

Cape Chamber of Commerce and Industry

Draft IEP Report and the IRP Assumptions and the Base Case 2016 – Initial Comments

Stakeholder Consultation Workshop

Western Cape: Cape Town International Convention Centre, Cape Town – 13 December 2016

The Cape Chamber of Commerce & Industry (CCC&I)

- Established in 1804 (> 200 years old)
- The oldest member based organisation in Africa
- Remained contemporary & relevant - a wide range of services, including information, training, networking, trade facilitation and robust advocacy on behalf of our members.
- We are the voice of business in the Western Cape
- Network >2,500 member companies
- Industrial focus portfolio - specific focus - energy & electricity security, supply & price path. The lifeblood, survival, job creator & major cost item of business
- Seminars on energy mix & socio-economic impact – across all electricity generation technologies – CCC&I is energy technology agnostic, supports a lowest cost, security of supply energy mix

Agenda

- IEP and IRP update consultation process
- IRP Update objective(s)
- Credible base case
- Planning assumptions and input parameters
- Demand forecast
- Economic parameters
- Generation technology cost and performance characteristics
- IEP objectives

IEP and IRP update consultation process

- Process flawed – 1st IEP then IRP, GUMP etc.
- Short time & notice to provide initial comments & final written submission to a vital piece of energy policy
- 5 years elapsed to release IRP update: from 2011 (IRP 2013 not cabinet approved without any explanation) – less than 3 month period allowed for stakeholder consultation and submissions from November 2016 over annual business holiday season to February 2017.
- Stakeholder consultation process proposed to be changed and longer duration – at least to 31 March 2017
- Propose change process to update IRP
 - First step: Assumptions, latest and best information
 - Next step: Criteria for “credible” base case
 - Next step: Select credible business case

DoE should “update” the IRP update process and progress

Table 1: IRP Update Progress

Activity	Status	Comments
Assumptions	Done ?	This is subject to comments from various stakeholders.
Base Case	Done ?	This is subject to change based on to be comments received on the assumptions.
Scenarios	In Progress	The results of the scenarios will also be impacted by changes to the assumptions. Number of scenarios may also change based on feedback from public consultations.
Policy Adjusted IRP	To follow after scenarios	This will follow once the scenarios and public consultation is completed

Source: DoE

- Assumptions **not** “Done” - stakeholders in process of commenting
- Base case **not** “Done” when not changed based on comments/advice received prior to release and still in consultation
- Scenarios “In Progress” - to evaluate eventually against credible base case

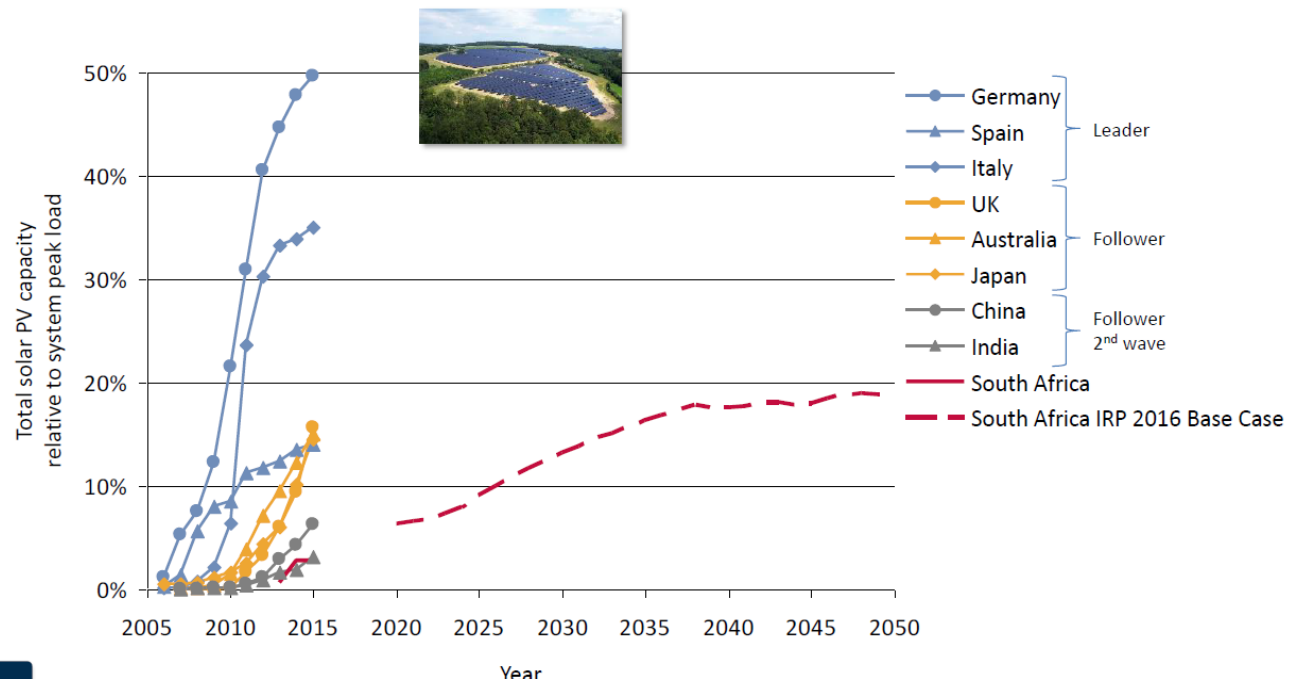
IRP base case not credible - based on objectives outlined in IRP document

