



# Department of Energy

## IEP PLANNING REPORT

### WORKSHOP

# Overview of Universal Energy Access Strategy



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# Background

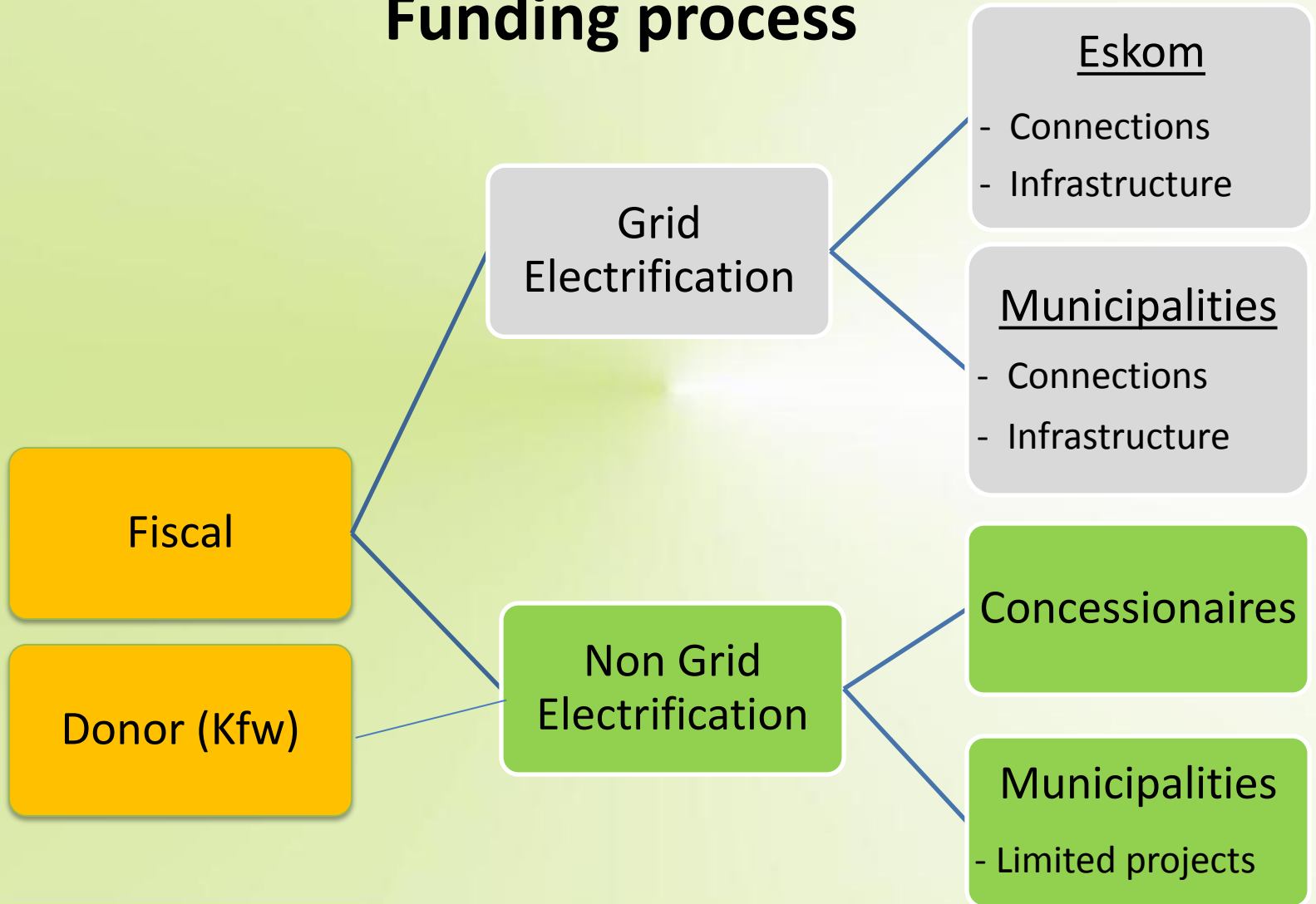
- After 1994 and through the Government's initiative of RDP (Reconstruction and Development Programme) the electrification programme was endorsed.
- In the period 1991 – 2001 electrification was an electricity industry funded programme.
- During 2001 Government took responsibility for funding and managing the electrification programme, via funds made available from National Treasury – as a result of the White Paper on Energy Policy (1998).
- Resulted in the establishment of Integrated National Electrification Planning (INEP) unit within the Department of Energy.



