

MASTER PLANNING

AMEU Good Hope Branch Meeting

15 Aug 2014

Presented by George Lotter



MOTLA The logo for MOTLA, featuring the letters 'MOTLA' in a white, sans-serif font. The letter 'A' is stylized with a green triangle pointing upwards from its top center.

MASTER PLANNING

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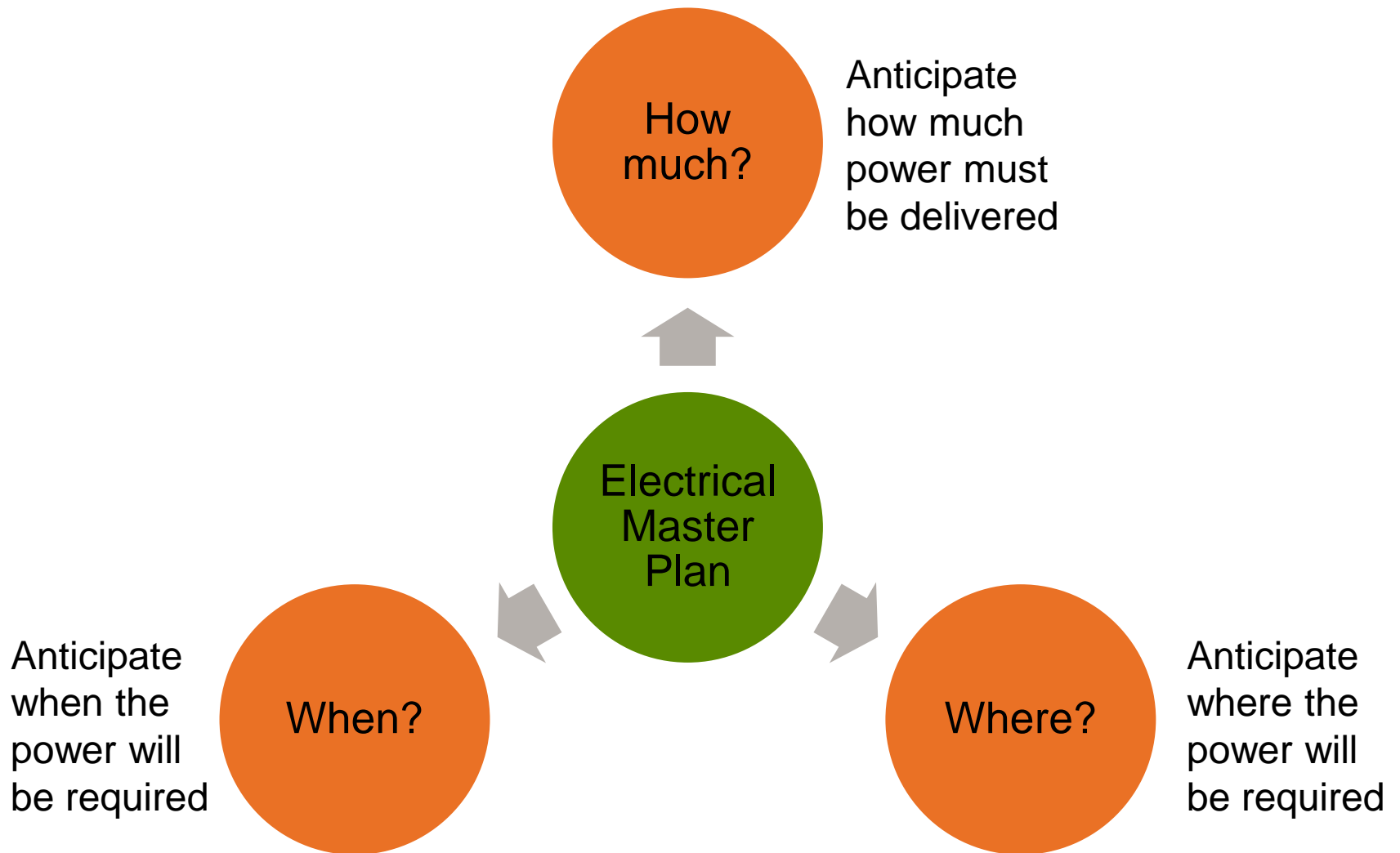
- ^ Introduction
- ^ Overview
- ^ Network Master Plan (NMP) vs Network Development Plan (NDP)
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INTRODUCTION

