

Introduction to the SA Electricity Codes

Bernard Magoro

RSA Grid Code Secretariat

Email: magorotb@eskom.co.za




- Introduction and objectives
- Structure and the scope of codes
- Governance process
- Enforcement and compliance monitoring
- Current developmental areas
- Conclusions

- The key objective of the **Codes*** is to set out reciprocal obligations of **participants** regarding the Use, Operation and the Development of the transmission system (TS) and distribution system (DS)
 - All licensed **network service providers** and **generators** are participants and therefore have to abide by the Codes provisions
- This will ensure:
 - Non-discriminatory access to the TS and the DS
 - Adherence to minimum technical requirements
 - System integrity & adequate service delivery
 - Defined accountabilities
 - Information availability
- **Transmission Grid Code** came into force in 2005
- **Distribution Code** was approved by NERSA in 2007
- **Wind Connection Code** was approved in March 2011
- Connection requirements for other renewables is currently being developed

NB: *term “codes” refers to Transmission grid code, Distribution code and all other associated codes such as wind code etc.

Structure of the Codes

- Transmission Grid Code
 - Distribution Code
 - Wind energy facility connection requirements
 - Renewable energy (other) connection requirements*
 - Scheduling and dispatch Rules*
- 

- Each of the Tx Grid and Dx Code is divided into 7 chapters:
 - Preamble
 - Governance Code
 - Network Code
 - System Operation Code
 - Metering Code
 - Tariff Code
 - Information Exchange Code

* currently being developed

Scope: what is regulated by the codes?

- **Connection process**, for example:
 - Issuing of connection quotes by service providers
 - Minimum connection network redundancy and related charges
 - Agreements to be put in place between network service providers and generators (e.g. connection, operating, Use of System, Ancillary Services etc.)
- **Design requirements** (for both generators and network service providers)
 - Codes specify mandatory minimum requirements (e.g. unit islanding, protection, voltage control, frequency control, fault ride through, metering installations etc.)
 - There are also negotiable requirements, these are contracted on a need basis
- **Operations and maintenance** coordination by the ***System Operator***
 - Participants are required to cooperate with SO in this process
- **Dispatch** of generation and demand side resources in line with the rules
- **Information exchange** between participants
- **Tariffs** of the network service providers (Transmission and Distribution)

- Participants are ultimately responsible to ensure that their plant & equipment complies with the relevant codes
- “Black box” principle applies whereby compliance to requirements is tested at connection point
- Enforcement of the Codes:
 - Enforced by NERSA through **licenses**
 - In some cases through **agreements** with network service providers
 - Parties must demonstrate compliance to applicable code requirements prior to connection or commercial operation
 - Submission of information required as per Information Exchange Code to Service providers and / or SO for system studies (e.g. plant dynamic models)
- Compliance monitoring:
 - This is mainly NERSA’s responsibility
 - However, there is an implied compliance monitoring role by other participants especially the network owners and System Operator
- There is an option for exemption or derogation in case of non-compliances, however this is subject to strict approval process