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# Funding process



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# Electrification progress

- Over 5.7 million households were connected to the grid between 1994 and 2013/14.
- In period 2002 to 2013/14 - 65 929 households were supplied with non-grid technology (Solar panels – Renewable Energy)
  - Eastern Cape - 12,282
  - Kwazulu Natal - 44,266
  - Limpopo - 9,381
- Non-grid electrification programmes will in future not only be implemented in concessionary areas, but in a limited basis in other areas in country.

Province	Electrified Houses: Municipalities & Eskom
Eastern Cape	1 023 492
Free State	363 711
Gauteng	677 133
KwaZulu Natal	935 011
Limpopo	991 602
Mpumalanga	545 809
Northern Cape	133 770
North West	659 868
Western Cape	387 576
<b>Total</b>	<b>5 732 777</b>



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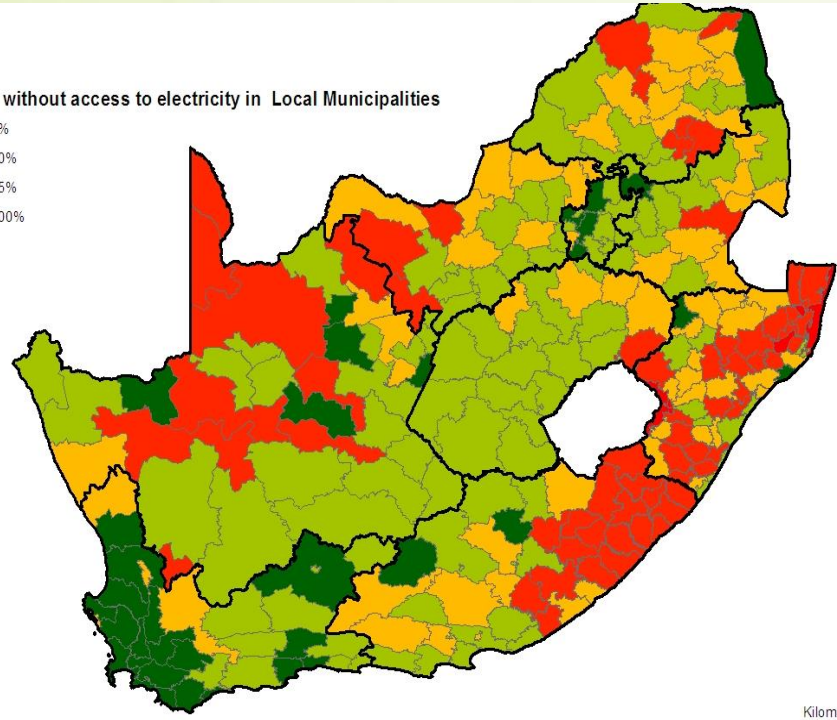
# Access - 1996



