

REQUEST FOR EXPRESSIONS OF INTEREST
CONSULTING SERVICES

Selection #: GY-T1147-P001

Selection Method: Full Competitive

Country: Guyana

Sector: Infrastructure and Energy Sector

Funding – TC #: ATN/OC-16533-GY

Project #: GY-T1147

TC name: Tapping the Promised Land: Guyana's Future as an Oil Producer

Description of Services: Elaboration of a technical and economic feasibility study for the development of natural gas use in electricity generation in Guyana. The study includes: (i) potential conversion of existing oil-fired generators to dual fuel operation (fuel oil/natural gas); and (ii) development of a new natural gas power plant with best technology generation options. Moreover, the study will identify and analyze related infrastructure, and technical and investment requirements including the onshore transport best option, power transmission system infrastructure, land availability for the new plant and gas purity requirements for power generation.

Link to TC document: <https://www.iadb.org/en/project/GY-T1147>

The Inter-American Development Bank (IDB) is executing the above-mentioned operation. For this operation, the IDB intends to contract consulting services described in this Request for Expressions of Interest. Expressions of interest must be delivered using the IDB Portal for Bank Executed Operations (<http://beo-procurement.iadb.org/home>) by **March 29th, 2018, 5:00 P.M.** (Washington D.C. Time).

The consulting services (“the Services”) mentioned above are expected to be completed in an estimated timeframe of five months.

Eligible consulting firms will be selected in accordance with the procedures set out in the Inter-American Development Bank: [Policy for the Selection and Contracting of Consulting firms for Bank-executed Operational Work](#) - GN-2765-1. All eligible consulting firms, as defined in the Policy may express an interest. If the Consulting Firm is presented in a Consortium, it will designate one of them as a representative, and the latter will be responsible for the communications, the registration in the portal and for submitting the corresponding documents.

The IDB now invites eligible consulting firms to indicate their interest in providing the services described below in the [draft summary](#) of the intended Terms of Reference for the assignment. Interested consulting firms must provide information establishing that they are qualified to perform the Services (brochures, description of similar assignments, experience in similar conditions, availability of appropriate skills among staff, etc.). Eligible consulting firms may associate in a form of a Joint Venture or a sub-consultancy agreement to enhance their qualifications. Such association or Joint Venture shall appoint one of the firms as the representative.

Interested eligible consulting firms may obtain further information during office hours, 09:00 AM to 05:00 PM, (Washington D.C. Time) by sending an email to: Jaime Sologuren Blanco (jaimeso@iadb.org), copying Leopoldo Montañez (leopoldom@iadb.org) and Lenin Balza (leninb@iadb.org).

Inter-American Development Bank
Division: Energy Division
Attn: Jaime Sologuren Blanco, Energy Specialist

1300 New York Ave, NW, Washington DC 20577, USA
Tel: (592) 225-7950
E-mail: jaimeso@iadb.org
Web site: www.iadb.org

Draft Summary of Terms of Reference

Selection Process #: GY-T1147-P001

TERMS OF REFERENCE

CONSULTANCY SERVICES FOR THE GAS TO POWER FEASIBILITY ANALYSIS

GUYANA

GY-T1147 - ATN/OC-16533-GY – TAPPING THE PROMISED LAND: GUYANA’S FUTURE AS AN OIL PRODUCER

1. Background

Following the recent oil discoveries of approximately 3.2 billion oil-equivalent barrels offshore Guyana, the country is poised to become a major oil producer in the region by mid-2020. The availability of indigenous natural gas reserves presents the opportunity for cleaner energy generation and the reduction of CO₂ emissions, while also offering a medium-term path to increased reliance on renewables in accordance with the Government’s Green State Development Strategy.

Guyana is expected to experience a significant growth in electricity demand. Major economic and infrastructural transformation is expected over the long term, stemming from increased foreign direct investment, demand for goods and services, and foreign exchange earnings. As a consequence, real GDP growth is expected to grow 38.5 percent and 28.5 percent in 2020 and 2021 respectively¹. Such growth scenarios within the context of an emerging oil and gas sector could alter recent electricity demand forecasts.

