IRP 2019: Some implications for Local Government

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IRP generation allocations:

	Coal	Coal (Decommissioning)	Nuclear	Hydro	Storage	PV	Wind	CSP	Gas & Diesel	Other (Distributed Generation, CoGen, Biomass, Landfill)
Current Base	37 149		1 860	2 100	2 912	1 474	1 980	300	3 830	499
2019	2 155	-2373					244	300		Allocation to the extent of the short term capacity and energy gap.
2020	1 433	-557				114	300			
2021	1 433	-1403				300	818			
2022	711	-844			513	400 1000	1600			
2023	750	-555				1000	1600			500
2024			1860				1600		1000	500
2025						1000	1600			500
2026		-1219					1600			500
2027	750	-847					1 600		2000	500
2028		-475				1000	1 600			500
2029		-1694			1575	1000	1 600			500
2030		-1050		2 500		1 000	1 600			500
TOTAL INSTALLED CAPACITY by 2030 (MW)	33364		1860	4600	5000	8288	17742	600	6380	
% Total Installed Capacity (% of MW)	43		2.36	5.84	6.35	10.52	22.53	0.76	8.1	
% Annual Energy Contribution (% of MWh)	58.8		4.5	8.4	1.2*	6.3	17.8	0.6	1.3	

Koeberg life extended, no other nuclear up to 2030

Some new coal plant

Significant coal end-of-life decommissioning

Coal remains largest part of mix

Installed Capacity
Committed / Already Contracted Capacity
Capacity Decommissioned
New Additional Capacity
Extension of Koeberg Plant Design Life
Includes Distributed Generation Capacity for own use

