

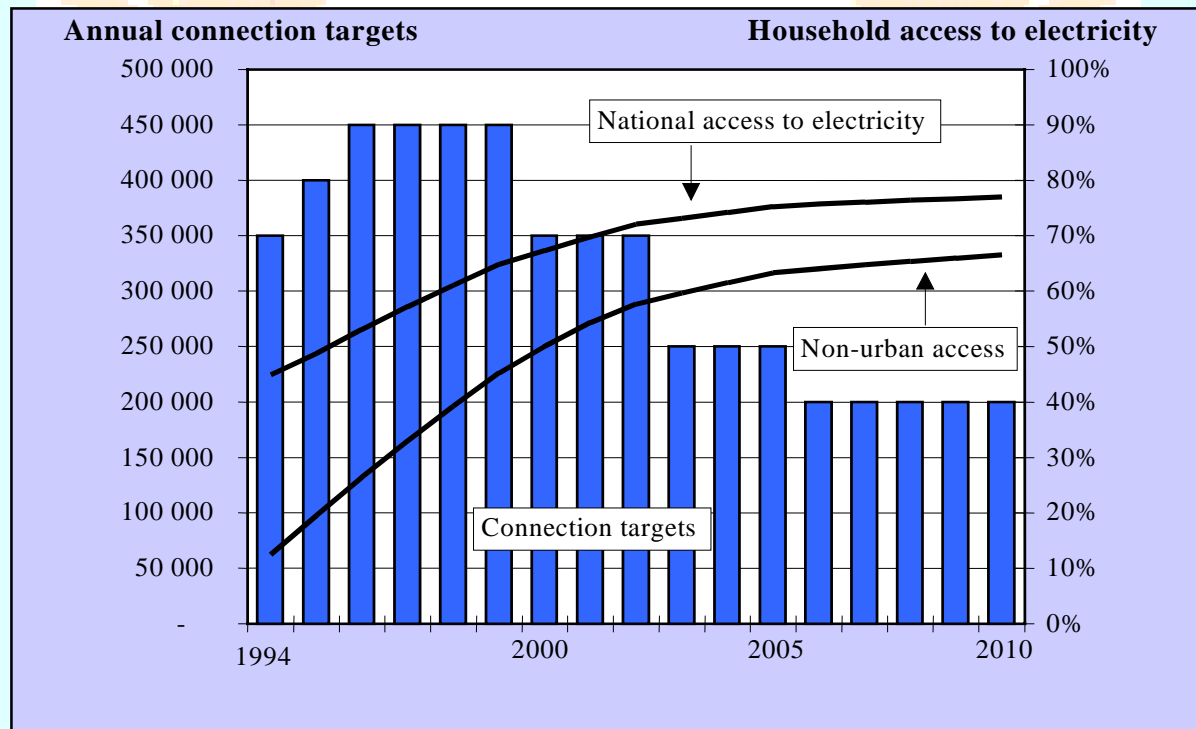
# The National Electrification Programme