Guyana Power and Light (GPL), the main public supplier of electricity, is therefore faced with the challenge to produce, distribute and commercialize the necessary energy to supply that demand under adequate quality standards and economic conditions. Recent reports describe that reliability of electricity supply has been low, and characterized by frequent and long outages, load discharges and voltage variations. Poor reliability has been linked to dependence on old and obsolete equipment for power generation that need to be replaced in the short run. Additionally, electricity prices in Guyana are the third highest in the Caribbean due in large part

¹ IMF Country Report No. 17/175

to the country's reliance on expensive imported fuel oil for electricity generation. At present, the cost of fuel accounts for up to 52% of the total cost of electricity generation.

In order to identify guidelines for the development of the most adequate electrical infrastructure for generation and transmission expansion in the country, the Inter-American Development Bank (IADB) conducted in 2014 an Initial Study on System Expansion of the Generation and Transmission System of Guyana (Initial Study) and an Update of the Initial Study which was completed in June 2016. Currently, the Government of Guyana (GoG) is expected to commission a second update of the Expansion Study that will consider the option of natural gas-fired power generation facilities utilizing indigenous gas resources, as part of an optimal generation mix. In this regard, and as a separate assignment, Government of Guyana will undertake a comprehensive technical and economic assessment of potential gas to power generation options with the support of an experienced international consulting firm.

2. Consultancy Objectives

2.1 Elaboration of a technical and economic feasibility study to for the development of natural gas use in electricity generation in Guyana. The study includes: (i) potential conversion of existing oil-fired generators to dual fuel operation (fuel oil/natural gas); and (ii) development of a new natural gas power plant with best technology generation options. Moreover, the study will identify and analyze related infrastructure, and technical and investment requirements including the onshore transport best option, power transmission system infrastructure, land availability for the new plant and gas purity requirements for power generation.

3. Main Activities

1. In order to achieve the consultancy objective, the Consultant firm will develop at least the following activities:

Part I – Preparatory activities

- I. Review related studies done by the GoG and partners including but not limited to, the 2016 Expansion Study, 2017 Energy Narrative NG Study, GPL's Development and Expansion Study, 2017 National Energy Policy (Draft), and others that are considered by Government of Guyana.
- II. Consult with main energy sector stakeholders including (i) The Ministry of Public Infrastructure; (ii) The Guyana Energy Agency; (iii) the Guyana Power and Light Inc. and the Ministry of Natural Resources to gain a broad perspective the current state of the sector, policies and strategies. Others stakeholder working the Oil & Gas sector may be included.
- III. Analyze – and propose revisions when needed – on the main indicators of the Guyana power sector including the current and projected electricity demand, and current and projected installed and effective power generation and transmission system capacity.
- IV. Review the information provided by GoG related to the gas supply (volume, chemical composition, gas supply agreements, on-shore gas prices, etc.) that would be available from offshore production.
- V. Determine the technical considerations for converting existing oil-fired thermal power plants to natural gas and calculate the investments needed and associated timelines for the conversion.
- VI. Review best practices and lessons learned from other countries that have developed gas to power projects, in particular those in developing and emerging countries.
- VII. Analyze the current power generation system and associated infrastructure. Recommend potential conversions with the selection of the right technology for conversions to dual fired plants.

Part II – Technical and economic evaluation

Assess the technical and economic feasibility of installing a new natural gas power plant by conducting at least the following activities:

- VIII. Recommend an optimal natural gas power plant capacity (and the resulting cost of electricity), as well as selection of technology for the new gas fired facility, considering future developments of Renewable Energy power generation plants in the long run, and recent electricity demand projections.
- IX. Assess the provided potential locations for the proposed new gas-fired power plant considering predefined offshore gas landing options, space availability and plant layout/design options, proximity to transmission infrastructure. This activity will be informed by MPI on the separate site selection work, being conducted for landing of the offshore pipeline.
- X. Estimate the required gas on-shore best transportation options, the required investments, technical designs and associated construction terms to deliver natural gas to the new power plant and (when feasible) to each of the potentially converted dual fuel power plants (consideration shall be taken in case planned pipelines cross industrial areas).
- XI. Propose alternatives with a cost-benefit analysis for the deployment of gas-fired power plants, including at least: (i) a combined-cycle of 200 MW, (ii) a combined-cycle of 100 MW, (iii) the conversion to gas of all existent power plants (where technically feasible), or (v) any other combination and natural gas generation technology that the consultant considers is appropriate to satisfy the country's need and gas availability.
- XII. The selection of the power generation technology shall include: i) investment costs, ii) operating costs including fuel costs and, iii) reliability of the system considering the existing generation system. The study should also indicate the retirement costs of existing thermal plants that may not be part of the future generation system.
- XIII. Determine the two best alternatives (and their trade-offs) to deploy natural gas to power, and make a recommendation on the best option, indicating for each one at least: (i) designs of the new plant and the conversion of existing ones, (ii) the cost break-down of each, (iii) roadmap for project development and projected construction timetables, (iv) detail of additional investments required (e.g. onshore gas pipelines, transmission reinforcements or new higher voltages, etc.), (v) economic and financial analysis, and (vi) emission reductions and climate benefits.
- XIV. Determine substation requirements for efficient supply of power on the Demerara Berbise System
- XV. Determine the load conditions by the project interconnection year and long term. Selection of an optimal transmission voltage for the amount of power to be delivered.
- XVI. All proposed units need to be in compliance with the Minimum Technical Requirements of the Guyana Grid Code.

