

**GRENADA ELECTRICITY SECTOR  
GRID CODE**



**INTRODUCTION CODE**

**October 2019**

## ARRANGEMENT OF REGULATIONS

IC 1	CITATION.....	4
IC 2	COMMENCEMENT .....	4
IC 3	SCOPE.....	4
IC 4	INTRODUCTION .....	4
IC 4.1	CODE DEVELOPMENT AND DESIGN .....	4
IC 4.2	CODE OBJECTIVES .....	4
IC 5	COMMISSION ROLE.....	5
IC 6	OVERVIEW OF THE CODES .....	6
IC 6.1	INTRODUCTION.....	6
IC 6.2	GENERATION CODE.....	6
IC 6.3	TRANSMISSION AND DISTRIBUTION CODE.....	6
IC 6.4	SUPPLY CODE .....	7
IC 7	DEFINITIONS .....	8
IC 8	TECHNICAL STANDARDS .....	8
IC 9	MODIFICATIONS TO THE CODES; PUBLICATION .....	8
IC 9.1	GRID CODE REVIEW COMMITTEE .....	8
IC 9.2	REPORT ON WORK TO COMMISSION .....	8
IC 9.3	REQUESTS FOR REVISION OF THE CODE.....	8
IC 9.4	COMMISSION REVIEW .....	9
IC 9.5	PERIODIC REVISIONS OF GRID CODE .....	9
IC 9.6	INTEGRATED GRID CODE VERSION .....	9
IC 9.7	PUBLIC ACCESS TO CODE .....	9
IC 10	GRID CODE REVIEW COMMITTEE .....	9
IC 10.1	DUTIES .....	9
IC 10.2	GRID CODE REVIEW COMMITTEE MEMBERSHIP COMPOSITION; MEETINGS .....	10
IC 10.2.1	MEMBER APPOINTMENT .....	10
IC 10.2.2	TENURE .....	10
IC 10.2.3	MEETINGS .....	10
IC 10.3	GRID CODE REVIEW COMMITTEE WORK PROCEDURES .....	10
IC 10.3.1	ANNUAL MEETING; PUBLIC ACCESS .....	11
IC 10.3.2	LACK OF CONSENSUS; COMMISSION REFERRAL .....	11
IC 11	GRID CODE DISPUTE RESOLUTION PROCEDURES .....	11

IC 11.1	DISPUTE NOTICE .....	11
IC 11.2	RESOLUTION PROCEDURES.....	11
IC 12	CODE EFFECTIVE DATE; TRANSITIONAL PROVISIONS .....	12
IC 12.1	EFFECTIVE DATE.....	12
IC 12.2	NEW LICENSEES AND SYSTEM USER INTERCONNECTIONS.....	12
IC 12.3	TRANSITIONAL PROVISIONS .....	12
IC 12.3.1	PURPOSE.....	12
IC 12.3.2	SCOPE.....	13
IC 12.4	REQUEST FOR RELIEF .....	13
IC 12.4.1	PRE-APPLICATION MEETING .....	13
IC 12.4.2	CONTENTS OF REQUEST FOR RELIEF .....	14
IC 12.5	COMMISSION REVIEW OF THE REQUEST FOR RELIEF.....	14
IC 12.5.1	COMMISSION REFERRAL.....	14
IC 12.5.2	GRID CODE REVIEW COMMITTEE EVALUATION.....	14
IC 12.5.3	RECOMMENDATION OF GRID CODE REVIEW COMMITTEE.....	14
IC 12.5.4	COMMISSION DEROGATION ORDER.....	14
IC 12.5.5	GROUND FOR DENIAL.....	15
IC 12.5.6	NOTICE OF COMMISSION DECISION .....	15
IC 13	COMMISSION RULINGS AND DIRECTIONS .....	15
IC 14	TREATMENT OF THIRD PARTY CONTRACTS .....	15
IC 15	ENFORCEMENT.....	15
APPENDIX A	.....	16
APPENDIX B	.....	29

## **IC 1 CITATION**

These Regulations may be cited as the

### **GRENADA ELECTRICITY SECTOR GRID CODE**

## **IC 2 COMMENCEMENT**

These Regulations shall come into force on the date of publication in the Gazette.

## **IC 3 SCOPE**

The Grenada Electricity Sector Grid Code establishes a comprehensive framework regulating all material technical aspects of the development, maintenance, and operation of the electricity Grid and, insofar as they affect the Grid, the operation of Generating Facilities and the interconnection of System User facilities and electric lines, in order to secure a safe, reliable, and efficient Grid for Grenada. The provisions of the Code are enforceable under the Electricity Act, 2016.

## **IC 4 INTRODUCTION**

### **IC 4.1 CODE DEVELOPMENT AND DESIGN**

The Code covers the guiding principles, operating procedures and Technical Standards governing the installation, operation, maintenance, safety, and performance of the Grenada Power Grid and, all interconnected Generating Facilities. The Code has been developed through consultation among the Ministries responsible for Public Utilities and for Energy, the Network Licensee, and System Users, and has been designed to be consistent with internationally required technical standards and with Prudent Utility Practice, and to address the specific needs of the Grenada Grid and its System Users.

