined Project or separated into Project components. The Project development options assessed shall include the following:

- Engineering, procurement, and construction;
- Build, operate, and transfer;
- Build, own, operate, and transfer;
- Independent power producer, and
- Other options for private sector development or for the transfer of ownership to the government (if recommended).

Deliverable #12 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 12.

Task 13: Preparation of Request for Proposal Package

The Contractor shall prepare and present to the Client for approval a draft request for proposals (“RFP”) for a Project developer, based on international best practices. The RFP package is intended to set forth the terms of, and to serve as a basis of, the agreement between the power plant developer and the Client, as well as with the DISCOS for a long-term commitment for the purchase of electricity. The RFP package shall contain the following items, at a minimum:

- a) Description of the Dominican Republic electricity market;
- b) General description and technical specifications of the LNG terminal;
- c) General description and technical specifications of the power plant;
- d) Project schedule and commercial date;
- e) Draft public-private partnership or build, operate, and transfer agreement;
- f) Power purchase agreement;
- g) Sovereign guarantee;
- h) RFP schedule;
- i) Evaluation committee;
- j) Questions and answers;
- k) RFP addenda and annexes;
- l) General bid submittal requirements;
- m) Bid submission format and deadline;
- n) Selection criteria; and
- o) Any other relevant information needed to prepare the bid documents, including the bid scoring methodology.

Deliverable #13 – The Contractor shall prepare and deliver to the Client a detailed written report describing all work performed (including all reports, deliverables, and findings) for Task 13.

Task 14: Final Report and Presentation

The Contractor shall prepare and deliver to the Client and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference (the “Final Report”), which must conform to the requirements under Clause I of the Mandatory Contract Clauses (as defined in Annex II). The Contractor shall organize the Final Report into chapters and sections with clear labels corresponding to each of the above tasks and sub-tasks of these Terms of Reference, and the Contractor shall include in the Final Report all deliverables and documents that have been provided to the Client under these Terms of Reference. The Contractor shall incorporate into the Final Report (i) all of the findings, recommendations and conclusions of the Study under these Terms of Reference, and (ii) all other documents and/or reports provided pursuant to the tasks noted above, in each case clearly organized and labeled according to each task and sub-task under these Terms of Reference. The Contractor shall also include an executive summary to the Final Report as a whole, and provide a summary for each task under the Terms of Reference.

Before completing and delivering the Final Report to the Client or USTDA, the Contractor shall (a) prepare a draft Final Report in accordance with the instructions in the above paragraph, (b) travel to the Dominican Republic to present the complete findings of the Study to the Client, and (c) provide the draft Final Report to the Client for review and discussion.

Once the Client has provided comments and revisions to the draft Final Report, the Contractor shall make the necessary changes and modifications to the draft Final Report, it being understood that the Contractor shall not make any changes or modifications that are inconsistent with any of these Terms of Reference.