Part III – Complementary analysis

- XVII. Assess all transmission upgrade requirements (transmission lines and substations) and their associated investment costs, considering the power plant site, and electricity demand information including base-load versus peak-load.
- XVIII. Perform a stability assessment for the project and assessment of critical contingencies including trip of generation at the plant and load rejection (loss of load).
- XIX. Determine a dispatch model of GPL generation with the addition of the new generation plant using a detailed production costing software/models.
- XX. Propose the commercial mechanisms and contract terms for the supply of natural gas (types of contract, main clauses, risks and mitigation measures) to have the power plant operational and the supply contracts in place by 2021-2022.
- XXI. Screen the different GoG financing options and their attractiveness for the required investment profile in the power plants (new or convertible ones).
- XXII. Develop a roadmap with the sequence of activities and timelines for the two best options regarding the development of the power plants.
- XXIII. Review and recommend the required regulatory framework for the natural gas power plants

to be operational.

4. Payments

4.1 Payments for the consulting services will be specified in the Contract, using the concept of lump sum, and will be made as follows:

- 20% upon presentation of an inception report describing the methodology and timeline for the development of the consultancy;
- 30% upon approval of interim report on activities (i) through (vii) of Part I;
- 40% upon approval of interim report on activities (viii) through (xxii) of Part II
- 10% upon approval of Final Report

All deliverables shall be submitted to the MoPI and the IADB for review and approval. Deliverables must be submitted in electronic and printed copy (2 copies) as required by the MoPI. Deliverables are expected to comply with the deadlines agreed.

5. Qualifications of the Consultant Firm

- The firm must have successfully completed at least 3 assignments of similar nature and complexity, over the past 10 years.
- The firm and team members must be citizens of an IDB member country.
- The firm or consortium must have proven experience in: (i) technical and commercial feasibility assessment of natural gas use to power generation alternatives at utility scale; (ii) robust analysis and modeling of generation expansion planning; and (iii) robust transmission expansion planning and upgrading as well as interconnection analysis for utility scale projects.
- It is expected that all members of the team or consortium of firms should have a post graduate level degree (Masters or Ph.D.) with a minimum of 10 years of experience in the field and, at least, 6 years of significant in-depth international expertise and LAC regional knowledge of the Power sector and relevant consulting services advising National Governments. A track record of success in technical and commercial feasibility assessment of gas to power alternatives for countries with natural gas infrastructure is also a requirement. Highly relevant and proven sector experience could in cases stand for in lieu of a post graduate degree.
- The consulting firm may propose the best team combination to achieve the overall goal. To be considered for the assignment, proposed team members should submit their respective CV's.
- Fluency in English is a prerequisite for each team member.

6. Specifications for the Consulting Services

Type: The work is expected to be carried out by an international consulting firm or association of international and national firms. The contract is a lump sum payment to be awarded on a Quality and Cost base.

Starting date and duration: 15th April 2018, for an estimated length of five (5) months.

Place of work: The work is expected to be carried out in the place of work of the consulting firm and will include at least 4 missions to Georgetown for two members of the consultant team.

During the first mission, the consultant is expected to initiate the collection of information and receive feedback from GOG; for the final mission, the consultant will perform the workshop to present the inception report and the draft Final document to the GoG and IDB.