

Confronting South Africa's Electricity Crisis in the context of a 'Balanced Just Energy Transition' (BJET) and the need for a reliable and resilient national electricity grid

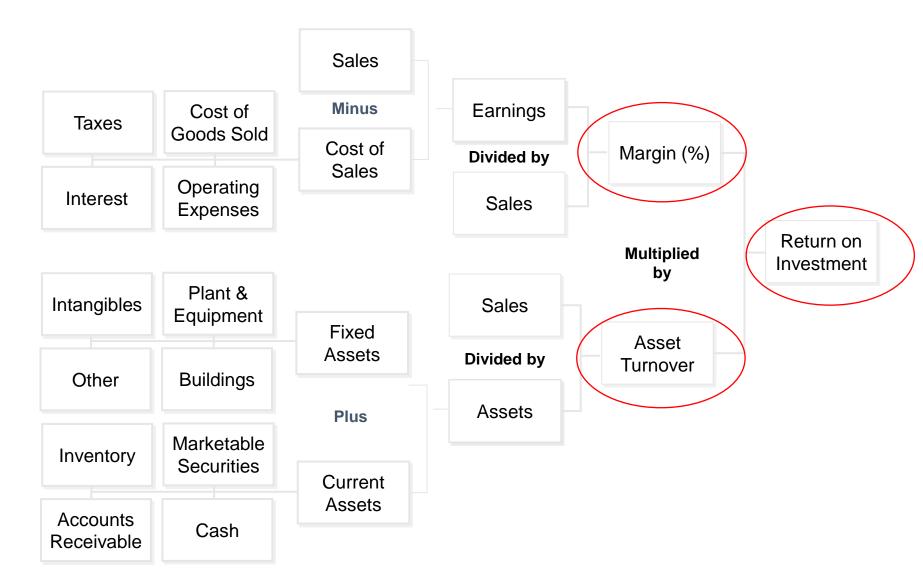
The 'dying'? Municipal electricity business - Quo Vadis?

