

Raising General Awareness to Support Energy Efficiency Projects

Eskom
South Africa
Dhevan Pillay
29th June 2009

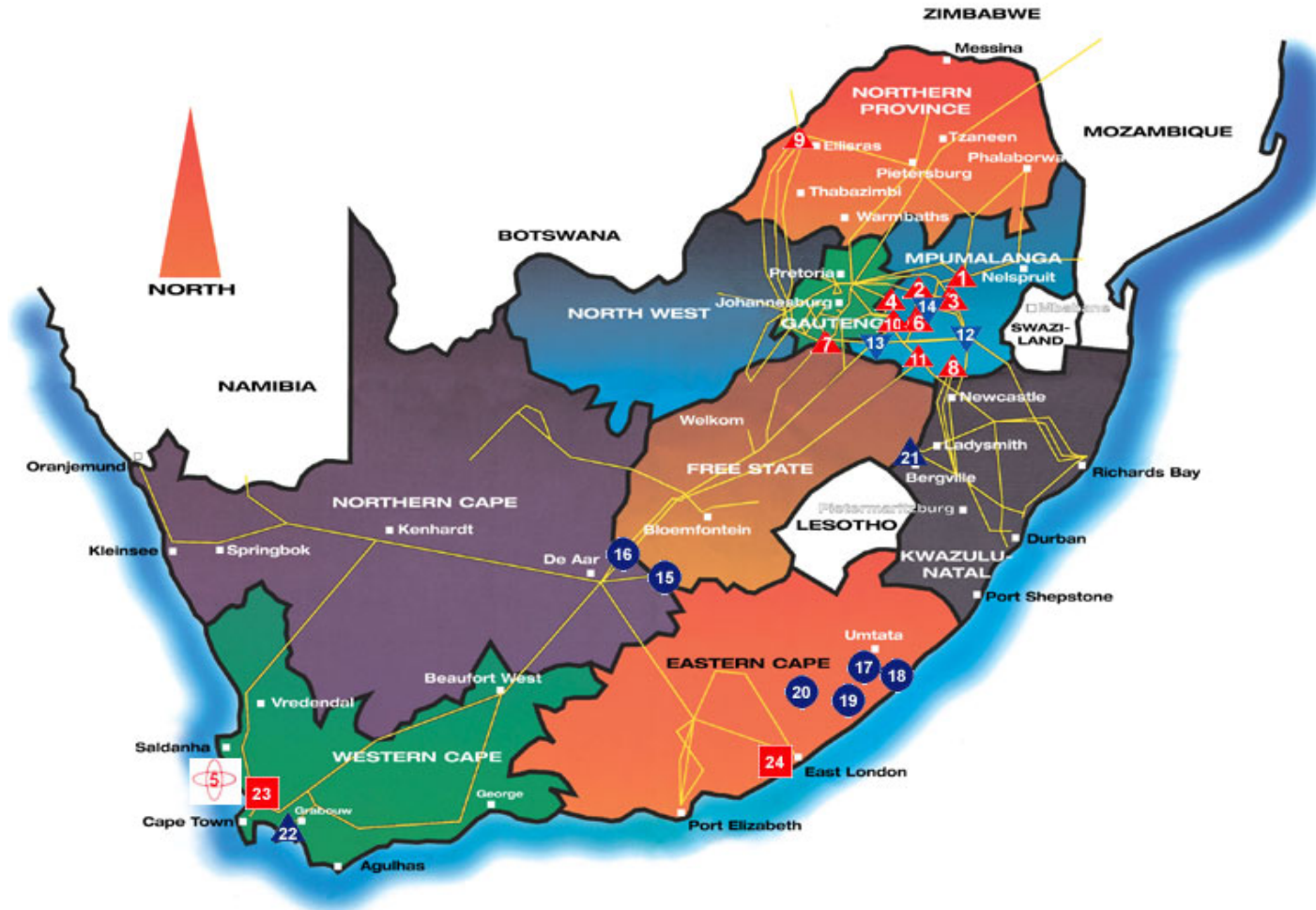




Contents

1. Current situation and Challenges
2. Energy Solution Selling
3. Self Funding Model
4. Benefits to the Customer
5. Energy Management Process
6. Internal Energy Efficiency Initiatives
7. External Energy Efficiency Initiatives
8. Conclusion

Eskom Power Stations



General Features

At 31 March 2005:

- Nominal capacity – 42 011 MW
- Power lines (all voltages) – 347 204 km
- Coal burnt – 136,4 Mt
- Revenue (Company) – R41 387m
- Total sales – 256 959 GWh
- Sales to countries in southern Africa (Transmission and Distribution) – 16 008 GWh
- Peak demand on integrated system – 34 195 MW
- Total assets (Company) – R104 994 million
- Employees – 29 845
- Customers – 3 603 943

Plant Mix

TYPE	NUMBER	NET MAX CAPACITY
Coal fired	13 stations	32 066 MW
Gas turbine	2 stations	342 MW
Hydroelectric	6 stations	600 MW
Pumped storage	2 stations	1 400 MW
Nuclear	1 station	1 800 MW
TOTAL	24 STATIONS	36 208 MW

International Comparisons

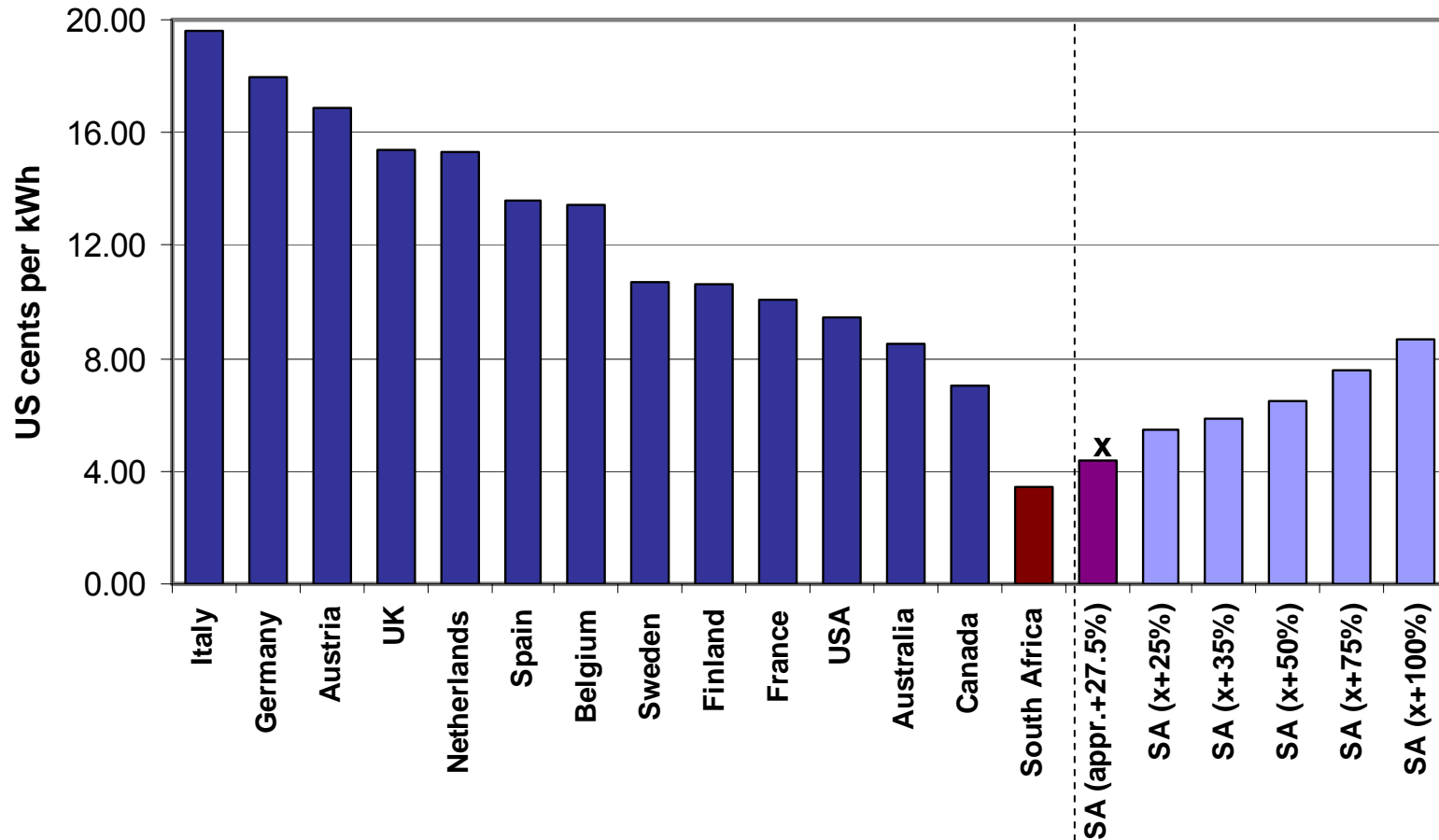
<i>Company</i>	<i>Country</i>	<i>Sales TWh</i>	<i>Rating by sales</i>
RAO-UES	Russia	636	1
EDF	France	473	2
E.On.	Germany	404	3
KEPCO	South Korea	294	4
TEPCO	Japan	281	5
RWE Energie AG	Germany	230	6
Eskom	South Africa	206	7
Vattenfall	Sweden	186	8
Elektrobras	Brazil	178	9
Hydro Quebec	Canada	169	10
Taiwan Power (TaiPower)	Taiwan	159	11
Enel	Italy	156	12
TVA	USA	155	13
Kansai Electric Power Co.	Japan	142	14
Electrabel	Belgium	137	15
Endesa	Spain	134	16
Chubu	Japan	123	17
AEP	USA	118	18
AES	USA	108	19
FPL	USA	103	20

