Draft IRP 2010: Comments
Exxaro Resources (Pty) Ltd

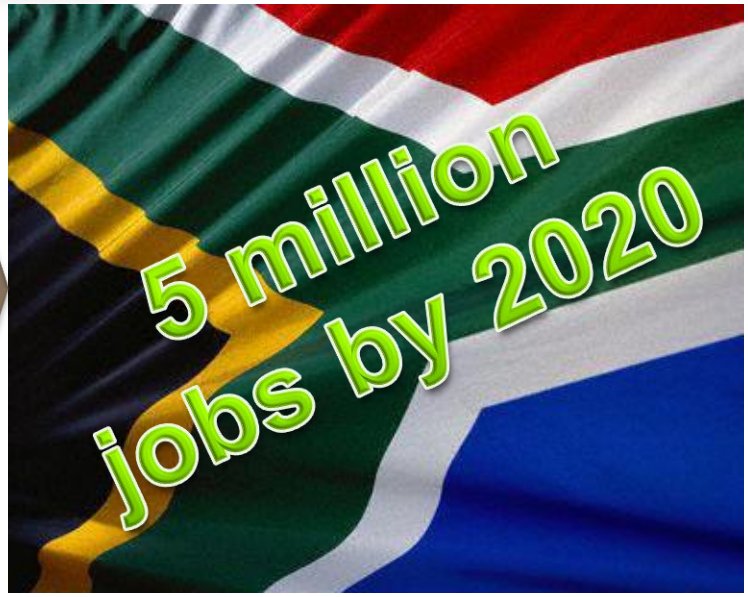
2 December 2010

South African context

Government Objectives for Economic Growth

Six Key Sectors and Activities:

1. Infrastructure expansion
2. Agriculture and agro-processing
3. Mining and mineral beneficiation
4. Green economy and associated services
5. Manufacturing sectors identified in IPAP
6. Tourism and selected services sectors



Adequate electricity provision will be key to the achievement of these objectives

The changing South African electricity environment

From	To
Energy Oversupply	Energy Constrained

- There is significant unserved electricity demand in the economy that cannot be supplied due to system supply shortages
- Voluntary supply interruptions to major industrial users are being invoked
- Major expansion projects are being shelved because of uncertainty regarding security of electricity supply

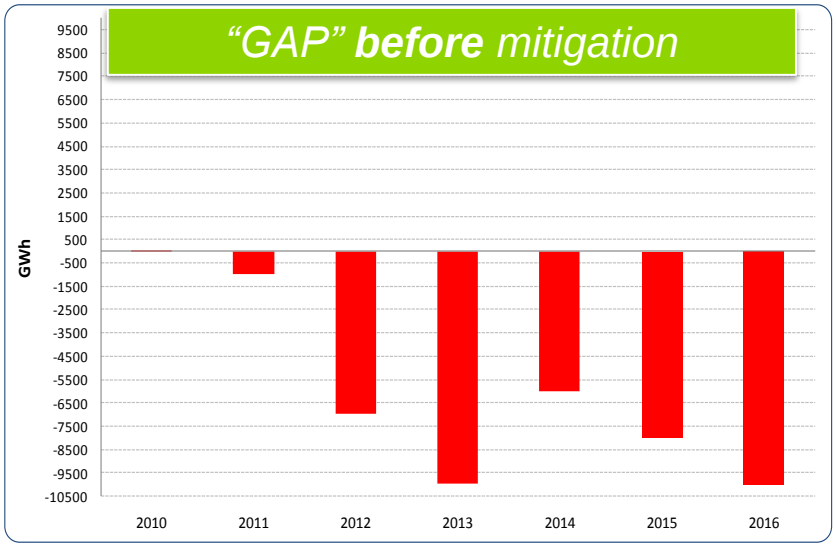
The Regulatory environment is not adapting fast enough:

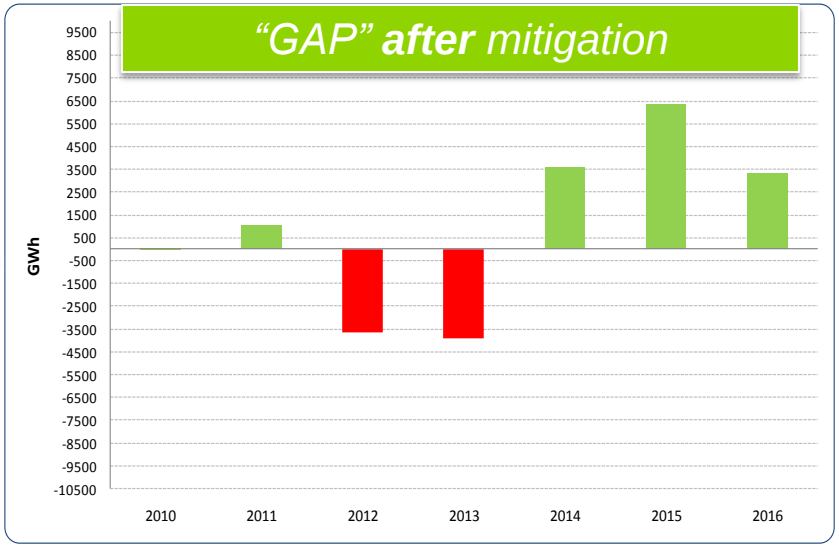
- New Generation Regulations not yet amended
- Delay preventing REFIT implementation
- Formation of ISMO is a critical required policy for IPPs

Significant challenges to be addressed through the Medium Term Risk Mitigation plan and IRP2010

At the national level, response in the form of the Medium Term Risk Mitigation Plan (MTRMP) and the IRP2010

Medium Term Risk Mitigation Plan





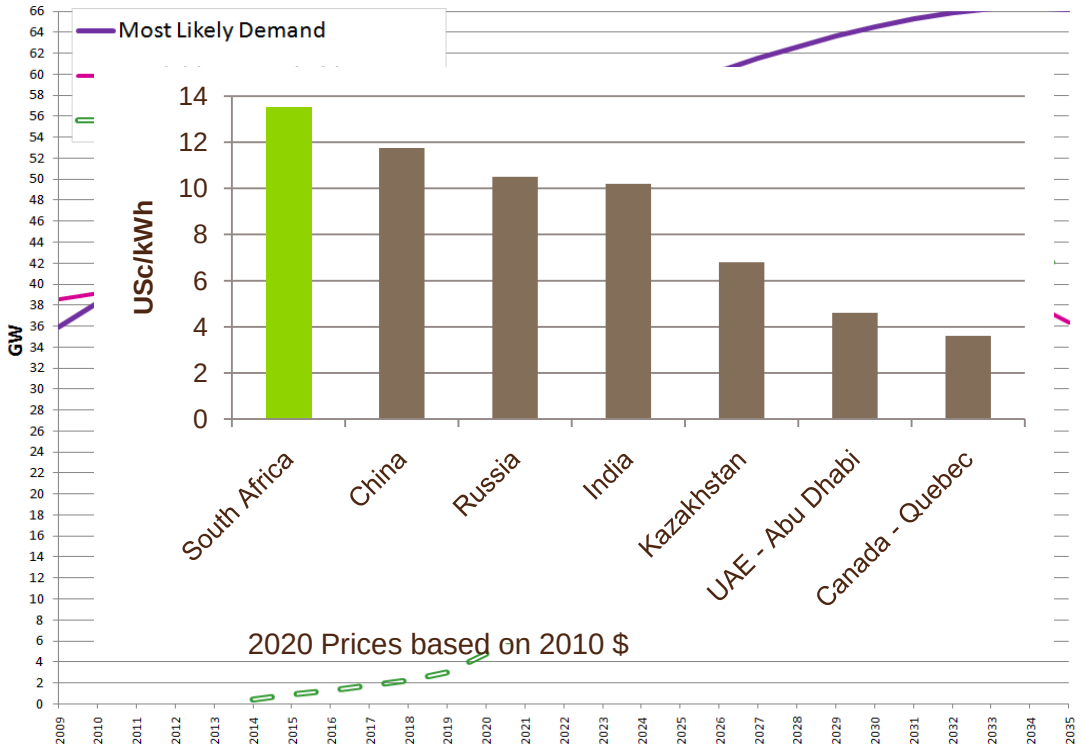
Draft IRP2010: Revised Balanced Scenario

