Distribution Grid Code Phase 2 Implementation Plan

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Presentation Outline

- Background
- Dx Code Development process
- Content of the Distribution Code
- Electricity Codes Governance Process
- Implementation plan
- Conclusion
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  – ESI reform in South Africa
  – Introduction of IPPs, REDs & Wholesale energy market
Current Tx & Dx Codes design attempt to achieve this vision
NERSA is the codes administrative authority i.t.o the Act:
  – Right to develop & enforce electricity industry codes
  – Approve all changes and exemptions to the codes
Background: Objectives

- The Dx Code establishes reciprocal obligations of participants regarding the use, development & operation of the *Distribution System (DS)*
- It ensures:
  - Non-discriminatory access to the DS
  - Adherence to min. technical requirements for connection to the DS
  - System integrity & adequate service delivery
  - Clarifies accountabilities of all parties
  - Information availability
Background: Benefits to Industry

- Provides a stable platform for the evolving ESI
  - For example, introduction of REDs & Independent Power Producers
- Sets foundation for future contractual arrangements
- Improved efficiency and transparency of service providers
- Harmonization of industry standards
- Improved regulatory measures
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• Process took about 2 yrs (starting June 2005)
• Main participants:
  – NERSA - Chair
  – AMEU (main representation: Ekurhuleni, eThekwini and Cape Town)
  – Energy Intensive User Group (EIUG) / Large Customers
  – Department of Minerals and Energy (DME)
  – Eskom (Distribution, Transmission and Generation)
  – System Operator (Secretariat)
  – Independent Power Producers (Kelvin Power station)
• June 2007: Grid Code Advisory Committee accepted the Code for approval
• August 2007: Final version 5.1 approved by NERSA Board
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Accountability for:

Network Service
System Operation
Ancillary Services

Operations of:

Network Service
System Operations
Scope of Tx vs Dx Code

Generators (Eskom and IPPs)

National Transmission Service Providers (NTSPs)
Transmission Directly Connected Customers

Distributors
Embedded Generators
Retailers
Resellers
End-customers

Tx Grid Code

Dx Code

Tx System

Dx System
Grid (Tx) vs Dx Code Participants

**Tx Code**
- Generators >20MVA
- Gx: Providing ancillary services
- Dx: Connected to TS
- Directly connected customers
- Retailers / Traders for use of TS
- Tx network service providers
- System Operator
- AS providers (interruptible loads)

**Dx Code**
- Embedded generators
- Co-generators
- End-customers
- Retailers
- Resellers
- Distributors
- System Operator
Content of The Distribution Code

- Glossary of definitions
- Distribution Network Code
- Distribution System Operating Code
- Distribution Metering Code
- Distribution Tariff Code
- Distribution Info Exchange Code
- Code Governance
  - NERSA approved that current Tx Governance Code process shall apply whilst the Dx Governance Code is in draft stages
Glossary (Code Definitions)
Preamble Code

- Contains all terms, acronyms and list of standards used in the Dx Code
Network Code

- **Describes:**
  - procedure/process for new connections (incl. sample application form)
  - set out the responsibilities of all parties regarding use and development of the Distribution Networks
  - Includes some embedded generation connection requirements.
- **Distributors’ responsibilities:**
  - prepare “*customer connection information guide*”
  - Upon customer request, prepare “*offer to connect*” and ultimately “*connection agreement*”
  - advise potential *users* of the expected reliability on its network
  - conduct “*Distribution System impact assessment studies*”
  - compile a 10-year load forecast at each Dx incoming Point of Supply
  - publish 5-yr network development plan reviewed at least every 3 yrs
  - Comply with reliability indices set annually by NERSA
• Customers’ responsibilities:
  – Provide safe access to Dx equipment within customers plant
  – Ensure equipment compatibility at the point of connection (incl. protection equipment)
  – Comply with QoS requirements as per NRS 048 & NERSA Power Quality Directives
  – Customers > 100kVA $\Rightarrow$ Power factor at least 0.9 lagging. No leading p.f.
  – Earthing requirements as per NRS 076
  – Safeguard their equipment from faults on the DS
  – Maintain equipments at least in accordance with manufacturer’s specifications
Network investment

- Least life-cycle cost investment criteria in line with NRS 048 & NERSA reliability requirements
- Premium connection costs shall be borne by the requesting customer
- Statutory investments will be based on predetermined criteria. Government requests to be considered if passed by legislature.
- No cross-border subsidies shall apply for international customers
- Refurbishment to be done by the Distributor when equipment becomes unsafe & / or unreliable to operate. Conditions:
  - customer must also agree to the timing
  - engineering solution to minimise costs of both customer and Distributor

Provision and costs for excluded services shall be negotiated between the parties.
- NERSA reserves the right to regulate these costs if unreasonable.

Embedded Generation requirements included in sec 8
- EGs >10MVA must also comply with requirements of the Grid Code
• Defines roles of parties regarding operating of the DS and connected customer equipment
• It promotes having negotiated agreements between parties regarding network operating
• Scope:
  – Safety of personnel and equipment
  – Operational responsibilities of Embedded Generators and other customers
  – Coordination of outages and commissioning
    • Dx has right to test customer equipment at point of connection
  – Contingency planning
  – Operational authority, procedures, liaison with other participants and communication requirements
  – Conditions for disconnecting customers (mainly for safety related reasons)
  – May shed load to maintain network integrity, but customers must be informed (for planned maintenance → 5 days in advance)
• Specify distributors requirements with respect to metering installations
• Extensive reference to NRS 057, but Dx Code takes preference
• Tx/Dx boundary meters is the responsibility of Transmission
• Dx/Customer meters is the responsibility of Distributors
• Metering data validation, collection, processing and verification shall be done as per NRS 057
• Clarify metering data integrity and storage requirements
• Automated Meter Reading is recommended for large Customers
• Confidentiality: Metering data to be regarded as confidential but may not be unreasonably refused if customer requests it
• Also include dispute resolution process
Tariff Code

• The Code describes:
  – Principles for the determination of tariffs
  – Segmentation of costs for tariff design purposes
  – Tariff design for International load customers
  – Recovery of subsidies and other levies using tariff structures
  – Connection charges principles (Standard and Premium)

• Included allowable charges:
  – Energy charges including recovery of losses
  – Network charges, including ancillary services
  – Customer services charges
  – Connection charges.

