

Utility Management Consulting

MasterPlanning

PowerCAPEX



Capital Program & Financial Analysis

PowerCapex establishes a framework where the master planner can easily cost and evaluate a number of long-term network development alternatives.

PowerCAPEX caters for network expansion, network refurbishment and other costs in order to ensure that all costs are taken into account during the financial analysis.

Process:

In order to perform a financial analysis a basic capital program is compiled for each alternative that complied with the technical analysis. The capital costing process is computerised and standard cost libraries are used so that updates to standard costs and alternative changes can be effected with relative ease and in a short time frame. Refurbishment costs are included in the capital expenditure of the alternatives.

Care is taken to include good estimates of the operating costs, non-payment percentages and cross subsidisation.

This ensures that the financial analysis is based on realistic information.

Financial analysis tests the viability of the capital expenditure in terms of the following:

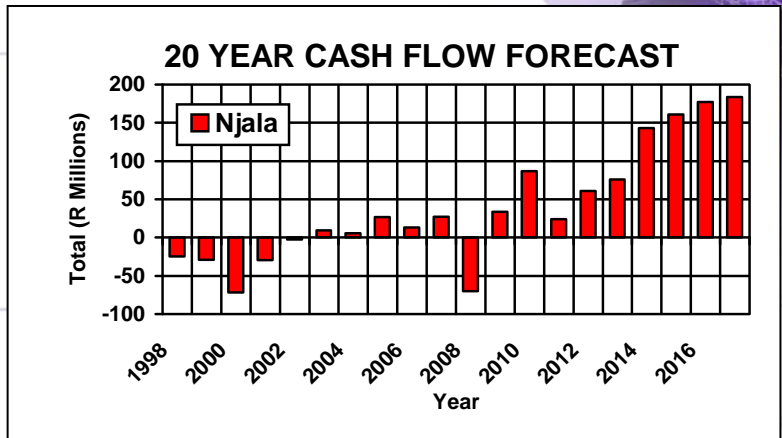
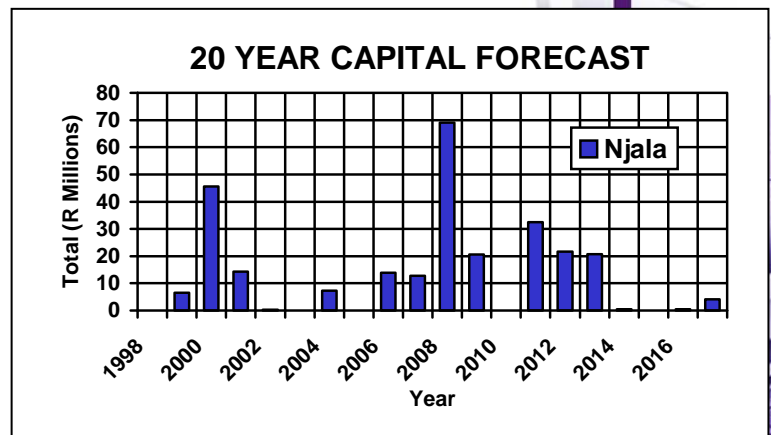
- Impact on future cash flows
- Nett present worth of the investments
- Internal rate of return

Basically the financial analysis ensures that the envisaged capital expenditure program is affordable and which alternative performs the best financially.

The output of **PowerCAPEX** is a detailed capital program for the preferred alternative.

This capital program is compiled together with comprehensive single line diagrams and maps to illustrate the development of the network and the phasing of the projects.

Special attention is given to include the refurbishment planning to form a complete capital program.



Other Products Used:

