**ACTION PLAN TO PRODUCE ENERGY: (DIRECTOR ENGINEERING SERVICES)**

**Purpose of report**

To submit a report to council regarding the Action Plan to Produce Energy.

**Background**

The municipality finds itself in a situation that any development is placed on hold due to insufficient electricity supply.

Langeberg Municipality procures energy from Eskom at 6 (six) points of supply (POS) namely: Muiskraalkop (Robertson), Noree (Robertson), McGregor, Montagu, Bonnievale and Ashton.

The size (Notified Maximum Demand or NMD) of each POS determines the maximum or total instantaneous power that can be consumed at any given time. The Municipality determines the NMD by the demand at each POS and by requesting additional capacity from Eskom as and when needed.

Because of diversity between the Municipal customers, we are able to supply a greater spectrum of customers whist remaining within our Eskom NMD. Diversity means that not all the consumers are using all their capacity at the same time.

The following table provides the NMD's for each supply point as well as what the Municipality actually consumed (for the past 3 years):

| Point of supply | 2019/20 | | 2020/21 | | 2021/22 | |
|---|---|---|---|---|---|---|
| | Max Reading (kVA) | NMD (kVA) | Max Reading (kVA) | NMD (kVA) | Max Reading (kVA) | NMD (kVA) |
| Muiskraalkop | 36 760.09 | *36 000.00* | 36 287.22 | *36 000.00* | 36 183.23 | *36 000.00* |
| Noree | 5 361.11 | *5 000.00* | 4 887.91 | *5 000.00* | 5 380.90 | *6 000.00* |
| McGregor | 2 682.79 | *2 700.00* | 2 558.27 | *2 700.00* | 2 679.50 | *2 700.00* |
| Montagu | 8 770.54 | *9 000.00* | 8 357.79 | *9 000.00* | 8 197.84 | *9 000.00* |
| Bonnievale | 10 596.41 | *10 000.00* | 9 994.25 | *11 500.00* | 9 747.18 | *11 500.00* |
| Ashton | 9 368.51 | *12 000.00* | 9 542.20 | *10 500.00* | 9 406.12 | *10 500.00* |

***Note:*** *The values in red is where the Municipality exceeded the NMD*

## 1. Load Profiles

The load profile provides a picture of the Municipal energy consumption over time. The following graphs provide the combined load profile for the Langeberg Municipality for 2020/21 and 2021/22. One month for each quarter is shown to illustrate the seasonal variance. Eskom defines high demand season as June – August and low demand season as the other months. Energy is generally more expensive in high demand season.

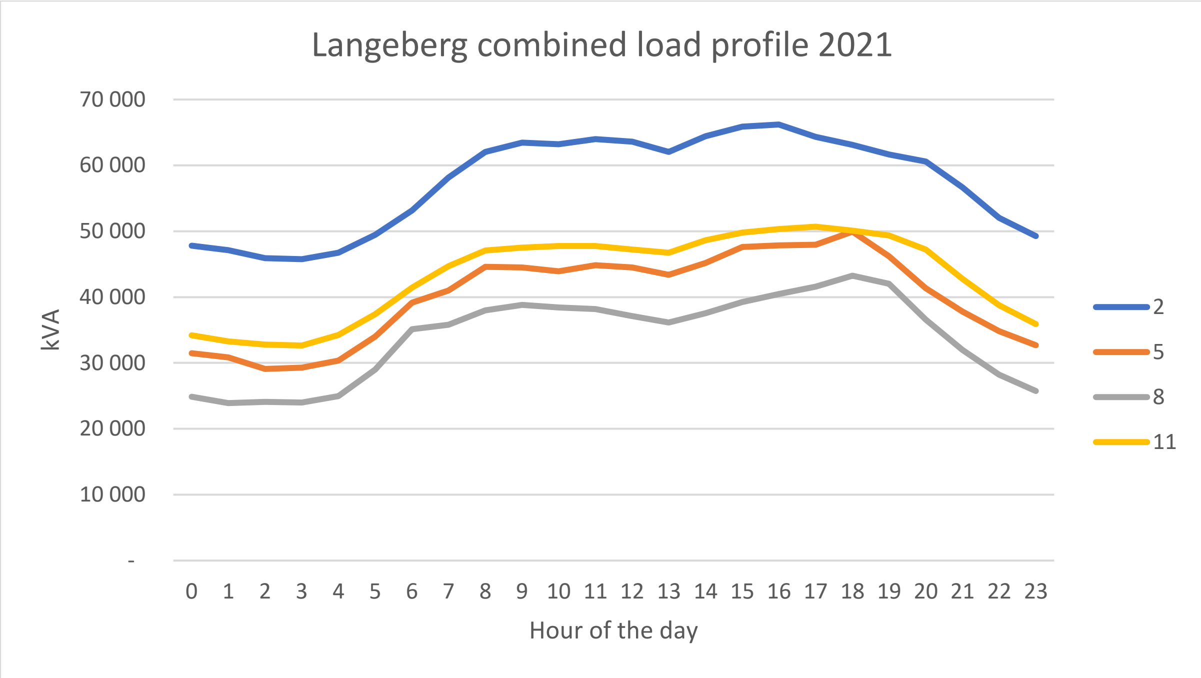


*Figure 1: Langeberg combined load profile 2021 (month number series i.e. 2 = Feb, 5 = May etc.)*