Page 7 – Draft IRP Assumptions & Base case 2016

2. Developing a credible Base Case from the IRP 2010 by updating the underlying assumptions based on new information;

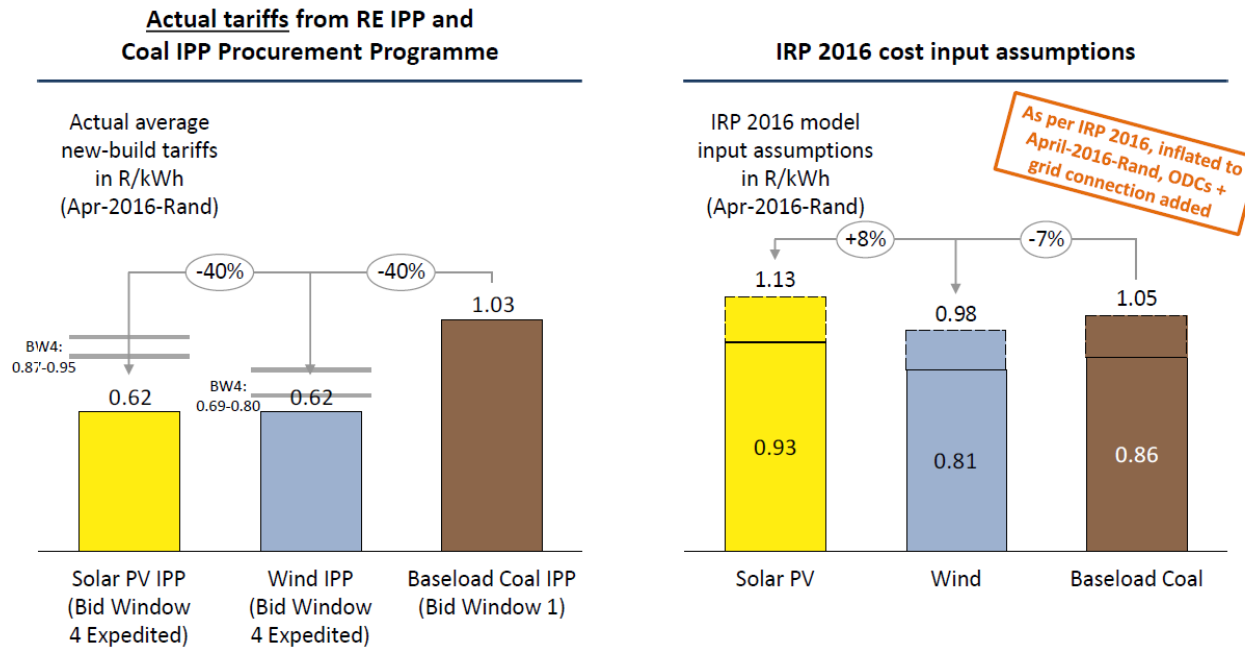
- Underlying assumptions **not** “based on new information” – artificial limits constrained renewables similar to IRP2010 prior to REI4P
- Economic assumptions **not** based on “new information” – economic/GDP growth rates not based on realistic actual and forecast
- Key objectives of IEP/IRP:
 - Ensure security of supply;
 - Minimise the cost of energy;
 - Minimise negative environmental impacts from the energy sector;
- Base case should be least cost, without any artificial constraints, free of any policy adjustments - to ensure secure supply