### **IC 4.2 CODE OBJECTIVES**

The Code objectives are to:

- (a) Facilitate the safe, reliable, and economic operation of the Grenada Grid;
- (b) Prohibit any undue discrimination with regard to Grid access among categories of System Users and/or individual System Users;
- (c) Set out the responsibilities and roles of the Network Licensee and all System Users, covering planning, day-to-day operations, and normal and exceptional circumstances in the Transmission and Distribution System operations, including:
  - i. reliability, security and safety of the Transmission and Distribution Systems;
  - ii. operational authority, communication, emergency and contingency planning of the Transmission and Distribution System;

- iii. operation of the Transmission and Distribution System under abnormal conditions;
  - iv. field operation, maintenance and maintenance coordination/outage planning;
  - v. safety coordination and management criteria to be applied by the Network Licensee to meet the Distribution conditions and obligations; and
  - vi. demand and voltage control strategies and methods used for the control of Transmission and Distribution System parameters.
- (d) Set out the responsibilities and roles of the Network Licensee and all Customers with regard to Supply to Customers, and the conditions of use necessary to ensure safety and maintain quality of supply to Customers.
- (e) Clarify that under the Code, the Network Licensee has responsibilities in two distinct capacities, including:
- i. the prudent and efficient management of the Grid by virtue of its holding of the Network License for transmission, distribution and supply of electricity to Customers under Section 14(1)(b) of the Act. The Codes apply the term "Network Licensee" whenever referring to Licensee in this capacity; and
  - ii. As the owner of Generation Facilities, Licensee is responsible for the operation of those facilities by virtue of its holding of a Generation License. The Codes apply the term "Generator" or "Generation Licensee" whenever referring to Licensee in this capacity.
- (f) Establish detailed technical provisions to enable achievement of the renewable energy and energy efficiency objectives of the Act, as well as the efficient transition of Grenada to renewable energy electricity generation - to lower Grenada's reliance on imported fossil fuels and to lower the cost of electricity, while maintaining a safe, secure, stable and reliable Grid. The Code provisions address minimum technical conditions for the integration of renewable energy generation sources consistent with international best practices and standards, planning and operational responsibilities, and preparatory feasibility studies and system studies. It is anticipated that these Code requirements will evolve with time, to respond to technological advances and to support increasingly higher levels of renewable energy penetration and innovative use of energy efficiency initiatives.

## IC 5

## COMMISSION ROLE

The role of the Commission with respect to this Code shall be to apply and enforce its provisions and to review the recommendations of the Grid Code Review Committee concerning proposed revisions. The rights and obligations under this Code cannot be changed or otherwise altered without the written approval of the Commission

consistent with the Derogation process described in IC 12, “Transitional Provisions” below.

## **IC 6 OVERVIEW OF THE CODES**

The Code is comprised of an Introduction and three sections organized by Grid functions, including the Generation Code, the Transmission and Distribution Code, and the Supply Code:

### **IC 6.1 INTRODUCTION**

The Introduction sets forth provisions applicable to the entire Code, describing the effective date of the Code, Definitions, Technical Standards, procedures for Code modification through a Grid Code Review Committee in consultation with the Commission, Dispute Resolution procedures, and Derogation provisions establishing a transition mechanism for System Users to achieve compliance with new Code provisions. Grid Code citations to the Introduction appear in the format “IC 1.1, “section title.”

### **IC 6.2 GENERATION CODE**

The Generation Code covers the Generator Interconnections to the Transmission or Distribution Systems. The responsibility boundary between the Generator and the Network Licensee will normally be the Network Licensee’s side of the Generating Unit transformer. The Generation Code includes provisions controlling the Network Licensee in carrying out Dispatch activities involved in the central management and direction of Generating Facilities and other sources of supply to the Grid. Grid Code citations to the Generation Code appear in the format “GC 1.1, “section title.”

The Generation Code includes:

- (a) Interconnection Conditions
- (b) Generation Operational Metering
- (c) Generation Scheduling (Unit Commitment) and Economic Dispatch
- (d) Communication and Reporting
- (e) Generation Scheduling and Dispatch Tools
- (f) Load Shedding and Power Restoration
- (g) Generator Maintenance Planning
- (h) Testing and Monitoring
- (i) General Provisions

### **IC 6.3 TRANSMISSION AND DISTRIBUTION CODE**

The Transmission and Distribution Code covers both the Transmission System and Distribution System. The Transmission System includes electric power lines operating

at 33kV, and related switchgear, switches and transformers. The Distribution System covers the Distribution System from the point of the outgoing isolators on the Transmission Substations as described above, to the Customer's Service Point of Supply Delivery. Grid Code citations to the Transmission and Distribution Code appear in the format "TDC 1.1, "section title."

The Transmission and Distribution Code includes:

- (a) General Requirements
- (b) Transmission and Distribution Planning
- (c) Maintenance Standards
- (d) Transmission and Distribution Interconnection
- (e) Power Quality Standards
- (f) Plant/Apparatus Relating to Interconnection Sites
- (g) Site Related Conditions
- (h) Operational Communications
- (i) Demand Control
- (j) System Control
- (k) Contingency Planning
- (l) Incident Information Supply
- (m) Communications and Control
- (n) Numbering and Nomenclature of Apparatus
- (o) Testing, Monitoring and Investigation
- (p) Transmission and Distribution Metering
- (q) Transmission and Distribution System Data Registration

## **IC 6.4 SUPPLY CODE**

The Supply Code covers the sale of electricity by the Network Licensee to Customers, and their respective roles and responsibilities. Grid Code citations to the Supply Code appear in the format "SC 1.1, "section title."

The Supply Code section includes:

- (a) System of Supply and Classification of Customers
- (b) New and Modified Connections
- (c) Self-Generators
- (d) Network licensee's Equipment in Customer's Premises

- (e) Wiring and Apparatus in Customer Premises
- (f) Contract Demand and Agreement
- (g) Metering & Billing
- (h) Billing
- (i) Payment and Disconnection
- (j) Back Billing and Irregularities

## **IC 7 DEFINITIONS**

In these Regulations, unless the context otherwise requires, the capitalized terms shall have the meanings set forth in the Definitions Table attached as IC Appendix A.

## **IC 8 TECHNICAL STANDARDS**

In these Regulations, unless the context otherwise requires, the technical standards applicable are set forth in the controlling Generation, Transmission and Distribution, or Supply Codes.

## **IC 9 MODIFICATIONS TO THE CODES; PUBLICATION**

### **IC 9.1 GRID CODE REVIEW COMMITTEE**

The Commission shall establish and maintain a Grid Code Review Committee as a standing body charged jointly with keeping all aspects of the Grid Code and its implementation under review.