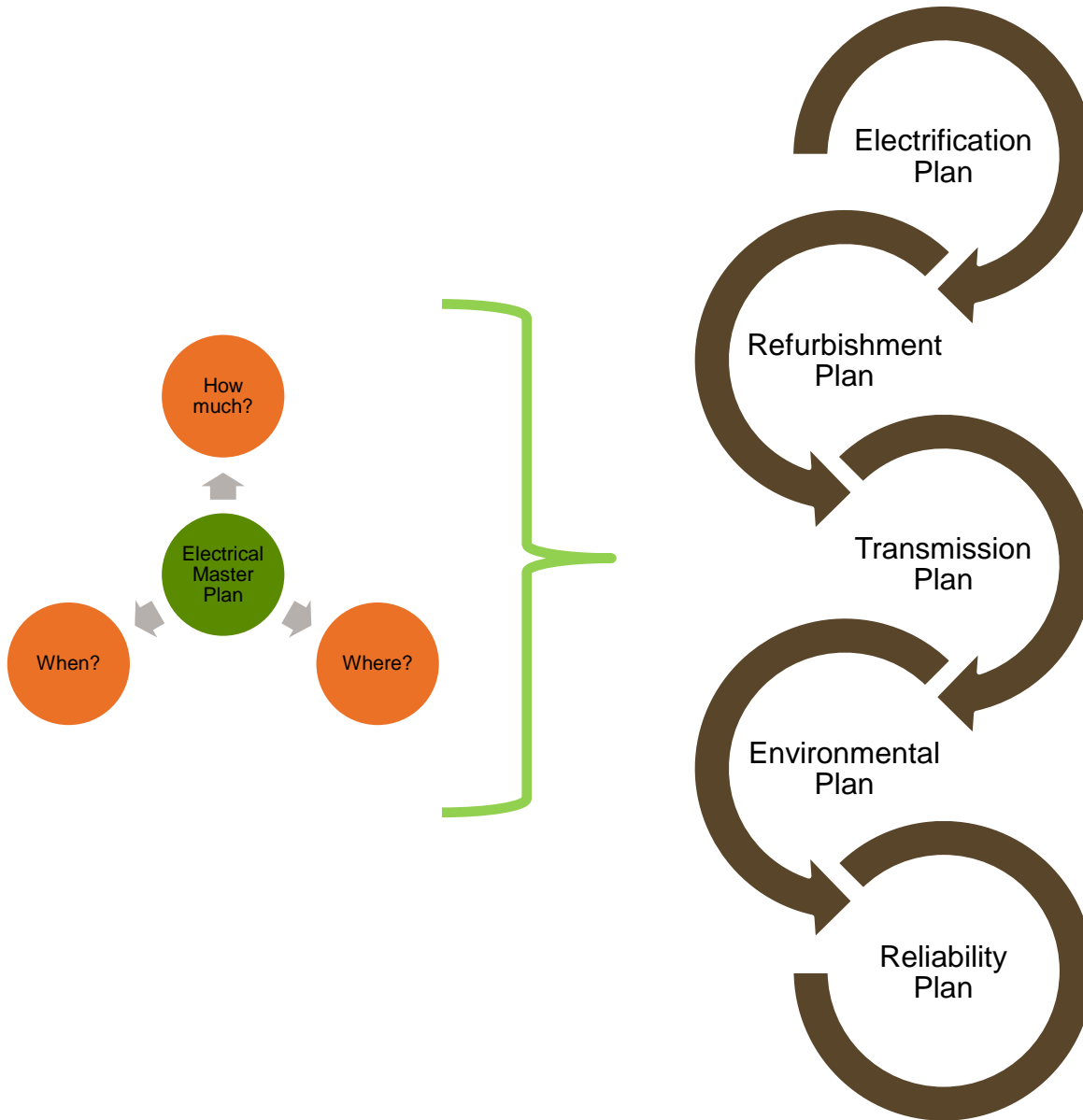
“The objective of distribution planning is to provide an orderly and economic expansion of equipment and facilities to meet the utility’s future electricity demand with an acceptable level of reliability.”