## Legend

Household without access to electricity in Local Municipalities

- 0% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%



Source: STATSSA, 1996  
 Compiler: DBSA, Information Unit

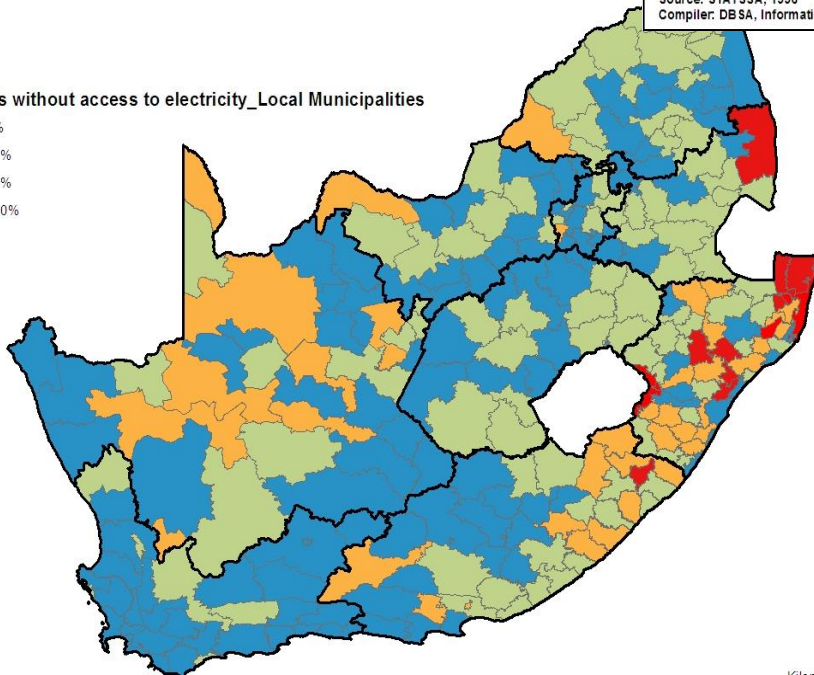
0 250  
 Kilometres

## PERCENTAGE OF HOUSEHOLDS WITHOUT ACCESS TO ELECTRICITY:

### Legend

Households without access to electricity\_Local Municipalities

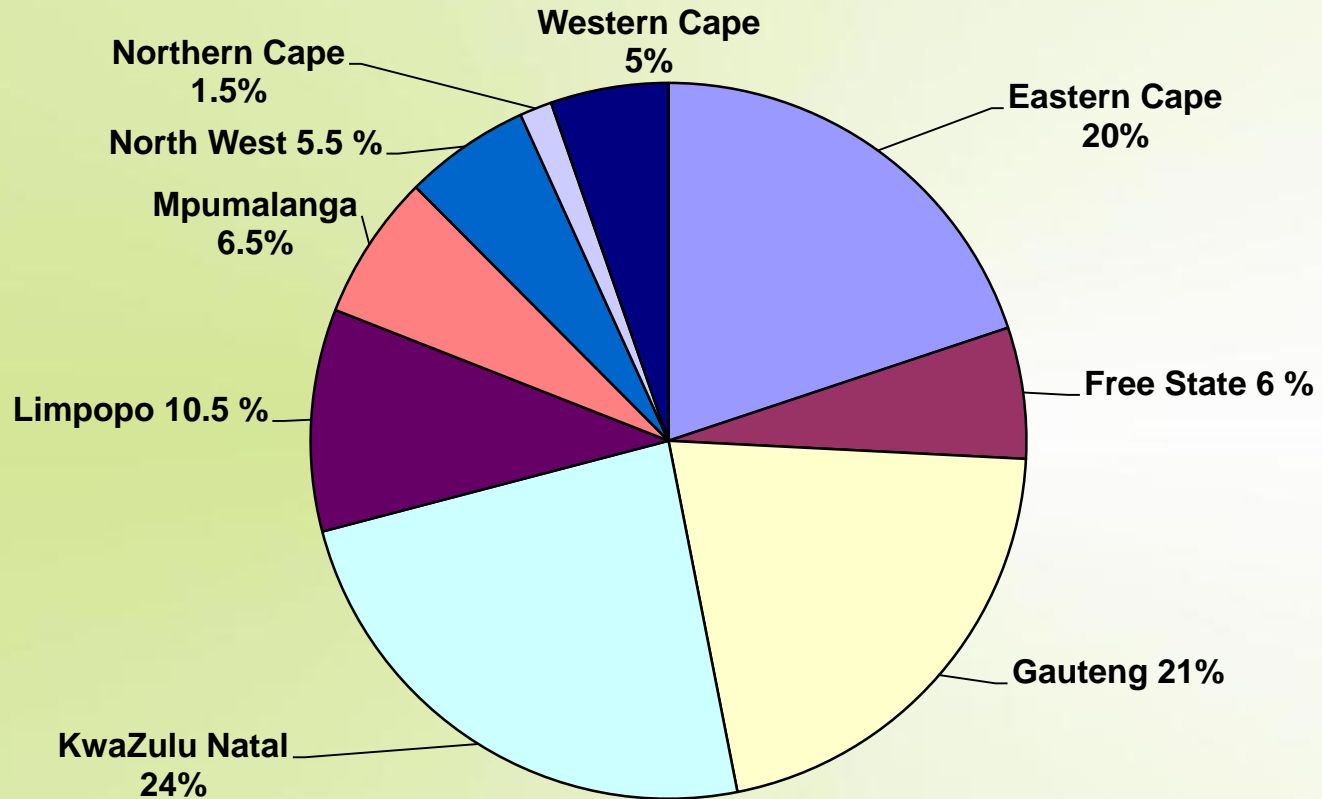
- 0% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%



# Access - 2012



# Universal access background



- Households without electricity: ~3.2 million (Informal 1.2 mil and formal 2 mil)
- 75 % in Eskom supply area and 25% in municipalities supply area.