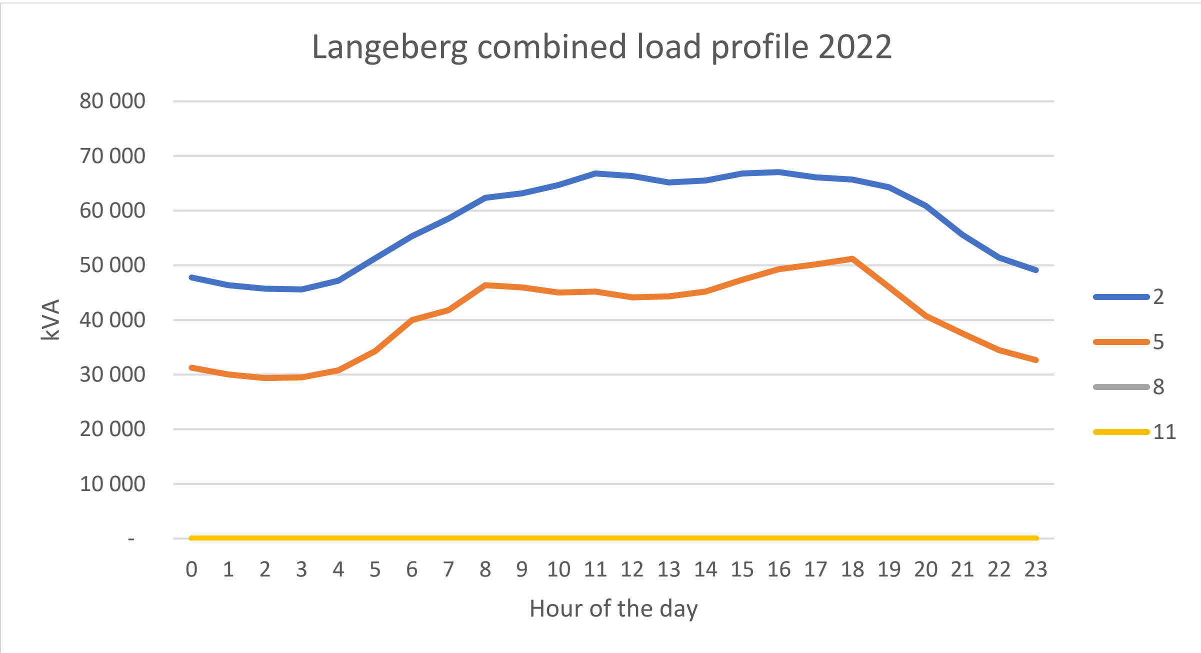


*Figure 2: Langeberg combined load profile 2022 (month number series i.e. 2 = Feb, 5 = May etc.)*

The graphs for the individual supply points for a typical day for each of the quarters are shown in Annexure A.

The following graph indicates the seasonal variance of the maximum demand over a 12-month period:

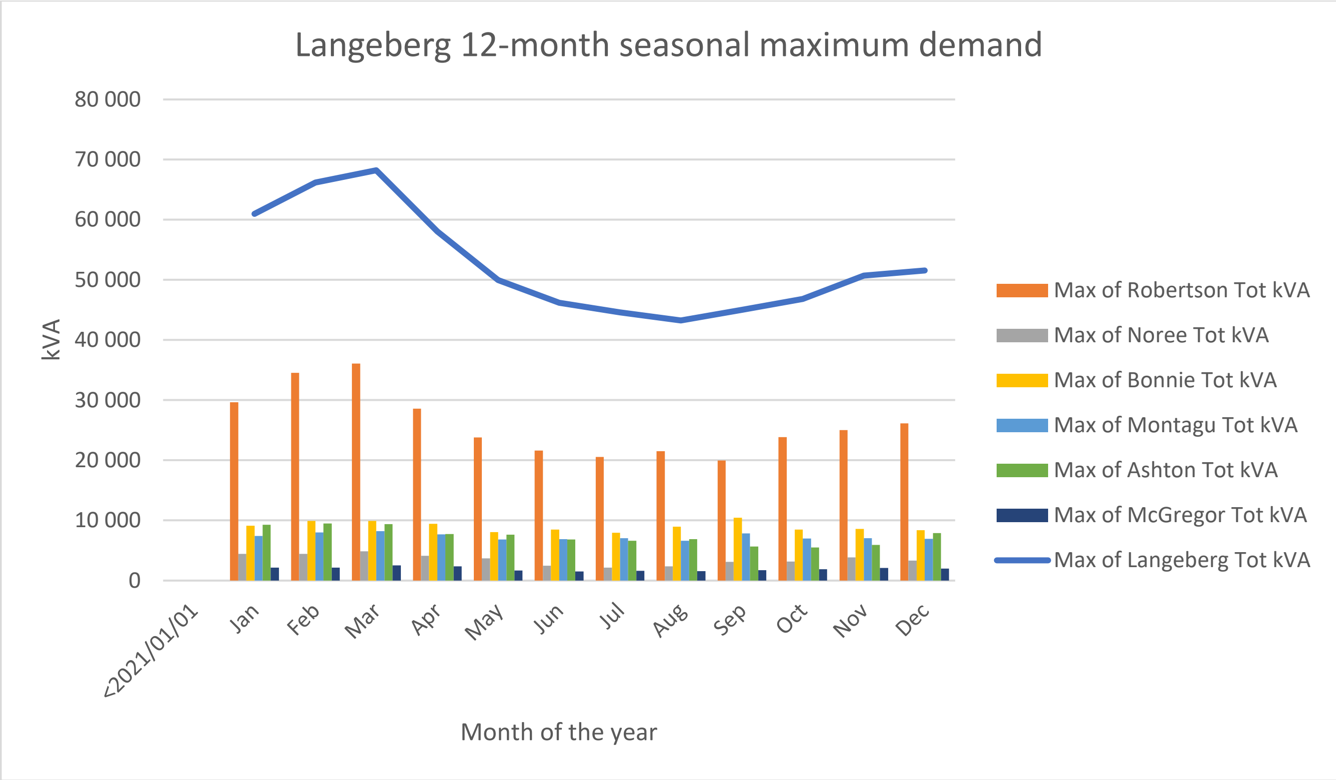


*Figure 3: Langeberg 12-month seasonal maximum demand*

The combined Langeberg trendline (blue) fits well with the solar generation capacity of a typical PV system, i.e. higher yield in the summer – and lower yield in the winter months.

## 2. Langeberg Municipality's requirements

In addition to the existing demand (and notified maximum demand), several applications from existing and potential new customers (i.e. developers) for additional electrical capacity have been received. The following table summarizes the additional requirement:

| TOWN | kVA required |
|---|---|
| ROBERTSON | 16 243 |
| NOREE | 1 400 |
| McGREGOR | 1 422 |
| ASHTON | 0 |
| BONNIEVALE | 1 418 |
| MONTAGU | 1 000 |
| TOTAL | 21 483 |

It should be noted that some of the capacity requirements are for developments which are in the early feasibility stage.

The estimated load growth from the Electrical Masterplan is illustrated the following graphs. It shows the historical maximum demand as well as a 3-scenatio forecast per point of supply. With the current limitations on the Eskom supply network in the Langeberg area, it is expected that we'll follow the "Low" scenario.

