



SAREC Comments on IRP & IEP 2016

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Overview of SAREC response

- ❖ Comments on IEP/IRP process
- ❖ Renewable energy should not be constrained
- ❖ Risks should be taken into account
- ❖ Is there a grid constraint?
- ❖ Accurate cost inputs should be used
- ❖ Investors need policy certainty
- ❖ Electricity sector needs to be restructured
- ❖ Conclusions

Comments on IEP/IRP process

- ❖ SAREC welcomes the release of IEP and IRP updates. Generation capacity decisions have been guided by outdated plans for far too long.

- ❖ IEP/IRP consultation process timeframes make meaningful response difficult:
 - Insufficient time allowed to consult members and prepare for presentations
 - Draft IRP does not include a 'least cost' base case
 - No tariff trajectory provided for scenarios
 - Missing appendices with assumptions on learning rates, discount rate and other key inputs (7.3, 7.4, 7.5)

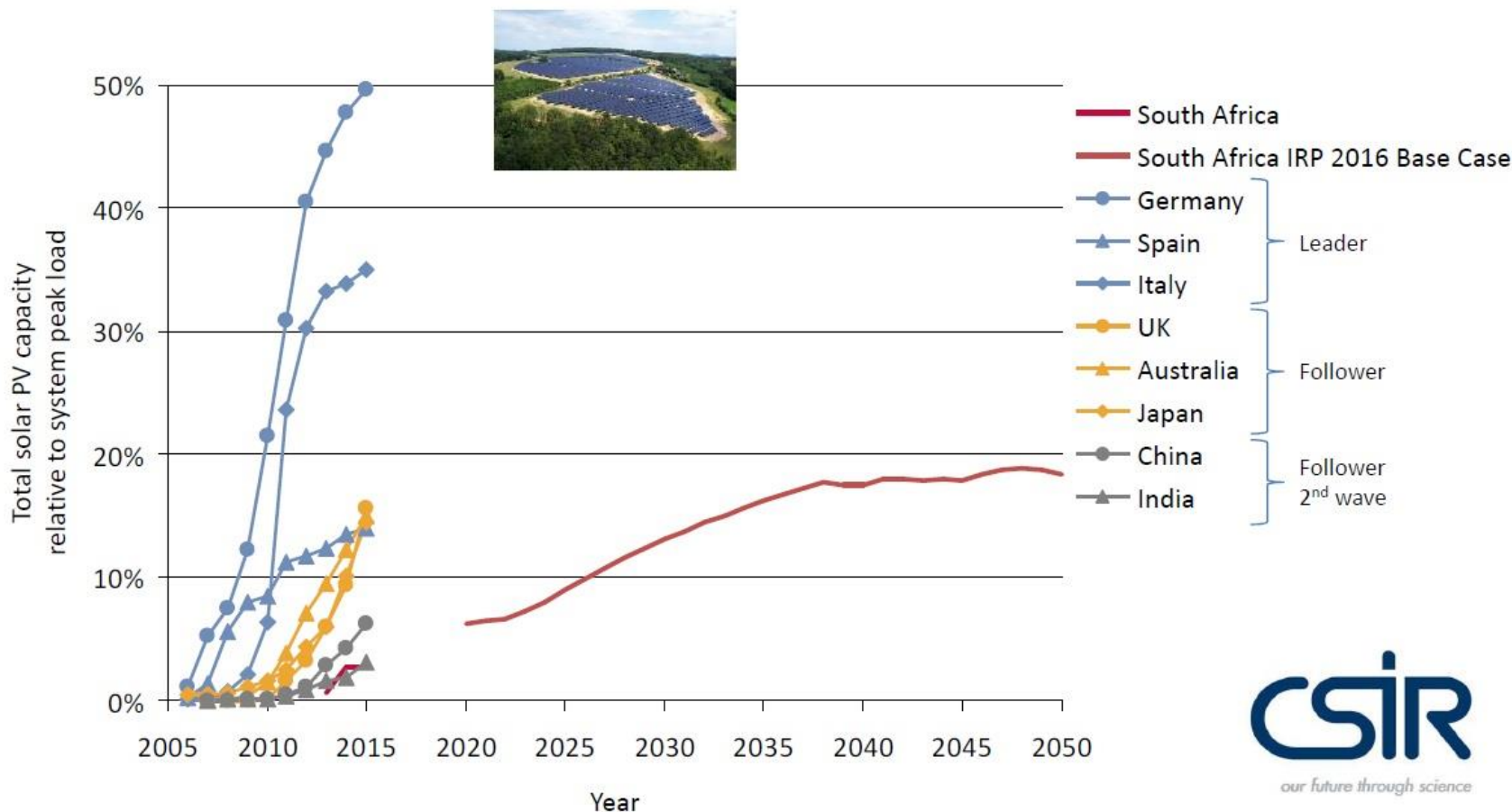
Comments on IEP/IRP process

- ❖ Continued high share of mega programmes bring implementation risks not suited to uncertainty – cost and construction overruns, climate policy, utility death spiral
- ❖ Renewable power does not come with these risks:
 - Private sector bears risk of delivery and cost overruns; little Government or Eskom capex required
 - Modular, flexible and responsive energy mix with scalable, quick to build technologies