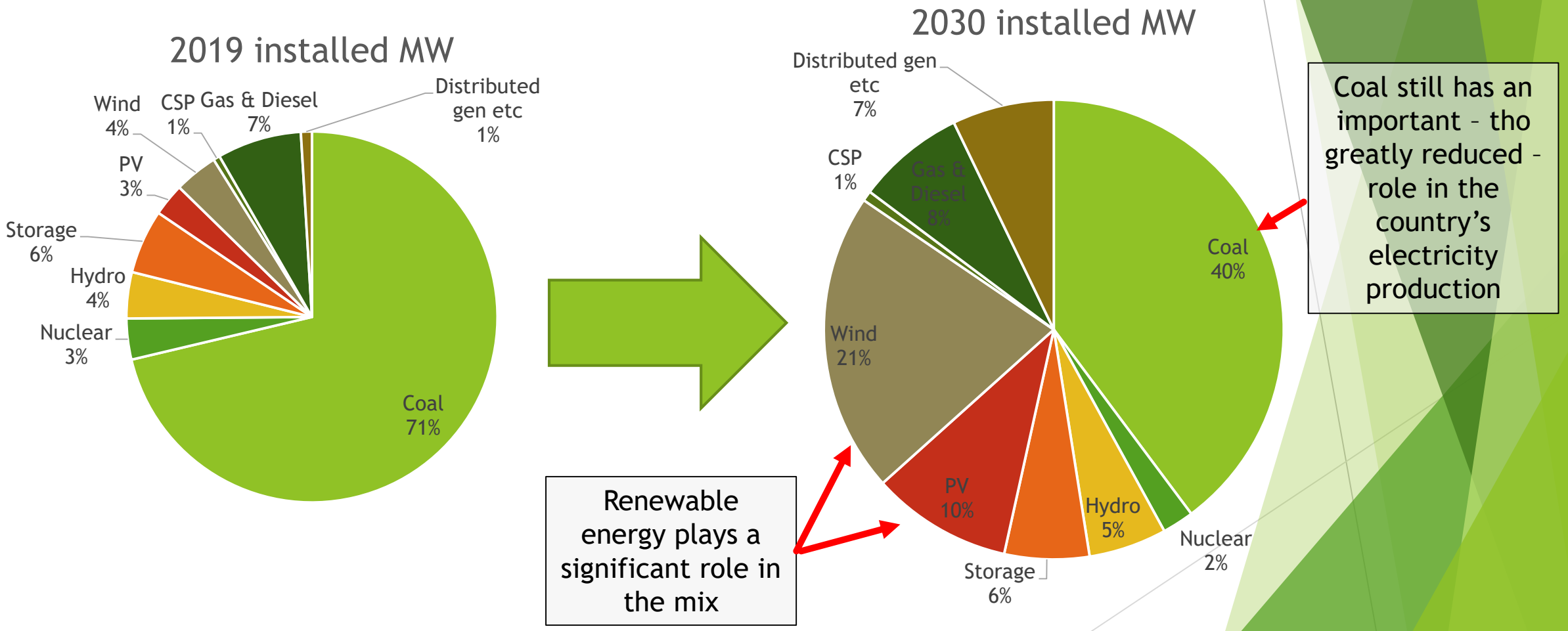
Significant PV and Wind capacity

Increased annual distributed generation allocation

- 2030 Coal Installed Capacity is less capacity decommissioned between years 2020 and 2030
- Koeberg power station rated / installed capacity will revert to 1926 MW (original design capacity) following design life extension work.
- Other / Distributed generation includes all generation facilities in circumstances in which the facility is operated solely to supply electricity to an end-use customer within the same property with the facility
- Short term capacity gap is estimated at 2000 MW

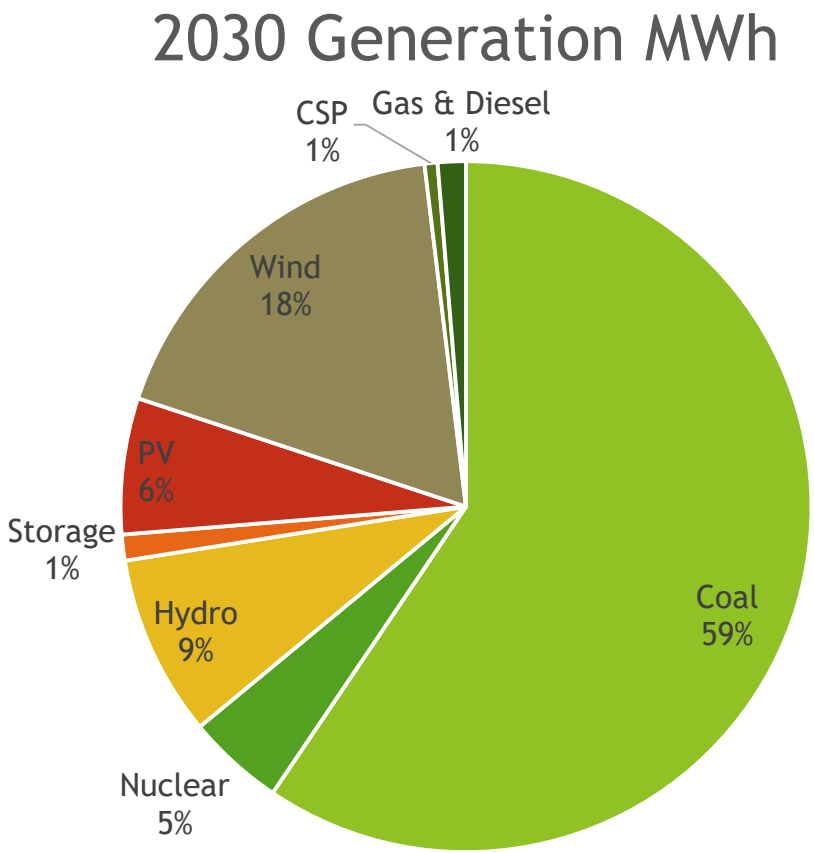
Table source: IRP 2019 document

IRP generation mix: installed capacity



Source: percentages from the IRP 2019 document

IRP mix: energy generated



Source: percentages from the IRP 2019 document
(no figures given for distributed generation)

Notes on the IRP mix:

- IRP based on least-cost modelling
- Policy adjustments to least-cost mix:
  - Retention of annual build limits of renewable energy (smooth rollout)
  - 1500MW of coal generators to support just-transition
  - 2500MW of regional hydro imports
  - Annual allocation of 500MW of ‘own use’ Distributed Generation
- Distributed Generation is considered to be 1 to 10MW generators
- Small Scale Embedded Generation (<=1MW) is deemed to be included in the low demand forecast, and is not quantified

How the IRP deals with some key issues:

- Load shedding (recognised as a priority)
  - Immediate term: demand side measures and promote distributed generation
  - Power purchase programme launch
- Fast changing technology and cost environment
  - Flexibility prioritised via:
    - Few large, long term commitments (avoid stranded assets)
    - Rollout regulated by Ministerial Determinations as the situation merits
    - Review IRP regularly
- Jobs (acknowledges that a ‘just transition’ is important)
  - Include some new coal in mix, programme of upliftment and reskilling
  - Transition of jobs to renewables etc (which create more jobs per unit energy)
- Carbon emissions
  - Keep to national commitments (peak-plateau-decline trajectory)
- Electricity prices
  - In spite of a least-cost focus power prices are likely to rise steeply (next slide…)

Electricity prices

Note that IRP price path excludes implications of Eskom financial rescue, which is likely to put additional upward pressure on tariffs

IRP2019 price path
(higher due to poor performance of Eskom and use of gas peakers)

Initial steep price increases
(in recovery phase of IRP where immediate shortages need to be addressed, reserve margin re-established etc)