Capacity 2009 MW		
1800	4%	Nuclear
34435	78%	Coal
2400	5%	Gas/liquid turbine
2100	5%	Hydro
1400	3%	Pumped storage
1760	4%	Municipal/private
43895	100%	**Capacity 2009**

Capacity 2030 MW		
11400	13%	Nuclear
38666	45%	Coal
11066	13%	OCGT CCGT
5449	6%	Hydro
2732	3%	Pumped storage
14160	17%	Renewables / municipal
1643	2%	Cogen / own build
125	0%	Landfill / small hydro
85241	100%	**Capacity 2030**

Risks and concerns identified

- Limited flexibility to accommodate and encourage accelerated economic growth, investor confidence and job creation
- Impacts on national competitiveness based on projected electricity price levels
- Pressure on Eskom to operate ageing fleet of coal fired power stations at a high EAF, increasing the risk of unplanned outages
- Risk of further possible slippage in Medupi as mentioned in MTRMP



- Risks of continuing shortfalls in supply beyond the horizon of the MTRMP (2017 onwards) if all mitigation measures and new build capacity do not materialise as scheduled
- Capability to plan, source, fund and execute new nuclear build programme to start contributing from 2023

Proposed alternative

Our Proposal:
To allow new build of FBC coal fired power by IPPs to come in earlier than the originally planned date to mitigate risks mentioned earlier

This enables:
1. **Less reliance on expensive gas/diesel**
2. **Reduction in EAF from PF Coal**
3. **Option to retire oldest/most expensive PF Coal**
4. **De-risking of delays in Eskom build**

2011	35494	0	0	0	0	1800	0	1960	0	1400	0	2100	493	2400	0	0	0	45 647
2012	35797	0	0	0	0	1800	0	2260	0	1400	0	2100	493	2400	0	100	0	46 350
2013	35898	0	0	722	0	1800	0	2560	0	1733	0	2100	617	3420	0	125	0	48 975
2014	35898	0	0	1444	0	1800	0	2760	100	2732	0	2100	1043	3420	0	125	0	51 422
2015	35718	0	0	2888	0	1800	0	3160	200	2732	0	2100	1643	3420	0	125	0	53 786
2016	35628	0	0	3610	0	1800	0	3960	300	2732	0	2100	1643	3420	0	125	0	55 318
2017	35628	0	0	5778	0	1800	0	4760	400	2732	0	2100	1643	3420	0	125	0	58 386
2018	35628	0	0	6501	0	1800	0	5560	500	2732	0	2100	1643	3420	0	125	0	60 009
2019	35628	0	0	7947	0	1800	0	6360	600	2732	0	2100	1643	3420	474	125	0	62 829
2020	35628	0	0	8670	0	1800	800	6360	600	2732	360	2100	1643	3420	1185	125	0	65 423
2021	35553	0	0	8670	0	1800	1600	6360	600	2732	1110	2100	1643	3420	1896	125	0	67 609
2022	33683	0	0	8670	0	1800	2400	6360	600	2732	2220	2100	1643	4225	1896	125	0	68 454
2023	31403	0	0	8670	0	3400	3200	6360	600	2732	3349	2100	1643	5030	1896	125	0	70 508
2024	30404	0	0	8670	0	5000	4000	6360	600	2732	3349	2100	1643	5605	1896	125	0	72 574
2025	28974	0	0	8670	0	6600	5											74 859
2026	28974	0	0	8670	0	8200	6											77 059
2027	28974	250	500	8670	0	8200	7											79 814
2028	26124	1000	1000	8670	750	9800	7											81 369
2029	24996	1750	1000	8670	750	11400	7											83 396
2030	24996	1750	1000	8670	2250	11400	7											85 241