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# INEP PERFORMANCE (12/13)

Entity	MTEF Allocations	Connections INEP (including roll-overs)	Connections Own funding	Total Connections
<b>Eskom (bn)</b>	R 1,879 368	121 041	21 831	142 872
<b>Municis (bn)</b>	R 1,151 443	50 620		50 620
<b>Non-grid (mil)</b>	R 86 400	9 343		9 343
<b>Total</b>	<b>R 3,117,211</b>	<b>181 004</b>	<b>21 831</b>	<b>202 835</b>

- ✓ Target of 180 000 was exceeded
- ✓ Improved efficiencies as a result of being more involved in the operational activities of implementers.



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# Universal access background

- INEP established in 2001/02 - address backlogs of households in line with Energy White Paper (1998) recommendations.
- Newly built households to be electrified by the restructured Electricity Distribution Industry (EDI) - due to serious inefficiencies in the EDI over the last 10 years, INEP had to address not only backlogs, but also newly built houses and informal households.
- Not only connections had to be funded, but also 'back bone' network infrastructure.
- In addition to the above challenges, escalating electrification costs and limited funding, as well as the high growth rate of houses (formal and informal), resulted in a serious threat to reach universal access in the country.
- Despite its successes to date, the electrification programme will fall short in meeting its target of electrifying 92% of formal households by 2014, as defined as backlogs in 2001/02.



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# Universal access background (cont.)

- If universal access to electricity by 2014 is not practical, what is the most effective and realistic timeframe to reach universal access, given the various challenges in the electricity industry, raising cost of electrification, etc.?
- Hence a new approach to electrification is required - New Electrification Roadmap (Implementation plan) for South Africa was developed.
- In 2011 DoE started with a new initiative where all the relevant stakeholders were invited to participate and agreed on the need for a new Electrification Roadmap.
- To improve the rate of electrification the following basic elements are required:
  - Work from a common implementation plan
  - Improve the efficiency of implementers
  - Additional funding
  - Utilizing different technologies to define access to energy