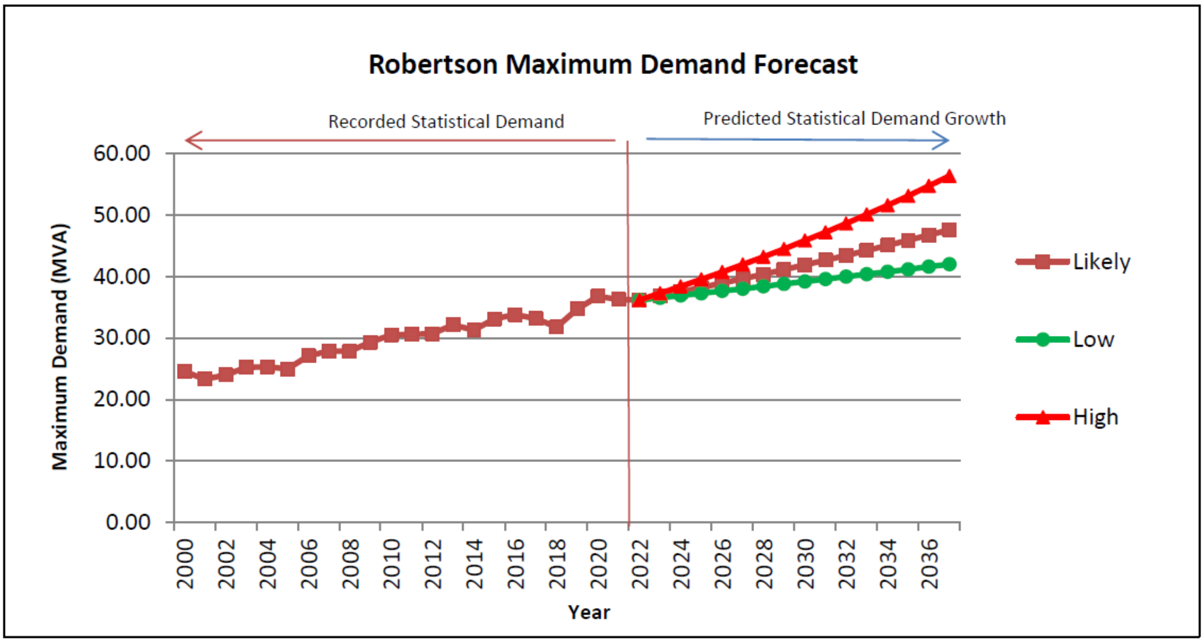


*Figure 4: Robertson Maximum Demand Forecast based on historic growth*

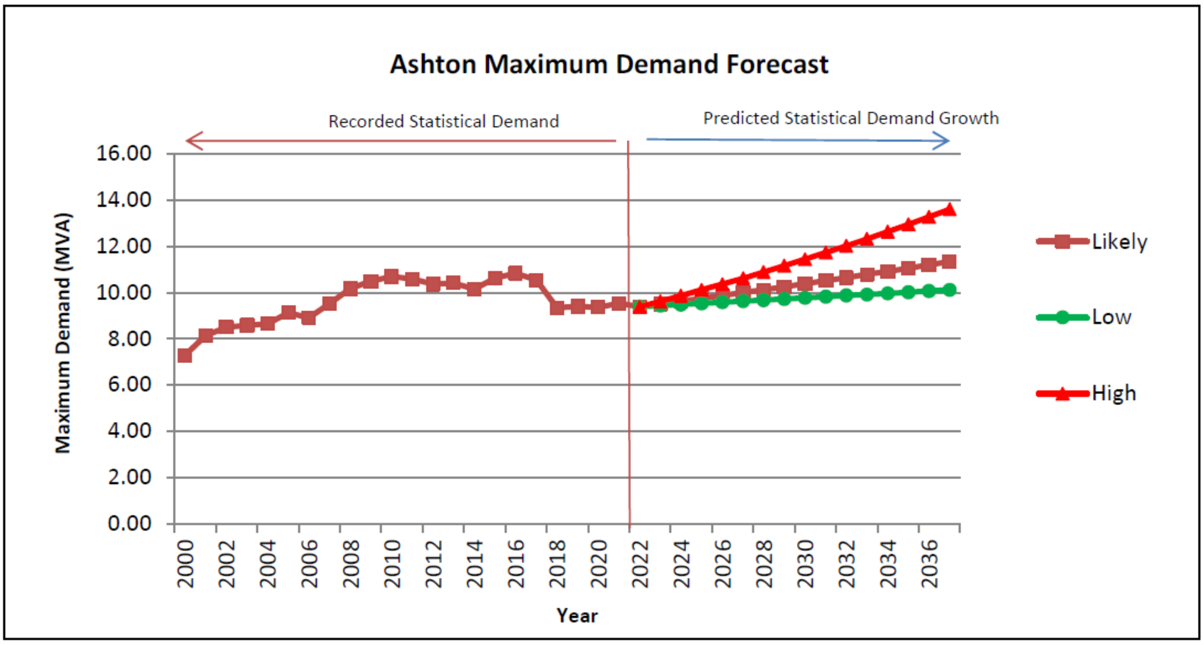


*Figure 5: Ashton Maximum Demand Forecast based on historic growth*

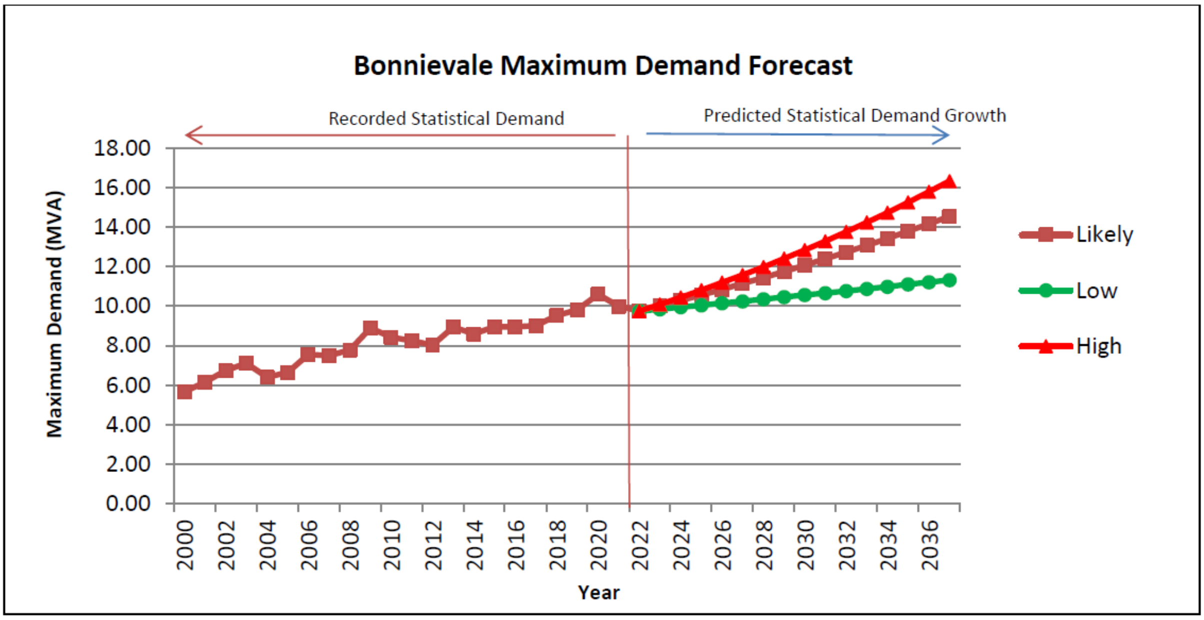


*Figure 6: Bonnievale Maximum Demand Forecast based on historic growth*

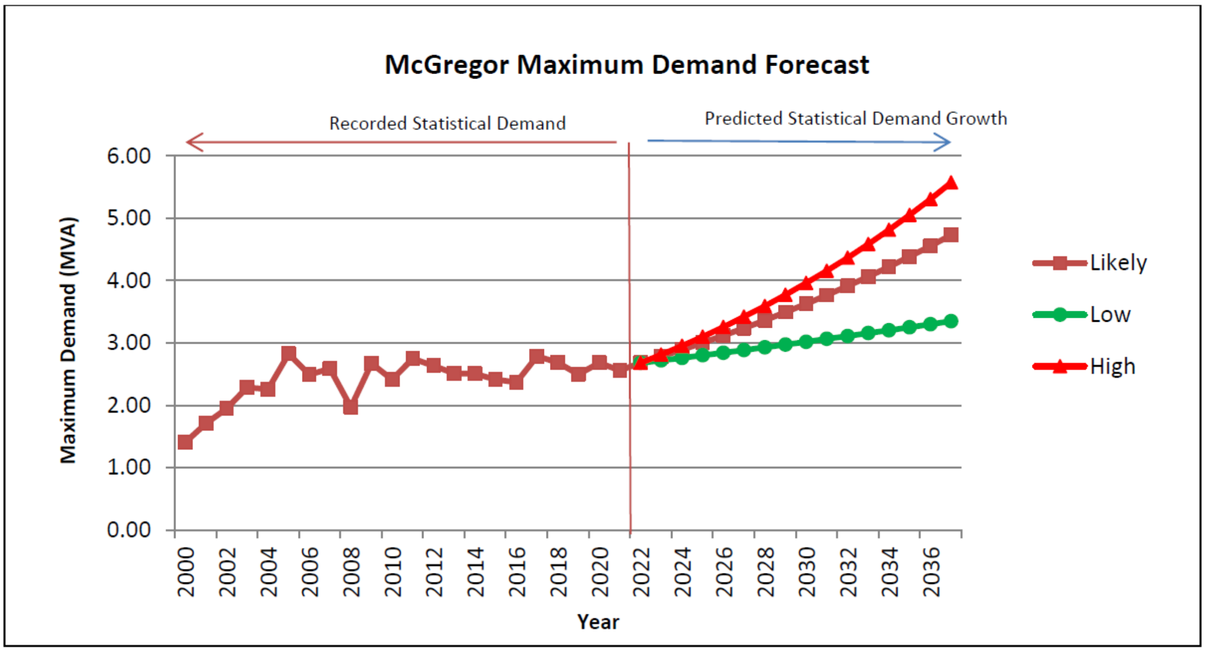


*Figure 7: McGregor Maximum Demand Forecast based on historic growth*

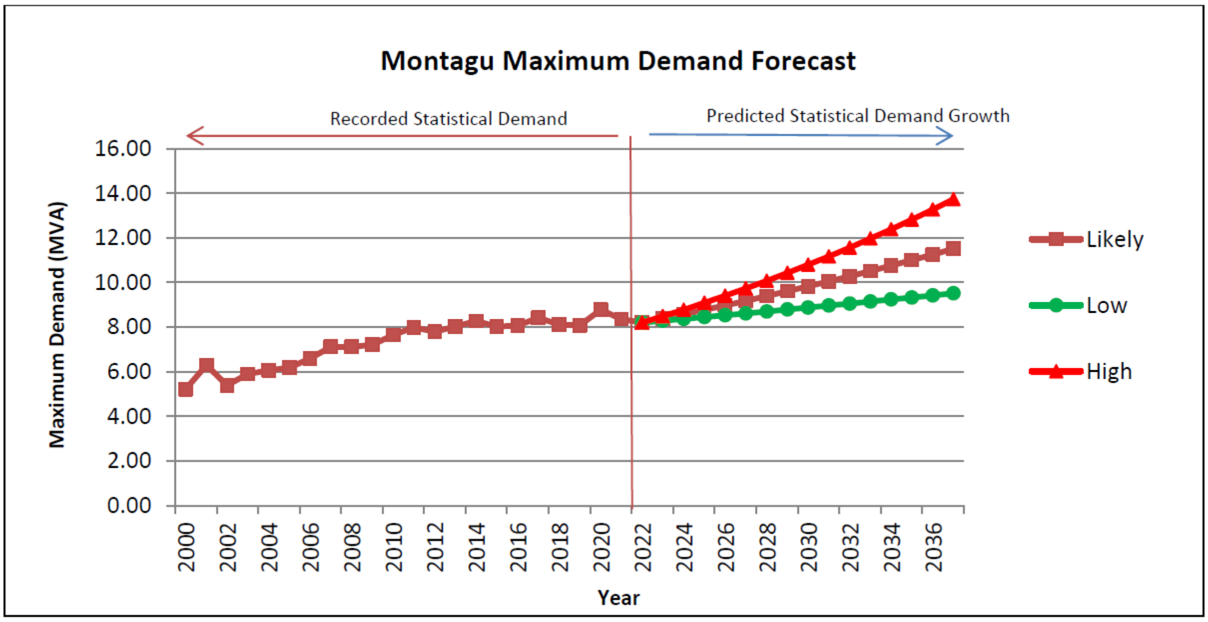


*Figure 8: Montagu Maximum Demand Forecast based on historic growth*

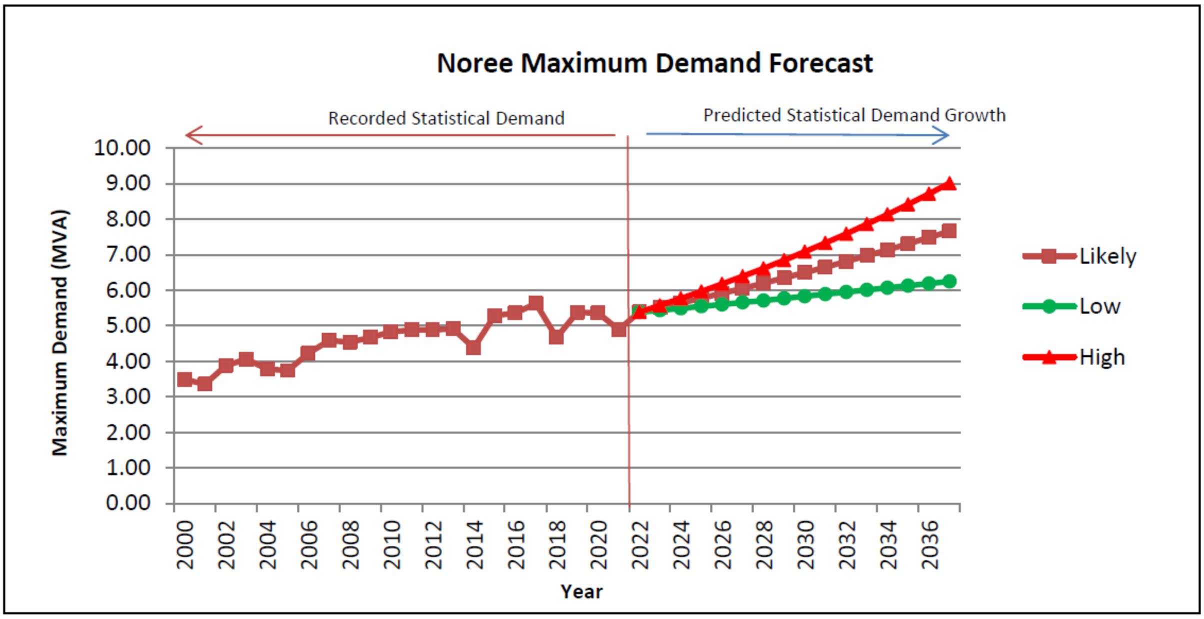


*Figure 9: Noree Maximum Demand Forecast based on historic growth*

## 3. Alternative energy sources

The follow alternative energy sources might be considered and will be discussed in more detail below:

### 3.1 Solar PV generation

Solar PV technologies currently consist of various module types such as mono- and poly-crystalline, single face and bi-facial modules. Although mono crystalline modules are more expensive than the poly crystalline, they provide a better yield. The bi-facial panels can generate power from the back reflection or, Albedo, resulting from reflection of radiation form the surrounding terrain such as rocks, soil, vegetation etc. near the solar modules.