Revised Balanced Scenario allows for build of 4000MW of coal fired power starting in 2027 in addition to Medupi and Kusile

Benefits of the proposed alternative

- Increases **security of electricity supply** for South Africa
- Increases **flexibility** of the IRP if something does not go according to plan:
  - Medupi and/or Kusile later than expected as considered in Scenario 2 of mitigation options in the MTRMP
  - Limited success of measures proposed in MTRMP
  - Nuclear later than expected
- Enables **less reliance on most expensive** generation capacity (80-90c/ kWh)
- Encourages **economic growth and job creation** by making power available
- **Does not impact on carbon emission level** from 2029 as proposed in revised balanced scenario of the IRP2010

Advantages of IPPs:

- Encourages private investment and job creation
- Relieves funding burden on Eskom
- Relieves burden on government to provide financial guarantees
- Competition drives prices down in the long run

The market has identified the need for early IPP base load

- Exxaro has signed non-binding term sheets for the provision of base load electricity to a number of large industrial users:

Potential Off-taker	Progress on Signing of PPA Term Sheet	MW interest
Diversified resources 1	Signed	350MW
Diversified resources 2	Signed	300MW
Diversified resources 3	Signed	75MW
Metals 1	Signed	80MW
Metals 2	Signed	200MW
Metals 3	Signed	40MW
	Total signed	**1,045MW**

The economic impacts of the project are:

- Approximately R10 billion private sector investment to develop a new coal mine
- More than R 20 billion private sector investments to build the power station
- Downstream investment by off-takers in the order of R 15 billion
- Ripple effects of service and supply industry stimulation
- Job creation and skills development associated with these investments

Alignment with key criteria for the IRP

Criteria	Revised Balanced Scenario	Proposed Alternative
Least cost to consumer	✗	✓ **FBC is 10 – 15% cheaper than PF and 85 – 90% cheaper than OCGT (Table 13, EPRI report)**
Lowest greenhouse gas emissions		~
Lowest water consumption	~	✓ **Dry cooled FBC introduced earlier, replacing some delivery from wet-cooled PF**
Least risk or uncertainty	✗	✓ **Flexibility introduced by introducing FBC coal earlier**
Greatest localisation potential	~	✓ **Earlier investments into generation capacity, mining and downstream investments**
Greatest regional development	~	~

This will have a positive impact on the future power cost curve

In conclusion...