Presented by At van der Merwe Energy Transaction Services

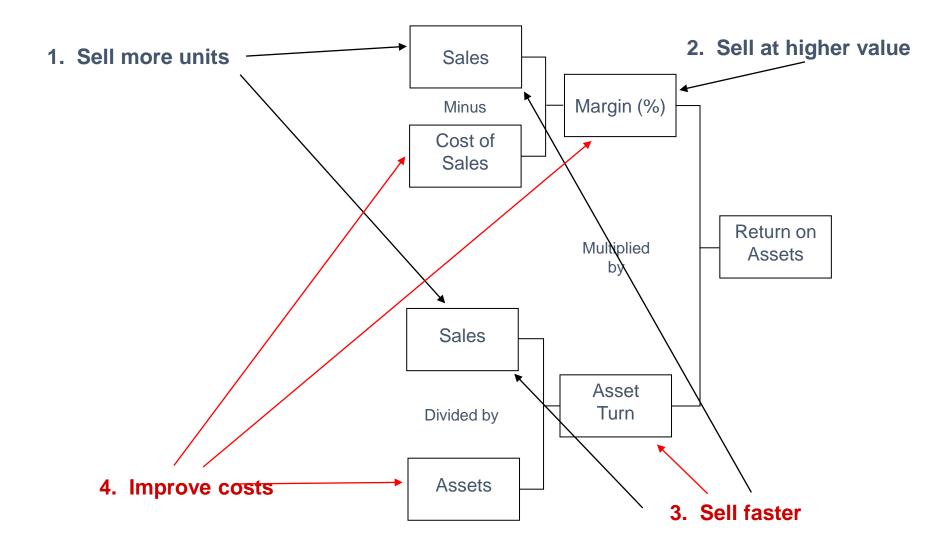


1. Analysis

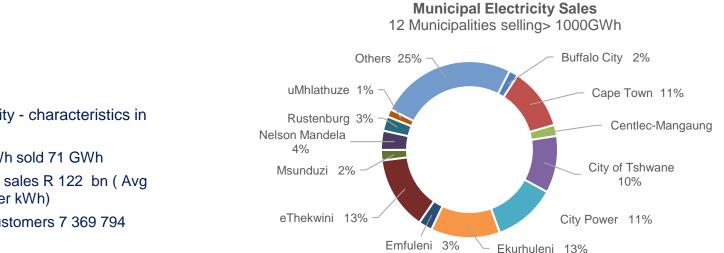
Utility Sustainability analysis



Utility Sustainability analysis

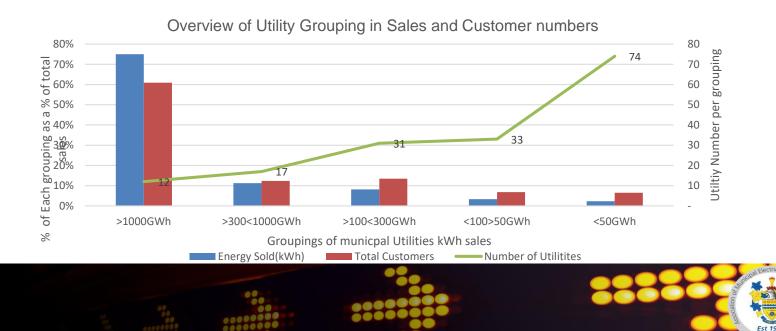


Analysis of 167 Municipal Licensees



Municipal electricity - characteristics in 2020/21:

- Total kWh sold 71 GWh •
- Value of sales R 122 bn (Avg ٠ R1.70 per kWh)
- Total Customers 7 369 794 •



Description of indices & benchmarks applied in the analysis

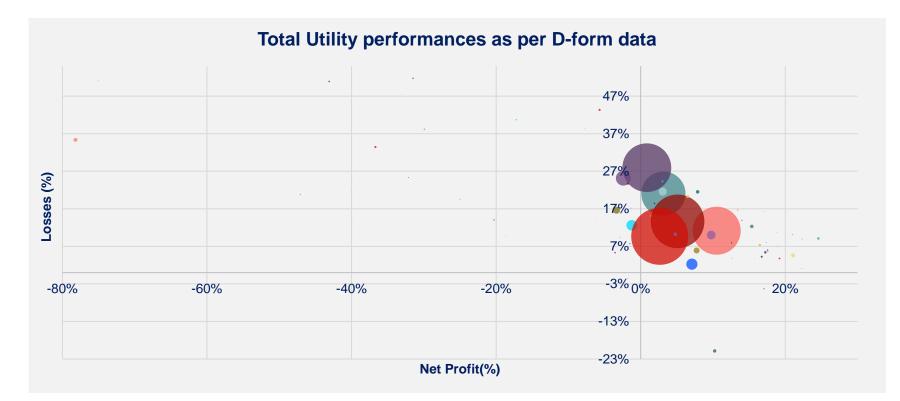
	Indices	Description				
			Financial Indicators (%)	Benchmark	Financial Benchmark Acceptable Range	
1	U U	Total revenue / Units sold.				
	(R/kWh)		Gross Profit Margin	58	58-62	
2	Billing Efficiency (%)	Units sold / Total units purchased.		15	10.00	
			Net Profit Margin	15	10-20	
3	Manpower efficiency	Number of customers / Number of employees.	Demonstrate Device Cost	74	50.70	
			Percentage Power Cost	74	58-78	
4	Operating efficiency	Operating cost / Units sold.				
	(R/kWh)		Technical Energy Losses	10	5-12	
5	Losses	(Total kWh Purchases- Total kWh Sales)/ Total				
		kWh Purchases.	Revenue Collection Rate	95	85-100	
6	Gross Profit (%)	(Revenue from sales- Bulk purchase expense)/				
L		Total Revenue from sales.	Repair & Maintenance			
7	Net Profit (%)	(Revenue from sales- Total expenditure)/ Total	(Minimum Of 6% Of	6	6	
		Revenue from sales.	Revenue)			
8	Bulk Purchase % of	Bulk Purchase cost/ Total Opex.				
	Total Opex (%)			VFRSA 2022/23		

