QUALITY CONTROL (QC) REPORT

Sector	Electricity Generation
Name of DNA	Ministry of Environment and Cooperatives
Primary Person for QC Procedures	**Ms. June Hughes** Director Ministry of Environment and Cooperatives Department of Environment
Contact of the Primary Person	Phone: (1-869) 466-8535 Email: june.hughes@gov.kn
Implementation Dates of QC Procedures	From date of adoption of standardised baseline

Please describe how your QC procedures were implemented

Involved Entities

The CDM DNA of Saint Kitts and Nevis is represented by the Ministry of Environment and Cooperatives.

St. Kitts Electricity Co. Ltd (SKELEC) is the sole entity responsible for generating, purchasing, transmitting, and supplying electricity throughout the St. Kitts, and Nevis Electricity Company Limited (NEVLEC) for Nevis.

The Energy Units in both St. Kitts and Nevis in collaboration with SKELEC and NEVLEC, are tasked to plan, promote, and effectively manage the production, delivery and use of energy through Energy Efficiency, Renewable Energy, and Cleaner Production interventions for the sustainable development of Saint Kitts and Nevis.

Specifically, the following information was collected:

Table 1. Key data parameters

Data	Source	Method for cross-checking
Annual Electricity Generation	SKELEC and NEVLEC	Data is collected and stored by the Electricity Utility companies. Annual Reports are prepared but only for Internal Purposes.
Total Fuel consumed	SKELEC and NEVLEC	Greenhouse Gas Inventory Reports
NCV of Fuel	2006 IPCC Guidelines	2006 IPCC Guidelines for National Greenhouse Gas Inventories: Volume 2: Energy: Chapter 1 - Introduction: Table 1.2 - Default Net Calorific Values (NCVs) and lower and upper limits of the 95% confidence intervals. Chapter found at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf

CO_2 emission factor of fuel	2006 IPCC Guidelines	2006 IPCC Guidelines for National Greenhouse Gas Inventories: Volume 2: Energy: Chapter 1 - Introduction: Table 1.4 - Default CO_2 emission factors for combustion. Chapter found at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf

Data collection process:

- Electricity generated: Energy data is collected using various methods by the electricity utility company. Electricity generation data is recorded hourly by system operators using a combination of generator and feeder energy meter points, in conjunction with Supervisory Control and Data Acquisition (SCADA) systems. Additionally, for NEVLEC, monthly energy purchased from the wind IPP is recorded and independently verified by both the IPP and Utility.
- Fuel Consumed: Information is recorded by plant operators tabulated and published in internal monthly fuel consumption, energy generation statistics and power plant key performance indicator report which are submitted to the General Manager and Board of Directors. The Ministry of Environment and Cooperatives, upon request collect energy statistics to meet reporting requirements and to produce Saint Kitts and Nevis's energy balance and greenhouse gas inventory.

- Fuel NCV: Information gathered using the 2006 IPCC Guideline documents.

- Fuel CO2 emission factor: Information gathered using the 2006 IPCC Guideline documents.

Quality Control process applied:

- Net electricity generated: Information if cross-checked daily by power plant's operations and production management staff. For the diesel power plants the net-generation is determined after parasitic losses are quantified and subtracted from gross generation figures. Additionally, for NEVLEC at the end of each month, the electricity utility and wind IPP verify the wind generation information as provided by a main meter and secondary meter. They arrive at a finalized agreement on the amount of electricity generated and supplied to the national grid by the IPP.

- Fuel Consumed: Fuel consumption data are cross-checked by plant operations and production management team. In addition, fuel consumption information is cross-checked by the National Climate Change Office as part of the QA/QC measures employed as part of the Greenhouse Gas Inventory process.

- Fuel NCV: continuous verification of changes in figures used at the regional level or those stipulated within the 2006 IPCC guideline documents.

- Fuel CO2 emission factor: continuous verification of changes in emission factors using IPCC's emission factors database and guideline documents.

Data recording and data storage

The information on electricity generation and fuel consumption was obtained from the SKELEC and NEVLEC with support from the Energy Units and the Ministry of Environment

and Cooperatives. The Energy Unit then shared the required information with the DNA, in compliance with the QA/QC requirements.

All the data collected as part of monitoring will be archived electronically and will be maintained to ensure the validity of the standardised baseline. All data should be monitored, unless otherwise stated in methodologies that are used by specific projects. Some parameters need to be monitored continuously while others must be monitored periodically. The data will be archived and maintained in such a way that allows for the reproduction of the calculation of the emission actor of the grid.