New and relevant information on renewable energy penetration rates – not constrained



- Agree with MACE indications on solar PV and wind penetration rates, minister and DoE provided **no explanation** why advice of MACE ignored
- **No credible studies** available or commissioned to support claim that SA grid is a constraint for renewable energy additions or what rates of penetration
- SA needs an **independent review** of transmission and distribution grids and plans

Latest available, verified information on renewable cost – RE lower values



- Concur with CSIR technology cost assumptions
- CSIR cost used for re-optimised IRP is available to DoE from REI4P expedited round 4 (round 4.5)
- Furthermore, recent international bidding rounds indicate equivalent to R0.35/kWh in Abu Dhabi at current exchange rate

Latest, best information on cost of energy technologies, specifically nuclear is contentious

Table 10: Technology learning Rates

Technology	2015 (R/kW)	2050 (R/KW)
PV (fixed tilt)	16860.6	13425.03408
PV (tracking)	17860.6	14221.26959
Wind	19208.1	17287.405
Nuclear	55260	53768.80047

Source: IRP Analysis

- Nuclear cost in IRP 2016 base case appears too low based on arbitrary blended cost between EPRI (supposedly Western biased) and Asia (supposedly China building high numbers of reactors – not comparable to SA)
- **Cost research undertaken by DoE not available yet** – refer Parliamentary Portfolio Committee on Energy (PCE)
- **Chairman of PCE insists on public availability of research documents from DoE**, but also on **open discussion of energy mix** – specifically nuclear before further decisions – including base case and assumptions of IRP

Consensus information on economic GDP growth rates driving expected demand

Table 4 GDP % growth forecasts per scenario

Year	Low	Moderate	High (Less energy intensive)	High (Same sectors)
2014	1.57	1.57	1.57	1.57
2015	1.40	2.20	2.50	2.50
2016	1.40	2.30	3.50	3.50
2017	1.80	2.70	4.00	4.00
2018	2.00	2.90	4.20	4.20
2019	2.00	3.00	4.50	4.50
2020	2.00	3.20	4.50	4.50