International Comparisons

<i>Company</i>	<i>Country</i>	<i>Generation capacity MW</i>	<i>Rating by capacity</i>
RAO-UES	Russia	156 600	1
EDF	France	122 600	2
Tepco Electric Power Co	Japan	62 660	3
E.On	Germany	54 000	4
KEPCO	Korea	50 432	5
Enel	Italy	47 000	6
AES	USA	46 000	7
RWE Energie AG	Germany	45 000	8
Endea	Spain	43 000	9
Eletrobas	Brazil	40 854	10
Eskom	South Africa	39 810	11
Southern	USA	39 000	12
Duke	USA	38 748	13
Exelon	USA	38 000	14
AEP	USA	36 000	15
Kansai Electric	Japan	35 434	16
Hydro Quebec	Canada	34 000	17
Taiwan Power (TaiPower)	Taiwan	33 290	18
TVA	USA	33 189	19
Vattenfall	Sweden	33 000	20

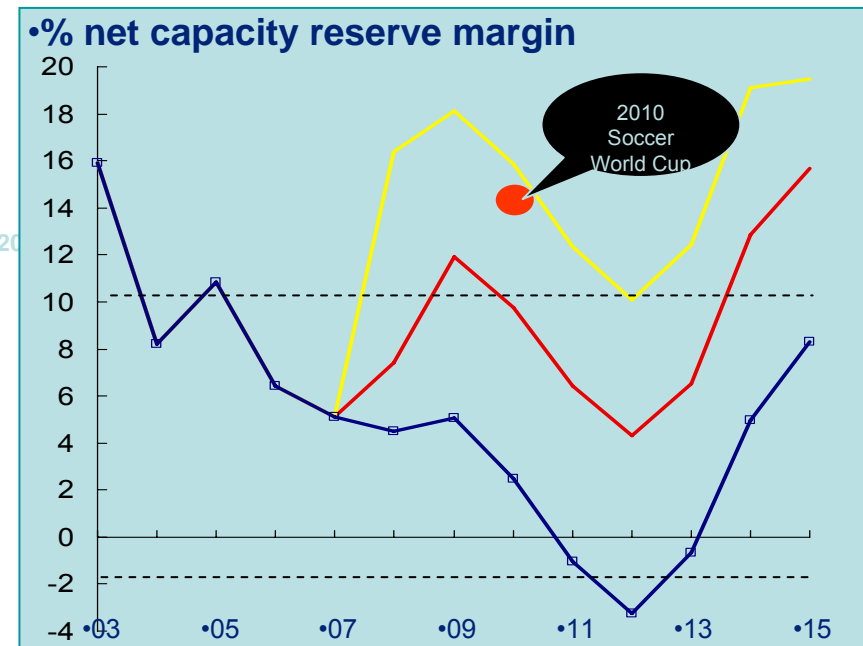
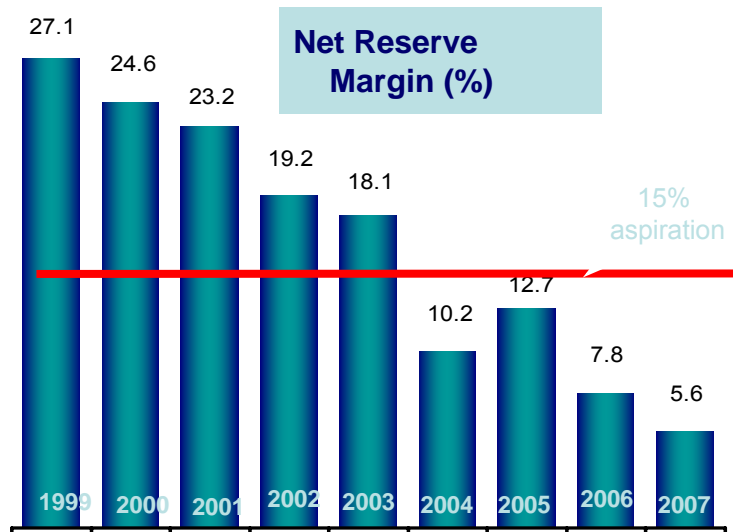
International Price Comparison