Source: NERSA 2022/23



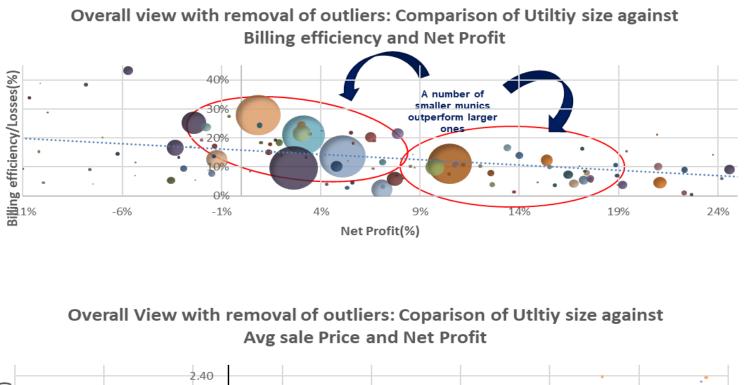


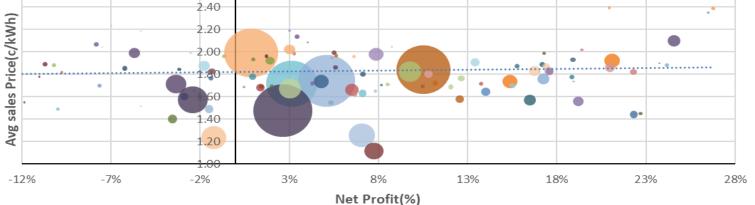
Analysis of all 167 Municipalities (D-form data)



- The range of municipalities, as demonstrated by sales volume and performance, is very broad.
- Thirteen municipalities gross sales are lower than their gross purchases, resulting in a negative gross purchase value
- Some sell more than what they purchase
- About half of the municipalities (87 or 52%) have a negative net profit, i.e. < 0% [range from 417% to 27%]
 8
- Three quarters of the municipalities (110 or 68%) have losses that exceeds the NERSA prescribed loss level of 10%
- Losses >10% R7bn (expressed as avg purchase cost)

Overall view with removal of outliers and negative yield



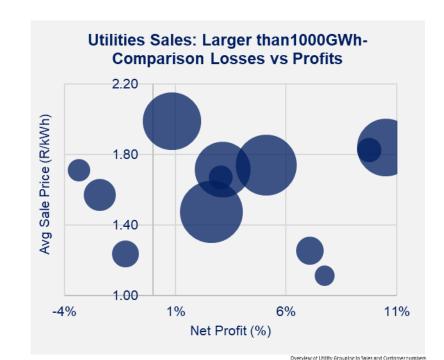


- Net Profit Performance - A statistically significant number of smaller municipalities outperform larger municipalities.
- The net profit performance of these smaller municipalities is not achieved by escalating the sales price – strong correlation to average sales price.

Comparison of Importance of utility size (economy of scale, better customer mix) in relation to Net Profit (Surplus) vs Avg Utility Sale Price and energy losses







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Groupings of municipal 2000 lies. Whitshee

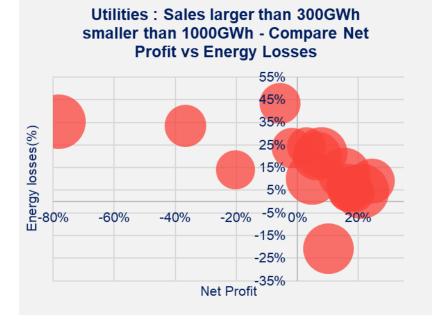
• Not all large utilities perform well - several have a low or negative return, even with a high average tariff.

• All large utilities with high losses show lower net profit levels than their peers.

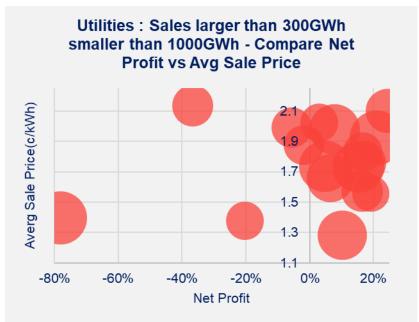
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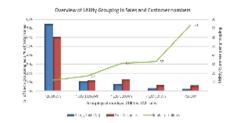
Utilities larger than 300GWh and Smaller than 1000 GWh