A Brief

Overview

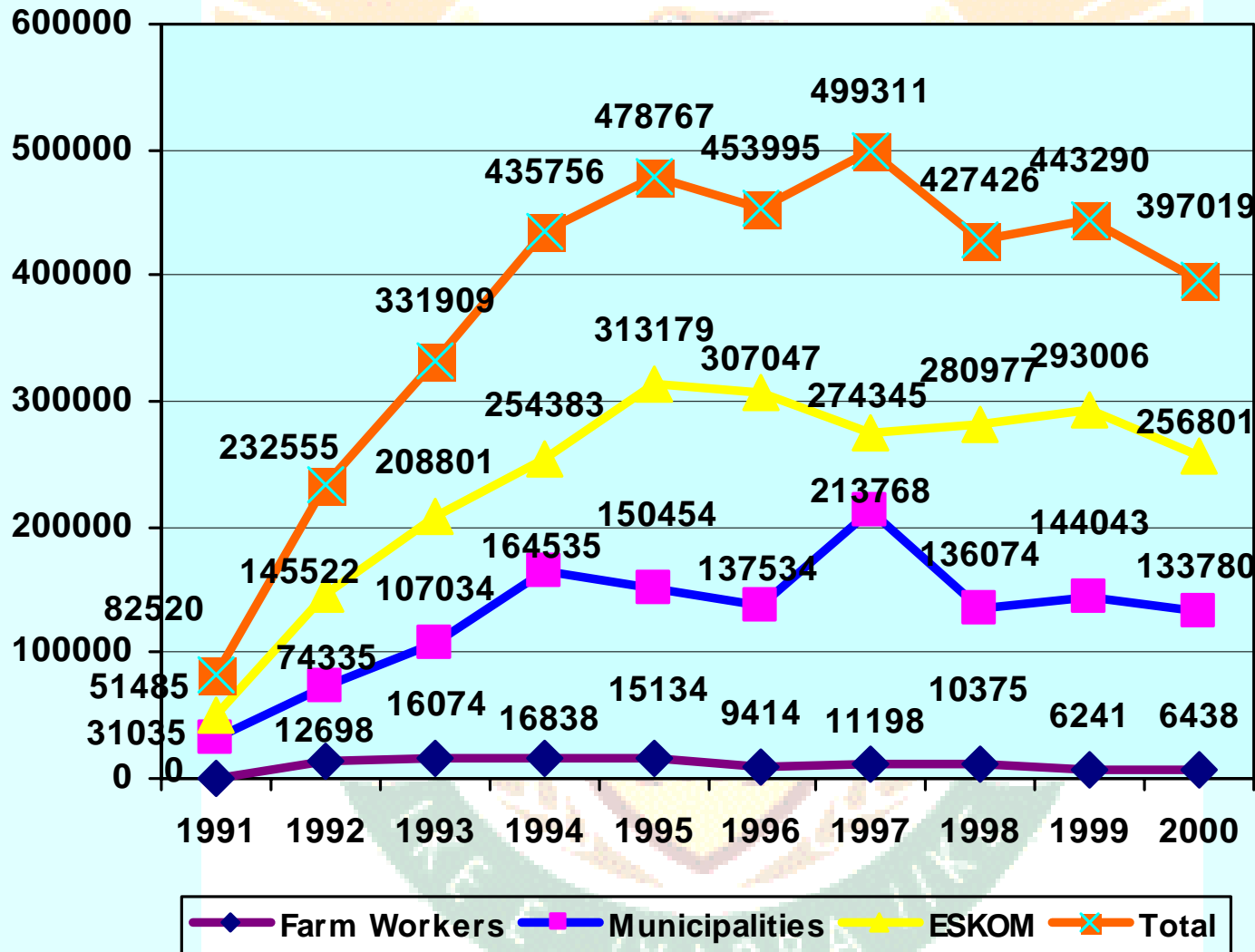


# The 1994-1999 National Electrification Programme



**NELF/ RDP Compact between Government and the Electricity Supply Industry: 2.5 million new household connections in the period 1994 to 1999, funded entirely by the Industry**

# The RDP Electrification Programme: Annual Connections



# RDP Electrification Programme: Actual Achievements

- ◆ **~2.8 million** new household connections: 1994 - 1999
- ◆ Financed partly through a "surcharge" on ESKOM sales and partly through debt financing by the respective utilities
- ◆ ESKOM/NER agreement: ESKOM to transfer R300 million/a, annually adjusted proportional to tariff increases, for allocation to Municipalities
- ◆ Average total annual investment **~ R 1.2 billion**

## Status of Electrification as on 31 December 2000

	No of houses electrified	No of houses not electrified	% electrified	% not electrified
Rural	1 949 994	1 923 996	50.3	49.7
Urban	4 825 403	919 777	84.0	16.0
<b><u>Total</u></b>	<b><u>6 775 397</u></b>	<b><u>2 843 773</u></b>	<b><u>70.4</u></b>	<b><u>29.6</u></b>

# **Electrification of Rural Schools & Clinics: Achievements & Scope**

- ◆ **1994: ~25 900 rural schools & ~ 2 000 health clinics identified for electrification**
- ◆ **16 400 schools and most of 2 000 clinics earmarked for PV-based non-grid electrification**
- ◆ **Secured grant funding after initial RDP allocation of MR86**
- ◆ **2 350 schools and 495 clinics PV electrified @ ~MR 165**
- ◆ **4 888 schools / 35 clinics grid connected (Funded by ESDEF)**
- ◆ **International donor support will always be welcomed, but a sustained flow of funding is required to support sustained rural development. Donor funding tends to flow in irregular spurts.**
- ◆ **Backlog of ~17 000 schools / ~1000 clinics to be integrated with the National Electrification Programme**

# Household Electrification: Some Cost Considerations

	<b><u>1994</u></b>	<b><u>1995</u></b>	<b><u>1996</u></b>	<b><u>1997</u></b>	<b><u>1998</u></b>	<b><u>1999</u></b>
<b>Connections p.a.</b> <b>{Industry}</b>	<b>435756</b>	<b>478767</b>	<b>453995</b>	<b>499311</b>	<b>427426</b>	<b>443290</b>
<b>CAPEX p.a.</b> <b>[Rmil] {Industry}</b>	<b>1481.6</b>	<b>1411.9</b>	<b>1473.2</b>	<b>1176.4</b>	<b>1234.8</b>	<b>1186.2</b>
<b>CAPEX per conn.</b> <b>[R] {ESKOM}</b>	<b>3179</b>	<b>3370</b>	<b>3417</b>	<b>3159</b>	<b>3008</b>	<b>2975</b>
<b>Monthly OPEX per</b> <b>conn. [R] {ESKOM}</b>	<b>26</b>	<b>24</b>	<b>23</b>	<b>26</b>	<b>19</b>	<b>19</b>
<b>Monthly sales per</b> <b>conn. [kWh]</b> <b>{ESKOM}</b>	<b>80</b>	<b>78</b>	<b>86</b>	<b>99</b>	<b>107</b>	<b>95</b>
<b>Monthly income per</b> <b>conn. [R] {ESKOM}</b>			<b>19</b>	<b>24</b>	<b>27</b>	<b>28</b>

# **Electrification Programme: Main Conclusions**

- **The Electrification Programme is not commercially viable**
- **It is fundamentally a long-term social investment programme with an indirect future return on capital**
- **Financing such a programme from inside the EDI places an undue burden on the utility and jeopardises its sustainability**
- **Such financing is not transparent and is difficult to co-ordinate with other infrastructure investment programmes**
- **Rural areas are particularly costly and difficult to electrify**
- **Substantial capital subsidies are prerequisites to drive such a programme. However, tariffs need to be adjusted to ensure that sales at least cover operating costs**

# Electrification Policy Guidelines from the Energy White Paper

*"Government commits itself to implementing reasonable legislative and other measures, within its available resources, to progressively realise Universal Access to electricity."*

*"Government will co-ordinate the electrification programme, including the setting of realistic targets, determination of allocation criteria and priority areas, ensuring allocation and management of funds, financing and subsidisation of projects and the determination of an appropriate mix between grid and non-grid technologies."*

*"Government will establish a National Electrification Fund to provide electrification subsidies."*

*"The National Electrification Fund will subsidise a portion of the capital costs of connections made towards meeting electrification targets."*



# Establishment of the National Electrification Fund (NEF)

*"Government will fund a National Electrification Fund on budget, from a dedicated electrification levy, the level of which will be determined annually, as part of the budgetary process."*

*"Backlog as well as new household connections will receive a standard subsidy, with differentiation in subsidy level on the basis of geographic region, supply technology or any other factor."*

*The National Electricity Regulator will regulate domestic electricity tariffs in order to rationalise the large variety of tariffs available in South Africa and ensure that a suite of supply options with progressive capacity-differentiated tariffs and connection fees are available to domestic customers*

*In remote rural areas, where the lowest capacity grid system cannot be supplied within the capital expenditure limit, this system will provide a natural opportunity for Remote Area Power Supply (RAPS) systems to be supplied.*