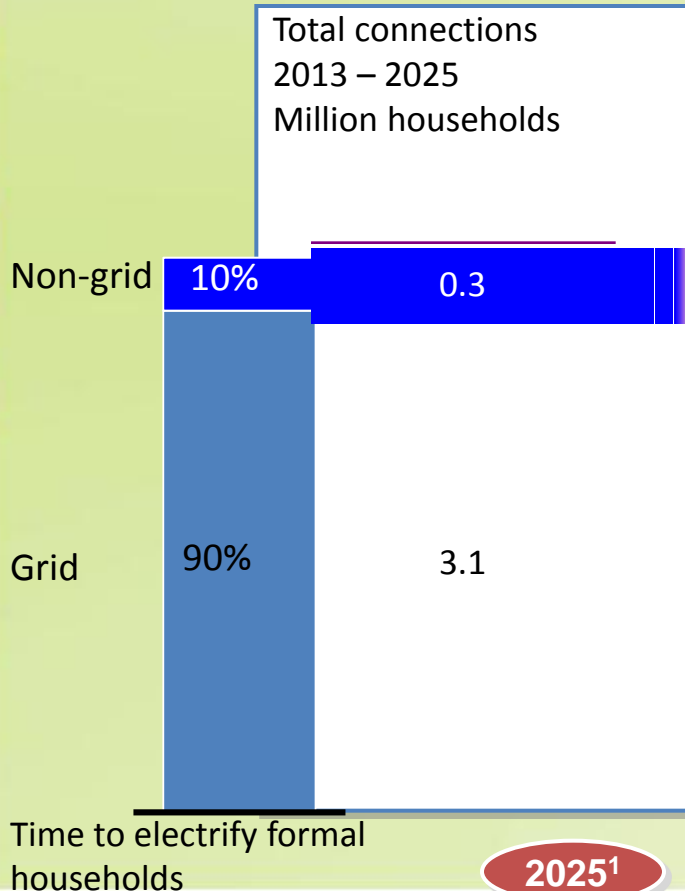


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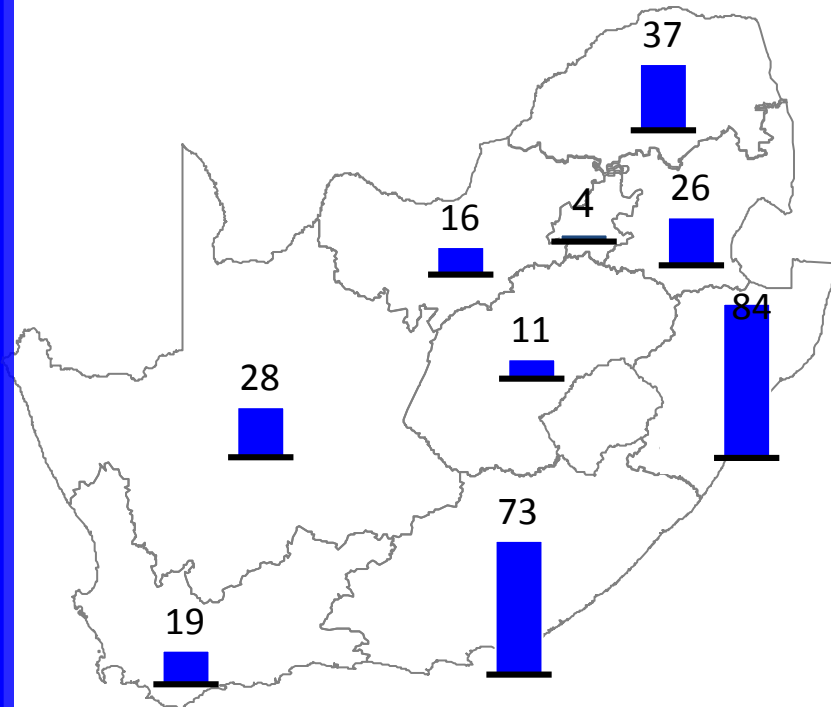
# Using these rules, it is expected to deploy around 300,000 solar home systems and reach universal access for formal households in 2025

## South Africa



## Provincial non-grid potential

### Thousand households



The highest potential for Non-grid is in KZN and Eastern Cape

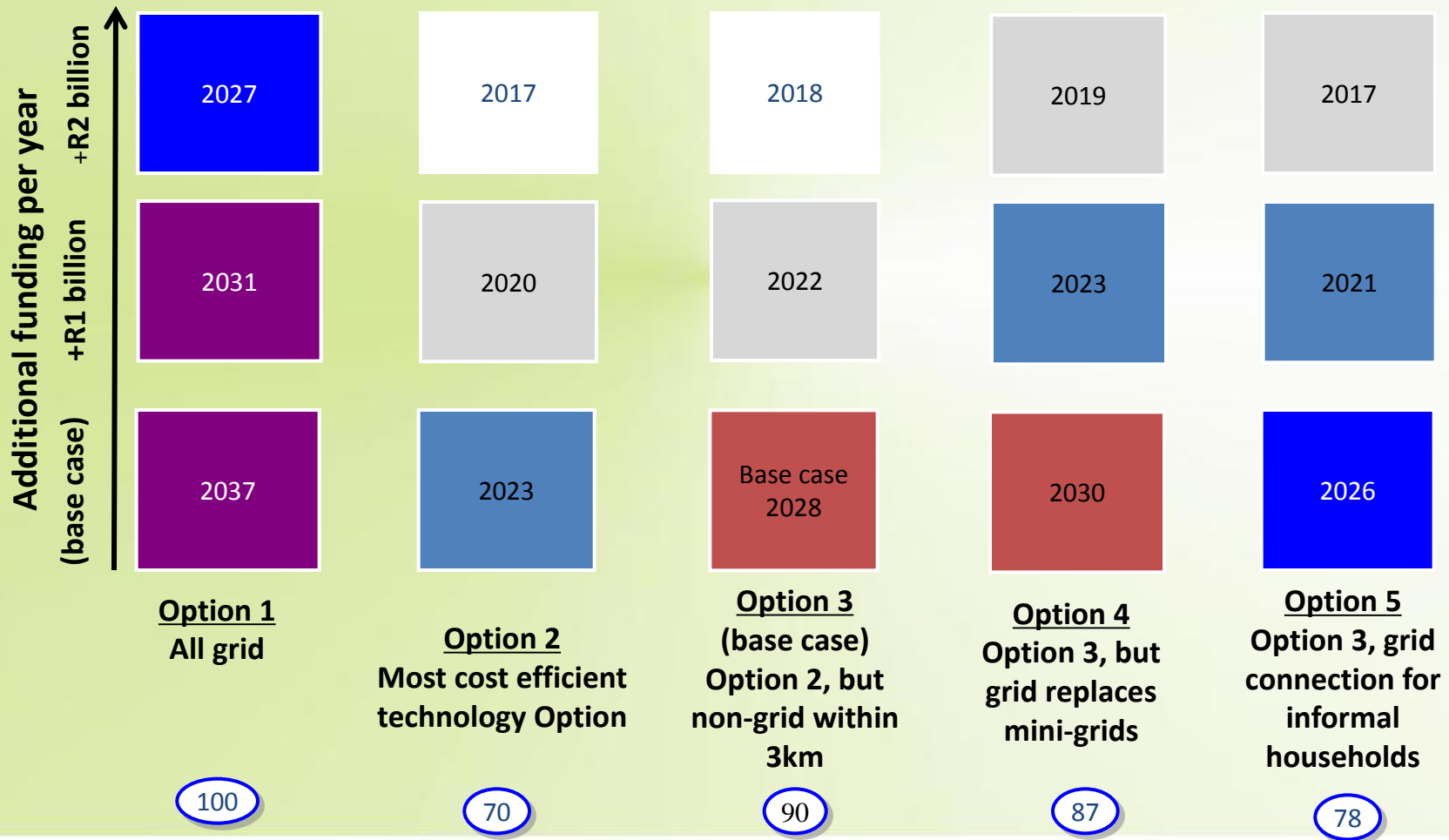
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<sup>1</sup> Assumes existing INEP annual funding and DoHS contribution of R2,000 per household for new RDP houses (40,000 houses per annum); assumes total of 50,000 new formal households per year from DoHS formalization process




