MASTER PLANNING
AMEU Good Hope Branch Meeting
15 Aug 2014
Presented by George Lotter

MOTL A
“The objective of distribution planning is to provide an orderly and economic expansion of equipment and facilities to meet the utility’s future electricity demand with an acceptable level of reliability.”

H. Lee Willis
OVERVIEW (1)

How much?

Anticipate how much power must be delivered

Anticipate where the power will be required

Anticipate when the power will be required

Electrical Master Plan
OVERVIEW (2)

Electrical Master Plan

- How much?
- Where?
- When?

Electrification Plan
Refurbishment Plan
Transmission Plan
Environmental Plan
Reliability Plan
OVERVIEW (3)

Electrical Master Plan

- How much?
- Where?
- When?

Electrification Plan
Refurbishment Plan
Transmission Plan
Environmental Plan
Reliability Plan

Capital Plan & Financial Evaluation

- Direct Customer
- Electrification
- Reliability
- Refurbishment
- Strengthening

MOTLA
NMP vs NDP (Eskom Terminology)

^ NMP: Network Master Plan
  ^ Focus → Long term & Strategic (20 year)
  ^ Revised every 5 years

^ NDP: Network Development Plan
  ^ Focus → Short to medium term (5 – 10 year)
  ^ Revised every 2 – 3 years

Municipal Master Plan study could be a combination between a NMP and a NDP
METHODOLOGY

1. Planning study objective; Review study area
2. Gather and verify network and load information
3. Load forecast; Strategic study
4. Analyse existing network capability; define problem statement
5. Identify and evaluate alternatives
6. Capital plan; Financial evaluation
7. Reporting
Planning study objective & Review study area

- Clear definition of objectives
- Confirm study area
- Prepare network SLD’s
Gather & verify network & load info

- Geographical background data
- Network asset information
- Load profiles
- Zoning information
- Reports, guides and standards
- Customer data
- Electrification data
- Performance KPI’s
- Various existing plans
- Environmental issues
- Demographic & Econometric studies
- Local economic development plans
- Spatial development frameworks (SDF’s)
- Municipal integrated development plan (IDP)
- Site visit / site audit
Load forecast & Strategic study

- Geo-spatial load forecast (GLF) based on regional demographic and historical load growth patterns (GIS)
- Demand & energy forecast
- Scenario creation
METHODOLOGY (4)

Analyse existing network capability & Define problem statement

- Build network models & load flow studies
- Analyse existing network capability (present and future loads)
- Analyse refurbishment, electrification and environmental plans
- Analyse reliability requirements (firm vs. installed capacity)
- Define problem statement(s)
METHODOLOGY (5)

Identify & evaluate alternatives

- Formulate alternatives
- Map alternatives
- Technical evaluation
  - load flow
  - fault studies
- Reliability analysis
- Life cycle costing
- Economic evaluation
- Environmental evaluation
- Integrated plans
  - transmission
  - sub-transmission
  - reticulation
Capital plan & Financial evaluation

- Select preferred alternatives
- Capital requirement plan (phasing)
- Financial evaluation
  - cash flow
  - income
  - tariffs
- Tools for securing income:
  - Tariff study
  - Bulk contribution policy
METHODOLOGY (7)

Reporting

• Reporting
• Conceptual plan
• Geographic presentation
• Hold points to workshop results / progress
• steer Master Plan study according to specific needs
• Final approval
• report
• drawings
• presentation to stakeholders
# ADVANTAGES

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<tbody>
<tr>
<td>1</td>
<td>Identify expansion, development and refurbishment needs and related projects</td>
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<td>2</td>
<td>Identify the financial requirements to implement projects</td>
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<td>3</td>
<td>Timeous application to Eskom for increased NMD (if required)</td>
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<td>4</td>
<td>Bulk services contributions: align with future expansion</td>
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<td>5</td>
<td>Tariff study: align with future expansion</td>
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Factors influencing required timeframe for study:
- NMP or NDP
- Extent of study area
- Availability of required information

Timeframe:
- Typically 6 – 18 months, depending on above mentioned factors
Customers experiment with generation of power

Implications (future):
- Feed back into grid
  - Fault / Voltage levels
  - Metering
- Loss of income to Municipality
- Network expansion affected
- Residential ADMD affected

Future Master Plan Studies to incorporate this
CLOSURE

Be smart
Anticipate your load growth…

How much?
Where?
When?

MOTLA
Thank you

Questions?

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ON A LIGHTER NOTE