• Tariff have to be as Cost reflective as possible
• Non-tariff costs (excluded services costs) have to be shown separately and may be regulated
• Appendix 1 – guideline to designing tariffs
Information Exchange Code

• Objective: reciprocal obligations of parties with respect to provision of information
• General principle: mutual agreement between parties
• Information divided into 3 types:
  – Planning info (e.g. info for connection & contingency planning)
  – Operational info (e.g. real-time dispatch, maintenance & commissioning)
  – Post-dispatch (e.g. incident investigations)
• Each party to appoint information owner to facilitate info exchange
• Data storage, security & archiving requirements:
  – All information should be auditable by NERSA
  – Storage: 3 months for voice recorders, except where there was an incident
  – Storage: 5 years all other information except voice information
• Confidentiality requirement: information exchanged is non-confidential unless indicated by the owner
Outstanding Issues

- Limitation of Liability
- Harmonisation of the Tx and Dx Codes
- Code enforcement
- Embedded generation connection requirements needs further improvements
- Conditions for (pre-emptive) load shedding (NERSA’s requirement)
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Electricity Codes Management

• **Tx Governance Code to be updated to include Dx Code**
• **Grid Code Advisory Committee (GCAC)**
  – Stakeholder representative panel
  – Current membership: NERSA (chair), AMEU, EIUG, SO, Eskom (Dx, Tx & Gx), IPP, BEE & SAPP (non-voting member).
  – Reviews all Codes submissions & make recommendations to NERSA Board for approval
  – May call for industry expert opinion on contentious issues

• **System Operator is the RSA Electricity Codes Secretariat:**
  – Advisor to Grid Code Advisory Committee
  – Handle all exemption and amendments applications through NERSA
  – facilitates submissions to NERSA Board
  – Management of both Grid & Dx codes
  – Chair Experts Team meetings
Amendment/Exemption Application Process

**Figure 3: Distribution Code Amendment/Exemption & Derogation Approval Process**

1. **NERSA – Capturing of application and submit to the secretariat**
2. **Licensees Submit Application to NERSA**
3. **Secretariat Issue ref Number and Submit to GCAC**
4. **GCAC initiates review process**
5. **Expert team assesses proposal**
6. **GCAC reviews proposal**
7. **GCAC recommends to NERSA**
8. **NERSA informs secretariat**
9. **Secretariat informs submitter/GCAC**
10. **Secretariat updates Grid Code**

Decision Point:

- If NERSA approves submission? (Y or N)
  - **Y**: NERSA informs secretariat
  - **N**: NERSA informs submitter/GCAC

**Flowchart Diagram:**
- NERSA – Capturing application and submit
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- GCAC recommends to NERSA
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NERSA workshopped the Code to the distributors with Max Demand >100MVA from November 2007 to April 2008

Amendment to current license obligations initially Distributors with Max Demand > 100MVA – To occur in November 2009

A reminder letter was sent to the affected licensees in July 2009

Phased in approach over 12 months (trial) period

- Month 1 – 6 Distributors were given an opportunity to do self compliance assessment – minimal feedback
- Month 7 – 12 Distributors required to Inform NERSA of their compliance status – minimal feedback
  - Apply for exemptions and amendments (via Code Secretariat through NERSA) – minimal feedback
- Month 12 Full implementation, licenses amended to include the code & parties expected to be fully compliant
  - If no exemption → non-compliant (penalty clause in the Act) - Ongoing
  - NERSA to conduct adhoc compliance audits for the Code – Ongoing
Phase 2 Implementation Process - What is Going to Happen Next?

- NERSA to workshop the Code to the distributors with Max Demand 50MVA>100MVA as well as IPPs, Embedded Generators beginning in November 2009
- Amendment to current license obligations Distributors with Max Demand 50MVA > 100MVA and IPPs – To occur in November 2010
- Phased in approach over 12 months (trial) period
  - Month 1 – 6 Distributors will given an opportunity to do self compliance assessment
  - Month 7 – 12 Distributors will be required to Inform NERSA of compliance status
    - Apply for exemptions and amendments (via Code Secretariat through NERSA)
    - Including interpretation requirements
  - Month 12 Full implementation, licenses amended to include the code & parties expected to be fully compliant
    - If no exemption → non-compliant (penalty clause in the Act)
    - NERSA to conduct adhoc compliance audits on the code.
Self Compliance Assurance – Industry Best Practices

- Licensees align themselves with the Regulator Compliance Framework and Best Business Practices
- Develop terms of reference of and form an internal Work Group to deal with certain aspects of the codes – Analysis and understanding thereof
- Break down the Work Group in the Work Streams and delegate as per terms of reference – Self Auditing and Reporting of Findings
- Compile action plans based on findings and execution thereof
- Where needed identify areas that may require exemptions or amendments in the codes.
- Form an internal body or committee that will monitor the progress
- Re do self assessment at least every two years but maintain the monitoring or the business status quo.
Conclusion

Remember complying to the industry codes of practice, standards, rules and regulations, is for the good of your business, it is mainly for quality of service and supply to your employer (Tax Payer/Public) as well as to run your business professionally and efficiently.
THANK YOU