### **IC 9.2 REPORT ON WORK TO COMMISSION**

The Grid Code Review Committee shall report to the Commission on its work, and, as appropriate, recommend amendments to the Grid Code for the Commission's approval.

### **IC 9.3 REQUESTS FOR REVISION OF THE CODE**

- (a) Persons seeking an amendment to the Grid Codes shall send written requests to the Commission and the Chairman of the Grid Code Review Committee. Any requests for Grid Code revisions received by the Commission shall be forwarded to the Chairman of the Grid Code Review Committee, along with any guidance or requests of the Commission;
- (b) The Grid Code Review Committee Chairman shall circulate the proposed revision to the Committee and shall task the appropriate sub-committee to review and develop a recommendation in response to the request for full Committee consideration;



- (c) The Grid Code Review Committee Chairman shall convene a Grid Code Review Committee meeting to consider the proposed revision request and the sub-committee recommendation;
- (d) The Grid Code Review Committee shall make a recommendation on the request to the Commission, taking into account the sub-committee's recommendation and any other appropriate information, including the following information:
  - i. Summary of Grid Code Review Committee's technical assessment of the requested revision and its consequences for Grid operations;
  - ii. Any proposed revision to the Grid Code; and
  - iii. All written representations and objections submitted by third parties at the time of review. The Chairman of the Grid Code Review Committee also shall forward a copy of agenda notes of proceedings of Grid Code Review Committee meetings to the Commission.

## **IC 9.4 COMMISSION REVIEW**

The Commission shall review any recommendations of the Grid Code Review Committee for Code revisions and determine whether to approve the Grid Code Review Committee's recommendation.

## **IC 9.5 PERIODIC REVISIONS OF GRID CODE**

The Commission shall, after consultation with the Grid Code Review Committee, make an annual report to the Minister on Grid Code recommended revisions no later than June 30 of each year, including reports on any requested revisions. In the event of an urgent matter, the Commission may refer a single Grid Code revision request to the Minister outside the annual report schedule.

## **IC 9.6 INTEGRATED GRID CODE VERSION**

The Commission shall incorporate all approved Grid Code amendments in a standard copy, containing a sheet showing the chronology of all the amendments.

## **IC 9.7 PUBLIC ACCESS TO CODE**

The Commission shall post the current Grid Code standard copy on the Commission's website and shall make copies available at standard administrative copying costs. All Licensees shall maintain updated copies of the Grid Code in their operations offices.

## **IC 10 GRID CODE REVIEW COMMITTEE**

### **IC 10.1 DUTIES**

The Grid Code Review Committee shall have the following duties:

- (a) Ensure that the Grid Code provisions remain consistent;

- (b) Ensure that all operational procedures, standards, and requirements governed by the Grid Code remain up to date;
- (c) Create sub-committees of the Grid Code Review Committee as needed to focus on specialized or emergent issues and to bring recommendations to the full Committee.
- (d) Review all proposals for amendments to the Grid Code which the Network Licensee, Generators, other System Users or the Commission may wish to submit to the Grid Code Review Committee for consideration and recommendations to the Commission;
- (e) Evaluate the technical issues following any Network Licensee referral of an unforeseen circumstances or events to determine whether the actions of the Network Licensee, other Licensees, Permit Holders, Customers, or third parties were justified, and what changes, if any, are necessary to the Grid Codes to minimize the risk of recurrence;
- (f) Evaluate the technical issues following any referral by the Commission of any technical issue involved in a Dispute, to determine whether revisions to the Grid Code are needed to minimize the risk of recurrence; and
- (g) Present recommendations to the Commission concerning Grid Code revisions that the Grid Code Review Committee considers appropriate with a written summary of the reasons for the recommended revisions.

## **IC 10.2 GRID CODE REVIEW COMMITTEE MEMBERSHIP COMPOSITION; MEETINGS**

### **IC 10.2.1 MEMBER APPOINTMENT**

The Commission shall appoint the Grid Code Review Committee members and Chairman, after consultation with the key stakeholders. Grid Code Review Committee members should include representatives of the Network Licensee Dispatch center, Transmission and Distribution System, and Supply operations, as well as Independent Power Producer Generation Licensees and Renewable Energy Self-Generators, and Customers.

### **IC 10.2.2 TENURE**

The tenure of the Grid Code Review Committee chairperson and members shall be two years, unless a different term is set by the Commission.

### **IC 10.2.3 MEETINGS**

In addition to the annual review, the Chairperson shall preside over at least quarterly meetings of the Grid Code Review Committee, and may convene additional meetings as needed to review and address issues relevant to the Code that may arise from time to time.

## **IC 10.3 GRID CODE REVIEW COMMITTEE WORK PROCEDURES**

### **IC 10.3.1 ANNUAL MEETING; PUBLIC ACCESS**

The Grid Code Review Committee annual meetings shall be open to the public. The Grid Code Review Committee Chairman may determine that public input would be helpful at other operational meetings and may give advance public notice of the meeting. The Grid Code Review Committee shall establish simple procedures to ensure efficient transaction of its work.

### **IC 10.3.2 LACK OF CONSENSUS; COMMISSION REFERRAL**

If a Grid Code Review sub-committee is unable to reach unanimous agreement or consensus on any matter, that matter shall be referred to the full Grid Code Review Committee for determination. Any such referral to the Grid Code Review Committee shall set out the cause of disagreement.

## **IC 11 GRID CODE DISPUTE RESOLUTION PROCEDURES**

### **IC 11.1 DISPUTE NOTICE**

In the event of any Dispute or difference of any kind between or among the Network Licensee and/or System Users, arising out of, or otherwise connected to, the correct interpretation of the Grid Code, a party to the Dispute may deliver a written notice to the other Person(s) involved (the "Dispute Notice"), declaring the existence of a Dispute, outlining the controverted matters, and requesting a mutual discussion meeting under IC 11.2(a) below to attempt to resolve the matter.