# National Electrification Programme: The Task

## Universal Access by 2010 ⇔ Access/Service Trade-off

- At least 284 000 household connections per annum
- Contain cost per connection to approximately R3 000
- Catch up on the Electrification of Rural Schools and Clinics
- Implement an appropriate Suite of Supply Options
  - ◆ commensurate with load projections
  - ◆ upgradable on application at payment of connection fee

### Supply Option

### Associated Level of Service

• Non-Grid (R100 max)	SHS: Lights (4), small B&W TV and small Radio
• <10 Amp (R0)	Lights, TV, Radio, limited additional small appliances
• 20 Amp (R150)	Most electricity requirements; may have to balance load
• 40 Amp (R500)	All electricity requirements, normal middle income house
• 60 Amp (R1000)	All electricity requirements - Suitable for small businesses

# **National Electrification Programme: The Budget**

<b>284 400 Household Connections per annum @ R3 200 each</b>	<b>R 910 million</b>
<b>1 700 rural schools + 100 rural clinics per annum @ R64 000 each</b>	<b>R 115 million</b>
<b>Programme management costs per annum</b>	<b>R 25 million</b>
<b>Total projected annual budget</b>	<b><u>R1 050 million</u></b>

## **Note:**

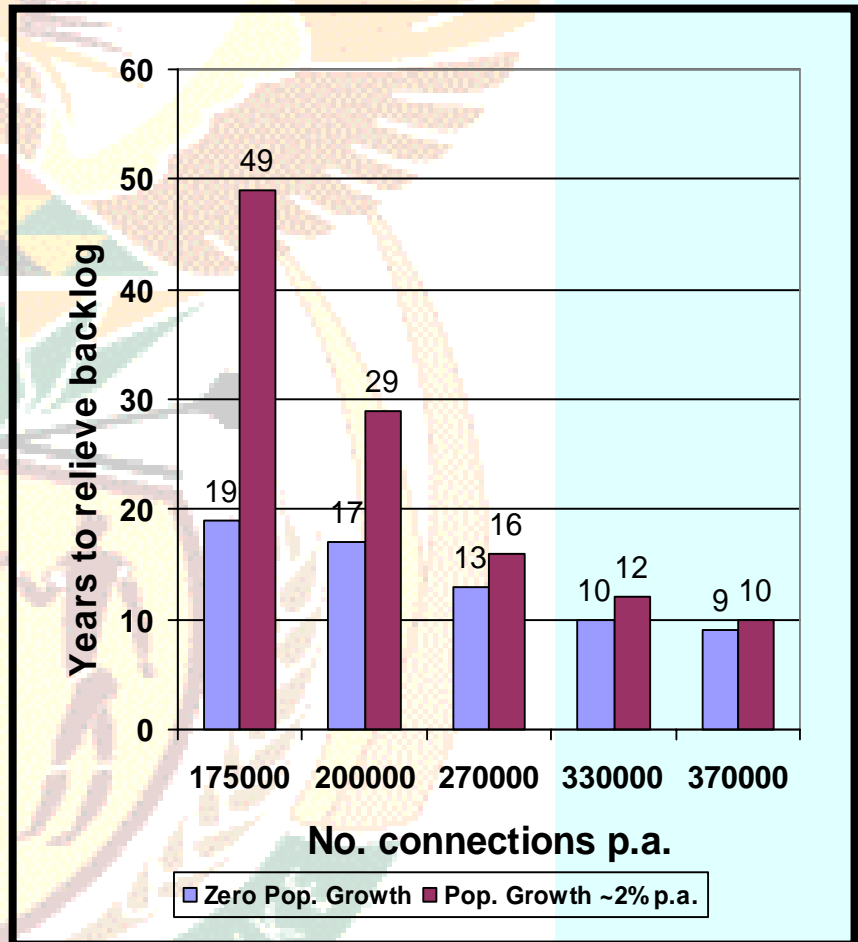
- ◆ This estimate assumes zero population growth over the period
- ◆ Funds to be provided on the DME Budget as a fiscal allocation