2008 Electricity Cost Comparison

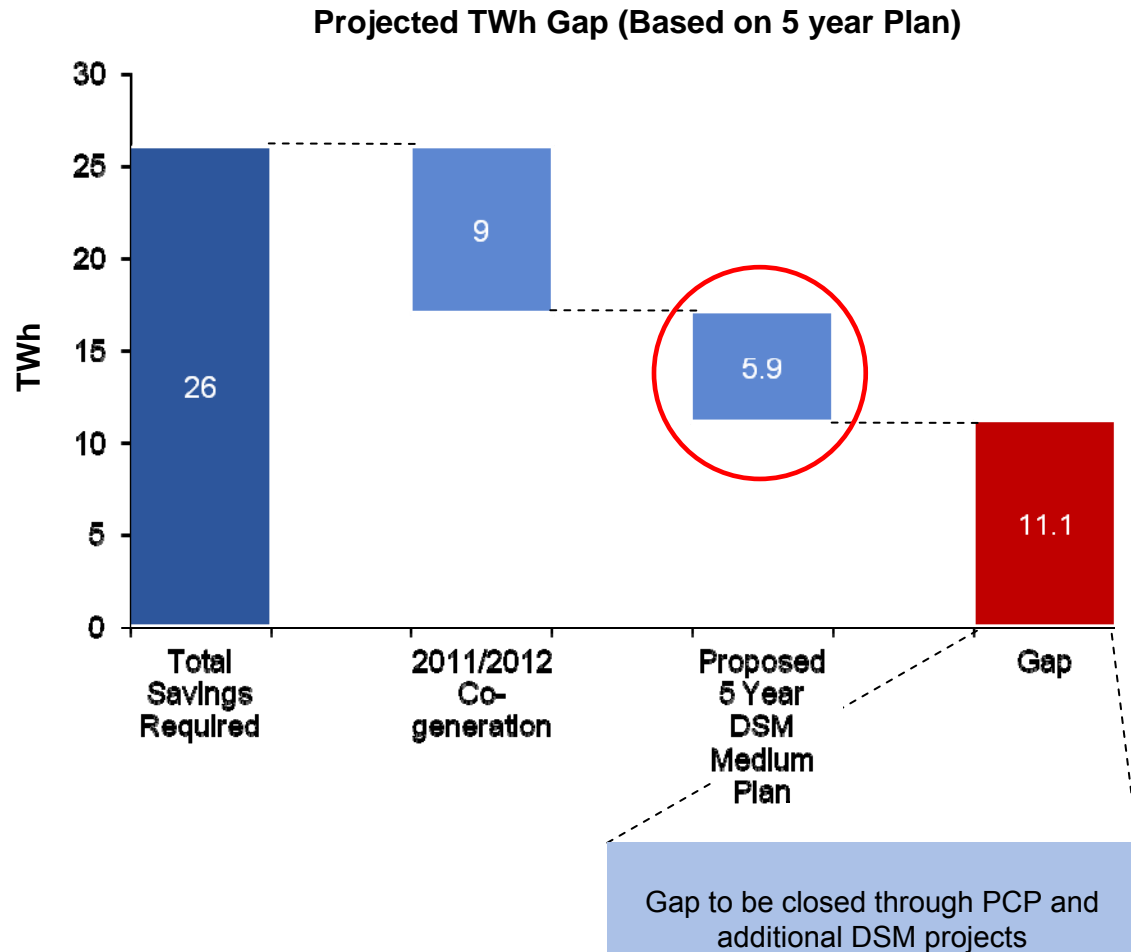


Source: NUS Consulting Group. "2007-2008 International Electricity Report & Cost Survey April 2008."
[Survey is based on prices as of 1 April 2008 for the supply of 1,000kW for an organization with a monthly usage of 450,000kWh (at R7.99 \equiv 1USD)].

Current Situation



Eskom Supply Gap



Key Considerations

- 26TWh to be removed by 2012.
- Funding uncertainty has already caused app. 6TWh opportunity to be lost.
- ESCO's are closing down and changing activities.
- Municipal projects already committed cannot proceed (Integrated Munic Plan).