### **IC 11.2 RESOLUTION PROCEDURES**

The following step-wise process shall be followed to resolve the dispute:

(a) Mutual Discussion

Following the issue of a Dispute Notice the parties shall agree to meet to resolve the Dispute.

(b) Referral and Determination by the Commission

If the Dispute cannot be settled within 30 calendar days following the delivery of the Dispute Notice, either party to the Dispute shall have the right to refer the Dispute to the Commission for resolution. The referring Person shall submit a written request for resolution of Dispute, attaching a dated copy of the original Dispute Notice.

- i. Upon receipt of a request for referral, the Commission shall issue a written acknowledgement to the Persons listed in the request as being involved in the Dispute, and shall issue a proposed schedule for resolution of the Dispute for comment.

- ii. Following receipt of the Commission’s acknowledgment, each Party shall have five (5) working days to submit a written summary of the Dispute cause and proposed resolution, including any changes in the Grid Code suggested to prevent a recurrence of the Dispute, and any comments on the proposed schedule.
- iii. No later than ten (10) working days after the Commission has received the Parties’ written submittal, the Commission shall issue a proposed schedule for further proceedings and measures to be undertaken to resolve the Dispute and indicate a date by which a determination may be expected.
- iv. The determination by the Commission shall be legally binding on both Parties subject to provisions of the Commission decision documents, and to the parties’ right of appeal in law.

## **IC 12 CODE EFFECTIVE DATE; TRANSITIONAL PROVISIONS**

### **IC 12.1 EFFECTIVE DATE**

The Codes shall come into operation and be applied as of the Effective Date, which shall be 60 days after the Minister’s Order approving the Grid Code.

### **IC 12.2 NEW LICENSEES AND SYSTEM USER INTERCONNECTIONS**

Any new System User, whether Licensee or Customer, interconnected to the System on or after the Effective Date shall comply with all Code Provisions. In unusual circumstances involving System legacy issues that would prevent implementation of specific technical standards pending System upgrade during the Transition Period (Appendix A), a new System User shall file a Request for Relief under IC 12.4, “Request for Relief” to allow sufficient time for the necessary System upgrades.

### **IC 12.3 TRANSITIONAL PROVISIONS**

#### **IC 12.3.1 PURPOSE**

With regard to all System Users who are interconnected to the System prior to the Effective Date, this Code provides for a transition mechanism to enable System Users to reconfigure current operations for compliance prior to full enforcement of all the provisions of the Codes. This section establishes:

- (a) a transition period to enable full compliance by all existing System Users;
- (b) a mechanism for System Users to identify and seek time-limited derogations from the Commission for non-compliant operations after the Transition Period; and
- (c) a requirement that all System Users shall attempt to bring all Interconnection Agreements, PPAs and existing System Users Licensees into compliance

with the Codes. The intent is to bring all Parties into compliance with the Codes as soon as economically and technically feasible, to provide a uniform system applicable to all Licensees to support a safe and reliable Power Grid. In the event that the prior binding contract provisions of an Interconnection Agreement and/or PPA between the Network Licensee and a System User conflicts with this Grid Code, the prior agreement shall prevail over the Code requirements. But the Network Licensee and System Users shall use good faith efforts to work with the Commission to address emergent issues and new technology needed to improve the System through collaborative planning and tariff adjustments, as needed, to address increased costs.

### **IC 12.3.2 SCOPE**

- (a) The transitional provisions are needed to bridge non-compliant System Users into compliance with the Codes. This recognizes that these System Users appropriately relied upon then-controlling guidelines in construction and equipment installations in their current facilities and in staff training, that some of the facilities currently in operation do not meet all the required criteria set forth in the new Grid Code, and that time is required to bring physical facilities into compliance and to train staff.
- (b) Existing System Users who are unable to bring their Apparatus and Interconnections into compliance with the Codes during the term of the Transition Period will be required to submit a Request for Relief to the Commission with the information described below prior to the end of the Transition Period.
- (c) New System Users seeking an interconnection to the Grid after the Effective Date of the Code may seek a Request for Relief from Code compliance from the Commission only in the unusual circumstances involving System legacy issues that would prevent implementation of specific technical standards pending System upgrade during the Transition Period, as outlined in IC 12.2, “New Licensees and System User Interconnections.” Any new System User should be required to bring its Apparatus and Interconnection into compliance within the Transition Period.
- (d) Upon submittal of a complete Request for Relief, the Commission will, in consultation with the Network Licensee, review the Request and may issue a Derogation Order. The Derogation Order may combine temporary relief and/or relaxation of standards, conditioned upon an acceptable System User plan to bring its equipment and installations into compliance and capacity building for personnel in response to changes in roles, obligations and responsibilities under the Codes.

## **IC 12.4 REQUEST FOR RELIEF**

### **IC 12.4.1 PRE-APPLICATION MEETING**

Applicants are encouraged to contact and meet with Commission staff prior to submission of a Request for Relief to expedite final approval.

#### **IC 12.4.2 CONTENTS OF REQUEST FOR RELIEF**

The Request for Relief must contain the following:

- (a) a list of all assets, installations, and equipment owned or operated by the System User which do not comply with the Codes;
- (b) a reasonably detailed description of the specific technical characteristics or the reasons that the assets, installations or equipment cannot meet the Codes, and identification of the controlling Code provisions;
- (c) a detailed plan to bring all assets, installations, and equipment into compliance with the Codes and to train all personnel in Codes requirement as soon as economically and technically feasible, in all but exceptional cases, within the Transition Period; and
- (d) any additional information that the Commission considers necessary.

### **IC 12.5 COMMISSION REVIEW OF THE REQUEST FOR RELIEF**

#### **IC 12.5.1 COMMISSION REFERRAL (CONSULTATION)**

Upon receipt of a Request for Relief and Order, the Commission shall refer (consult) same with the Network Licensee and the Grid Code Review Committee for review and comment within a time period prescribed by the Commission.