The DNA will share the following documents with NEVLEC and SKELEC but will keep records at the Climate Change Office:

- All data used to calculate the grid emissions factor
- Grid Emissions Factor calculation
- Quality Control Report

Please specify how the credibility of the data sources was checked.

The credibility of the data sources was verified by numerous methods which include: direct data sourcing from the electricity utility company (SKELEC, NEVLEC) which is verified by both internal quality checks and audits (financial and technical) in addition to governmental cross-checks for reporting purposes.

Please specify how the accuracy of the data was checked.

The main sources of the data are the SKELEC and NEVLEC who carries out internal data quality checks and audits to verify accuracy of data. Once data from SKELEC and NEVLEC have been shared at the General Manager level, the data is processed for internal reporting purposes and verified.

Relevance: The data provided is considered to be relevant.
Completeness: The DNA guarantees that the data provided is sufficient for the calculation of the Grid Emissions Factor.
Consistency: A consistency check was carried out by the DNA by comparing data with publicly available data. The DNA did not find significant changes or unexpected trends.
Credibility: The DNA guarantees that the data provided is credible.

Please specify how the consistency was achieved in particular where multiple secondary data sources were used.

Consistency of the data collected was achieved using similar internal methodologies such as the use of excel sheets for data collection and management. Excel sheets between the main source (SKELEC and NEVLEC) and the Energy Unit exhibited similar formats and units (Physical/Energy) across the timeline used for the standardized baseline. In addition, the data provided was arranged to fit the format and requirement stipulated by the DNA.

Please specify how the "Standard for data coverage and validity of standardized baselines" was complied with.

Data provided covered the exact timeline (three years – 2018 to 2020) requested with up-to-date figures for electricity generation and fuel consumption. Furthermore, the key data requirements for applying the methods established in the CDM tool "Tool to calculate the emission factor for an electricity system (Version 07.0)" was adhered to.

Please specify how the completeness was achieved.

The DNA assured that the data provided was adequate for the methodological requirements to calculate the emission factor for Saint Kitts and Nevis's electricity system. Also, the

Energy Unit received and shared with the DNA up-to-date grid emission factors from SKELEC and NEVLEC. This was done to ensure completeness and validity of the standardized baseline.

Please specify how the transparency was achieved.

All the energy statistics required for the calculation of the emission factor for Saint Kitts and Nevis' electrical system were shared and communicated between all parties involved to ensure transparency of the process via validation and cross-checks. Additionally, majority of the data used in the calculation process is readily available and easy to access through annual reports and audits.

In an effort to ensure proper referencing and transparency of the data among parties, the up-to-date grid emission factors from electricity consumption from SKELEC and NEVLEC along with background information, legal foundations, and the access to the basic documents and the official institutions in charge of updating these factors were shared.

A stakeholder consultation session was held on June 24th, 2021, validate the standardized baseline. The session was attended by stakeholders from the Department of Environment, Ministry of Public Infrastructure, Post, Urban Development and Transport, SKELEC and NEVLEC.

Name	Position	Organization
Ms. June Hughes	DNA	St. Kitts and Nevis & Director of Department of Environment
Ms. Cheryl Jeffers	Conservation Officer	Department of Environment
Mr. Ian Ward	Chief Engineer	NEVLEC
Mr. Jervan Swanston	System Planning & Projects Manager	NEVLEC
Mr. Naftalie Errar	Planning Engineer	NEVLEC
Mr. Kevin Bennett	Power Generation Manager	SKELEC
Mr. Jonathan Kelly	Engineering Manager	SKELEC
Mr. Denasio Frank	Energy Officer	Energy Unit (Ministry of Public Infrastructure, Post, Urban Development and Transport)

Ms. Cheryl Jeffers summarized next steps needed. As a request by Mr. Jervan Swanston, Saint Kitts and Nevis promised to have another internal meeting including both SKELEC and NEVLEC to review data collection process and Grid Emission Factor calculation. The meeting to seek for further details in relation to the collection and management of the energy data was conducted the following day.

Please specify major issues and uncertainties identified during the QC procedures.
N/A
Please specify major corrective actions taken during the QC procedures.
N/A
Please justify the conservativeness of the approaches taken during the QC procedures.
Currently, there are no known country specific values for net calorific values and emission factors associated with the data requirements for the calculation of the emission factors. As a result, the DNA approved the use of default values pre-established by international organizations such as IPCC (NCV and EFs). These values were selected and used in a conservative manner with pre-determine levels of uncertainties taking into consideration.
Please summarize key findings and present a plan to improve the data quality in the future.
N/A

23rd July, 2021

Date to finalize this report

Signature of DNA