

QUALITY CONTROL (QC) REPORT

| | |
|---|---|
| Sector | Energy generation |
| Name of DNA | Mr. John Auguste, DNA focal point, Energy Division, Ministry of Finance, Planning, Economy, Energy and Cooperatives |
| Primary Person Responsible for QC Procedures | Mr. John Auguste, DNA focal point |
| Contact of the Primary Person Responsible | John.auguste@yahoo.com, energydivisionou@gmail.com +1 473 440 2731 ext 1202 +1 473 419 2354 (mobile) |
| Implementation Dates of QC Procedures | From the date of adoption of standardized baseline. |
| Please describe how your QC procedures were implemented | |

All sources of data are given in the Table below.

Table: Key data parameters

| Data | Source | Method of Cross checking |
|-------------------------|-------------------------|--|
| Total fuel consumption | GRENLEC monthly Reports | This data is used for commercial transactions and confirmed to be correct by the DNA. In addition, an efficiency check shows that the values used are reasonable. |
| Total annual generation | GRENLEC monthly Reports | Annual reports (page 55) published by GRENLEC which are publically available and official. |
| NCV | GRENLEC monthly Reports | This data is used for commercial transactions and confirmed to be correct by the DNA. |
| Fuel emission factor | IPCC 2006 | - |
| Density | GRENLEC Monthly reports | Petro Caribe and SOL are the fuel providers to Grenada, and Carriacou and Petite Martinique respectively. This information is used for commercial transaction and deemed correct by the DNA. |

Grenada has a vertically integrated monopoly of electricity generation. GRENLEC is the only utility in the country, which generates, transmits and distributes electricity to the islands of Grenada, Carriacou and Petit Martinique – the three key islands of the country. GRENLEC started operations in 1960.

The fuel in Grenada (diesel) is imported and it is used for electricity and transport purposes; the division of Customs and Excise of the Ministry of Finance manages all imports, including fuel imports. There are three key entities importing fuel; Petro Caribe Grenada Limited, SOL and RUBIS. Petro Caribe and SOL are the fuel supplier to GRENLEC (Grenada Electricity Services Ltd.) for electricity purposes.

GRENLEC has volumetric meters at each plant which continuously record and report the fossil fuel consumed. Continuous electricity meters provide the gross and net electricity

| | | | |
|---|-------------|-------------|-------------|
| <p>generated at each plant. Staff in charge of the operations at each GRENLEC plant are responsible to extract and prepare the monthly reports based on data recorded by the meters. The Energy division of the Ministry of Finance (DNA), uses the information of fuel importing records of the division of Customs & Excise, to cross-check the fuel consumption reported by GRENLEC monthly. In addition, the DNA checked that the average efficiency achieved by GRENLECs power plants each year is in the range of 30-46% for units run by oil, as per Appendix 1 "Default efficiency factors for power plants" of the Tool to calculate the emission factor for an electricity system, as shown below in monthly reports and detailed here:</p> | | | |
| Power Plant | 2010 | 2011 | 2012 |
| QUEENS PARK POWER STATION | 40.54% | 42.24% | 42.80% |
| CARRIACOU POWER STATION | 38.83% | 39.74% | 40.04% |
| PETIT MARTINIQUE POWER STATION | 30.63% | 30.72% | 29.99% |
| <p>GRENLEC also reports to the DNA the monthly electricity generation data in Grenada, Carriacou and Petit Martinique. The DNA crosschecks the data against GRENLEC company's on-line/public annual report. Based on that, Ministry of Finance reports to Prime Minister cabinet. GRENLEC publishes its reports per year since 2002. The reports for 2012 are used as source of cross-check for years 2010, 2011 and 2012. http://grenlec.com/Portals/0/AnnualReportsPDF/Report2012.pdf. Specific details are mentioned on page 55 of the report. At the time of preparing this SBL, the 2013 report was not available, therefore, it is assumed that the three years used in the calculations is the most recent data available at the time of submission.</p> <p>In addition, the DNA certifies that GRENLEC keeps accurate records of:</p> <ul style="list-style-type: none"> - Each plant / unit connected to the grid; - The commercial start date; - The technology and the type of fuel used in each plant; - The gross and net amount of electricity generated by each plant in the relevant years; - The consumption of each fuel type in the relevant years and power plants. <p>The data is presented in such a way that allow for the reproduction of the calculation of the emission factor of the grid.</p> <p>All data collected as part of monitoring will be archived electronically and will be maintained for at least 3 years by the DNA. All these data should be monitored, unless otherwise stated in the methodologies that are used by specific projects. Some parameters need to be monitored continuously, or need to be monitored periodically. The data will be archived and maintained in such a way that allow for the reproduction of the calculation of the emission factor of the grid.</p> | | | |
| <p>Please specify how the credibility of the data sources was checked.</p> | | | |
| <p>All data sources mentioned in the previous section were cross referenced. The monthly reports were crosschecked with the annual reports published, which can be considered an official source. It was noted that the total value of net generation reported in the year is slightly different than the one in the annual report. This difference is due to small checks that are done by GRENLEC throughout the year. The difference is minimal (ca. 0.45%) and thus it can be accepted. It is also pertinent to highlight that there is no auditing body in</p> | | | |