#### **IC 12.5.2 GRID CODE REVIEW COMMITTEE EVALUATION**

Following receipt of the referral (consultation), the Network Licensee and Grid Code Review Committee shall consult to evaluate whether the request for relief can be granted without having a material adverse effect on the security, stability or economics of Grid System operation.

#### **IC 12.5.3 RECOMMENDATION OF GRID CODE REVIEW COMMITTEE**

The Network Licensee and Grid Code Review Committee shall submit their recommendation (jointly or individually), supported by detailed reasons, to grant or refuse derogation for consideration by the Commission.

#### **IC 12.5.4 COMMISSION DEROGATION ORDER**

The Commission shall issue a Transition Period Derogation Order in response to a complete and acceptable Request for Relief, providing temporary relief and exceptions, as required, to enable a transition period for the System User to come into compliance. The Commission may deny the Request for Relief in whole or part if it determines that the proposal will threaten the security, stability, or economics of the Grid.

### **IC 12.5.5 GROUND FOR DENIAL**

The Commission shall deny, in whole or part, a Request for Relief if it determines that the requested Derogation would have a material adverse effect on the security, stability or economics of Grid System operation, or that the Person requesting the Derogation has not demonstrated that the Derogation is reasonable to address technical or economic challenges created by transition to compliance with the Grid Code requirement.

### **IC 12.5.6 NOTICE OF COMMISSION DECISION**

The Commission shall promptly inform the Person who submitted the Request for Relief of the Commission's decision, with the factual basis supporting the Commissioner's decision.

## **IC 13 COMMISSION RULINGS AND DIRECTIONS**

In the event of any conflict between the provisions of the Code and any direction or ruling issued by the Commission, a Person shall seek guidance from the Commission on resolution of the conflict. No Person shall be deemed to be in non-compliance with this Code if they have complied with the specific provisions of a Commission Order.

## **IC 14 TREATMENT OF THIRD PARTY CONTRACTS**

All System Users retain all obligations and rights pertaining to their Apparatus and premises when engaging third party services or other activities required by the Code. The System User has responsibility for assuring compliance with the Code by all third party contractors granted access to the System User's premises or apparatus.

## **IC 15 ENFORCEMENT**

The Commission shall have responsibility for enforcement of the Grid Code, consistent with the provisions of the Act. This provision is not intended to limit the rights or remedies available to the Network Licensee or to System Users in any litigation pertaining to the rights, responsibilities or damages incurred by the Network Licensee or a System User arising out of a Code violation.

## APPENDIX A

### GRID CODE DEFINITIONS

Act	The Electricity Supply Act, 2016
Advanced Metering Infrastructure (AMI)	Metering Systems that measure, collect and analyse energy usage, from advanced electricity meters using various communication channels either on request or on a pre-defined schedule. The infrastructure includes hardware, software and, data management and communications.
Alternating Current or “AC”	Current that reverses its direction at regular intervals
Allowable Error	The applicable ANSI meter performance standard, referenced under GC 3.4.1, “Generation Metering Standards” defines performance for “meters and devices used in revenue metering,” including the allowed "deviation from reference" for specific performance conditions, which deviation is often around +/- 2%
A – ampere	The unit used to measure an electric current or the rate of flow of electricity in the circuit
Ancillary Services	Those services necessary to support the transmission and distribution of electric power from seller to purchaser to maintain reliable operations of the interconnected transmission system. Ancillary services supplied with generation include load following, reactive power-voltage regulation, system protective services, loss compensation service, system control, load dispatch services, and energy imbalance services.
Apparatus	All lines and equipment related to the generation, transmission or supply of electricity
Automatic Generation Control or “AGC”	A system for adjusting the power output of multiple generators at different power plants, in response to changes in the load
Auxiliary Supply	The electricity supply needed to power electrical equipment required for a Generating Plant and/or Apparatus operations, other than the Generating Unit, DC Converter, or Power Park Module, including, but not limited to, control, communications, protection, metering, or the drives of switching equipment



Backup Metering System	The meters and metering devices owned by the Generator and used to measure the delivery and receipt of Net Energy Output, Dependable Capacity and other parameters pursuant to this Code
Business day	Any day on which the business offices are open and the local mail is delivered
Base Load Unit	A Generating Unit designated to operate for more than 8000 hours per annum and does not go through cycles of economic shut down
Black Start Capability	The ability to restart the generating facility in the absence of incoming power from the grid.
Black Start Generating Unit	A Generating Unit with Black Start Capability
Circuit Breaker	A device designed to open, under abnormal conditions, a current-carrying circuit without injury to itself
Code	This Generation Code and the Schedules hereto.
Cogeneration Facility	A cogeneration facility is a power generating facility that sequentially produces electricity and another form of useful thermal energy (such as heat or steam) in a way that is more efficient than the separate production of both forms of energy
Commission	The Public Utilities Regulatory Commission established under section 4 of the Public Utilities Regulatory Commission Act No. 20 of 2016
Confined space	A space which has restricted means of entry or exit and which, because of its location, design, contents, or work performed therein contains or is likely to contain: potentially harmful levels of a hazardous substance; an unsafe oxygen level; or a quantity of liquid or free-flowing solids in which a person could drown or suffocate
Customer	Any person or public body supplied, or requesting to be supplied, with electricity by a Network Licensee
Customer Installation	All equipment of any kind used by Customer in connection with, or forming a part of, an installation for utilizing Service for any purpose, ordinarily located on Customer's side of the Point of Service Delivery, whether such installation is owned by Customer or used by Customer by lease or otherwise, but shall not include any meters or associated equipment owned by the Network Licensee