H. Lee Willis

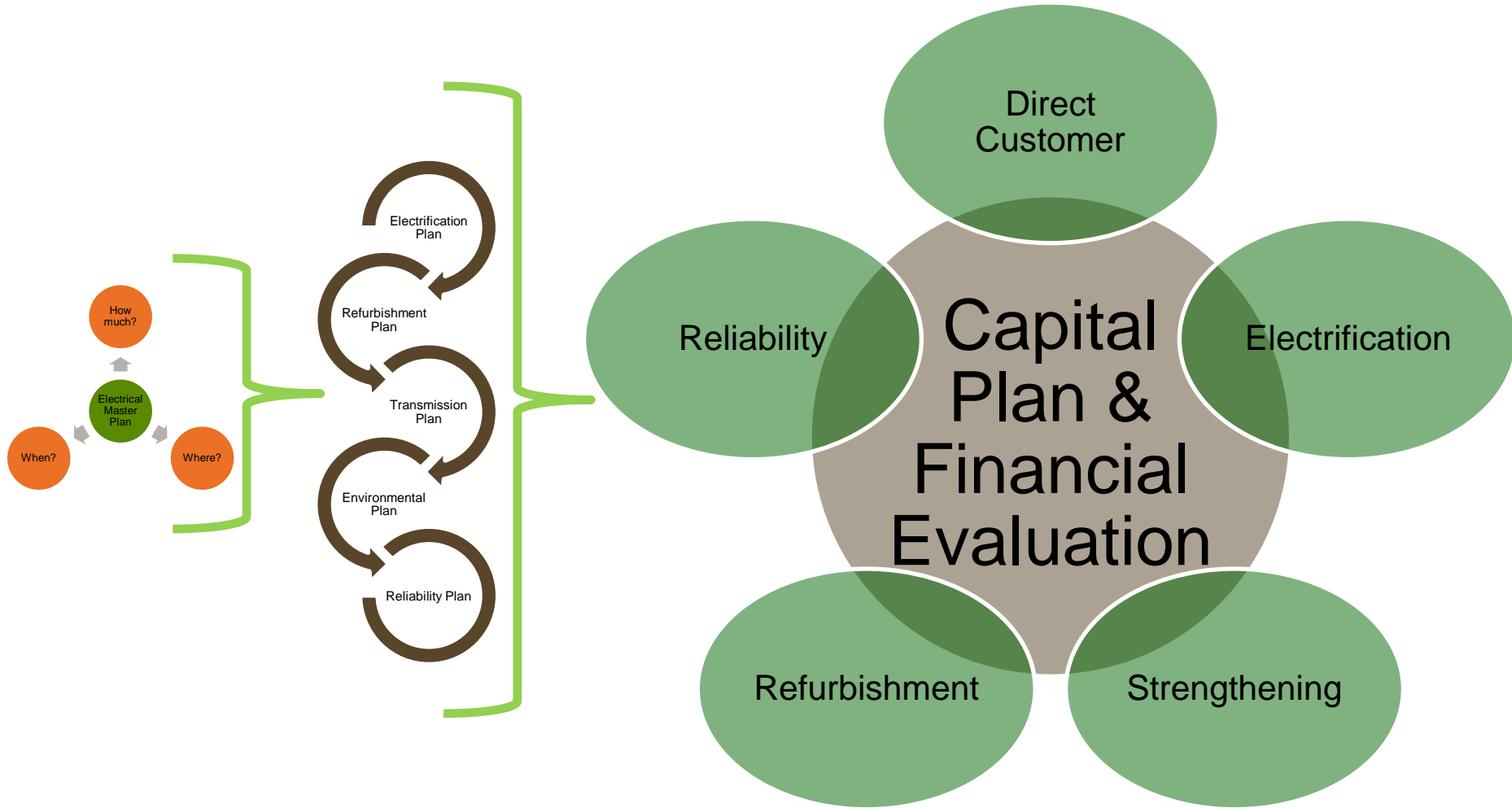
OVERVIEW (1)