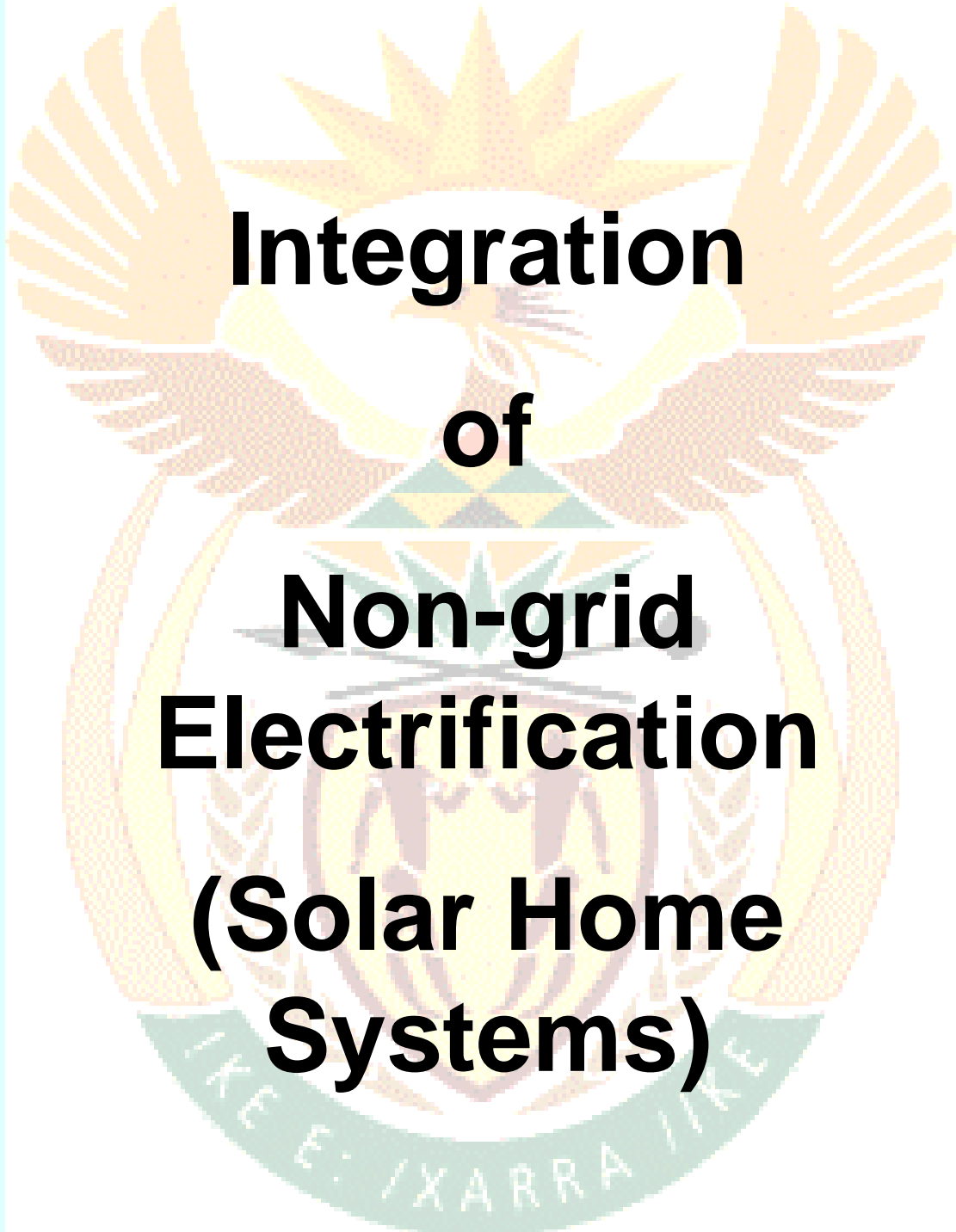
# Projected Time Frames

Period	Household connections per annum	Schools electrified per annum	Clinics electrified per annum	CAPEX per annum (Rm/Y2000)
5 years	568 800	3 400	200	R 2 034
7 years	406 300	2 430	143	R 1 453
10 years	284 400	1 700	100	R 1 016

# Effect of Population Growth & Budget Cuts

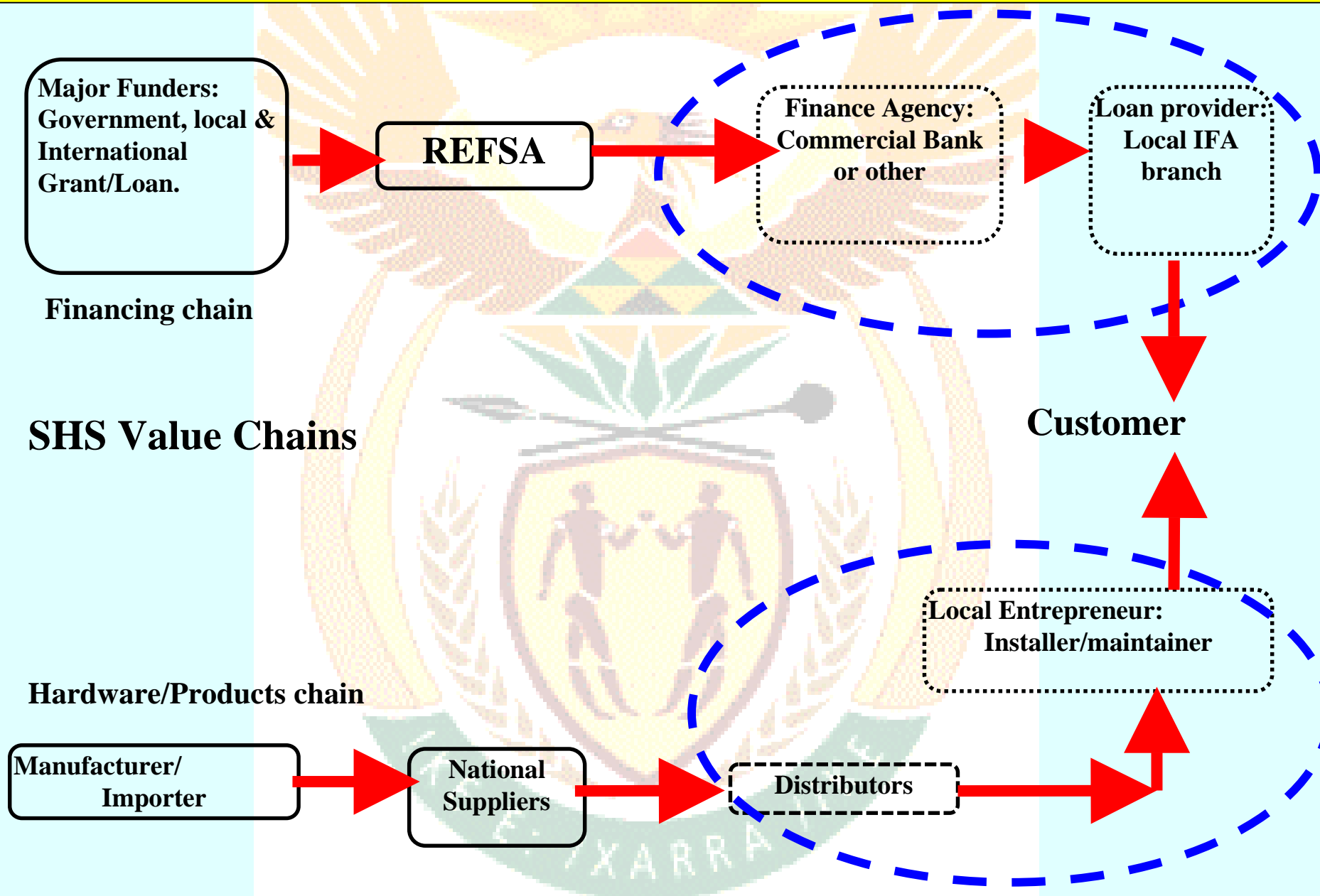
- At 170 000 or less connections per annum, universal access to electricity is moved out indefinitely