Control Centre/ Primary Control Centre	A physical location from where the Network Licensee will give and receive information and instructions related to the operation of the Electric System.
Current Transformer or “CT”	A type of transformer used to measure Alternating Current (AC). The device has primary windings connected in series with the current to be measured and a secondary winding which provides a current proportional to the primary current at a range suitable for measurement or control
Cycle	A period of alternating electric current comprising the full positive and full negative flow of current, sometimes measured as frequency in the unit hertz (Hz)
Cycling Units	A Generating Unit required to operate less than 8000 hours per annum and designed to withstand cycle of economic shut down and start up
Day	The 24 hour period beginning and ending at 00:00
Dedicated Feeder	An additional and separate feeder requested by a Customer in addition to the feeder from which Supply is provided to the Customer by the Licensee
Demand	The maximum regular power supply demanded by a Customer, measured in kilowatts (kW)
Demand Interval	The period over which the Demand is integrated
Dependable Capacity	The maximum Capacity modified for ambient limitations which a Generating Unit, or item of electrical equipment can sustain over a specified period of time
Dispatchable Generating Unit	Generating Units whose required level of output at any instant of time is determined and regulated by the Network Licensee
Dispatch Instructions	The instructions issued by the Network Licensee to the Generator to schedule and control its generation in order to increase or decrease the electricity delivered to the Grid
Dispute	The meaning ascribed thereto in IC 11.1

Dispute Notice	The meaning ascribed thereto in IC 11.2(b)
Distribution System	That portion of an electric system which transfers electric energy from the bulk electric system to the Customers.
Effective Date	The date that is sixty (60) days following the date of the Minister's Order approving the Grid Code as set forth in IC Section 12.1, "Code Effective Date"
Economic Dispatching Technique	The approved method used to rank Generating Units by their economic merit and to determine at which level they should be dispatched to minimize total variable operating cost subject to Generating Units operating limits and system constraint.
Electrical Inspectorate Unit	The unit of government responsible for: (i) the inspection and testing of all new installations, additions, extensions, and alterations before electricity is supplied to the structure to ensure compliance with the applicable Building and Electrical Codes; (2) periodic inspection of electrical installations; and (iii) advice on electrical installation practices
Embedded Generator	A person or entity that generates electricity using an Embedded Generating Plant
Emergency Control Centre	A physical location from where, the Network Licensee will give and receive information and instructions related to the operation of the Electric System, in the event of the unavailability of the primary control center
Energy	Electric energy or electric work, expressed as the product of power measured in kilowatts and time measured in hours. The SI unit of energy is the watt hour (Wh), or kilowatt hour (kWh)
Force Majeure	Any of the following circumstances, to the extent that such circumstance is beyond the reasonable control of the person claiming to be affected by it: acts of God, including, but not limited to, earthquake, hurricane, flood, and fire; riot or civil commotion; strikes, lock-outs and other industrial disturbances; wars, blockades, invasions, terrorist actions, civil unrest, and insurrection; fire and explosions; outbreak of pestilence or epidemic; government rationing of electricity or other wartime or emergency controls imposed by a government or other shortage of adequate power or transportation; and embargoes, trade restrictions, or nationalization or government sanctions

Forced Outage	An interruption of a Generating Unit's capability to generate power that is not the result of (i) a request by the Network Licensee (ii) a Scheduled Outage or a Maintenance Outage; or (iii) an event or occurrence of Force Majeure
Fuel Supply Plan	The Generator's plan for providing fuel to ensure its operation in accordance with the terms and provisions of this Code or any contracted Power Purchase Agreement. The Fuel Supply Plan shall include, but not be limited to, the Generator's proposed fuel specification, fuel supply and transportation arrangements, and the Generator's plans to obtain fuel on the most economic basis at any given time
Generation	The production of electricity from renewable or non renewable energy sources, and the term "generate" shall be construed accordingly
Generating Facility	Any facility, whether privately or Licensee-owned, containing one or more Generating Units and associate infrastructure producing and delivering electrical energy to the Transmission or Distribution System
Generation License	A license for the generation or storage of electricity or the sale of such electricity to a Network Licensee, granted to an independent power producer or a generation licensee pursuant to Section 14 of the Act
Generation Licensee	Any person to whom a Generation License is granted
Generating Unit	Any electric power generating equipment or Apparatus, whether privately or Licensee owned, delivering electrical energy to the Transmission or Distribution System
Generation Code	The Code which covers the guiding principles, operating procedures and technical standards governing operations of the power grid and all interconnected generating facilities.
Generation Code Review Committee	A Committee appointed by the Commission under Introduction Code Section 10, responsible for advising the Commission on Code issues and potential revisions.
Generator	Owner and/or operator of an electricity Generating Facility that produces electricity from renewable or non-renewable energy sources as defined under Section 2 of the Act Network Licensee Note that the Code creates three categories of Generators: (i) a

	grid-scale facility owned by the Network Licensee, an Independent Power Producer, or a Self-Generator who holds a generation license under Section 14 of the Act authorizing sale of electricity to the Network Licensee; (ii) a Self-Generator or a Small-Scale Renewable Energy Generator who holds a permit authorizing supply of excess electricity to a Network Licensee under Section 25 of the Act; or (iii) a Self-Generator without any interconnection to the Grid who is authorized to operate without a license or permit under Section 13(2) and (3).
Grenada Electricity Services Limited	Grenada Electricity Services Limited (also referred to as GRENLEC) is the current Network Licensee
Grid	Term used interchangeably with System
Government Chief Electrical Inspector	The government employee in charge of the Government Electrical Inspection Unit, as defined in Section 2 of the Act and authorized to act as an electricity inspector pursuant to Section 44 of the Act
Government Electrical Inspection Unit	The government unit headed by the Government Chief Electrical Inspector and authorized to act as an electricity inspector pursuant to Section 44 of the Act
Harmonics	Harmonics are waveforms that distort the fundamental 50 Hz wave.
Heat Rate	The measure of a Generating Unit thermal efficiency, expressed as the number of thermal energy units to produce one kWh of electrical energy.
Heat Rate Curve	A plot of Heat Rate changes between minimum and maximum output levels of a Generating Unit.
Heat Rate Test	A test of a Generating unit thermal efficiency carried out in accordance with internationally accepted standards
High Voltage	An operating voltage level 11kV and above
Incident	An unscheduled or unplanned occurrence on the Transmission or Distribution System or the System User's facility, including, without limitation, faults, breakdowns, and adverse weather conditions experienced.
Incremental Cost	The cost required to produce an additional MWh of energy above a base amount.