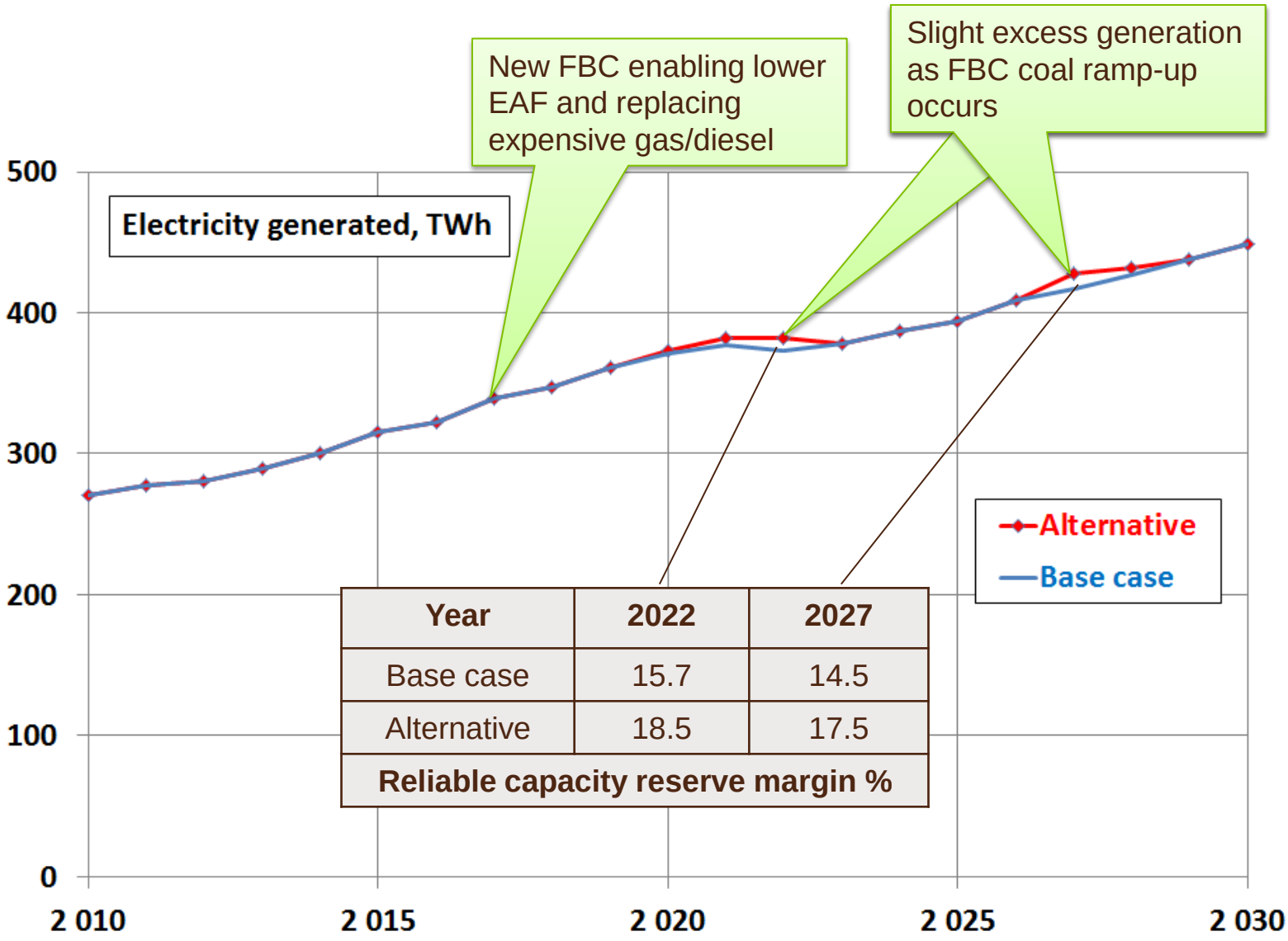
The establishment of FBC coal fired power by IPPs earlier than the originally planned date in the IRP2010 would:

- Reduce the current energy constraints
- Result in lower tariffs due to reduced reliance on expensive gas and diesel generators, thus improving national competitiveness
- Take the pressure off Eskom to operate an ageing fleet of coal fired power
- Enable lower EAF, thus decreasing the risk of unplanned outages
- Increase flexibility due to spare capacity
- Reduce risk if the mitigation measures and new build capacity of the IRP2010 do not materialise as scheduled
- Have no impact on carbon emission levels as at 2029
- Relieve the funding burden on Eskom and on government for financial guarantees
- Increase investor confidence
- Stimulate private investment into the economy

Ultimately resulting in the achievement of government's objectives for achieving economic growth.

Thank You

Electricity generation profile of alternative plan



Year	2022	2027
Base case	15.7	14.5
Alternative	18.5	17.5
Reliable capacity reserve margin %		

Carbon emission profile of alternative plan