Assumptions:

- Co-Gen aspiration 1500MW at 70% LF = 9TWh required by 2012
- DSM assumptions to achieve 5.9 TWh by 2012/13
- The 11.1TWh gap can be filled by "hard wired savings" from DSM, however funding for this will need to be secured.



Challenges

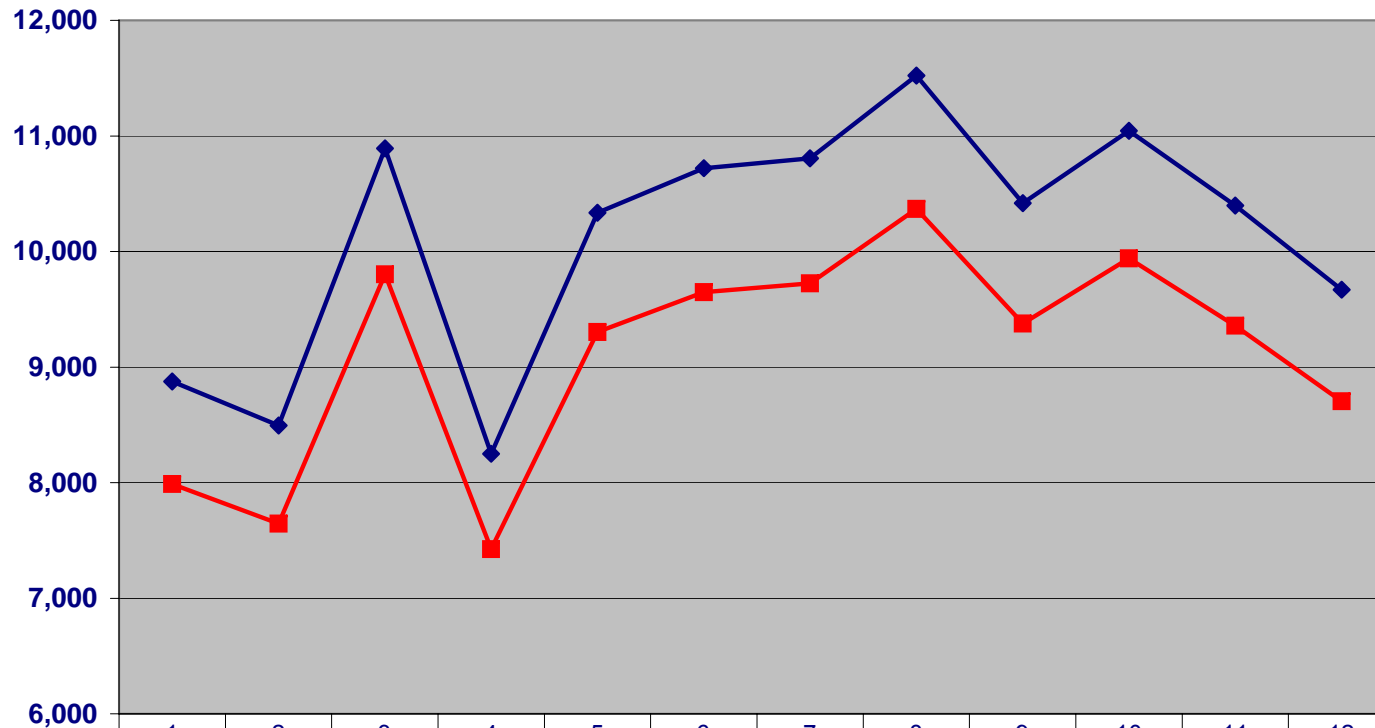
- Global financial crisis
- Relatively cheap electricity price
- Limited DSM funding
- Lack of resources
- PCP/ECS implementation
- Customer barriers
 - Engineers
 - Egos intact
 - Not in KPA
 - MD / FD / Board
 - Opportunity not brought to their attention
 - Capital constraints
 - Inertia – always been done this way