OVERVIEW (2)



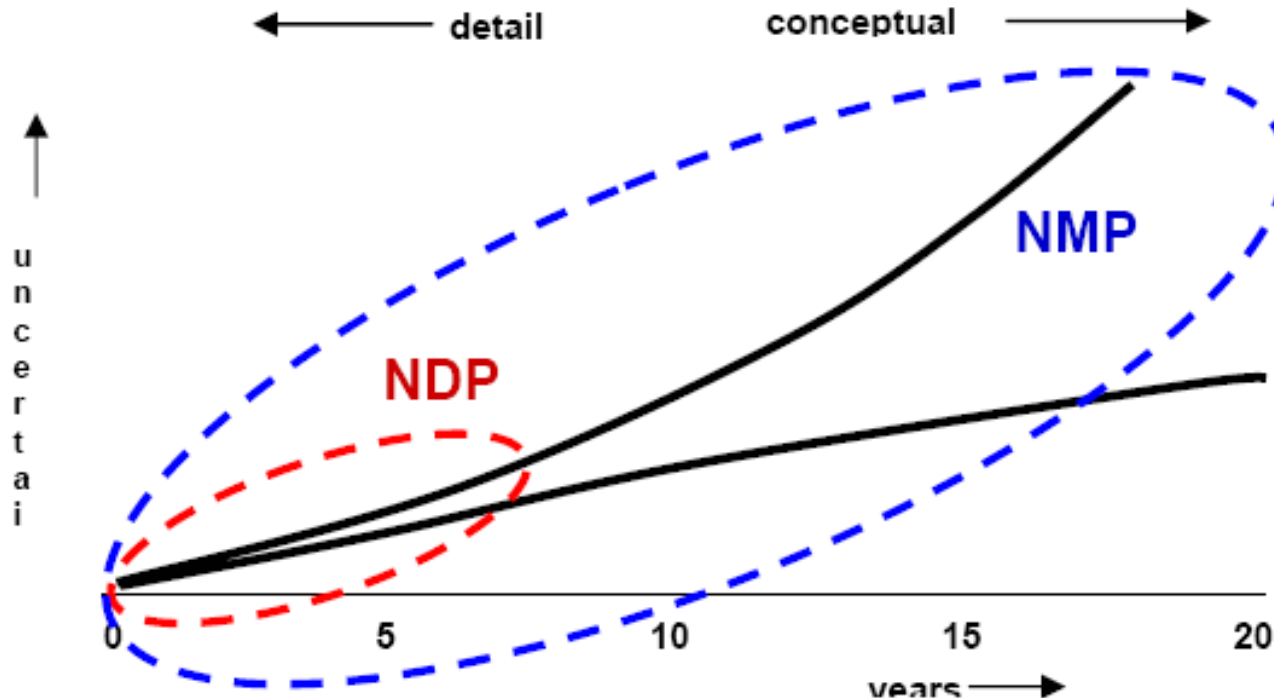
OVERVIEW (3)



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

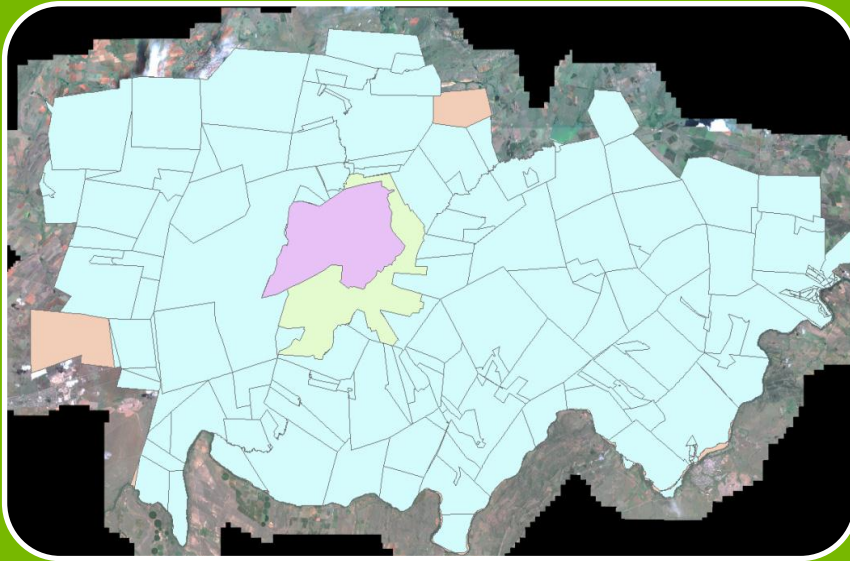
Municipal Master Plan study could be a combination between a NMP and a NDP