# Universal Access is function of Electrification Technology options and funding



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Technology mix

 % of current un-electrified formal households to be connected to the grid

# New Households Electrification Strategy

The **Cabinet Approved (26 June 2013)** the implementing of the new Household Electrification Strategy based on the following focus areas:

- a) The defining of universal access as 97% of households, as full electrification is unlikely to be possible due to growth and delays in the process of formalising informal settlements;
- b) The electrification of about 90% of households through grid connection and the rest with high-quality non-grid solar home systems or other possible technologies based on cost effective options in order to address current and future backlogs;
- c) The development of a master plan to increase efficiency in planning and the delivery process to ensure more connections, including a workshop on the Plan to which all members of Cabinet would be invited to; and

The consideration of the proposed delivery targets, taking into consideration views with regard to-

- i. the proposed change to the delivery dates for universal access from 2014 to 2025
- ii. the concern that the new proposed target of 250 000 households will contribute to the backlog with regard to the targets set by the Presidential Infrastructure Coordinating Commission (PICC); and
- iii. funding provided by the National Treasury to speed up connections

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# INEP: MTEF Allocations

<b>VOTED FUNDS</b>	<b>MTEF 2013/14 R'000</b>	<b>MTEF 2014/15 R'000</b>	<b>MTEF 2015/16 R'000</b>	<b>MTEF 2016/17 R'000</b>
<b>MUNICIPALITIES</b>	1 314 772	1 564 658	2 056 090	2 165 063
<b>ESKOM</b>	2 141 027	2 470 024	3 661 039	3 852 775
<b>NON - GRID</b>	91 150	96 621	101 067	106 424
<b>BASELINE ALLOCATION</b>	<b>3 546 949</b>	<b>4 131 303</b>	<b>5 818 196</b>	<b>6 124 262</b>



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# Households electrified in South Africa

- 2011 Census:  $\pm 12,24$  mil households out of  $\pm 14,45$  mil households are utilizing electricity as a lighting source;  $\pm 85\%$  of households have access to electricity for lighting purposes.
- Different types of households included into the total household figure (built on the same stand as the formal household):
  - Houses/flats/rooms in backyard 423 000
  - Informal dwellings in backyards (shacks in backyard) 713 000
  - Room/flatlet on a property or larger dwelling/servants quarters/granny flat 120 000
- Total 1,256 000
- Majority of these households (about 90% ) are not metered, estimated to be  $\pm 1$  mil .
- Network designs were not done to accommodate these additional households, hence will have to be upgraded.
- These households also do not qualify for inclining block tariff and FBE.
- About 2.2 mil households according to Census 2011 stats are without electricity, if the about 1,1 mil households that are not metered are been added, total figure of about 3,2 mil.
- In line with the INEP stats for households that are not formally electrified (metered), hence  $\pm 77\%$  households have a metered supply.