Energy Solution Selling





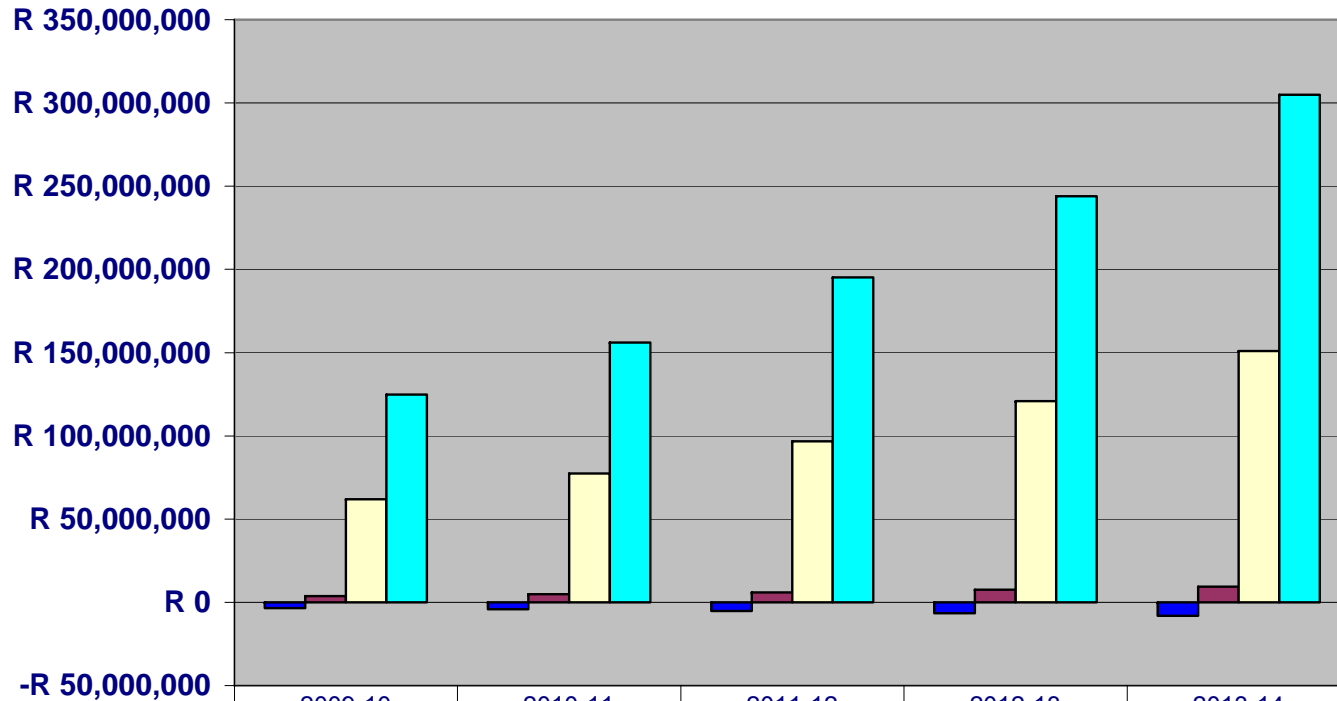
Baseline and Allocation Profiles



	1	2	3	4	5	6	7	8	9	10	11	12
◆ Baseline (MWh)	8,875	8,495	10,893	8,250	10,336	10,721	10,806	11,521	10,418	11,045	10,397	9,670
■ Allocation (MWh)	7,987	7,646	9,804	7,425	9,303	9,649	9,725	10,369	9,376	9,940	9,357	8,703