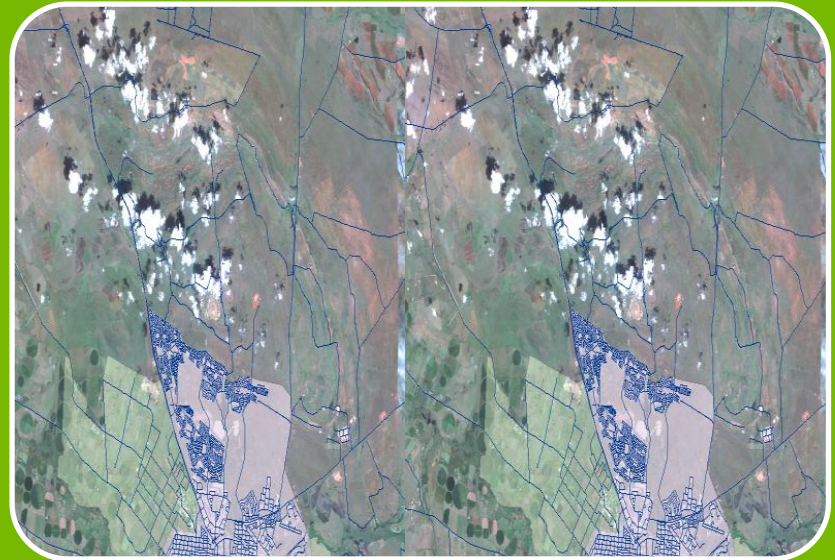
METHODOLOGY

- 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

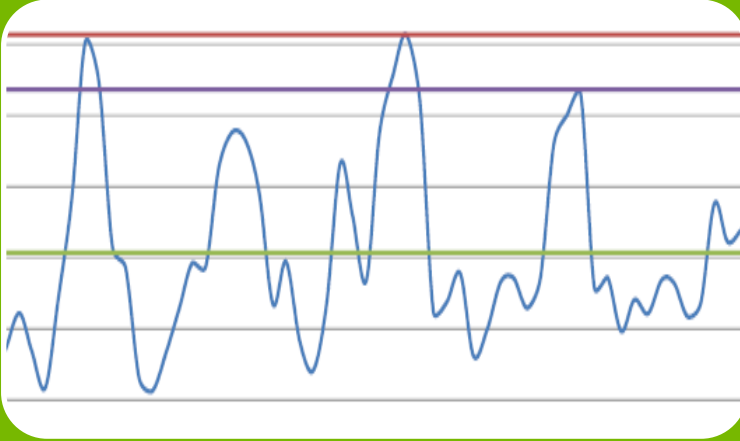


- Clear definition of objectives
- Confirm study area
- Prepare network SLD's



METHODOLOGY (2)