Independent Engineer	The independent licensed professional engineer jointly selected by the Parties who, among other things, shall receive copies of all test results performed pursuant to Section GC 12.2 of the Generation Code, on the Generating Facility for the purpose of certifying in writing that the Facility can be satisfactorily commissioned. The fees charged by the Independent Engineer shall be borne by the Generator.
Interconnection Agreement	An agreement between the Network Licensee and a Customer providing for the interconnection of the Customer's premises, or between the Network Licensee and a Generator providing for the interconnection of the Generating Facilities.
Interconnection Point	The physical point(s) where the Generator and the Grid are connected as detailed in GC 2.3.2, "Point of Interconnection", or the Point of Service Delivery for a Customer as detailed in SC 5.1.2, "Location of Point of Supply Delivery"
Interconnection Point Apparatus	The electrical wires, switches and other equipment used to interconnect a Generating Facility to the Transmission or Distribution System
Independent Power Producer (IPP)	A person to whom a generation license has been granted and who is not a Network Licensee.
kVA – kilovolt-ampere	The unit of apparent electric power equal to 1,000 volt-amperes
kVAh - kilovolt ampere hour	The product of apparent power in kVA and time measured in hours
kW – kilowatt	The unit of electric power equal to 1,000 watts (the term "horsepower" or 1 HP is equivalent to 746 watts)
kWh – kilowatt hour	The unit of electric energy and means the unit of electric work or energy equal to that done by one kilowatt acting for one hour
Large Customer	A large commercial or industrial facility qualifying as a Complex Connection under SC 3.1.2, "Codes of Practice for Connections," and requiring special interconnection to the Transmission or Distribution System due to the nature of the Load
License	A license granted by the Minister under Section 14 of the Act
Licensee	Any person authorized by a Licence to either generate, transmit, distribute and supply electricity

Load	Electricity demand, measured in watts or multiples thereof
Load Factor	The ratio of the average load to the maximum load; the actual use of electrical equipment as a percentage of the maximum possible use of the equipment
Load Shedding	Disconnecting or interrupting the electrical supply to a Customer Load by the utility, usually to mitigate the effects of generating Capacity deficiencies or transmission limitations.
Low voltage	An operating voltage level less than 400 volts.
Maintenance Outage	An interruption or reduction of the Generating Unit capability that: i.) is not a Scheduled Outage; or ii) has been scheduled and allowed by the grid Operator in accordance with Section 5; and iii) is for the purpose of performing work on specific components, which work could be postponed by at least six (6) Days but not be postponed until the Scheduled Outage.
Medium Voltage	An operating voltage level from 400 Volts and less than 11kV
Merit Order	The ranking of Generating Units based on their order of dispatch on to the Grid as per sections 3.1. and 3.2.
Metering Equipment	Meters and other supplementary and associated devices necessary to measure the service used by the Customer
Metering System	Meters and metering devices (including the Primary and Backup Metering Systems) used to measure the delivery and receipt of Net Energy Output, Dependable Capacity and other parameters pursuant to Section 2 of this Code.
Minister	The Minister responsible for the electricity sector in Grenada
Month	A calendar month according to the Gregorian calendar beginning at 00:00 hours local time on the last day of the preceding month and ending at 00:00 hours local time on the last day of that month.
N-2	The Contingency principle which allow for the loss of any two individual elements from the Generation System which maintains the integrity of supply.

Net Energy Output	Net energy delivered by the Generator for sale to the Network Licensee at the Interconnection Point in accordance with a valid Dispatch Instruction
Network Licensee	The holder of the License to transmit, distribute, and supply electricity to Customers under section 14(1)(b) of the Act. The Network Licensee currently is the Grenada Electricity Services Limited (“GRENLEC”)
Network Licensee Facilities	All equipment of any kind owned or used by the Network Licensee in connection with, or forming a part of, an installation for rendering services under this Code, ordinarily located on the Network Licensee’s side of the Point of Service Delivery, whether such installation is owned by Network Licensee or used by Network Licensee by lease or otherwise, including, but not limited to any meters or associated equipment owned by the Network Licensee
Non-Dispatchable Generating Units	Generating Units will be classed as Non-Dispatchable when it is not practical to control or dictate the required level of output of these units to the system Grid on an ongoing basis.
Ohm	The unit of electrical resistance, referred to by the symbol $\Omega$ . The resistance of a circuit, in which a potential difference of one volt produces a current of one ampere
Operating Margin	The amount of reserve, provided by Generating Units or by Demand control, available over and above that required to meet the expected Demand. It is required to limit and then correct frequency deviations that may occur due to an imbalance between total generation capacity output and Demand.
Operating Reserve	Generating capability in MW above firm System Demand available to provide for regulation, load forecasting error, equipment forced and scheduled outage. It consists of Spinning and Non Spinning Reserve (Generation Code).
Operation	A schedule or planned action relating to the operation of the Transmission or Distribution System or a User System
Operational Interface	The common boundaries of the Network Licensee and System User Interconnection Point
Over Current Device	An electrical automatic disconnect device such as a fuse or circuit breaker



