# Overview of Renewable Energy Opportunities in South African Municipalities

# Renewable Energy Landscape

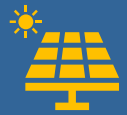
- Increased interest in renewable energy implementation due to cost-savings, load-shedding and climate change.
- Changes to the Electricity Regulation Act have encouraged greater participation from the private sector.
- Removal of licensing threshold for Embedded Generation – only registration required.
- Municipalities encouraged to participate in energy generation and procurement.

**Aim of presentation:** Overview of renewable energy mechanisms
Key actions for munics to take
Support available

# RENEWABLE ENERGY MECHANISMS

- Embedded Generation
- Wheeling
- Procurement from IPPs
- Municipal Own Generation

# EMBEDDED GENERATION



**A generator connected to the municipal distribution network. These are typically on a customer's property and behind their meter.**

**Likely installed by customers who would like to:**

- **Reduce their electricity costs**
- **Alleviate load-shedding (if installed with batteries)**
- **Address climate impact concerns**

**Customer characteristics:**

- **Commercial or industrial**
- **Mid to high income households.**

# EMBEDDED GENERATION:

## KEY ACTIONS

| | |
|---|---|
| **1. EG POLICY** | Develop an EG Policy and get it approved by Council. |
| **2. ELECTRICITY BY-LAW** | Make amendments to the Electricity By-Law – to enforce the policy. |
| **3. CAPACITY BUILDING** | Capacitate municipal officials to deal with installations and applications. |
| **4. EXPORT CREDIT** | Design an EG Export Credit and get Council approval |
| **6.METERING/BILLING** | Revise metering and billing system. |
| **7. RECORD KEEPING** | Develop a system to monitor, record and report on EG systems. |
| **8. COMMUNICATION CAMPAIGN** | Develop a communication campaign for EG (encouraging registrations). |

# EMBEDDED GENERATION

## WHAT NOT TO DO

Ignore EG installations without regulating them, this could result in:

- Revenue Loss
- Installation of unsafe systems
- Technical challenges to the network.

# EMBEDDED GENERATION:

*Table 1: Summary of connection assessment requirements for small- and large-scale generators*

| Generator characteristics | | | Connection assessment method | |
|---|---|---|---|---|
| Scale | Size | LV or MV connected generator | Simplified criteria (NRS097-2-3) | Grid studies |
| Small-scale (up to 1MVA) | 0-350kVA | LV connected | ✓ | ✗ (if complies with NRS097-2-3) |
| | | MV connected | ✗ | ✓ |
| | 350kVA-1MVA | LV or MV | ✗ | ✓ |
| Large-scale (>1MVA) | >1MVA | LV or MV | ✗ | ✓ |

# EMBEDDED GENERATION:

## Support Available :

**Municipal Embedded Generation Training (SALGA/GIZ/SEA):**

| Technical | Financial | Capacity Building |
|---|---|---|
| • Bi-directional Metering<br>• Grid Impact Studies<br>• Grid Code Compliance | • EG Tariff Training | • Application Processing |

# WHEELING

**Wheeling is the delivery of electricity generated by a private operator in one location to a buyer or off-taker in another location via a third-party network (Eskom or municipality).**

**Typical customers:**

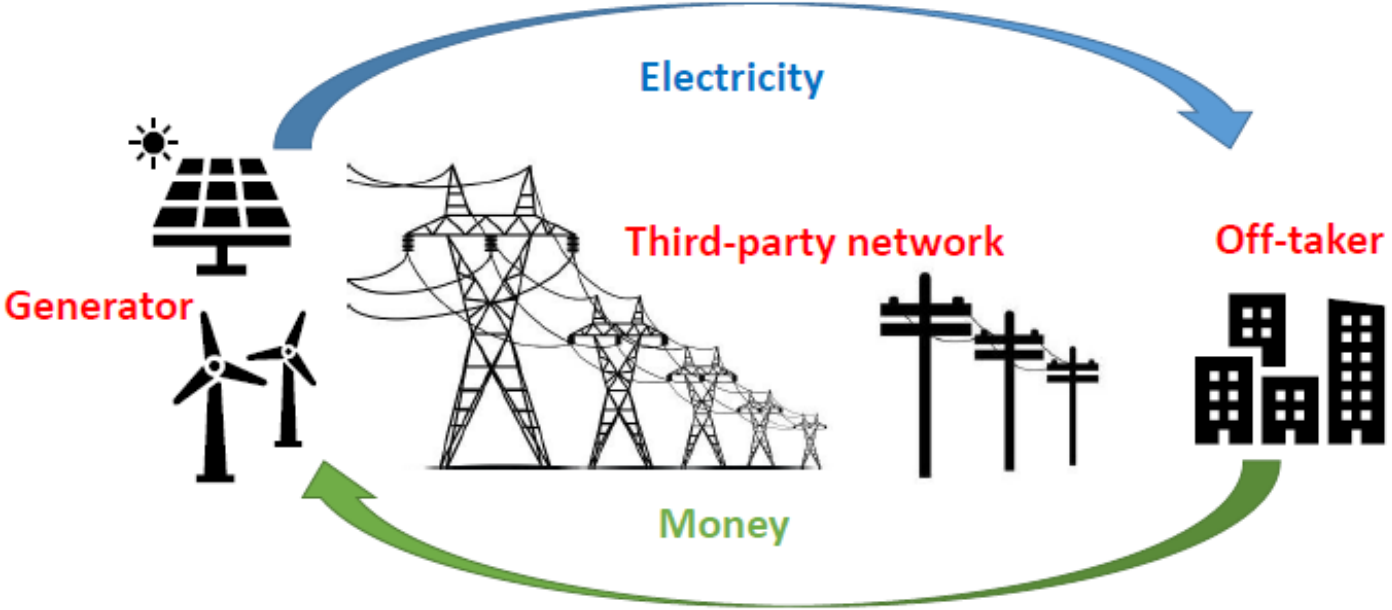
- **Customers who would like to meet their climate change objectives**