Net Profit vs Sales price and Losses

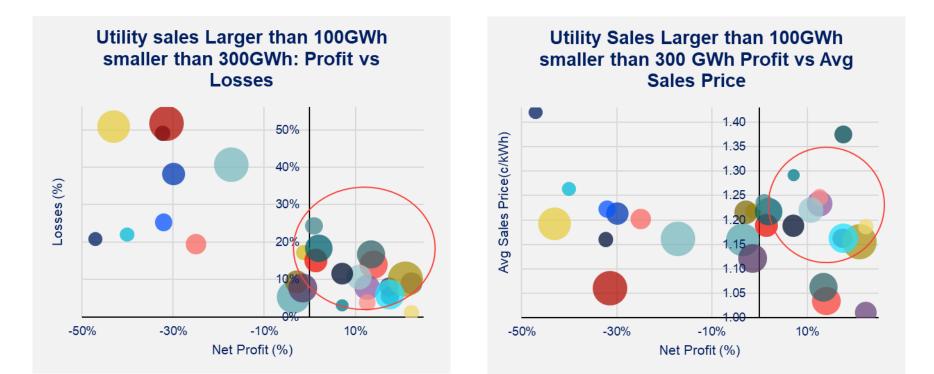


- > Number of Utilities still perform in the negative
- Clustering around 20% losses and 10% net profit.
- > Average sales price around R1.85 for the 10% net return.





Utilities larger than 100GWh and Smaller than 300GWh



- Net Profit Performance A statistically significant number of medium sized municipalities seems to outperform larger municipalities.
- It appears that this group has achieved good net profit performance, and low loss levels, while keeping tariffs on average at a lower level than that larger municipalities.
- For some it appears that tariffs levels are just too low.

Sustainability ranking & analysis: >20% Net Profit

No	Province	Losses %	Avg Purchase rate (c/kWh)	Avg selling rate (R/kWh	Net Profit	Operating efficiency (c/kWh)	%Bulk/Total
1	Northern Cape	21%	1.34	2.39	21%	0.19	90%
2	North West	21%	0.96	2.39	27%	0.53	70%
3	KwaZulu-Natal	13%	1.16	2.35	26%	0.39	77%
4	North West	9%	1.16	2.10	25%	0.30	81%
5	Western Cape	5%	1.15	1.92	21%	0.32	79%
6	KwaZulu-Natal	14%	1.10	1.90	24%	0.16	89%
7	Free State	6%	1.18	1.88	24%	0.17	88%
8	Western Cape	10%	1.16	1.86	21%	0.18	87%
9	Mpumalanga	1%	1.19	1.82	22%	0.22	85%
10	Limpopo	0%	0.97	1.45	23%	0.14	87%
11	Northern Cape	9%	1.01	1.44	22%	0.01	99%

Ranking of largest to	least profit categories
>20%	1
<20>=10%	2
<10%=>5%	3
>0%<5%	4
<0%	5

Performance indicators	Benchmark	Acceptable range
Electricity Price margin (%)	60	58-62
Bulk purchase cost / total expenditure (%)	75	58-78
Energy Losses (%)	10	5-12
Revenue collection rate (%)	95	95
Repairs & Maintenance (% of revenue)	6	6-15
Net Surplus Margin (%)	15	10-20

Table 21: Performance Indicators

- Comparing Losses, Avg Purchase and Selling rates, Operating efficiency & % Bulk of Total Cost.
- · High Profit is not always an indicator of sustainability:
 - Due to Tariff some 30% higher than industry benchmark and/or
 - No ops spend or large Ops spend
 - Losses (too) low
- Compared to NERSA benchmarks of Losses, Ops spend & tariffs – possible candidates for sustainability are marked green.

Ranking Summary: Sustainability results

Avg selli Operating Purchase %Bulk/T Province Losses % rate Net Profit efficiency rate (R/kWh (c/kWh) otal 🚽 Ic/LWh Northern Cape 1.34 21% 0.19 90% 1 2.39 2 North West 21% 0.96 2.39 27% 0.53 70% 3 KwaZulu-Natal 13% 2.35 26% 0.39 77% 1.16 81% North West 9% 1.16 2.10 25% 0.30 Western Cape 5% 1.15 1.92 21% 0.32 79% 14% 89% Kwa7ulu-Natal 1.10 1.90 24% 0.16 6% 88% Free State 1.18 1.88 24% 0.17 Western Cape 10% 1.16 1.86 21% 0.18 87% Mpumalanga 1.19 1.82 22% 0.22 85% 0.97 87% 1.45 23% 0.14 impopo 11 Northern Cape 99% 9% 1.01 1.44 22% 0.01 11 in Group: 6 Green-