- PowerGLF
- PowerREFURB
- PowerRETIC
- PowerBASE
- PowerLV

Project & Configuration Setup : GPMC

Number	Name	Description	Project Type	Year	System	SubSystem	Total Cost	Last Modified
n100-XX	Njala3	Upgrade to 750MVA firm	Expan.Netw	2018	S1-NJALA	SS10	R 26,533,000.00	10May-99
n100-XX	Njala4	Upgrade to 1000MVA firm	Expan.Netw	2018	S1-NJALA	SS10	R 9,928,000.00	10May-99
n103-70	PL Man3Half	Additional 150MVA - 4km	Expan.Sub	2018	S1-NJALA	SS13	R 3,800,000.00	10May-99
n103-70	PL Nja-Half	Additional 300MVA - 24km	Expan.Sub	2018	S1-NJALA	SS13	R 28,800,000.00	10May-99
n105-PL	PL HighScan	Upgrade - 300MVA - 9km	Expan.Netw	2018	S1-NJALA	SS10	R 6,000,000.00	10May-99
n209-PL	PL KwaZab	Upgrade 300MVA - 2km	Expan.Netw	2018	S2-KWAGGA	SS20	R 2,700,000.00	10May-99
n300-XX	Buffel2	Upgrade 1000MVA firm	Expan.Netw	2018	S3-BUFFEL	SS30	R 130,090,000.00	10May-99
n305-88	BonAccSwitch	Upgrade 1000MVA firm	Expan.Netw	2018	S3-BUFFEL	SS30	R 25,000,000.00	10May-99
n305-PL	PL Buf-Bonacc	Additional 300 MVA - 12km	Expan.Netw	2018	S3-BUFFEL	SS30	R 14,700,000.00	10May-99
n307-36	PL Buf-RossSwitch	Additional 150MVA - 7km	Expan.Netw	2018	S3-BUFFEL	SS30	R 14,200,000.00	10May-99
n307-36	Roslyn Switch	10 bays	Expan.Netw	2018	S3-BUFFEL	SS37	R 14,694,500.00	10May-99
n400-XX	Rietvel2	Upgrade 250MVA firm	Expan.Netw	2018	S4-RIETVEL	SS40	R 20,000,000.00	10May-99
n400-XX	Rietvel3	Upgrade 500MVA firm	Expan.Netw	2018	S4-RIETVEL	SS40	R 20,000,000.00	10May-99
n500-XX	Kudu1	Kudu 250MVA firm	Expan.Sub	2018	S5-KUDU	SS50	R 42,889,500.00	10May-99
n500-XX	Kudu2	Kudu upgrade 500MVA firm	Expan.Sub	2013	S5-KUDU	SS50	R 10,428,000.00	03May-99
n500-XX	Kudu2	Kudu 500MVA firm	Expan.Netw	2014	S5-KUDU	SS50	R 23,531,500.00	10May-99
n501-55	PL Kud-Kosmos	Upgrade 300MVA Kudu-Kosmos	Expan.Netw	2018	S5-KUDU	SS54	R 9,100,000.00	03May-99
n504-XX	Folka Diara	Folka Diara switch station	Expan.Sub	2010	S5-KUDU	SS54	R 14,694,500.00	03May-99
n506-XX	De Hoewes Switch	Upgrade 1000MVA	Expan.Netw	2010	S5-ELAND	SS56	R 8,703,600.00	03May-99
n506-XX	Wildebeest	Wildebeest 250MVA	Expan.Netw	2013	S5-ELAND	SS50	R 67,125,500.00	07May-99
n601-PL	PL ElandLynn	Upgrade 300MVA ElandLynn	Expan.Netw	2013	S5-ELAND	SS60	R 8,150,000.00	03May-99
n611-PL	PL Crieland	Upgrade 300 MVA CrielandLynn	Expan.Netw	2009	S5-ELAND	SS60	R 8,700,000.00	03May-99

Project & Configuration Setup : GPMC

Project: n506-XX De Hoewes Switch Yard

Name: De Hoewes Switch Yard

Description: Feasibility options

System: S5-KUDU SubSystem: SS56

Year Impl: 2000

Project Additional Cost: R 0.00

Project Total Cost: R 8,703,600.00

Major Projects:

- Pretoria Metro Primary Network
- Nelspruit Town Council
- TED Rural
- Eskom Central Gauteng
- Eskom Eastern Gauteng
- Lekoa Vaal
- Eskom Sandton
- Eskom Fourways
- Krugersdorp
- Eskom West Rand

frmFinancialParameters : Form

FINANCIAL ANALYSIS VARIABLES

Find on: Systems | S3-BUFFEL | 6

	Short Term	Long Term	Inflation
Escalation rate:	12 %	12 %	5
Interest rate on capital (Discount rate):	14 %	14 %	5
Percentage losses - Primary:	2 %	2 %	10
Percentage losses - Secondary:	5 %	6 %	10
Percentage operating costs (excl. electif) - Primary:	5.258 %	5.3 %	10
Percentage operating costs (excl. electif) - Secondary:	14.5 %	15 %	10
Operating costs for electrification per connection:	R 20	R 10	5
Average power factor:	0.96	0.95	10
System load factor:	0.78	0.68	10
System diversity factor:	1	1	10
Purchase rate [c/kWh] - Primary:	13	13	10
Selling rate - Primary / Purchase rate - Secondary [c/kWh]:	27.87	27.87	10
Selling rate [c/kWh] - Secondary:	26.828	27.2357	10
Percentage non-payment:	7.15 %	15 %	10
Percentage turnover to cross subsidisation:	20 %	10 %	10
Percentage secondary capital expenditure:	20 %	20 %	10

System Layout : GPMC

Layout: S5-KUDU - SS50-SS55

- S2-KWAGGA - SS20-SS213
- SS23 - Tareel A (ABCDEFG)
- SS26 - Pla Industrial A (ABCDEFG)
- BUITE3A
- BUITEV1
- PRW4
- SS21 - Gardsbuike Ateridgeville A (ABCDEFG)
- SS22 - Gomsand, Orchards A (ABCDEFG)
- SS24 - Pioness Park A (ABCDEFG)

System Name: S5-KUDU

System Description: SS50-SS55

frmFinancialStudies : Form

Financial Studies : GPMC

Study: Financial Parameters

Find Study: 19 Add Study

Njala 19 Delete Study

Study Systems: S1-NJALA

Study SubSystems: S510 S511 S512 S513 S514 S515 S516 S520 S521

IRR: 16.7%

PV (Excl): 0

PV (Incl): 823245

Generate 20 year capital & load forecast graph

Generate Financial Tables

20 year load graph

20 year cashflow graph

frmCapitalMenu : Form

Capital Expenditure & Refurbishment: GPMC

Geographical Boundaries Layout

- Setup Systems and SubSystems
- Alternative System / SubSystem Setup
- LoadZone Assignment

Project Layout

- Setup Items
- Setup Technology Types
- Setup Blocks
- Setup Equipment Types
- Setup Projects & Configurations
- Capital Reports