 - Required grid upgrades are mostly self-funded by IPPs and included in REI4P bid costs
 - Less large-scale transmission required for properly distributed RE (vs centralised plants)
- ❖ IRP model already takes network stability into account (standard model parameter)
- ❖ Eskom System Operator already has ability to manage grid despite variable generation

Renewables Should be Unconstrained

- ❖ Running a constrained base case scenario does not produce a reliable 'least cost' outcome.
- ❖ A Least Cost Base Case without any constraints should be produced, and constraints then applied and policy adjustment made.
- ❖ If technical grid constraints are offered as the reason for constraining renewables, this claim should be backed up by research. Eskom's word on the topic is not sufficient.

Renewables Should be Unconstrained



Note Japan and Australia, similarly to SA do not have continental interconnections, yet still have high RE penetration and do not intend stopping

Risks Should be Taken Into Account

The cost of the Medupi and Kusile power plants



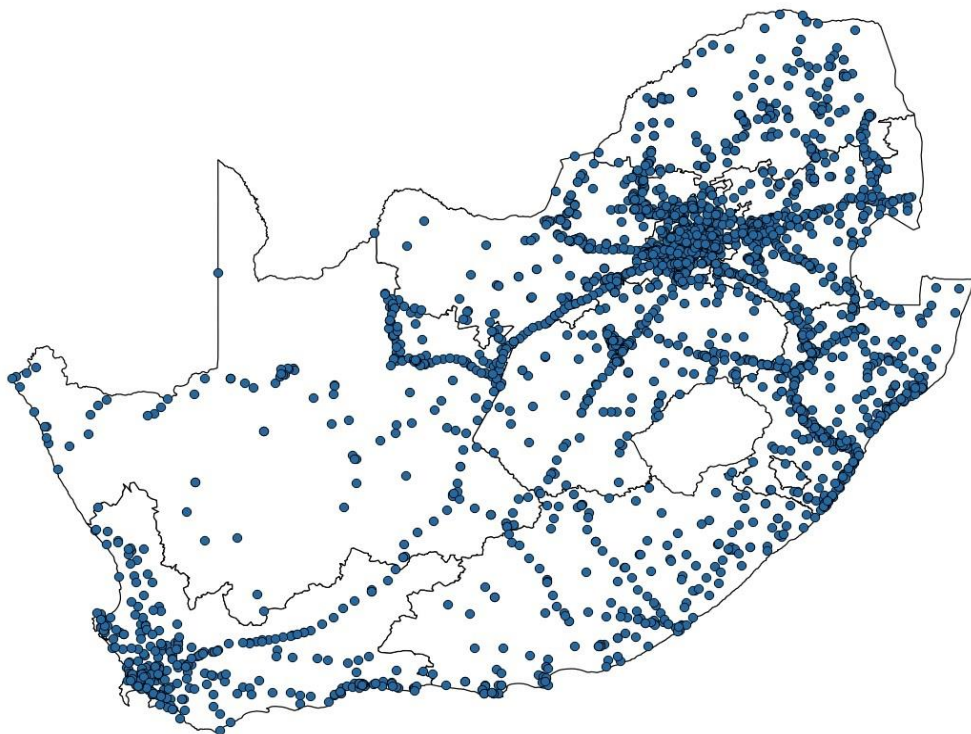
Description	Cost Estimate 2005 (Rbn)	Cost Estimate 2013 (Rbn)	Cost Estimate 2016 (Rbn)	Cost Overrun	Original Full Commercial Operations Date	Actual Full Commercial Operations Date	Actual Cost per MW	Market Norm cost per MW
Medupi	69	105	195	282%	2011	2020?	R40.6m	R20m
Kusile	80	118	225	281%	2013	2022?	R46.9m	R20m
Ingula	9	24	25	277%	Dec 2012	June 2017		
Total	158	247	465	294%				

