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NERSA Comments on Carbon Tax Discussion paper

Presented to National Treasury

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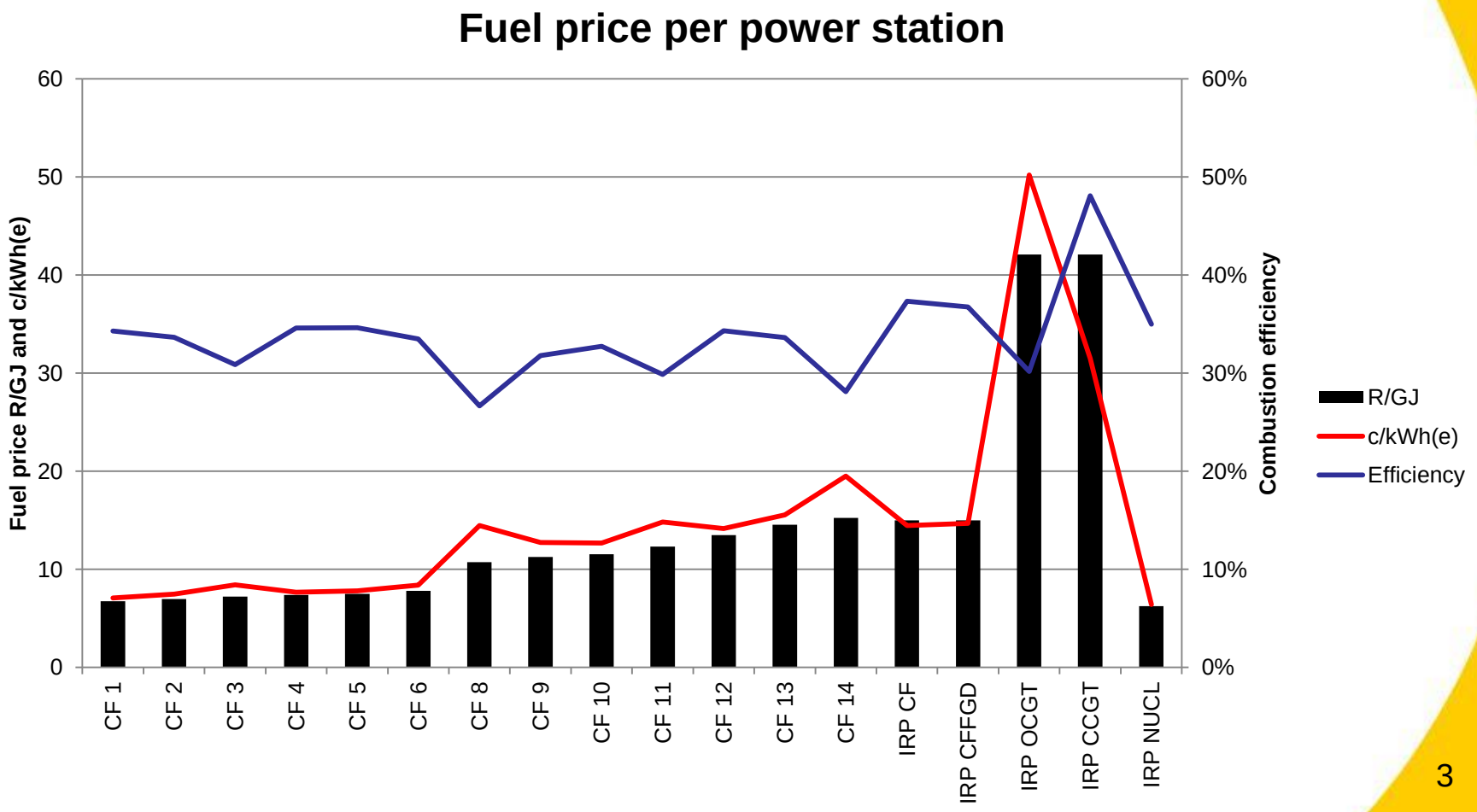
Coal-fired power generation

- 93% of electricity comes from coal fired generation;
- Only 2.3% from low efficiency (munic and private) power stations
- Coal burn has a low calorific value (<20 MJ/kg Eskom)
- Tons CO_2 emission = 1.8 x Tons Fuel burn (approximately)

	Electricity Production (GWh)	% coalfired production	Coal burn (kton)	Fuel efficiency %	Energy content of coal (GJ/ton)
Eskom	211,152	90.69%	120,338	33.39%	18.95
Municipal	770	0.33%	549	21.72%	22.00
Private	4,755	2.04%	3,375	23.07%	22.00

Power generation fuel prices



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Introduction

- All three options for introducing a carbon tax (direct on CO2 emissions, upstream on fuel producers, downstream on electricity) impact the cost of electricity produced;
- Carbon tax of R100/ton would increase the cost of producing electricity by about 10c/kWh (20% increase in average sales price of electricity)

Will this electricity price increase achieve the objective of "creating an adequate incentive to encourage behavioral change"?

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Behavioral changes expected (1)

- Reduced use of electricity generated by coal fired power stations
  - The person dispatching the power stations (System Operator) decides which power stations should operate at what output level to meet the demand.
  - Sending a price signal to the end user will not impact the System Operator.
  - Dispatch rules such as changing from minimum cost dispatch to minimum emissions dispatch would influence the use of coal fired power stations.
- Reduced % coal-fired generation in the installed capacity mix
  - The capacity mix is determined by the IRP which is centrally planned by government. The IRP provides for a low carbon future;
  - Sending a price signal to end users will not reduce the mix.
  - The penalty for carbon emissions can be implemented in the IRP modeling without implementing it in real time.

Behavioral changes expected (2)

- Improved fuel combustion efficiency
  - There is scope for improving the fuel efficiency of some of the old inefficient power stations (E.g. Pretoria West – 20% efficiency, currently not generating).
  - The remaining life of these stations are limited but there may be opportunities for refurbishing and improving their efficiency.
  - The carbon tax would cause these stations to be shut down. But it could be shut down through regulation by for example requiring that these stations' efficiency be improved to a certain level by a certain time.
- Efficient use of electricity
  - The most effective contribution that electricity users can make to reduce CO2 emissions is through becoming energy efficient and reducing energy consumption.
  - The price of electricity has already been increased to almost unbearable levels reaching the stage where meters are bypassed, resulting in no incentive to conserve consumption.
  - The regulations targeted at energy efficiency (recycling, banning incandescent lights, housing regulations) is appropriate. These initiatives will create new jobs and grow the economy and not merely burden the economy with a tax to which there is limited response.

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Conclusions

- A carbon tax will have a direct impact on electricity prices.
- Price increases have negative behavioral consequences when the person paying the increased price has limited or no options to respond.
- A carbon tax is inappropriate for the centrally planned and controlled South African electricity sector. It may be effective in the case of a liberalized market.
- Regulations and regulatory rules would be more effective to influence the technology choice, the dispatch of generation and the efficient use of electricity.
- Such regulations would create new jobs and grow the economy and not merely burden the economy with a tax to which there is limited response.

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Thank You

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Residential power usage