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

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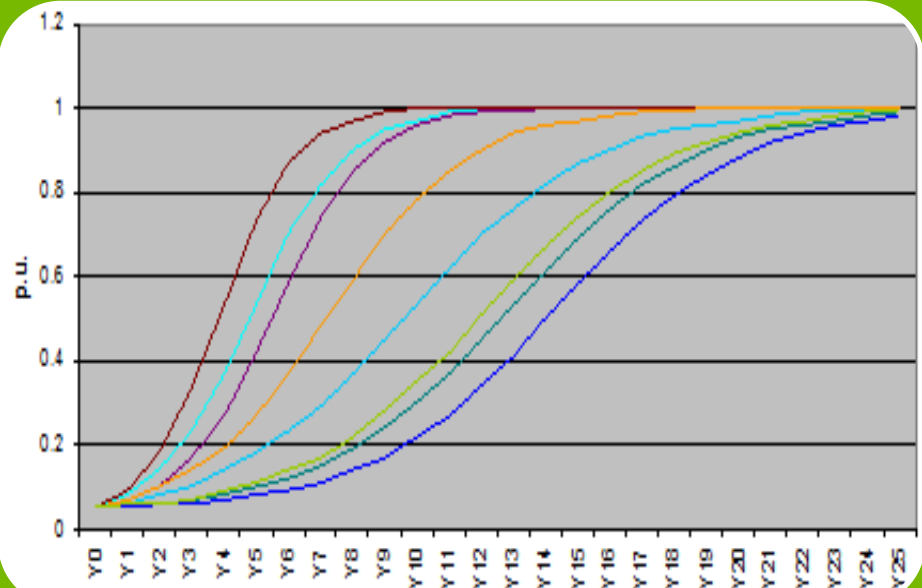
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Load forecast & Strategic study

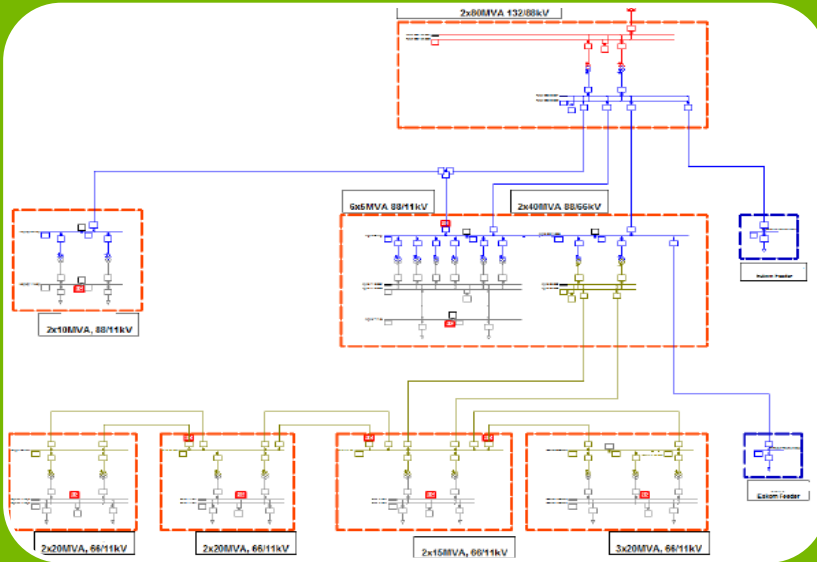


- Geo-spatial load forecast (GLF) based on regional demographic and historical load growth patterns (GIS)
- Demand & energy forecast
- Scenario creation



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)