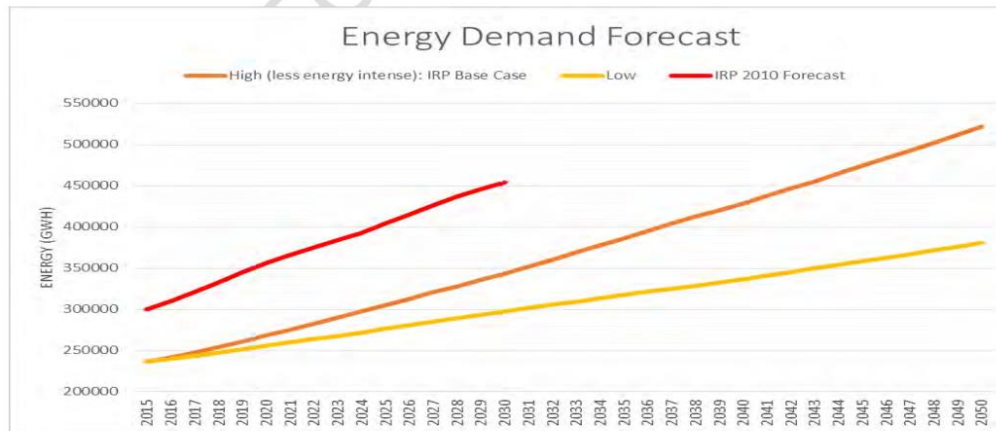
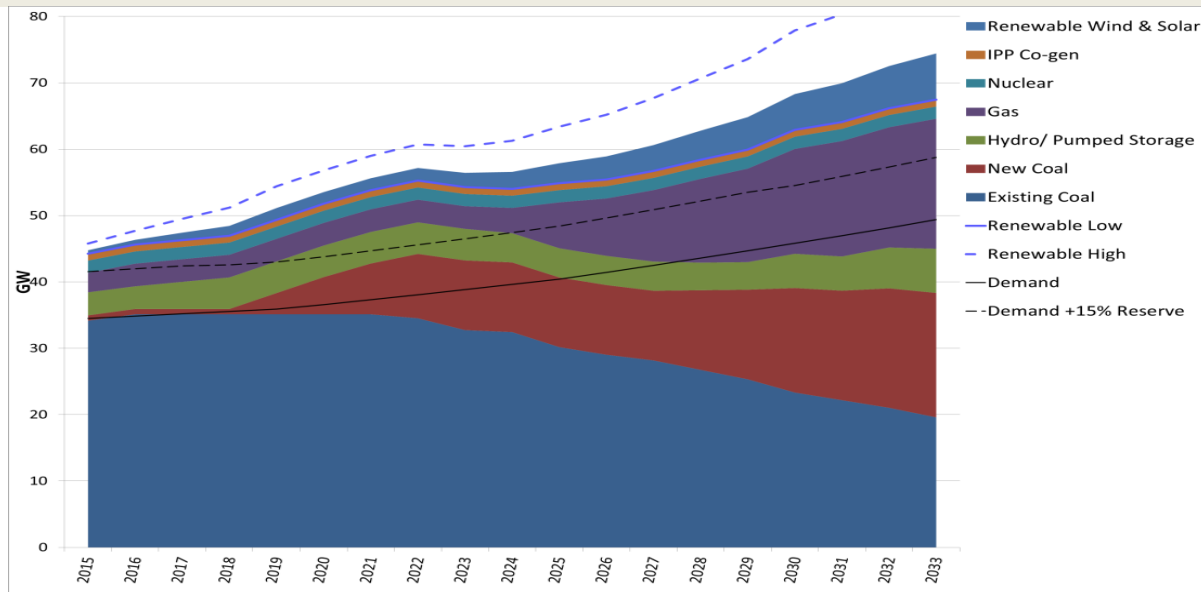


Figure 2: Energy Demand Forecast

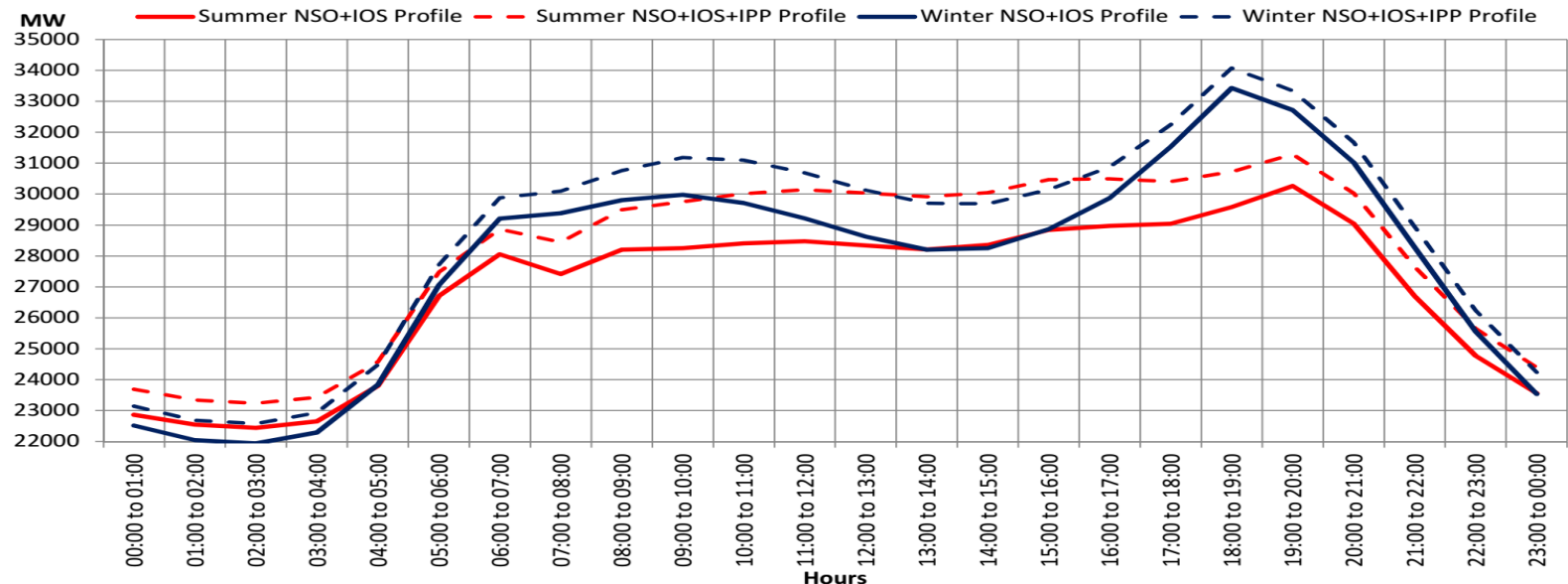
- **SA growth rates** need to be evaluated and assumptions based on best forward estimates – consensus is **not 3.5% to 4.5%**
- We contend that the expected demand in the base case is not credible and latest information