Group 1: Net profit of >20%

Group 3: Net profit of <10%>5%

No	Province	Losses %	Avg Purchase rate (c/kWh	Avg selling rate (R/kWh	Net Profit	Operating efficiency (c/kWh) -	%Bulk/T otal	
1	Eastern Cape	22%	1.24	1.99	6%	0.31	84%	
2	Free State	5%	1.18	1.86	6%	0.52	70%	
3	KwaZulu-Natal	18%	1.26	1.97	6%	0.32	83%	
4	KwaZulu-Natal	20%	1.16	1.66	7%	0.10	94%	
5	Mpumalanga	9%	1.26	1.96	7%	0.44	76%	
6	Mpumalanga	19%	1.14	1.62	7%	0.10	93%	
7	North West	2%	1.08	1.26	7%	0.06	95%	
8	Western Cape	12%	1.19	1.63	7%	0.17	89%	
9	Western Cape	3%	1.29	1.80	7%	0.34	80%	
10	KwaZulu-Natal	6%	0.89	1.11	8%	0.08	92%	
11	Western Cape	7%	1.14	1.65	8%	0.29	81%	
12	Mpumalanga	22%	1.17	1.98	8%	0.33	82%	
13	KwaZulu-Natal	6%	1.34	1.70	8%	0.14	91%	
14	North West	10%	1.14	1.71	9%	0.29	81%	
15	Eastern Cape	14%	1.20	1.71	9%	0.17	89%	
16	Northern Cape	10%	1.36	2.04	9%	0.36	81%	
17	Free State	10%	1.10	1.83	10%	0.42	74%	
18	Mpumalanga	-21%	1.17	1.28	10%	0.19	84%	
19	Western Cape	8%	1.25	1.69	10%	0.17	89%	
	19 in Group 19 Green							

Group 2: Net profit of <20%>10%

	Province	Losses efficiency %	Avg Purchase rate	Avg selling rate (R/kWh	Net Profit	Operating efficiency (c/kWh)	%Bulk/T otal
1	Western Cape	11%	1.07	1.84	11%	0.44	73%
2	Western Cape	1176	1.22	1.80	11%	0.24	85%
3	Western Cape	11%	1.21	1.72	11%	0.17	89%
4	KwaZulu-Natal	10%	1.23	1.69	12%	0.11	92%
5	Limpopo	8%	1.23	1.58	13%	0.04	97%
6	Western Cape	4%	1.25	1.76	13%	0.25	84%
7	Eastern Cape	17%	1.06	1.91	13%	0.38	77%
8	Western Cape	1%	1.21	1.71	14%	0.25	83%
9	KwaZulu-Natal	14%	1.03	1.65	14%	0.21	85%
10	Northern Cape	5%	2.12	3.04	15%	0.36	86%
11	Gauteng	12%	1.17	1.73	15%	0.14	91%
12	Limpopo	10%	1.24	1.70	16%	0.05	96%
13	Western Cape	4%	1.31	1.87	16%	0.22	86%
14	KwaZulu-Natal	7%	1.02	1.57	16%	0.21	84%
15	Western Cape	4%	1.15	1.83	17%	0.32	79%
16	Western Cape	10%	1.15	1.82	17%	0.23	85%
17	Western Cape	-4%	1.22	1.53	17%	0.10	92%
18	Northern Cape	16%	1.22	1.89	17%	0.10	93%
19	Western Cape	5%	1.12	1.76	17%	0.28	81%
20	Eastern Cape	9%	1.28	1.99	17%	0.24	85%
21	Western Cape	8%	1.16	1.87	17%	0.28	82%
22	Western Cape	6%	1.16	1.83	18%	0.27	82%
23	KwaZulu-Natal	6%	1.38	1.82	18%	0.05	97%
24	KwaZulu-Natal	11%	1.21	1.78	19%	0.08	94%
25	Western Cape	7%	1.29	1.93	19%	0.18	88%
26	KwaZulu-Natal	4%	1.16	1.74	19%	0.20	86%
27	Western Cape	4%	1.12	1.56	19%	0.10	92%
28	Free State	15%	1.21	2.02	19%	0.20	88%
	2	8 in G	Group	o: 18 (Gree	า	