The installation configurations include fixed tilt, single- and dual-axis tracking. The fixed tilt systems are usually designed at a tilt angle equivalent to the latitude angle of the chosen site. The tracking systems are designed to follow the sun and can do by means of a single axis movement in the horizontal or vertical configuration, or in the case of the dual axis tracking a combination of these.

All the solar PV installations generate direct current power and convert this into alternating current power which is then collected and stepped up to a higher voltage for connection to a power grid. The numbers of inverters vary between manufacturers and can be designed such to compensate for the effects of clouds and shadows. Control systems enable these installations to maximize the power output generated for the entire installation.

### 3.2 Concentrated Solar generation

CSP is complex and a relatively expensive technology (when compared with other solar technologies) and, is therefore usually only suited for deployment at significant scale. This technology makes use of parabolic mirrors to heat a heat transfer fluid located in the focal point of the mirror. This fluid is then pumped through a heat exchanger, generating steam where after a standard steam turbine generator installation is used to generate the electricity. This technology was used in early rounds of the REIPPP programme (i.e. bid windows 1 to 3) CSP was procured at between 50 and 100MW of capacity, with varying capacities of energy storage . One of the reasons for the size is determined by the size of the commercially available steam turbine. This technology, where an energy storage system (most often thermal energy storage (salt bath)) is installed, has been successfully deployed to generate electricity during peak hours. Given the scale and complexity of these projects, the commercial viability of these projects remains challenging.

### 3.3 Wind generation

Utility-scale wind farms require commercially viable wind resources, in general Class 3[1] wind resources and better. In addition, in general the strength of the wind resource increases (on a logarithmic scale) with the height of the turbine hub above the ground. Accordingly, the turbine hub heights are gradually getting higher and, consequently, the blade lengths are getting longer. Lager scale and utility-based installations usually deploy horizontal axis turbines, in order to access the better wind resources. Thus, in general, only horizontal axis turbines are commercially deployed. Vertical axis turbines are, in general, only deployed for small-scale installations.