Permit	A Permit issued by the Minister under Section 25 of the Act
Person	Any (i) natural person; (ii) public body, company or association; or (iii) legal entity, whether corporate or unincorporated
Plant	Fixed and moveable items used in the generation, transmission or distribution of electricity other than Apparatus
Primary Metering System	All meters and metering devices owned by the Network Licensee (and financed by the Generator) used to measure the delivery and receipt of Net Energy Output, Dependable Capacity and other parameters pursuant to GC Section 3, “Operational Metering”
Prudent Utility Practice	The practices generally followed by the electric utility industry in respect to the design, construction, operation, and maintenance of electric generating, transmission, and distribution facilities, including, but not limited to, the engineering, operating, and safety practices generally followed by such utility industries
Point of Supply Delivery	The point or place at which the Licensee delivers to the Customer the Supply of electricity to be used by the Customer
Potential Transformer or “PT”	A type of transformer used to measure Voltage (also known as Voltage Transformer). It is a parallel connected type of instrument transformer designed to present negligible load to the supply being measured and to have an accurate voltage ratio and phase relationship to enable accurate secondary connected metering
Power	Electric power, defined as the rate at which electrical energy is transferred by an electric circuit. Power is commonly given as active power measured in watts (W) or apparent power measured in volt ampere (VA) or multiples thereof (kW, MW respectively kVA, MVA);
Power Factor	Power factor means the ratio of active or real power to apparent power, often expressed as a percentage (e.g. unity power factor is 100% power factor)
Power Purchase Agreement or “PPA”	An agreement between an Independent Power Producer or a Generation Licensee, and a Network Licensee for the sale of electricity by the Independent Power Producer or the Generation Licensee to the Network Licensee

Renewable Energy	Non-fossil sources of energy capable of use for the generation of electricity such as wind, solar, hydropower, biomass, geothermal, wave and tidal sources
Self-Generator	A person who generates electricity only for his or her own use and, as the case may be, for the provision of excess electricity to a Network Licensee, and the term “self-generate” shall be construed accordingly
Service	Includes all Power and Energy requested by the Customer and, in addition, the readiness and ability on the part of the Network Licensee to use best endeavours to furnish power and energy to the Customer. The term includes all services offered by the Network Licensee, including the installation of electrical infrastructure, transformers, meters, cables and switchgear. The maintenance by the Network Licensee of voltage and frequency at the Point of Supply Delivery will constitute the rendering of service irrespective of whether the Customer makes use of it.
Service Entrance Equipment	Network Licensee-owned low voltage equipment up to the Point of Supply Delivery, including, but not limited to, switches and meters
Service Entrance Conductors	Network Licensee’s conductors from the point of connection at the service drop or service lateral to the service equipment
Significant Incident	An Incident which in the opinion of the Network Licensee has had a significant effect on the Transmission or Distribution System or the System User’s facility
Stand-by service	When at a single Point of Supply Delivery, service requirements for the Customer's load are supplied or supplemented from the Customer's generation during periods of outages
Sub-meter	A meter installed beyond the regular meter to measure a part of the Customer's load
Substation	A facility where the 33 kV transmission voltage is converted to 11 kV
Supply	The sale and resale of electricity
System	The Network Licensee Facilities, through which the electrical energy output from Generating Units are distributed to Customers, including electric plant, electric lines and all other

	equipment, works or apparatus utilized by a licensee to supply electricity. The terms “Grid” and “System” have identical meanings and are used interchangeably.
System Emergency	A condition or situation that (i) is likely to materially and adversely affects the ability of the Network Licensee to maintain safe, adequate and continuous electrical service to Customers, or (ii) endangers the security of persons, Plant or equipment.
System User	All Generators and Customers using the Transmission and Distribution System
Transformer Vault	A facility where the 11 kV distribution voltage is converted to low voltage (400 V or 230 V);
Transition Period	The three year period commencing on the Effective Date of the Codes designed to enable Existing System Users to come into compliance, as set forth in IC 12.3, “Transitional Provisions”
Transmission System	That portion of an electric system which transfers electric energy from the Generating Facilities to the Distribution System.
Three-Phase	Pertaining to a combination of three circuits energized by alternating electromotive forces that differ in phase by 120 degrees
Total System	The Transmission and Distribution System together with all System Users
Total System Shutdown	The situation when all generation connected to the Total System has ceased and the Total System has ceased to function
Uninterruptible Power Supply, or UPS	<p>An electrical apparatus that provides emergency power to a load when the input power source from the Grid fails, so long as there is no connection between the UPS and the Distribution system which might enable the UPS to energize the facilities of the Network Licensee or the Distribution System.</p> <p>A UPS differs from an auxiliary or emergency power system or standby generator in that it will provide instantaneous or near-instantaneous protection from input power interruptions by means of one or more attached batteries and associated electronic circuitry for low power users, and or by means of diesel generators and flywheels for high power users. The system is designed to provide sufficient time to bring an auxiliary power source on line, or to properly shut down the protected equipment.</p>

	<p>While not limited to protecting any particular type of equipment, a UPS is typically used to protect computers, data centers, telecommunication equipment or other electrical equipment where an unexpected power disruption could cause injuries or serious business disruption. UPS units range in size from units designed to protect a single computer without a video monitor (around 200 VA rating) to large units powering entire data centers (&gt;1MVA), buildings (&gt;300kVA), or manufacturing processes.</p>
US	The United States of America
V – volt	<p>The unit of electric force or pressure; the electromotive force, which will produce a current of one ampere when applied to a conductor whose resistance is one ohm. Voltage means the electric force or pressure necessary to drive electricity through a circuit. VA – volt ampere means the unit of apparent electric power equal to the product of volts and amperes</p>
VAh - volt ampere hour	<p>A measure apparent electric power consumption and is the product of apparent power measured in VA and time measured in hours</p>
Voltage Flicker	<p>The rapid change in voltage that distorts or interferes with the normal sinusoidal voltage waveform of the Transmission System.</p>
Wh - watt hour	<p>The SI unit of electric energy; the work done in one hour at the steady rate of one watt</p>

## **APPENDIX B**

### **LIST OF REFERENCES**

1. The Electricity Act, 2016, as amended by the Electricity Supply (Amendment) Act, 2017
2. Public Utilities Regulatory Commission Act, 2015 as amended by the Public Utilities Commission Regulatory Act (Amendment) Act, 2017
3. National Energy Policy
4. Grenlec Renewable Energy Interconnection Policy Version 3.2 dated November 2015
5. Grenlec Electricity Services Limited Suspense Policy Revision 1.01, dated February 16, 2009
6. Grenlec Electricity Services Limited Service Application Checklist
7. Grenlec Tariff Rate Schedule

DRAFT