Installed Capacity (IC) [MVA]	Firm Capacity (FC) [MVA]	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
160	80	147	154	160	167	172	176	182	182	193	199	204	209	221	230	234	238	242	247	254	258	262
80	40	70	73	75	80	83	86	89	91	99	103	106	110	120	127	131	135	139	142	150	154	158
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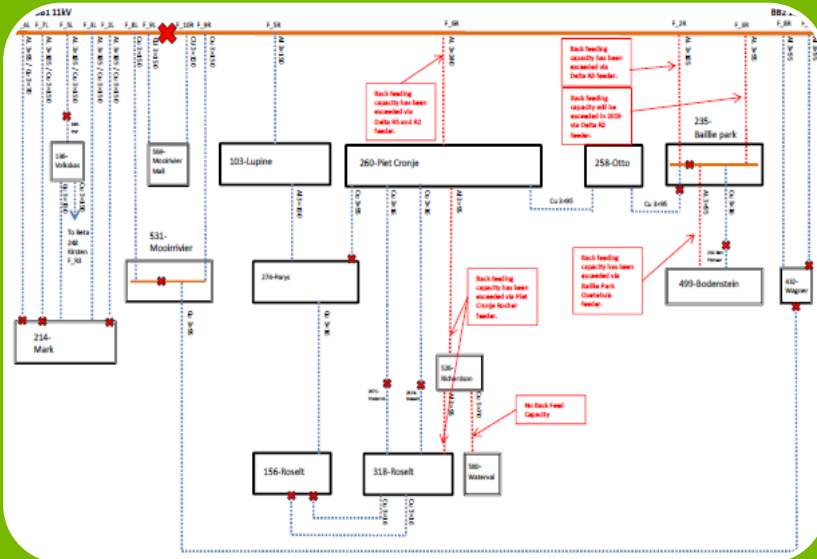
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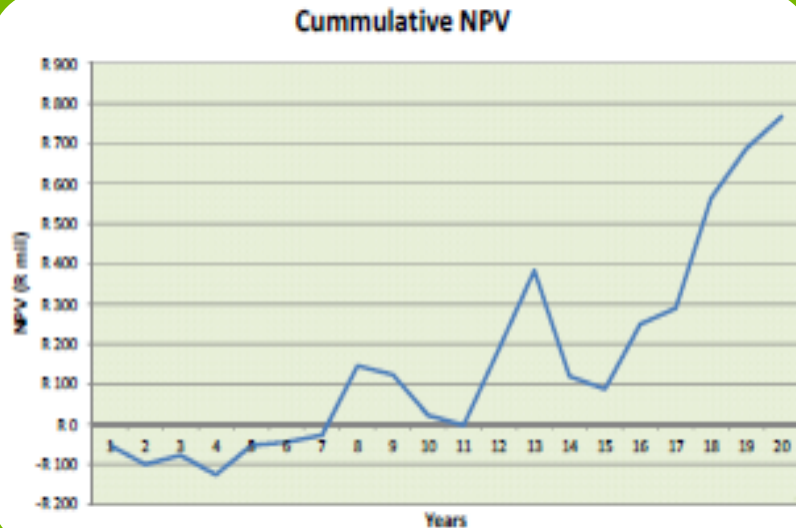
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Identify & evaluate alternatives



- 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

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

1	Identify expansion, development and refurbishment needs and related projects
2	Identify the financial requirements to implement projects
3	Timeous application to Eskom for increased NMD (if required)
4	Bulk services contributions: align with future expansion
5	Tariff study: align with future expansion

TIMEFRAME

- ^ 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



FUTURE COMPLEXITIES

^ Customers experiment with generation of power

^ Implications (future):