### 3.4 Battery Energy Storage Systems (BESS)

There are various types of battery technologies commercially available. Li-Ion, LiFe and Redox flow batteries amongst the more popular. Lead-acid batteries have predominantly been replaced by Li-Ion batteries due to the longer life cycle and higher depth of discharge obtained by Li-Ion batteries. There might still be small residential energy storage systems which utlise lead-acid batteries purely because of cost. The table below summarises the main characteristics of the different battery technologies[2]:

[1] In accordance with IEC 61400, Class 3 has average wind speeds of 7.5m/s
[2] https://www.imia.com/wp-content/uploads/2020/01/IMIA-WGP-112-19-Battery-Storage.pdf

| Specification | Lead-acid | Nickel based | Lithium-ion | Flow | Sodium-sulfur (NaS) |
|---|---|---|---|---|---|
| Specific energy [Wh/kg] | 30 – 50 | up to 120 | up to 250 | up to 150 | up to 150 |
| Life cycles [80% DoD] | 200 – 300 | up to 500 | up to 10.000 | up to 1.000 | up to 4.000 |
| Safety requirements | Thermally stable, can emit $H_2$ | Thermally stable, fuse protection | Protection circuit mandatory | Thermally stable | Has to be heated possibility of short circuits when cooling down |
| Cost | Low | Moderate | high | high | high |
| Self-discharge [per month] | 5% | 20 – 30% | 5 – 10% | | |

Consideration should be given to both power capacity and energy capacity when battery systems are sized and priced. The energy capacity is the amount of energy that can be stored in the system and is measured in Wh. The power capacity is the rate at which energy flows in or out of the system and is measured in W. If specifying the size of battery storage, both power – and energy capacity should be specified (i.e. 100kW/200kWh system has 100kW power capacity and 200kWh energy capacity.)

Battery Energy Storage is susceptible to mode of operation and therefore the system usually includes a Battery Monitoring System (BMS) to ensure the longlivety of the system. The mode of operation generally includes charge rate, discharge rate, depth of discharge and temperature. The BMS will typically manage these conditions to protect the system. The life expectancy of battery energy storage is measured in charge / discharge cycles. Depending on the mode of operation and specific battery technology, one should expect approx. > 3500 cycles for i.e. Li-Ion BESS before performance starts to degrade significantly. If one assumes one cycle per day the life expectancy is approx. 10 years. This has an impact of the capex and opex of the energy storage system.

Battery energy storage systems (BESS) can be used for a variety of applications, including frequency regulation, demand response, transmission and distribution infrastructure deferral, integration of renewable energy, and microgrids. Different battery technologies can enable different applications that can provide various benefits to utility services, and consumer services.

While BESS is not a generation technology, but rather an energy storage technology, it could be used to complement Renewable Energy generation, specifically for capacity firming and to improve the consistency of supply, effectively balancing the demand (load) and supply (generation.)

More recent applications of BESS in hybrid configurations with other RE generating installations such solar PV or wind generation installations became more common. These installations are typically for private industrial applications with the purpose to provide grid support or demand side management. RE installations with BESS hybrid installations also assists in the reduction of carbon footprint of the business supplied by the hybrid installation.  It could also be used to reduce curtailment of Renewable generation (i.e. when the renewable generation exceeds the load / demand or grid capacity.)

### 3.5 Hydro generation

In the case of hydropower production, power is produced by gravity, through moving water turning a turbine, and thus an adequate height differential, or 'head', at the hydropower site is a key consideration.

Utility / Distribution scale Hydro electric plants require substantial and sustainable river flow volumes or large water storage schemes. The timelines required for the EIA investigations and permits as well as the construction programmes, considering the timelines required by WC province, might not make hydro applications for utility / distribution scale viable.

### 3.6 Gas / Diesel generation

While this type of generation is not considered renewable, it should be noted that if this generation can be done economically, it will assist with base generation capacity while the transition is made from fossil fuel generation (coal fired power stations) to renewable generation. It could therefor play a role as an intermediate generation technology and to assist with base generation capacity.

It might be feasible to consider modular units to suite the Municipality's requirements. A major consideration will be the logistics around the delivery of fuel (gas / diesel.)

### 3.7 Hydrogen generation

This technology is fairly new and has some way to go to proof itself as commercially viable. The source of the fuel (Hydrogen) could be produced by various means and a Hydrogen colour code is assigned to depict the source of the Hydrogen. For instance, green Hydrogen is produced by electrolysis of water by means of clean / renewable energy (i.e. wind or solar.)

Blue hydrogen [3]is produced mainly from natural gas, using a process called steam reforming, which brings together natural gas and heated water in the form of steam. The output is hydrogen – but also carbon dioxide as a by-product. That means carbon capture and storage (CCS) is essential to trap and store this carbon.

Grey hydrogen is created from natural gas, or methane, using steam methane reformation but without capturing the greenhouse gases made in the process.

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[3] https://www.nationalgrid.com/stories/energy-explained/hydrogen-colour-spectrum

Using black coal or lignite (brown coal) in the hydrogen-making process, these black and brown hydrogen are the absolute opposite of green hydrogen in the hydrogen spectrum and the most environmentally damaging.

Pink hydrogen is generated through electrolysis powered by nuclear energy. Nuclear-produced hydrogen can also be referred to as purple hydrogen or red hydrogen.

### 3.8 Biomass generation

For this category of technologies, a common key consideration will be the quantity and quality of the available feedstock. In addition to the quality and availability, the sustainability of the feedstock plays a vital role for this generation, which in turn requires on site storage to compensate for the possible intermittence of the supply of the feedstock.

Commonly, there are four types of biomass fuels used: wood and agricultural products, solid waste, landfill gas and biogas, and alcohol fuels (such as bioethanol or biodiesel). With the most common being homegrown energy – wood (logs, chips, bark and sawdust) – accounting for about 44% of biomass energy.

One can use biomass fuels in several ways to generate energy:

- Burn the feedstock to create heat for boiling water, thus generating steam for turning a steam turbine, this requires a considerable amount of feedstock to have a sustainable power output and this result in a significant carbon footprint. Wood and agricultural biomass and MSW are common fuels for steam generation;
- Use the feedstock in a fermentation (or digestor) or gasification process to generate biogas, which can be combusted in a generator engine or turbine. Again, a constant supply of feedstock is required. The quality of the gas from this process is likely to be the determining factor in terms of its viability to be combusted in the generating engines/ turbines. Agricultural and industrial waste are generally viable fuels for biogas production. Gasification of biomass is a source of synthesis gas production for combustion in an engine or turbine;
- Use the feedstock in a fermentation process to generate liquid fuel (bioethanol or biodiesel) which may be used to fuel electricity production, either directly as a fuel, or indirectly as fuel octane booster.

Due to the potential ability to store the feedstock, either in raw form or in gaseous (biogas) form, the biomass-fueled technologies may have the added advantage of being a source of dispatchable renewable energy power. The dispatchability of such technologies is dependable on the offset market for these and thus requires a detailed market analysis and prospective purchase agreement to be in place before the project can be initiated.