Latest analysis on supply and demand outlook – no urgent investment decision required



- Agree broadly with **EIUG** internal analysis based on demand growth assumption of 1% YoY up to 2019, and 2% YoY onwards
- Thus **no need for an urgent investment decision** for further base load capacity in the short-term
- New capacity should be planned **appropriate to the demand**
- **Flexibility and diversification** of energy mix is vital – to result in shorter, controlled build that responds to changes in technologies and socio economic conditions

The daily “baseload” challenge is not addressed in IRP update – it remains controversial



- **Baseload requirement** referred to in statements by DoE and Eskom, but **no case study or new information** presented
- Difference between early evening peak and middle of night low in winter is on average 7 to 12 GW
- Demands a **flexible energy mix**, more “traditional” baseload such as nuclear and coal will exacerbate problem – no or limited “de-rating” during low demand period
- Other options, such as renewable energy combined with gas, is a solution and requires similar effort, funding and focus to study as is the case with baseload nuclear

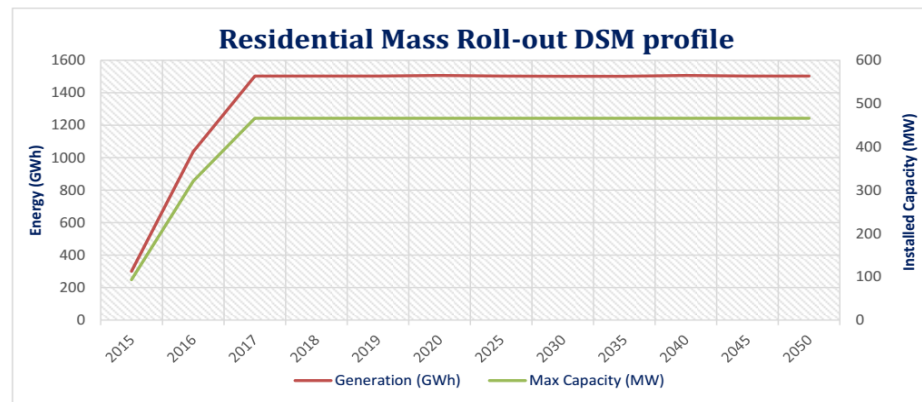
Economic parameters based on exchange rate is not credible

Table 2: Economic Parameters

Parameter	Value used in model	Comment
Discount Rate	8.2% ¹	Net discount rate before tax
Exchange Rate	R/\$ 11.55	Based on January 2015 exchange rate