Totals
121,427
109,284

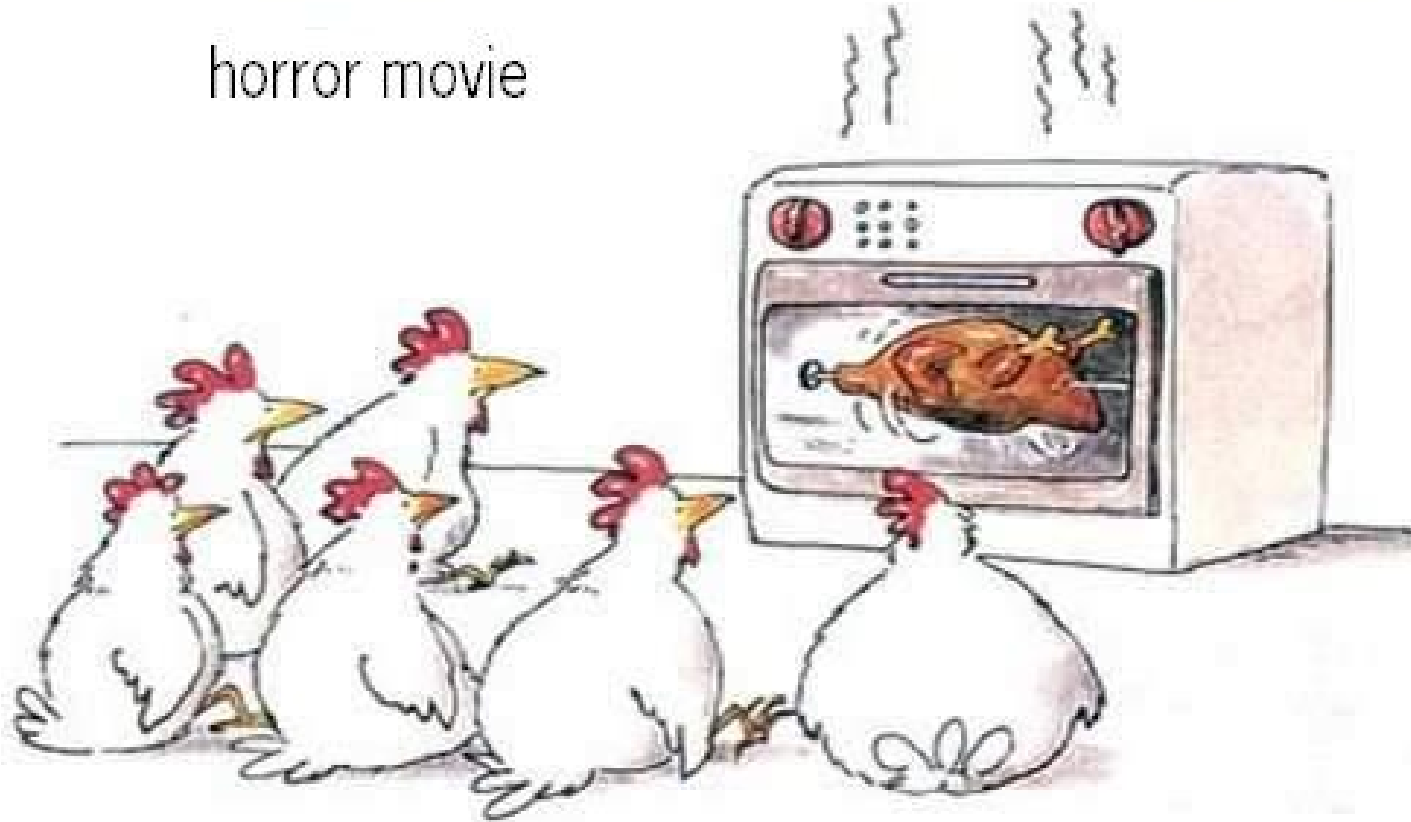
Self-Funding Analysis



	2009-10	2010-11	2011-12	2012-13	2013-14	Totals
■ 10% Savings	-R 3,370,125	-R 4,212,656	-R 5,265,820	-R 6,582,275	-R 8,227,844	-R 27,658,719
■ Consumption 1% above allocation	R 3,824,940	R 4,781,175	R 5,976,469	R 7,470,586	R 9,338,233	R 31,391,403
■ Consumption 10% above allocation	R 61,879,768	R 77,349,710	R 96,687,137	R 120,858,921	R 151,073,651	R 507,849,187
■ Consumption 15% above allocation	R 124,868,575	R 156,085,719	R 195,107,149	R 243,883,936	R 304,854,921	R1,024,800,301

It is no longer a movie, it is a horrific reality!