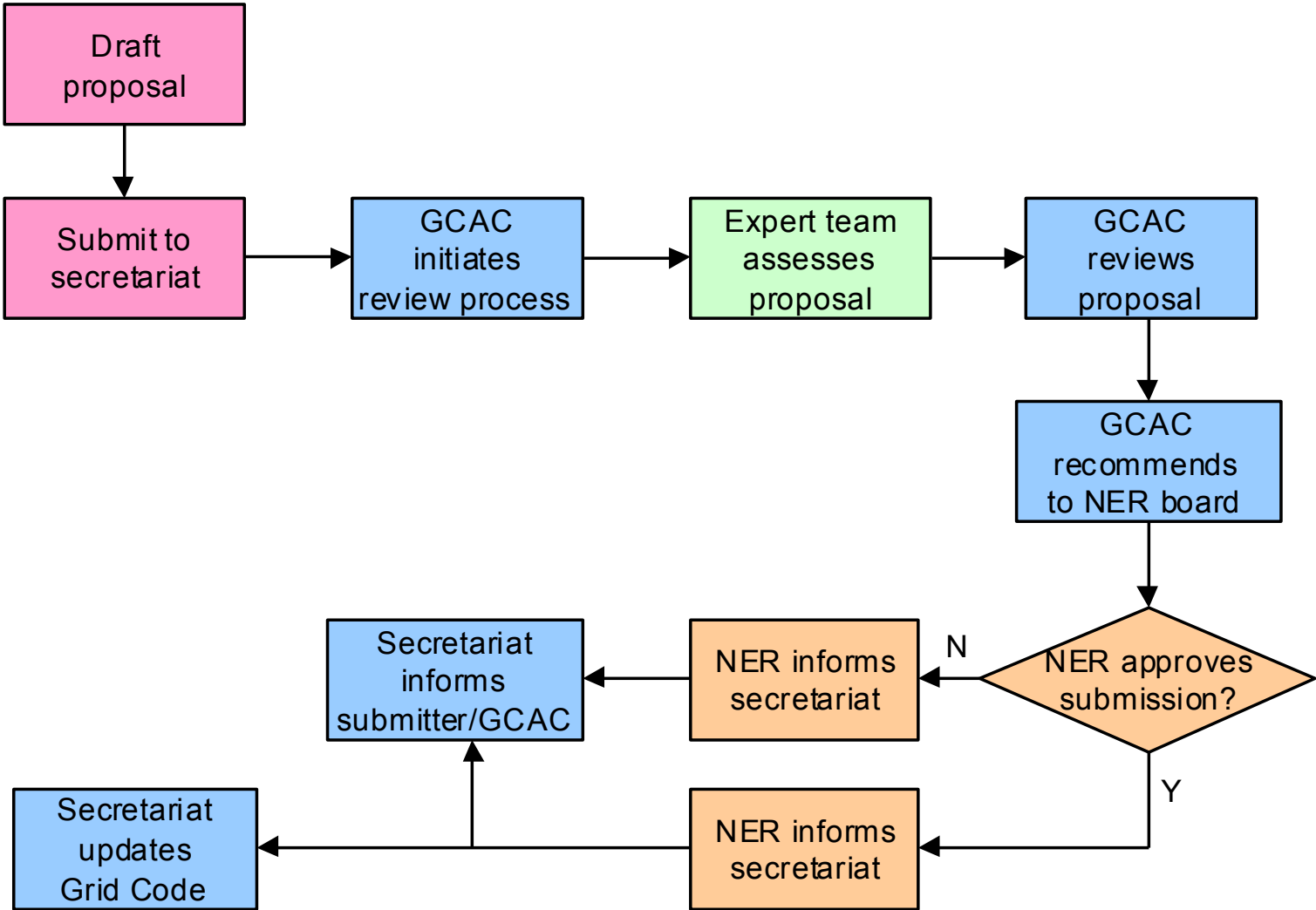
Governance... Assigned Accountabilities

High Court	Review
NERSA Board	Ratification & Governance
Grid Code Advisory Committee	Recommendation
Expert Teams	Expert opinion
Grid Code Secretariat	Administration
Service providers	Implementation
Expert Drafters	Expert drafting

- NERSA is the administrative authority for all codes:
 - approve codes and amendments thereto
 - make final decision on the granting of exemptions and derogations to participants
- Grid Code Advisory Committee (GCAC) review all submissions regarding the codes amendments and exemptions
- System Operator has been appointed as the Grid Code Secretariat
 - this role involves management of the Codes and
 - managing GCAC activities

- An industry participants stakeholder representative panel
 - chaired by NER
 - reviews all amendments/exemptions and makes recommendation to NERSA Board for approval
 - establishes expert teams to review submissions and resolve contentious issues
- Current membership (subject to review by NERSA):
 - One member representing the *System Operator*
 - One member representing *transmission network service providers (TNSPs)*
 - Two members representing *generators*
 - Two members representing *distributors*
 - One member representing large *end-use customers*
 - One member representing *NERSA*
 - One member representing *Southern African Power Pool* as an observer with no voting rights

Figure 2: Grid Code Amendment/Exemption Approval Process



- Technical connection conditions for renewable energy technologies (as defined the REFIT programme)
- Scheduling and dispatch rules
- Minimum primary fuel requirements mainly for coal and gas turbine generators
- Consolidation of the generation connection conditions into a single generation code

- The codes were developed to ensure industry standardisation, network integrity and non-discriminatory access to networks
- Generators must identify applicable minimum requirements and ensure that they are incorporated early in project development process
 - Standard power plant designs may not meet codes requirement
 - Trying to retrofit later can be a very costly exercise
 - Sourcing required information OEM (especially plant dynamic performance data) also proved difficult if not contracted for upfront
- Compliance testing and demonstration is a pre-condition to commercial operation
- Codes are living documents and it is critical for SAIPPA to participate in their future developments
- Approved versions of the Codes are available from www.nersa.org.za

THANK YOU