^ Feed back into grid

^ Fault / Voltage levels

^ Metering

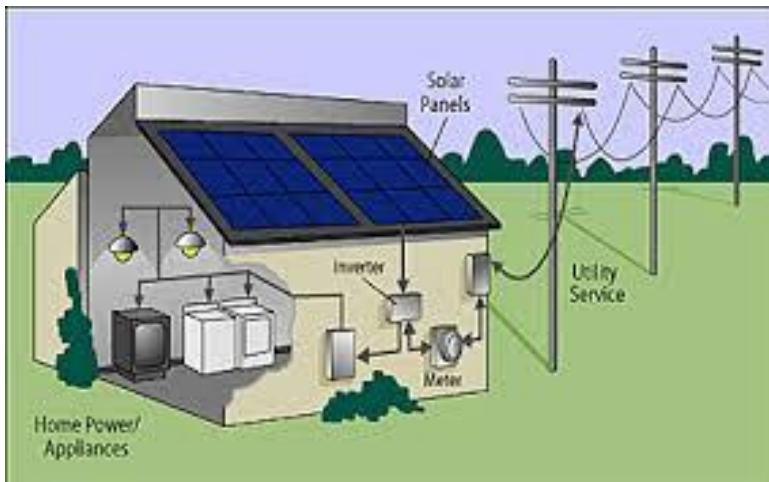
^ Loss of income to Municipality

^ Network expansion affected

^ Residential ADMD affected

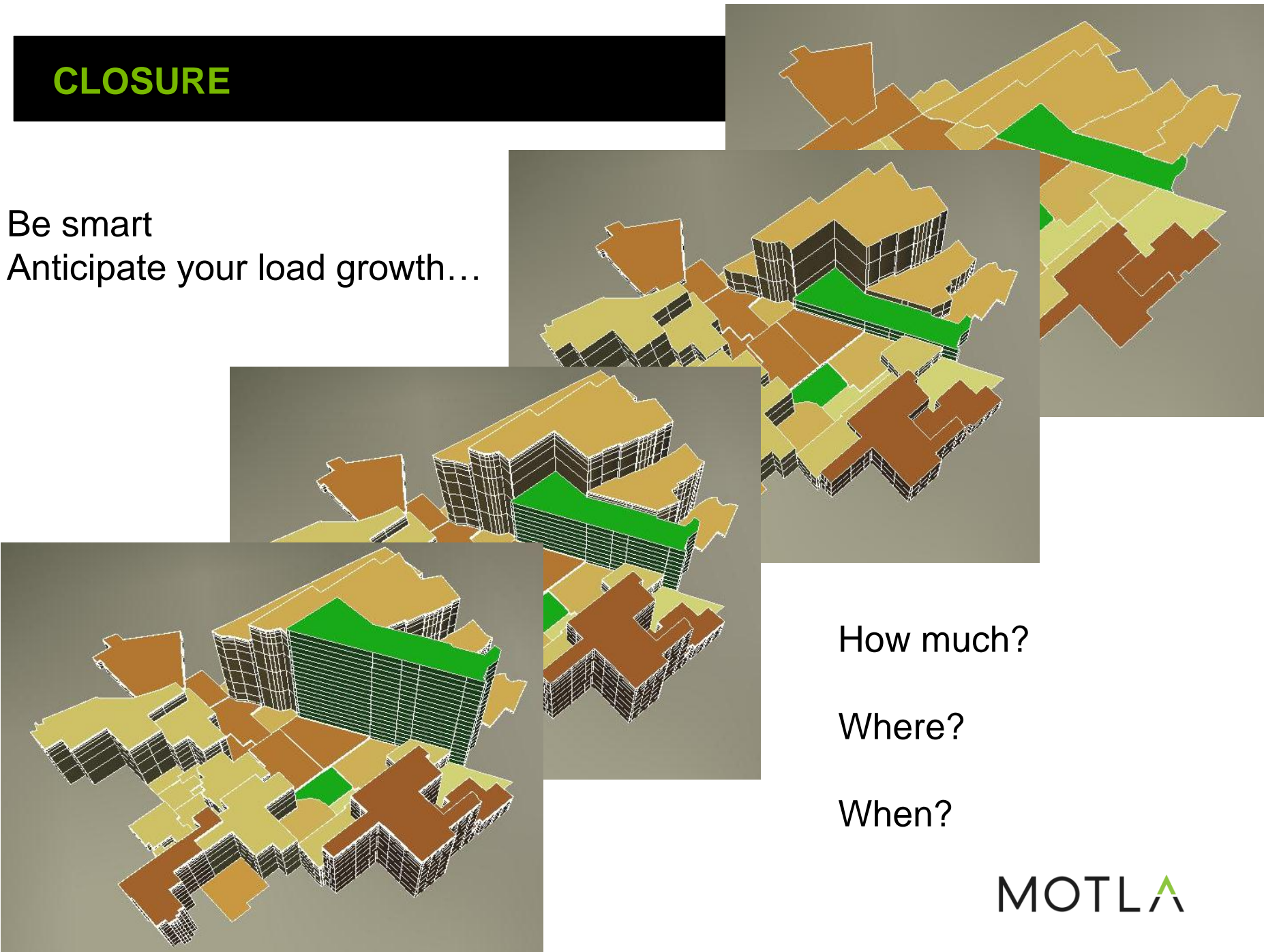


^ Future Master Plan Studies to incorporate this



CLOSURE

Be smart
Anticipate your load growth...



How much?

Where?

When?

Thank you

Questions?

George Lotter (B. Eng) Pr. Eng
Electrical Engineer
Motla Consulting Engineers (Pty) Ltd

georgel@motla.co.za

t +27 23 626 3699

f +27 86 650 6207

m +27 83 200 0051

www.motla.co.za

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ON A LIGHTER NOTE