For Biomass generation to be viable, a substantial supply of feedstock, with a sustainable and reliable supply is required. There are very few success stories where biomass generation was implemented and is still in operation.

## 4. National Treasury: MFMA Circular No. 118

The purpose of this Circular was to provide advice to municipalities relating to the legal framework for procurement of new generation energy capacity, particularly from renewable energy sources, within the provisions of the Constitution, MFMA (specifically section 33), DMRE regulations and other related legislation.

This relates to procurement, public private partnerships and consultation processes as the various stages in ensuring effective implementation consists of consultation, planning, resourcing, institutional capacity and capability, operational commitments and sustainability, infrastructure assessments, development of new and upgrading of assets, as well as financial obligations, amongst others, arising from such projects require substantial investments.

For each of the 7 (seven) Scenarios, the applicable legal framework is identified and key risks which may affect the viability of the specific scenario is highlighted. Possible mitigation measures are also included, where applicable.

The 7 (seven) scenarios are as follows:

1. Municipal IPP procurement programme in which the DMRE is the procurer and the municipalities are the buyers following a Determination
2. Municipal IPP procurement programme where the IPPs will bid for projects that are located on a non-municipal site and the municipality does not take any site or development risks
3. Municipal IPP procurement programme, where the IPPs will bid for projects that are located on a municipal or a non-municipal site and the municipality takes all or most of the site risk
4. A municipality constructing its own power plant and generating its own electricity whether in the municipal jurisdiction or outside the municipal jurisdiction
5. A municipality owned and constructed generation facility that can supply surrounding municipalities
6. A multi-buyer scheme and municipal power pool arrangements
7. Unsolicited Bids

There might also be combinations / permutations of these scenarios. The circular also provides roadmaps for scenarios 1 to 5.

The project size distinctions are provided as:

- Utility scale: > 10MW
- Distributed generation scale: 1 to 10MW
- Small Scale Embedded generation: < 1MW

All systems below 100MW are exempted from NERSA licensing requirements but are subject to registration under the Electricity Regulations Act 4 of 2006 (ERA.)

The Municipal and procurement law should be carefully considered when procuring energy from third parties. The pricing and tariffs should be reviewed and NERSA will require a Cost of Supply study for any changes to the tariffs. The Power Purchase Agreements (PPA) for the basis of the procurement process requires careful and specialist attention.

From the Municipal Electrical Masterplan a high-level case study was done for a 5MWp PV system in Robertson. The results were as follows:

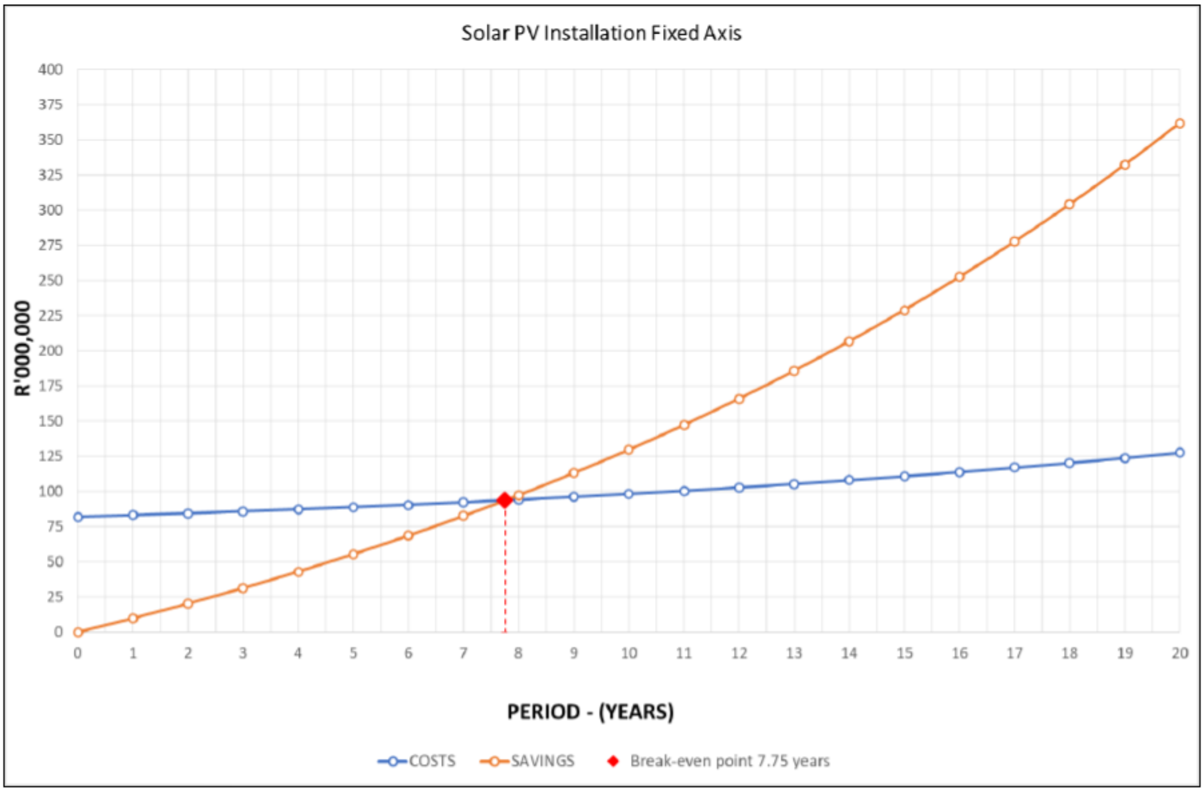



*Figure 10: High level 5MWp Solar PV case study for Robertson: financial results*

## 5. Technical considerations

### 5.1 Feed-in points

The feed-in points to the Municipal network will be determined by the capacity on each of the feeders at or near the specific Eskom point of supply (POS.) The higher voltage POS's will inevitably have more capacity. The Maximum demand at each of the POS's might also have an impact on the size of the alternative energy capacity that can be connected at that point.