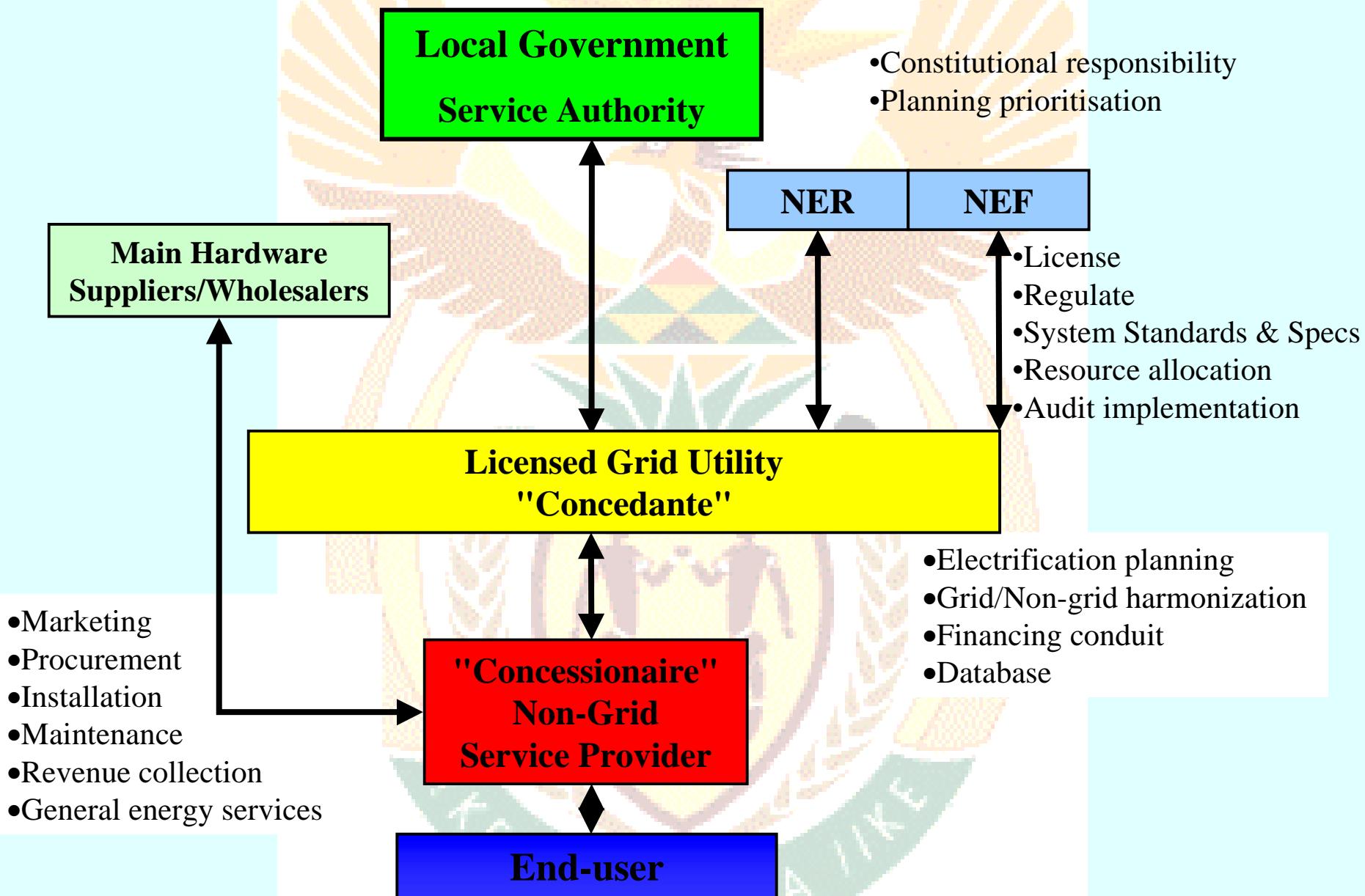


# **Integration of Non-grid Electrification (Solar Home Systems)**

# Rural Electrification: The Non-Grid Utility

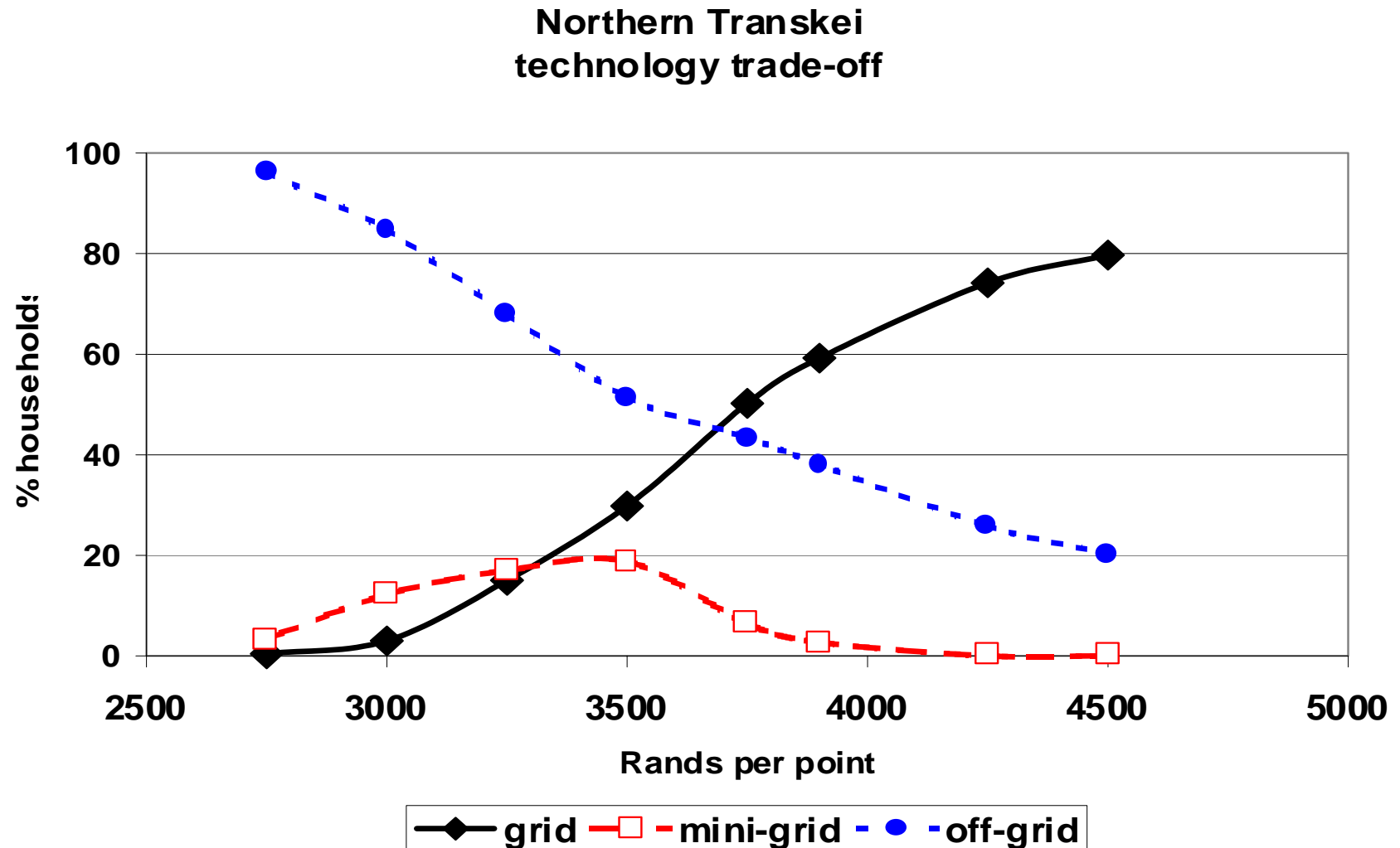


# Non-Grid Electrification: The Utility Model