- Current range June – November 2016 (R/\$)
- High 15.42
- Low 13.23
- **Average 14.11**
- Difference on average is 22%

Anticipated Integrated Demand Management relative to PV Small Scale Embedded Generation



Source: Eskom

Figure 4: Profile of Residential Mass Rollout DSM

- Small scale embedded generation specifically of **rooftop PV** in residential and industrial/commercial a **much larger impact than IDM**
- New information based on smaller than 1MW installations should be taken into account
- During **2015 rooftop PV** solar installations in South Africa **increased by 330% to 83 MW** and the industry expects this figure to reach 500 MW in 2016
- Furthermore, penetration of electric vehicles and energy storage in distributed battery systems has to be investigated for IRP and IEP

Conclusion and proposal on way forward

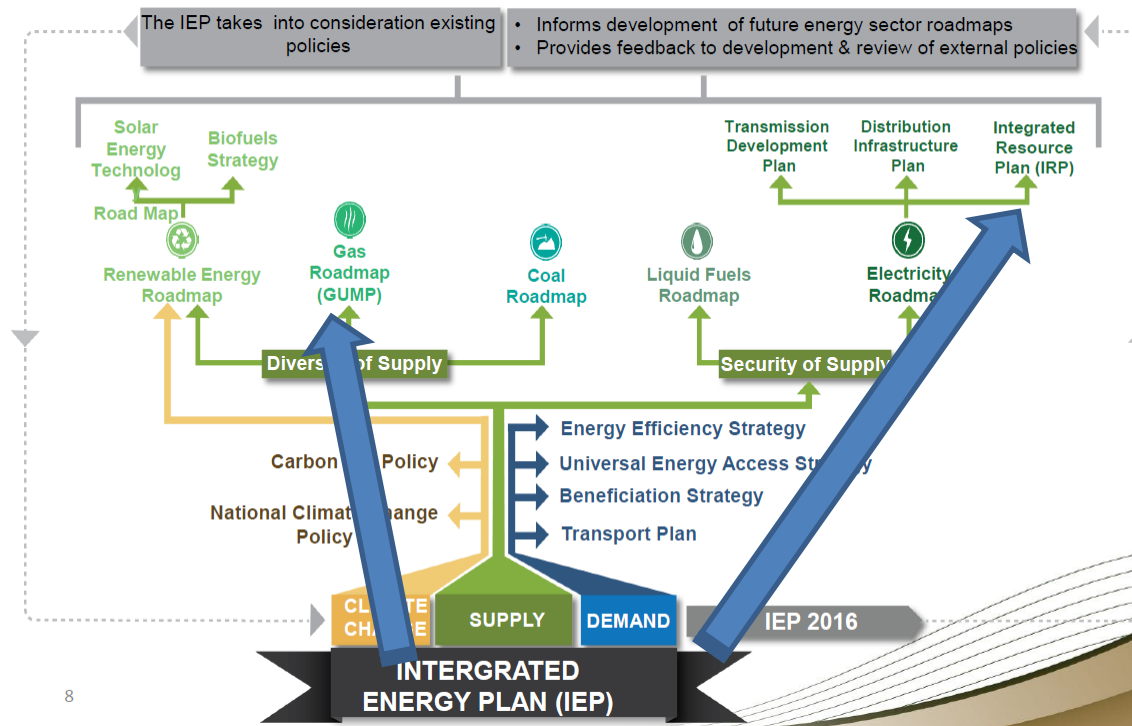
- Clarify IEP process and integration with IRP (and GUMP)
- Postpone IEP and IRP inputs on assumptions and criteria for IRP base case to 31 March 2017
- Then consult on Assumptions and input on credible base case
- Then publish credible, updated base case and scenarios

- Base case must be least cost, free of artificial constraints and free of policy adjustments

- Test all work and outputs against stated IEP/IRP objectives with criteria to measure including:
 - Ensure security of supply;
 - Minimise the cost of energy;
 - Minimise negative environmental impacts from the energy sector;
 - Diversify supply sources and primary sources of energy

IEP and IRP development process

- IEP drives/informs IRP
- IEP drives/informs GUMP (Gas Utilisation Master Plan)



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