Group 4: Net profit of <5%>0%

No	Province	Losses efficiency %	Avg Purchase rate	Avg selling rate (R/kWh	Net Profit	Operating efficiency (c/kWh)	%Bulk/T otal	
1	Eastern Cape	9%	1.40	1.69	0%	0.15	91%	
2	Gauteng	28%	1.40	1.05	1%	0.13	75%	
3	Limpopo	24%	1.07	1.55	1%	0.13	93%	
4	Eastern Cape	18%	1.23	1.93	1%	0.40	79%	
5	Free State	15%	1.19	1.68	1%	0.26	84%	
6	Northern Cape	18%	1.22	1.69	1%	0.18	89%	
7	Northern Cape	19%	1.40	1.96	2%	0.20	90%	
8	Gauteng	18%	1.22	1.92	2%	0.39	79%	
9	KwaZulu-Natal	14%	1.22	1.69	2%	0.24	85%	
10	KwaZulu-Natal	10%	0.99	1.48	3%	0.34	76%	
11	KwaZulu-Natal	4%	1.30	2.19	3%	0.78	63%	
12	Free State	24%	1.20	2.02	3%	0.37	81%	
13	KwaZulu-Natal	22%	1.09	1.67	3%	0.23	86%	
14	Gauteng	21%	1.03	1.72	3%	0.35	79%	
15	Free State	13%	1.35	1.98	3%	0.36	81%	
16	North West	21%	1.54	2.14	3%	0.10	95%	
17	Eastern Cape	22%	1.21	2.09	4%	0.44	78%	
18	Western Cape	4%	1.21	1.72	4%	0.38	77%	
19	Limpopo	10%	1.11	1.74	5%	0.41	75%	
20	Gauteng	14%	1.16	1.74	5%	0.31	81%	
21	Eastern Cape	3%	1.17	1.55	5%	0.26	82%	
22	Northern Cape	12%	1.49	1.95	5%	0.15	92%	
	22 in Group: 14 Green							

Of 167 Utilities, 110 (66%) have a sustainability challenge

Group 5: Net profit of <0%



Ranking of largest to least profit categories					
>20%	1				
<20>=10%	2				
<10%=>5%	3				
>0%<5%	4				
<0%	5				

Acknowledgement: GIZ South Africa for Research Funding and Support

Sustainability analysis- takeaways

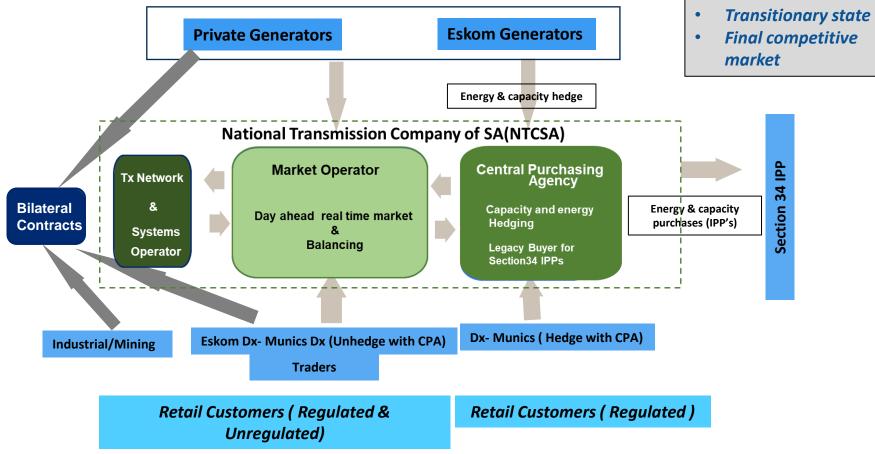
- Not the large utilities that perform the best
- Significant challenge with long term sustainability
- Biggest challenges:
 - Losses
 - Incorrect tariff signals
 - Cost & availability of Bulk Power
 - 0&M





2. External Landscape in Transformation

Envisaged Competitive Multi market model for SA



Acknowledgement: Adaption from Eskom and CPCS market models

Municipal DisCos -able to procure wholesale electricity through *<u>own generation capacity</u>, and/or through * signing <u>bilateral (financial / physical) contracts</u> and/or * <u>DER</u> and/or through *participating in <u>organised market platforms</u> # Could either do wires (NSP) and/or retail # Wholesale procurement foreseen not to be regulated but retail/ end customer level with caps on mark-ups/ profits on Wires & retail

Takeaways (ERA) for municipalities – Quo vadis ?

