EXPERIENCE IN STANDAR DISATION
FOR ELECTRIFICATION

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UNDERSTAND BUSINESS OBJECTIVES

• National objectives
• Current business:
  – Current revenue streams, subsidies and aid
  – Customer service expectations and requirements
  – Current network
• Future business:
  – Customer service expectations and requirements
  – Future revenue streams, subsidies and aid
  – Energy carrier options competitiveness
Successful Standardisation Requires:

1. Consideration of the total life cycle of the infrastructure
2. Understand the environment the standards have to serve
3. Standards processes and support
4. Rationalisation
5. Documentation
6. Discipline
Factors/Benefits Affecting Standardisation

- **Asset creation**
  - Optimal lifecycle cost
  - Volume production; competition and backup (security) of suppliers
  - Environmental considerations
  - Learning and optimisation
- **Asset operation and maintenance (Customer services and Field services)**
  - Staff training
  - Spares holding and breakdown response
- **Asset upgrade**
- **Finally …… asset disposal**
- **Quality management throughout the life of the asset and service**
REQUIREMENTS

• Understand load and service requirements
  – ADMD in kVA
  – Urban, rural, commercial, accessibility etc
• Determine operating and maintenance philosophy
  – Business structure of customer services
  – Business structure of network maintenance services
• Determine planning philosophy
  – Existing network vs where to go to
  – SWER – voltage and conductor
  – MV and LV voltage
  – Sub-transmission voltage
• Reliability/quality of supply and service requirements
RATIONALISATION

- Stay wires, insulator types, creepage, strength.
- Conductor types.
- Bundle conductor sizes and single or three phase.
- Transformer sizes, voltages and tap settings.
- Pole heights, strength, specification.
- NRS used in South Africa to link Eskom and municipalities.
• Need control process for changes
  – Revision dates
  – Voting process
  – Process to adapt suggestions
• Research plan in place for long term development
• Web page to ensure latest standards are used.
• Technical bulletins to address urgent issues.
USE OF STANDARDS

• Need to ensure optimal use of standards.

• Indicators developed to enable rapid assessment on use of standards
  – Span length
  – Conductor type
  – Three phase vs single phase
  – Actual ADMD
AVAILABILITY

• Eskom standards available

• Process in place and is transferable
Eskom Standard Levels

- **LV**: 230V, Dual Phase ±230V, 400V
- **MV**: 11kV, 22kV, 33kV, SWER
- **Sub Tx**: 66kV, 88kV and 132kV.
- **Conductors**: fox, mink, hare.
- **ABC**: 75mm² and 35mm² (1,2,3 phase)
CONCLUSION

• Need to link requirements to standards
• Need to allow for innovation
  – Suggestions
  – Research
• Need to have a process for approval of changes and revision
• Need to have documentation control
• Need to have process for technical bulletins to address certain issues.
• Need to monitor use of standards