IRP2018 price paths for different scenarios

'Policy adjustments' result in approx. 5% higher price path

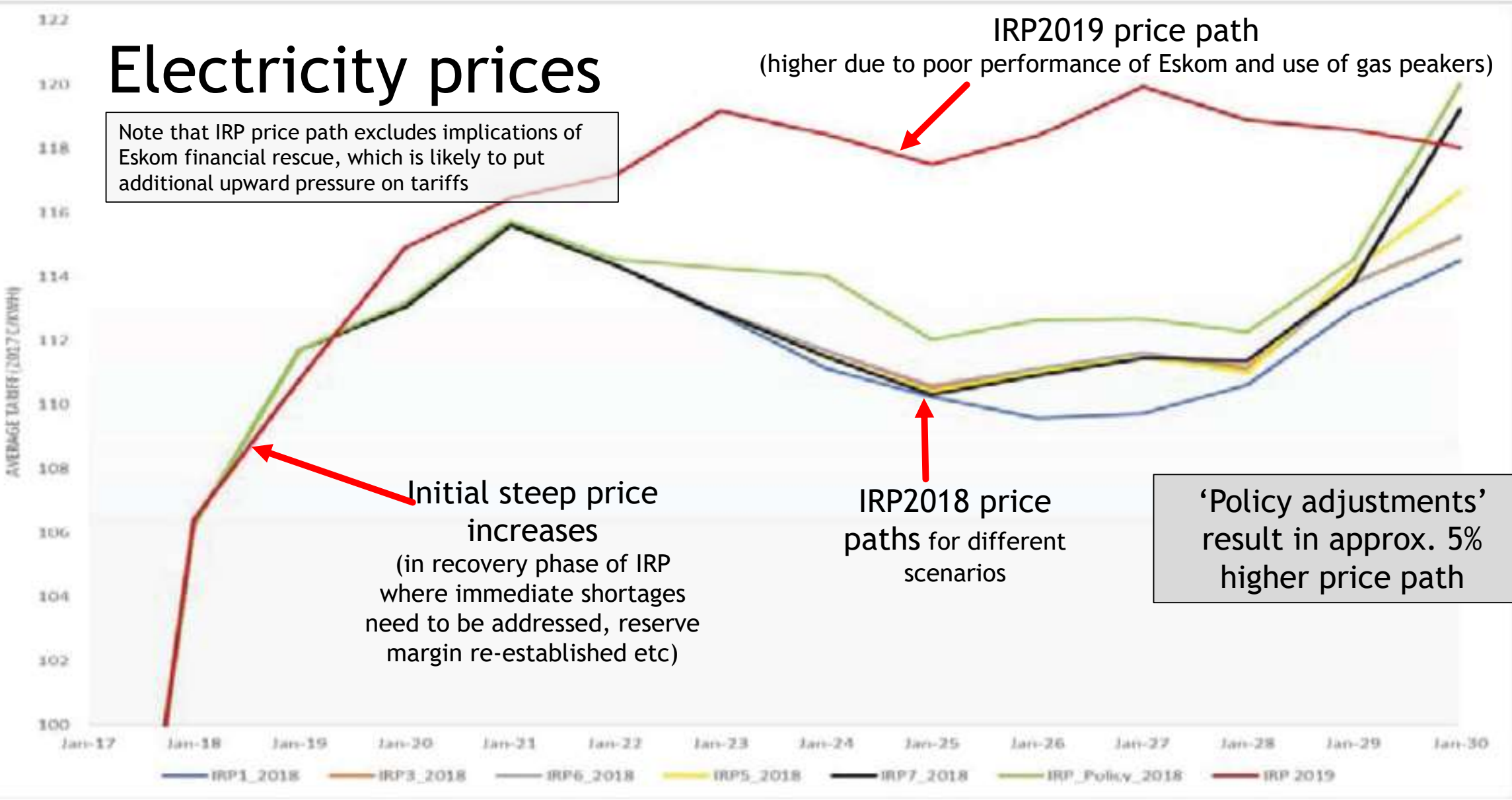
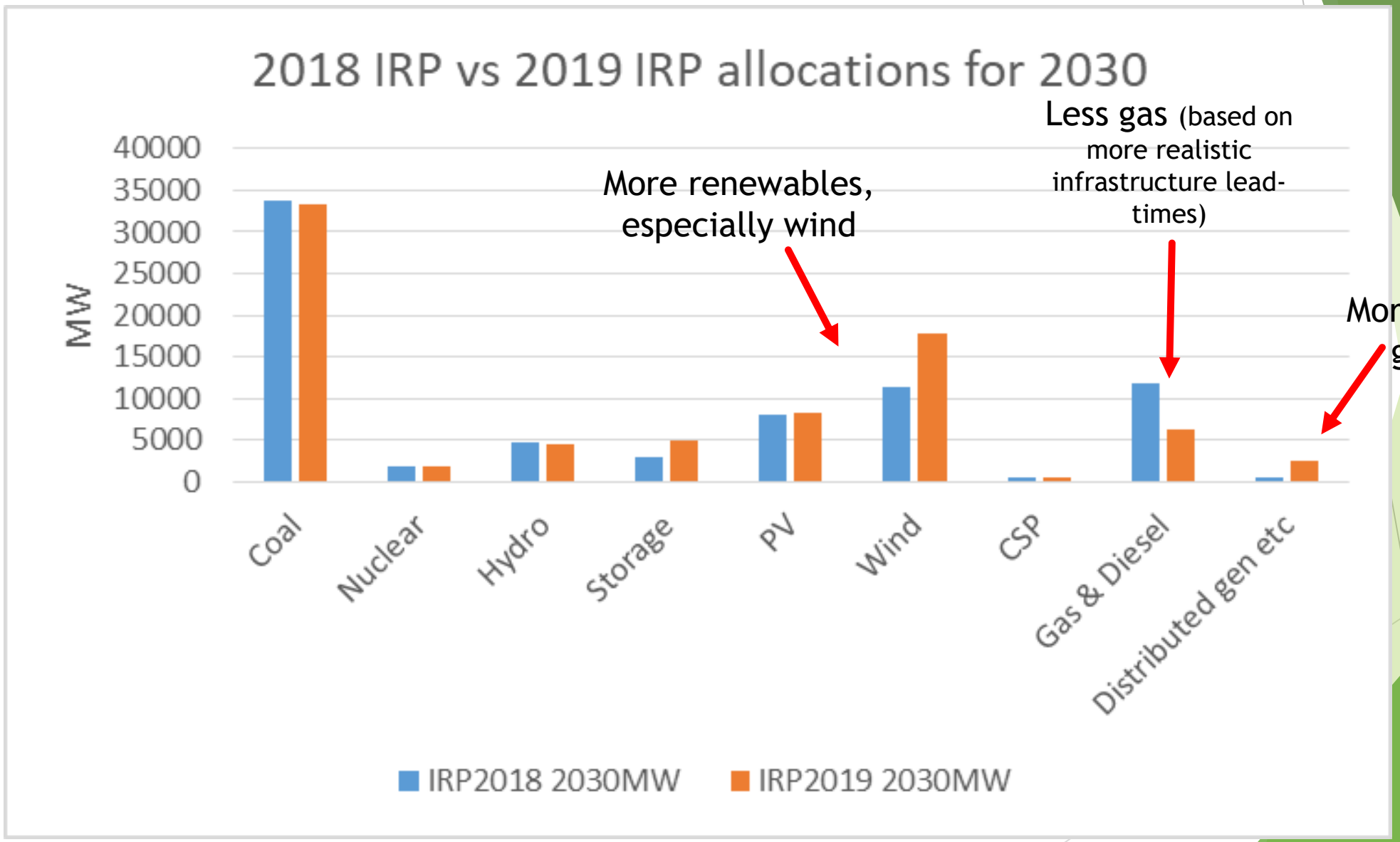