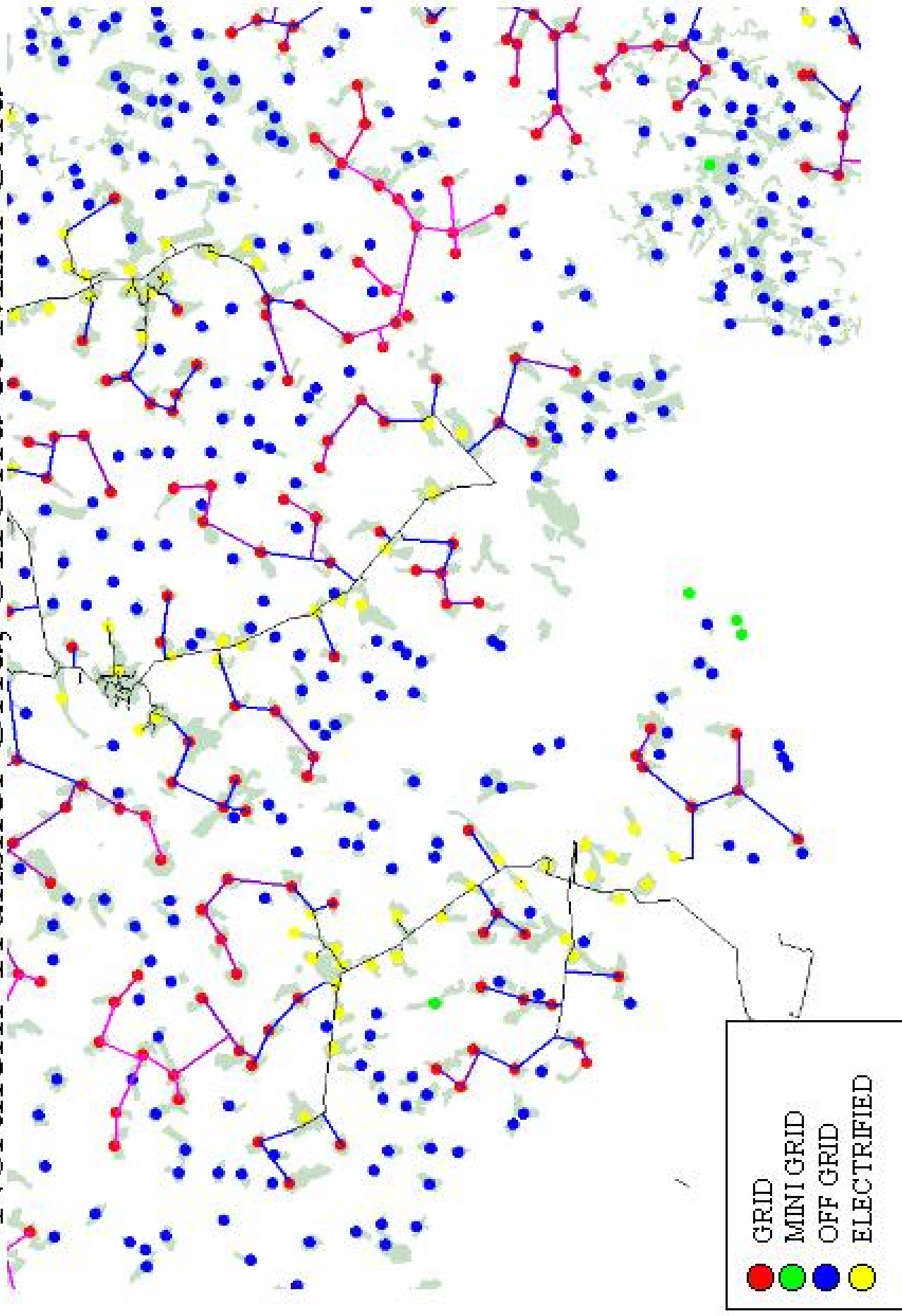




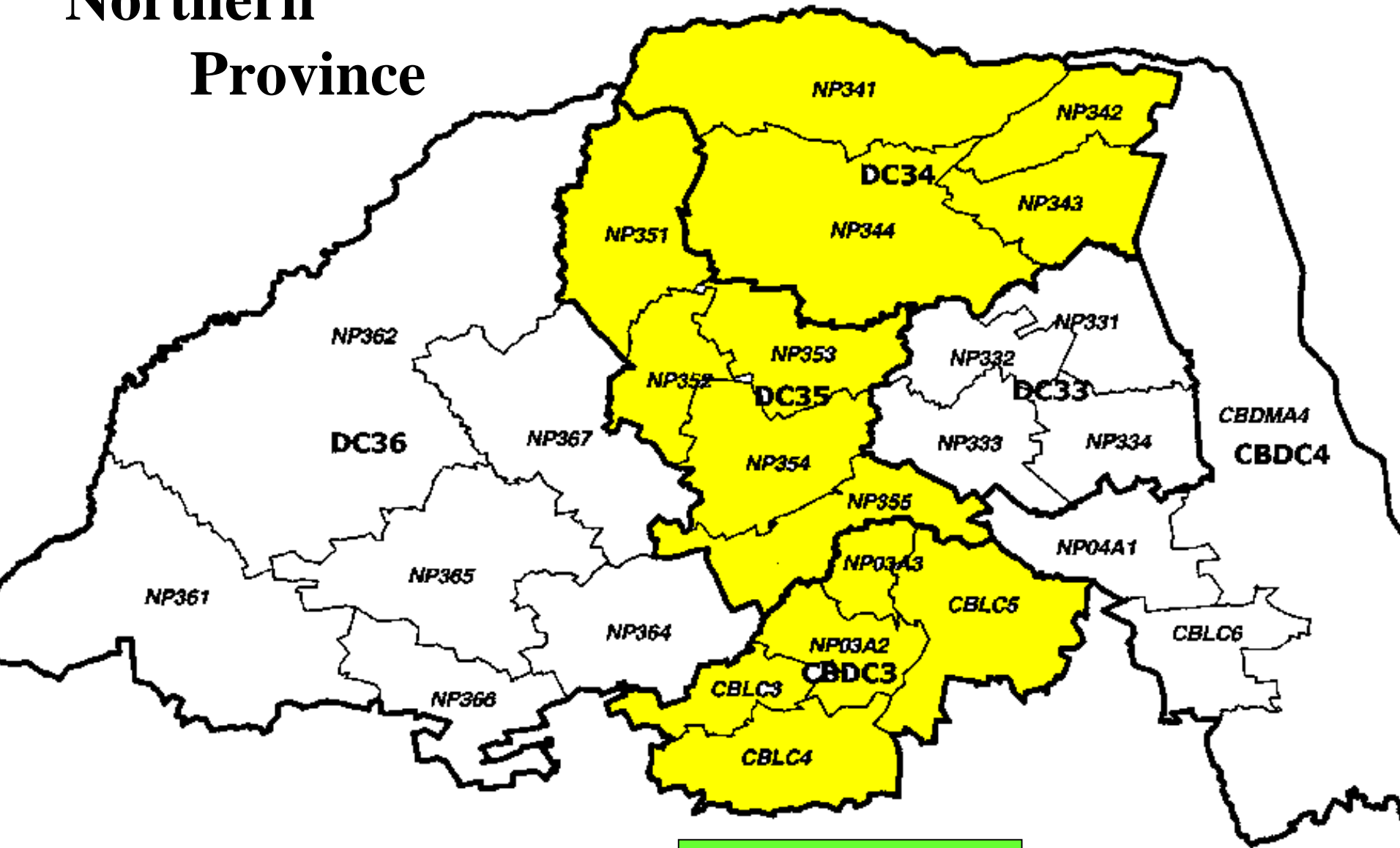
# Rural Electrification: Grid/Non-Grid Complementarity