horror movie

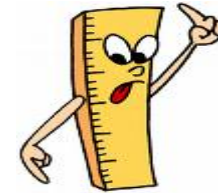


Benefits

1. Cost Reduction



2. Mitigate risk of punitive measures of ECS



3. Added benefit of carbon credits/trading



4. Environment





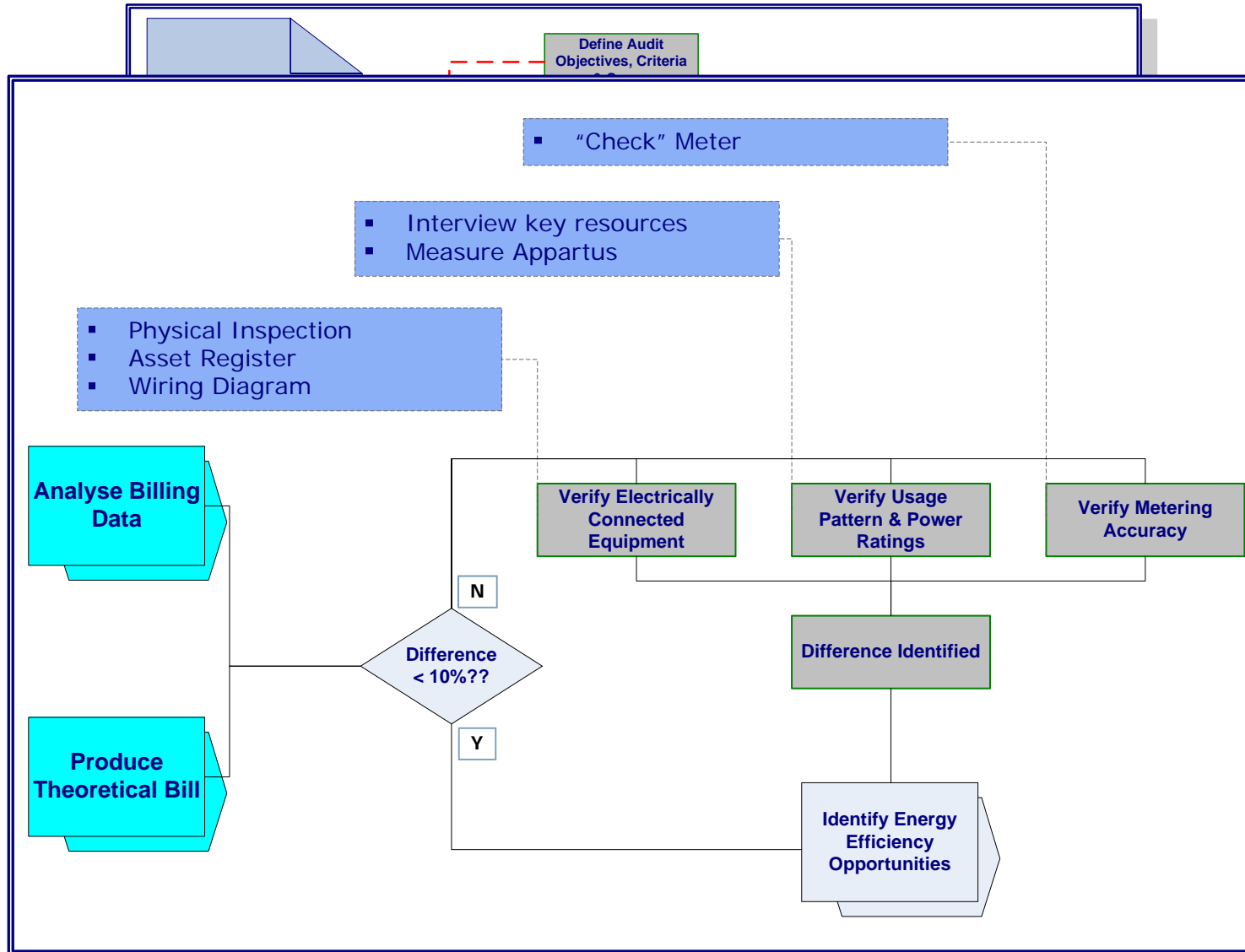
It is a “No Brainer”



"If the things we face are greater and more important than the things we refuse to face, then at least we have begun the re-evaluation of our world. At least we have begun to learn to see and live again.

But if we refuse to face any of our awkward and deepest truths, then sooner or later, we are going to have to become deaf and blind. And then, eventually, we are going to have to silence our dreams, and the dreams of others. In other words, we die. We die in life." (Ben Okri, 1997)

Energy Management – Process Flow



Internal Energy Efficiency (EE)

- **Creating Energy Efficiency Ambassadors Roadshow**
 - Employees at HO & Regions
 - Includes “Save it” Campaign sponsored by Government
- **Internal Energy Efficiency Project**
 - Buildings & Substations
 - Line losses & Power factor project
- **Embracing Energy Efficiency (EEE) Programme**
 - As from 1 July an embargo will be placed on int. & ext. facilities
- **Energy Efficiency Inspections**
 - carried out together with safety compliance inspections.
 - EE should be standing agenda item on any meeting to observe if meeting conducted in EE environment.
- **“E” pages**
 - Identifying a sector champion, sector specialist, technology specialist, list of reputable ESCO's & suppliers w.r.t EE processes / technologies
 - KC database

External Energy Efficiency

- **Creating Energy Efficiency Ambassador Roadshow**
 - Programme that fosters EE through education, awareness, behavioural change and technology at different levels of the KICs' organisations
 - Awareness of the short to long term energy plan & state of the system
- **EE Workshop to be held in July 2009**
 - Targeting KICs
 - Case studies allows for collaborative sharing of information
- **Roll out programmes eg: SWH: can count to KIC EE savings**
- **Establishment of a National EE Dashboard**
 - A visual display of achievements made by various stakeholders with regard to EE initiatives
- **Case studies**
 - Pilots across various sectors

Voluntary load management



Sense makes Cents





THANK
YOU