Figure 9: IRP 2019 Price Path

Source: graph from the IRP 2019 document

Differences between 2018 (draft) and 2019 IRP



Source: figures taken from the IRP 2019 document

Some strengths and weaknesses

The following strengths are notable, as well as potential areas of improvement for future consideration:

Strengths	Potential areas of improvement (for future IRPs)
Flexibility - allows responsiveness to changing technologies and costs	**Demand side not well addressed** – important and cost-effective demand options not well considered due to limited information
Balances interests of stakeholders – considers labour, nuclear industry, environmental imperatives etc	**Nuclear post 2030** - motivation for possible 2500MW of nuclear post 2030 is unsubstantiated
Least-cost emphasis – although policy adjustments increases costs slightly	**Small-Scale embedded generation impact not quantified** – potential for significant generation capacity, yet not factored into plan clearly
Some consideration of municipal issues – notes access, financial viability and distributed generation	**Distribution costs not considered** – distributor cost implications for distributed generation and other demand side options not considered (NB for municipalities)
	Storage from a distributor perspective not considered – can impact on distributor costs (NB for municipalities)
	Demand forecast doesn't reflect trends – even low demand forecast is growing, contrary to recent historical trends

Implications for municipal distributors

- Potentially **high tariff increases** for next several years – as the reserve margin is re-established etc
- Steadily **reducing risk of loadshedding**, but not immediately
- **Big increase in Distributed Generator applications** to connect to the local network (1-10MW generators)
- **Big increase in Small-Scale Embedded Generator applications** to connect to the local network (<1MW generators)
- **Demand side measures** emphasised (e.g. efficiency programmes)
- **Distribution-level storage** – not covered (municipalities will need to take forward by themselves)
- Direct municipal **purchase by municipalities from IPPs** – not covered in IRP

Municipal distributor support requirements

- Due to increased volumes of Distributed Generation, support with the following will be useful:
  - Developing **processes to assess applications**, and staff capacity building for this
  - Developing capacity to do **grid impact assessments** (to check if generators can connect to the network)
  - Developing **wheeling frameworks** (potentially increased pressure to wheel across municipal networks)
- **ACTIONS**:
  - Expand programmes **to support municipalities dealing with Distributed Generation (including SSEG)**
  - Request DMRE to **revise Schedule 2 (License exemption)** of ERA promptly
  - Request NERSA to:
    - **Approve SSEG tariffs** submitted to them
    - **License Distributed Generators** (1-10MW) promptly
- Implementing **energy efficiency** programmes
  - **ACTION**: Request DMRE to **expand EEDSM** and other EE programmes
- Municipalities will also require support in these areas:
  - Implementing **distributed storage**
  - **Communication and innovative products for customers** to reduce defections as power prices rise

End

To request the full paper on this topic, contact:

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