**The Electricity Regulation Act stipulates that, " .. A licensee must to the extent provided for in the licence, provide non-discriminatory access to the transmission and distribution power systems to third parties".**

**HOWEVER,**

**Wheeling can only be permitted if the action complies with all technical, safety and commercial requirements.**

# WHEELING




- This is primarily a financial transaction.
- If a generator is connected to the distributor's grid, an EG process would need to be followed.

# WHEELING:

## KEY ACTIONS

| | |
|---|---|
| **1. EG PROCESS** | Having a functional EG process & understanding prior to Wheeling. |
| **2. COST OF SUPPLY** | Conduct a detailed cost of supply study to determine the cost of the grid usage. . |
| **3. WHEELING FRAMEWORK** | Establish an overall framework for wheeling, including aims and long-term implications. . |
| **4. AGREEMENTS** | Develop draft generic connection and use of system agreements. |
| **6.BILLING** | Revise the billing system to accommodate wheeling charges and third-party sales. |

# WHEELING

## WHAT NOT TO DO

Allow  service providers to use the grid for wheeling without paying for usage.

All customers should pay their fair share of costs associated with grid usage.

# WHEELING:

## Support available :

### SALGA/GIZ/SEA

- Wheeling information sessions
- Wheeling Training

### GREENCAPE

- Support to Western Cape + Mpumalanga municipalities

### RESOURCES

- Wheeling Discussion Paper
- George's Wheeling Guideline
- Information Session Recordings

# PROCUREMENT FROM IPPs

**Municipalities are enabled to procure or buy new generation capacity i.e. buy from IPPs or own build.**

**Municipalities consider procuring from IPPs to:**

- **Reduce reliance on Eskom**
- **Address climate change concerns**
- **Access 'cheaper' electricity**

**However, few municipalities have successfully procured from IPPs because:**

- **Process is long and difficult**
- **There are steep requirements that municipalities must meet**

# PROCUREMENT FROM IPPs

Municipalities are required to apply to the Minister for a Section 34 Determination supported by:

- Feasibility study approved by Municipal council
- Evidence of alignment with IRP & IDP.
- Proof of compliance with MSA and MFMA.

# KEY ACTIONS

| | |
|---|---|
| **1. TARGET SETTING** | Assess needs + set targets for alternative electricity procurement and generation. . |
| **2. ENERGY SUPPLY PLAN** | Develop local energy supply plan. |
| **3. NERSA/TREASURY** | Ensure NERSA + Treasury are aware of municipalities intention to procure from IPPs |
| **4. AGREEMENTS** | Develop standard PPA that can be used for IPPs. |
| **6.ToR** | Draft ToR for procurement of electricity from IPPs (size and technology limits) |
| **7. PROCUREMENT** | Conduct procurement process and assess offers |
| **8. GRID ASSESSMENT** | Conduct grid connection assessment. |

# PROCUREMENT FROM IPPs:

## WHAT NOT TO DO

Municipalities should not enter into PPAs with IPPs without a formal procurement process.

This includes signing a Memorandum of Understanding.

# PROCUREMENT FROM IPPs:

**Support available :**

| SALGA | RESOURCES |
| --- | --- |
| • Independent Power Procurement Office (To be Launched) | • MPE Guide on Grid Compliance (In Progress)<br>• Guide to process systems larger than 1 MW (In Progress) |

# MUNICIPAL OWN GENERATION

**Municipalities are installing renewable energy technology on municipal buildings for self consumption.**

**Municipalities generate their own energy to:**

- **Reduce reliance on Eskom**
- **Address climate change concerns**
- **Access 'cheaper' electricity**

# KEY ACTIONS

| | |
|---|---|
| **1. RESOURCE ASSESSMENT** | Assessment of the renewable energy resources available in the municipality**.** |
| **2. ENERGY TARGETS** | Assess the needs and set targets for alternative electricity generation. |
| **3. INFRASTRUCTURE ASSESSMENT** | Assessment of infrastructure for possible integration of alternative electricity technologies. |
| **4. FEASIBILITY STUDY** | Conduct a feasibility study of potential installations **.** |
| **6.PROCUREMENT PROCESS** | Ensure a budget allocation for the installation<br>Issue a terms of reference for installation and conduct a procurement process**)** |

# MUNICIPAL GENERATION:

**Support available :**

| CSIR | RESOURCES |
| --- | --- |
| • PV Procurement Online Course | • CSIR PV procurement Guideline |

# The End