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# Electrification observations

Following observations regarding electrification projects:

- Electrification is not only an electricity industry challenge – it is a social challenge;
- Every new research/technology break-through will automatically result in resolving electrification mass roll-out implementation problems – challenge not technology but whole value chain of electricity industry need to functioning in harmony;
- Pilot projects will solve electrification problems - very few pilot projects are successful;
- Electrification does not make commercial sense – at the most it can be a break even venture:
- Recover connection costs via tariffs - consumption levels of rural costumers so low that it is impossible to recover capital and operations cost from the tariffs alone;
- In most instances not even possible to recover operation costs to supply a rural customer;



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# Electrification observations (cont..)

Following observations regarding electrification projects (continue):

- Metering technology can solve financial viability of electrification projects – non of the current metering solution (pre-paid meters, smart meters etc) can fulfil such a roll;
- Renewable energy technology systems requires no maintenance – need service providers and community responsible to take ownership of asset.



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# Way forward

If universal access to electricity is to be reached by 2025, the following is needed:

- Adequate funding for capital projects, management of INEP programme, skills transfer/Training
- Implementation in line with the Master Plan,
- Need to solve the serious challenges in the EDI - difficult to run an electrification programme where networks requires serious upgrading,
- To solve some serious network constraints – can't roll out connections in some parts of KZN and EC where there are large backlogs,
- More political support for non-grid technologies,
- Good co-operation between National Government and other spheres of government,
- Resources wrt municipalities to be improved, political intervention, long procurement processes, lack of responsibility and accountability, lack of reporting,
- DOE is 100% committed to the task of universal access by 2025.
  - Every 70 sec of a workable day in 2012 a new connection was made,
  - In 2013 we want to decrease it to every 60 sec that a new connection is made.



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# Thank you



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# Electrification Master plan

## Grid and Non – Grid Opportunities

- Least cost approach (benchmark)
  - cost per connection R12000 – Urban
  - cost per connection R17000 – Rural
- Critically analysing major infrastructure need/initiatives (PICC and SIP)
- Generation Capacity vs available network capacity – time frames to electrify outstanding households.



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# Census 2011 figures on main source of energy for lighting vs current situation

PROVINCE	Households 2011 Census	Houses electrified Census 2011	Backlog Census 2011	% Access per Province	Project Households with growth	ESKOM Connections (Oct 2011-June 2013)	Munic Connections (Oct 2011-June 2013)	Total House- holds connected	Houses without Electricity	Houses electrified	% Access per Province (Using Average %)	
EASTERN CAPE	1 687 385	1 265 759	421 626	75.01%	1 721 133	40029	9701	49730	405 644	1 315 489	76.43%	
FREE STATE	823 316	740 500	82 816	89.94%	839 782	6118	6771	12889	86 393	753 389	89.71%	
GAUTENG	3 909 022	3 416 360	492 662	87.40%	3 987 202	26470	11979	38449	532 393	3 454 809	86.65%	
KWAZULU NATAL	2 539 429	1 977 257	562 172	77.86%	2 590 218	43603	17307	60910	552 051	2 038 167	78.69%	
MPUMALANGA	1 075 488	929 372	146 116	86.41%	1 096 998	23729	10798	34527	133 099	963 899	87.87%	
NORTHERN CAPE	301 405	257 255	44 150	85.35%	307 433	5757	3533	9290	40 888	266 545	86.70%	
LIMPOPO	1 418 102	1 237 495	180 607	87.26%	1 446 464	47590	19489	67079	141 890	1 304 574	90.19%	
NORTH WEST	1 062 015	892 424	169 591	84.03%	1 083 255	21718	6243	27961	162 870	920 385	84.96%	
WESTERN CAPE	1 634 000	1 525 980	108 020	93.39%	1 666 680	19466	8721	28187	112 513	1 554 167	93.25%	
TOTAL	14 450 162	12 242 402	2 207 760	84.72%	14 739 165	234 480	94 542	329 022	2 167 741	12 571 424	86.05%	
		Census 2011 Figures					DoE connections from October 2011 to June 2013					

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