What to Do?

- <u>Being a market participant:</u> Toward end of period munics will have to <u>procure capacity</u> (physical bilaterals or CfD) or retain the services of a trader – to insulate against market volatility
- Depending on how the market is finally structured may have some balancing responsibilities
- <u>Separate</u> the wires and retail parts of the businesses
- Develop *Integrated resource planning and procurement* capacity.

WHY?

• Will provide opportunities to procure power at potentially better prices and increase availability of power.

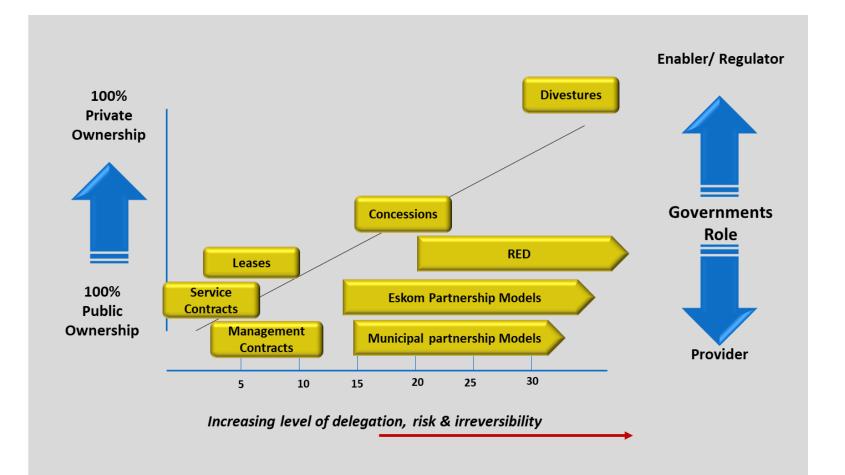




3.Support Options *Quo Vadis*

- Short to medium term to assist municipality utilities to move towards greater sustainability to take part in the market
- Longer term Institutional reforms (range of current examples in SA)

Restructuring Options

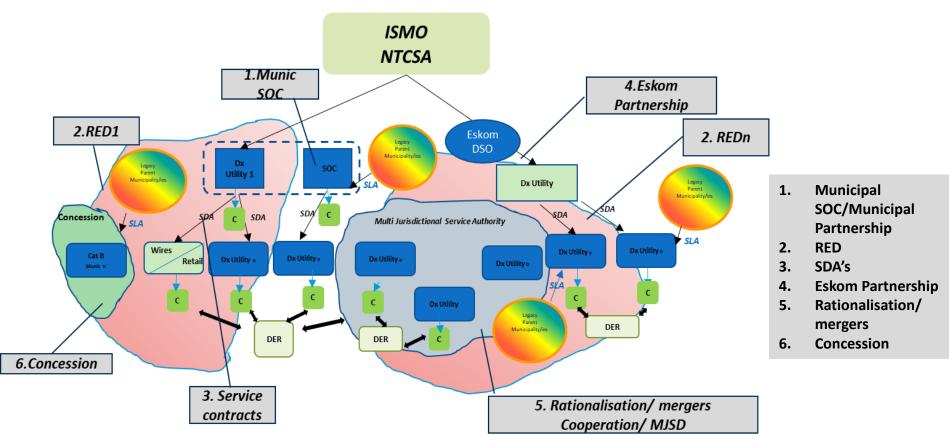




Restructuring Options

Institutional Reforms





<u>Adapted from De Beer, Vd Merwe & Vd Merwe:</u> The Dawn of the New Municipal Business Model : AMEU 2018

Conclusions and take Aways

- Munic performance parameters in general not good- indicate a serious decline in business performance
- The on-selling kWh business is dead
- The external landscape is changing
 - Both from an ESI point of view
 - Energy Transition/ (JET) changing energy use
- Can we survive in the current business structure?





69TH AMEU CONVENTION 2023 Confronting South Africa's Electricity Crisis in the context of a 'Balanced Just Energy Transition' (BJET) and the need for a reliable and resilient national electricity grid

Thank you!