# Northern Transkei Grid, OffGrid & Mini Grid



# Northern Province



Solar Vision Group



**RAPS/NUON Group**

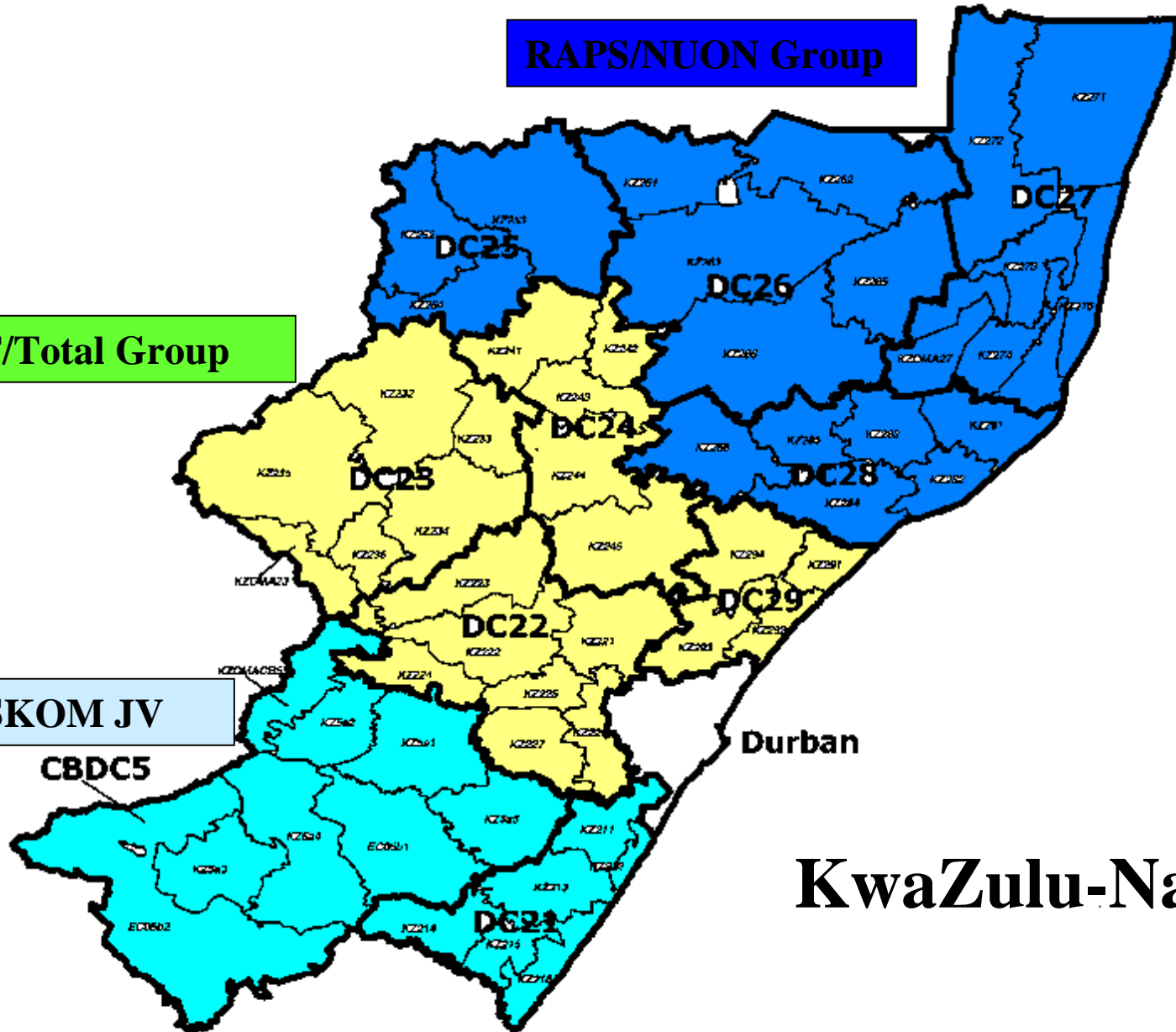
**EdF/Total Group**

**Shell/ESKOM JV**

**CBDC5**

**Durban**

**KwaZulu-Natal**



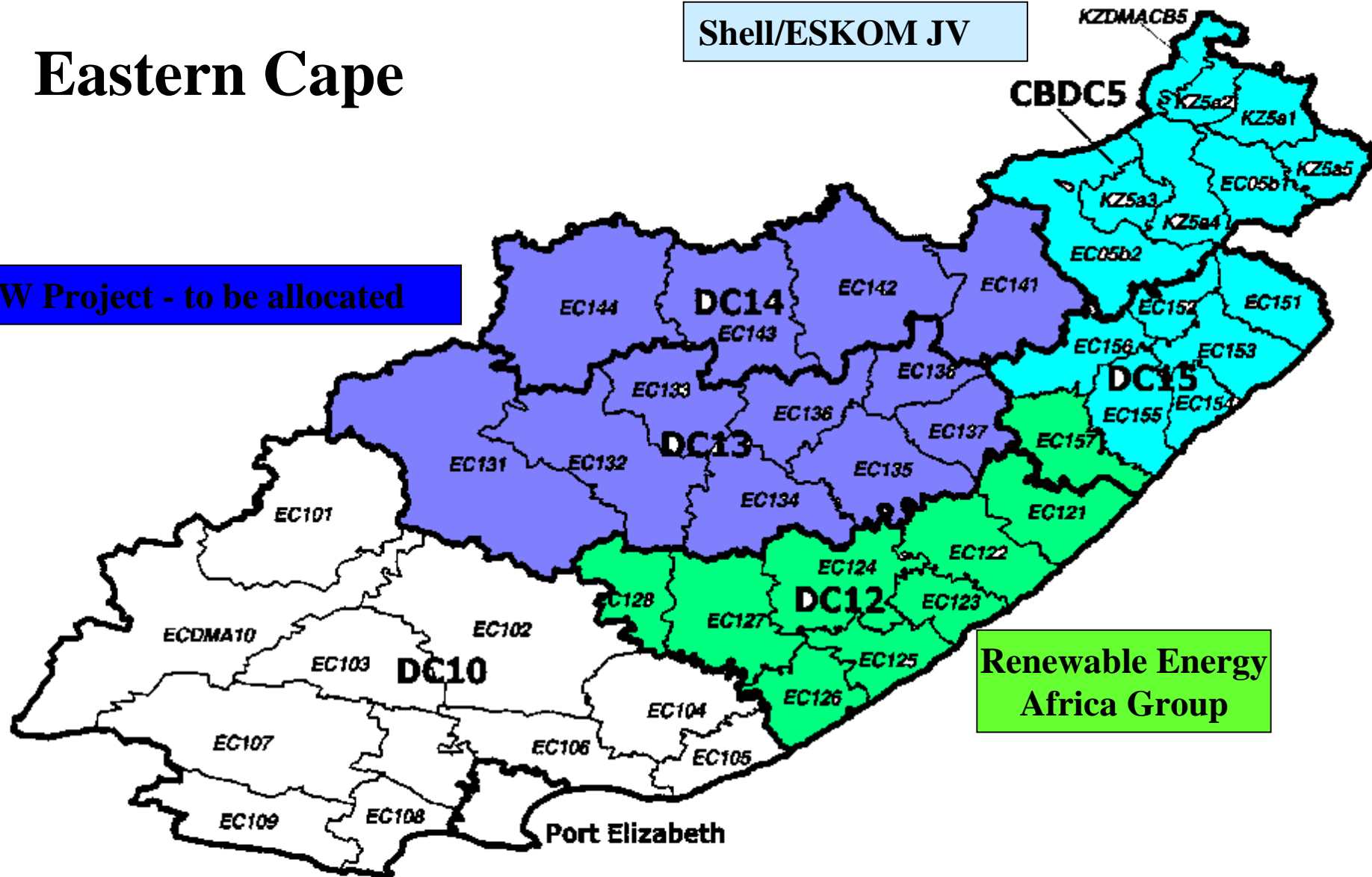
# Eastern Cape

Shell/ESKOM JV

KZDMACB5

CBDC5

KfW Project - to be allocated



Renewable Energy  
Africa Group