| | |
|--|--|
| the island. A regulatory commission was only created in 2016 and has not yet been established. The fuel consumption has been crosschecked against an efficiency value reported by GREENLEC which show that values are credible. | |
| DNA considers that the data is comprehensive and reliable as it is well documented in the monthly reports of GREENLEC, which have been used as source of data. | |
| Please specify how the accuracy of the data was checked. | |
| In this calculation primary source of data (GREENLEC) has been cross checked from publicly available annual reports (Annual report 2012, p. 55). It should be mentioned that data is also used in commercial transaction and so it should be considered accurate. | |
| Relevance: The key data used for the grid emission factor calculation is relevant. Both electricity generation and fuel consumption data are collected from GREENLEC which is the sole electricity company in the country. NCV is sourced from GREENLEC monthly reports. | |
| Completeness/Comprehensiveness: DNA assures the completeness of the data as data available is sufficient for the calculation of the grid emission factor. Generation data for 2010, 2011 and 2012 was accessed. | |
| Consistency: A consistency check has been done by the DNA by comparing 2010-2012 data with publically available data and did not find significant changes or unexpected trends. | |
| Credibility: GREENLEC publishes its annual reports since 2002, these are deemed credible by the DNA. | |
| Please specify how the consistency was achieved in particular where multiple secondary data sources were used, and how the vintage provision was met | |
| The most recent three year (2010 – 2012) data at the time of calculation and submission were used. The latest monthly report available is for 2012. The source of data is GREENLEC. | |
| Please specify how the "Standard for data coverage and validity of standardized baselines" was complied | |
| The data coverage includes the years of 2010, 2011 and 2012. The DNA wishes to apply the default validity of standardized baselines, which is three years (after the SB approval). | |
| Please specify how the completeness was achieved. | |
| Calculations follow the "Tool to calculate the emission factor for an electricity system" version 05.0, CDM EB 87, Annex 9 and data available fulfil sufficiently and adequately. | |
| Please specify how the transparency was achieved. | |
| There was sufficient available information to calculate this factor, in an efficient, conservative and transparent manner. | |

Mr. John Auguste
 Senior Energy Officer
 Ministry of Finance, Planning,
 Economy, Energy, and
 Cooperatives

22 September 2016

Signature of DNA

Date to finalize this report

| | |
|---|---|
| There are sources of data and documents collected that are open to the public in a transparent manner and allow to cross reference the calculation provided in the excel spreadsheet. | In addition, the Standardized Baseline Grid Emission factor for Grenada was presented at a workshop held at St. George's University on 19 and 20 March 2015. The participants included the key stakeholders from the various sectors: Utility company (GRENLEC), Waste, Academia, NGOs and the relevant media houses were also present. |
| Please specify major issues and uncertainties identified during the QC procedures. | Not applicable since data used in the calculation are cross checked from available monthly reports of the utility company. |
| Please specify major corrective actions taken during the QC procedures. | N/A |
| Please justify the conservativeness of the approaches taken during the QC procedures. | Off grid power plants are not accounted for this calculation. As of date there is no CDM project activities registered in Grenada. |
| Please summarize key findings and present a plan to improve the data quality in the future. | The data and parameters defined in the monitoring protocol, allows keeping the calculation with sufficient rigor and quality. |
| The following is suggested to improve data quality in the future: • Develop a system to systematically track and record the data required to calculate the grid emission factor for the power sector and to define a method to cross-check the data recorded by such system. | |