Source: Alastair Campbell

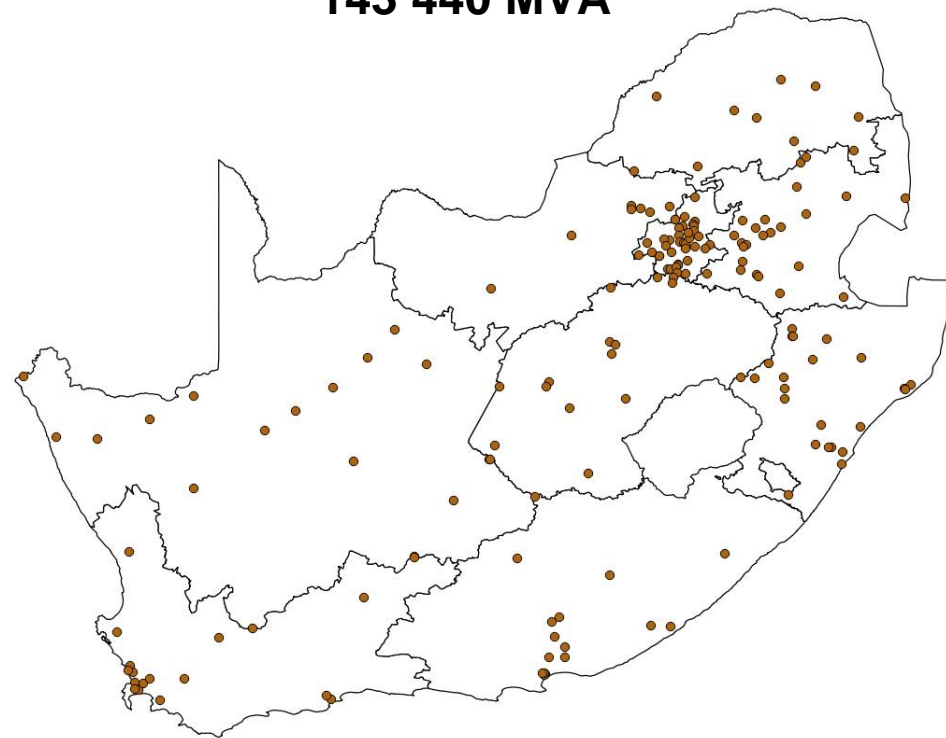
- ❖ Eskom claims it cannot afford Renewable Energy, yet it seems to afford Medupi & Kusile cost overruns and is proposing to go ahead with a nuclear RFP
- ❖ Eskom cost over-runs are borne by consumers. By comparison under the REIPPPP rules construction cost risks are entirely borne by IPPs
- ❖ The IRP should factor in Eskom's new build performance for construction cost and time over-runs for any capacity to be built by Eskom.

Is There a Grid Constraint?

**Installed distribution transformation capacity:
101 197 MVA¹**



**Installed transmission transformation capacity:
143 440 MVA¹**



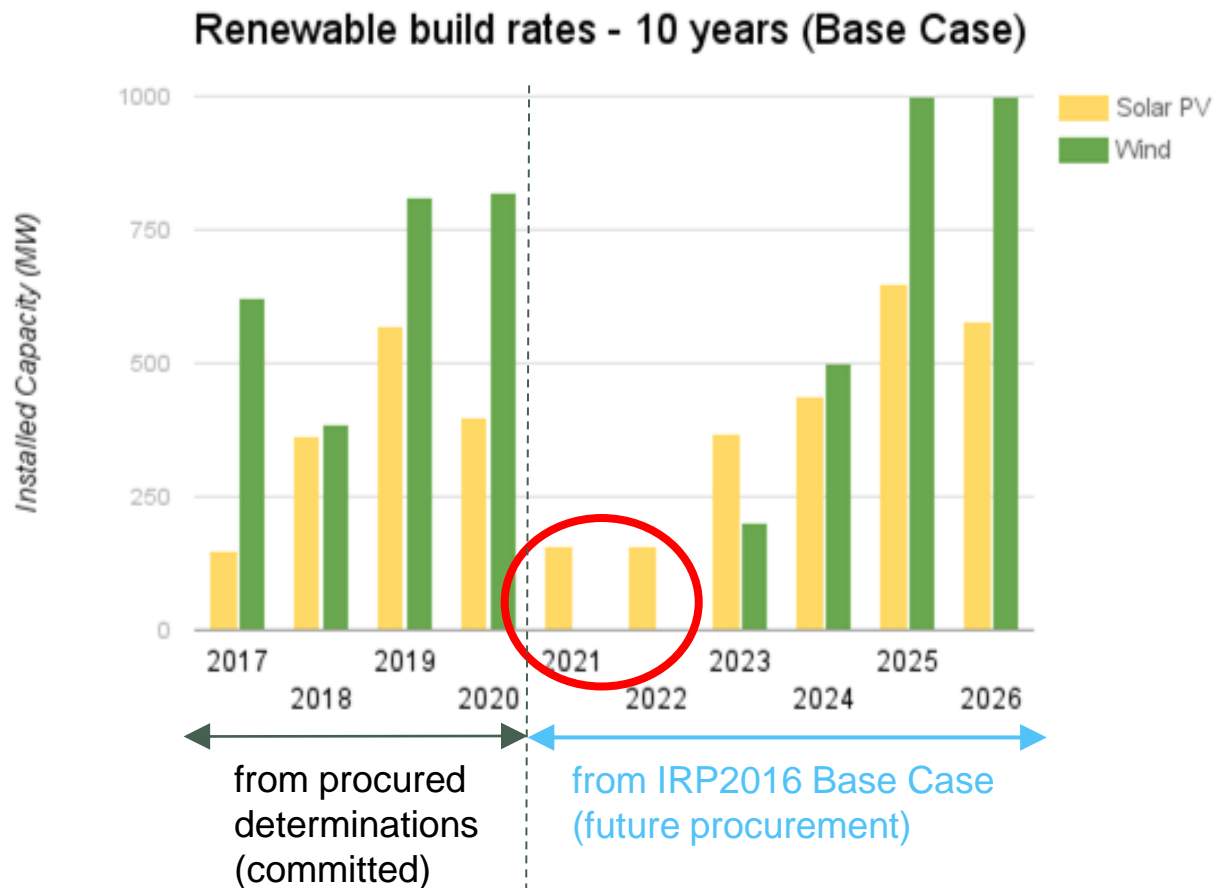
Is there really a grid constraint?

Accurate Cost Inputs Should be Used

- ❖ Input costs should reflect current market pricing where available
 - Planning should utilise latest bid prices
 - IRP claims to use REIPPPP Bid Window 4 – but model outputs suggest otherwise
 - For wind this should be: 62c/kWh (CSIR, 2015)
 - For solar PV this should be: 82c/kWh (CSIR, 2015)
- ❖ Learning rate assumptions for renewable energy are too conservative
 - PV capex forecast for 2050 has already been achieved in utility-scale PV plants
 - Solar panel costs have declined by a further 20% in recent months
- ❖ Nuclear Lifetime Cost of Energy (LCOE) assumption of R0.97/kWh is unsubstantiated¹
 - CSIR optimistic figure (April 2016): R1.17/kWh (based on Rosatom)
 - Updated EPRI report (Aug 2015): R1,50 to R1,83/kWh

¹ IRP 2016 (rev1) refers to a DoE study not published as part of the IRP, hence not open for public review

Investors Need Policy Certainty



No wind in 2021-22, only 200MW in 2023, very little PV in 2021-22.

Likely effects:

- Investment uncertainty
- Likely factory closures with associated job losses
- Community benefits delayed
- Retards local manufacturing investment

Consistent Industry contribution to SA economy requires stable or increasing annual policy, investment certainty and implementation reliability.

Electricity Sector Needs to be Restructured

- ❖ Fundamental constraints to implementation of an updated IRP:
 - Eskom track record of flouting government electricity policy (e.g. current refusal to sign REIPPPP power purchase agreements under ministerial determinations and IRP2010)
 - **Eskom cannot be both player and decision-maker**
- ❖ What is the point of an IRP if it will simply be ignored by Eskom later?
- ❖ **Therefore SAREC calls for:**
 - Reform of market structure to overcome conflicts of interest in power procurement, new-build and grid expansion
 - Legal separation of Eskom generation from grid

Conclusions

- ❖ Public consultation process will be strengthened by an extension of the timeline
- ❖ Publication of the IRP is welcomed, but base case should follow least cost, rational planning approach
 - ❖ The artificial constraint on Renewable Generation must be removed
 - ❖ Market-related costs should be used where available
 - ❖ Any policy adjustments should be costed and justified
- ❖ Modelling should consider the risks associated with mega projects such as construction over-runs. Sensitivity analysis should be done
- ❖ Power sector reforms are required to address Eskom's conflicts of interest

Thank You

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