132kV (McGregor): While 132kV will have the highest possible feed-in capacity, the maximum demand at McGregor will limit the alternative energy to approx. 2.5MW

66kV (Robertson, Noree): The 66kV feed-in capacity is approx. 34MW (Raccoon conductor)

11kV (Ashton, Bonnievale, Montagu): The 11kV feed-in capacity is limited by the largest 11kV feeder which is in the order of 6MW (Hare conductor)

### 5.2 Base generation capacity

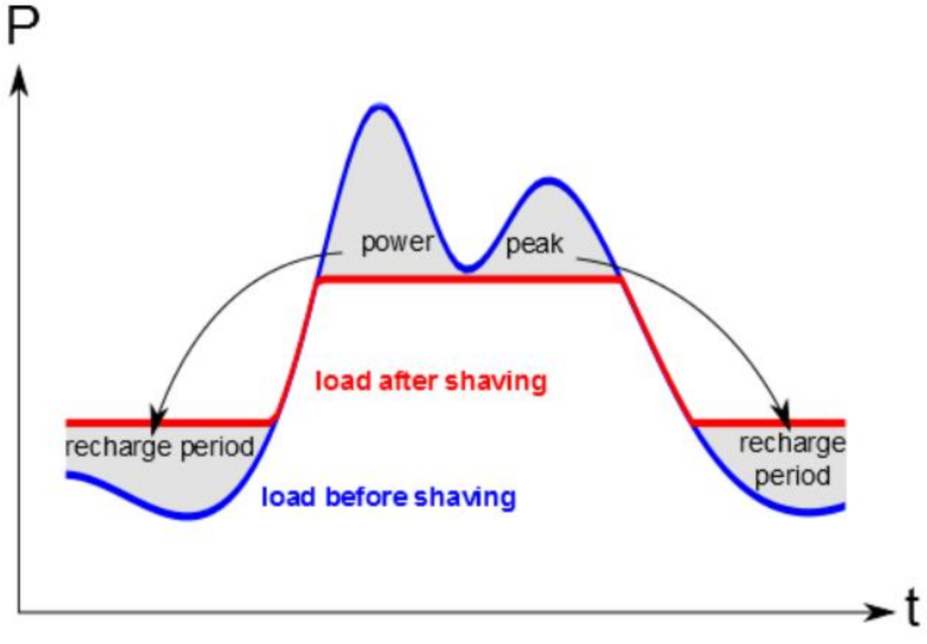
It should be noted that the dispatchability of alternative generation capacity plays an important role in the base generation capacity which is equivalent to Eskom's Notified Maximum Demand (NMD.)

**Dispatchability refers to the availability of the capacity at any given time. This means that i.e. Solar PV can only be dispatched when the sun shines and it will therefor not contribute to base generation capacity or NMD**.

**Solar PV with storage becomes more dispatchable to a certain extent, but it is still not 100% dispatchable because there could be days when there is insufficient sun or Eskom capacity to charge the batteries.**

### 5.3 Peak shaving

Another method of "saving" on notified maximum demand (NMD) is to employ storage to shave the peaks off the load profile. This is done by charging the batteries in lower demand timeslots and using the batteries in the peak demand, effectively lowering the NMD required from Eskom.



[4]

A detailed load analysis study should be done before considering this alternative. Any changes in demand / load profile would affect this system and there is a certain amount of risk involved. There are technical considerations that also come into play like for instance the useful life of the batteries, full cycle efficiency, type of technology to use (i.e. Li-Ion or Redox flow) etc.

### 5.4 Load shedding

The implementation of alternative energy could have an effect on load shedding or the particular stage (or level) of load shedding. It will be a complex calculation after a decision has been made on a specific technology and also in relation to the point of connection. Eskom would also have to be consulted in this regard. It would be good to include this in the planning stages and possibly the evaluation of possible proposals (once received.)

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[4] https://www.sandia.gov/ess-ssl/EESAT/2013_papers/Peak_Shaving_Control_Method_for_Energy_Storage.pdf

### 5.5 Energy efficiency

It is also recommended the energy efficiency be investigated for the Langeberg Municipality, specifically regarding:

- Street – and area lighting
- Own consumption i.e. Municipal buildings, waste water treatment works and pump stations

There could be external funding available to fund these initiatives; it requires further investigation.

## 6. Expert Team required

To implement the procurement of any alternative energy, a team of experts / transaction advisors are required to guide the Municipality in its decision making.

It is anticipated that the team will consist of Technical -, Financial – , Environmental – and Legal experts to ensure the chosen system and the procurement thereof is in the best interest of the Municipality and supports our strategic goals.

The cost of this expert team would have to be considered as they will be an integral part of the success of the project.

The Western Cape Government, through the Municipal Energy Resilience (MER) project has identified candidate Municipalities in the Western Cape to participate in the pioneering projects. Of these candidate Municipalities, Drakenstein and Stellenbosch is in the process of going to market for potential bids. City of Cape Town's request for proposals (RFPs) have closed and evaluation is underway. Due to the complexity and volume of proposals, a multistep evaluation process is followed (technical evaluation is underway.) It could be beneficial to engage these Municipalities for lessons learned and guidance with regards to the expert team requirements.

## 7. Eskom

The 132 & 66kV Eskom network that supplies the Langeberg Municipality has reached its thermal limits.

The McGregor point of supply is on a separate 132kV network and Langeberg recently upgraded the supply from 2.7MVA to 3.7MVA.

### 7.1 NMD increase

Langeberg Municipality submitted a request for the last bit of capacity on the 66kV network from Eskom. A cost estimation letter (CEL) (estimation confidence of 65%) has been received from Eskom and we are awaiting the budget quotation (BQ). The additional capacity is for 1MVA in Montagu and 2MVA in Robertson. The CEL costing is as follows:

| Description | Amount (Excl VAT) | Amount (Incl VAT) |
|---|---|---|
| **Robertson** | | |
| Connection Charge Estimate | R 5 698 488.84 | R 6 553 262.17 |
| Already paid: Pre-project Investigation | R 26 052.17 | R 29 960.00 |
| Already paid: BQ fee | R 90 805.00 | R 104 425.75 |
| Security Dep: | | R 2 709 000.00 |
| **Total Cost** | **R 5 581 631.67** | **R 9 127 876.42** |
| **Montagu** | | |
| Connection Charge Estimate | R 5 205 201.89 | R 5 985 982.17 |
| Already paid: Pre-project Investigation | R 16 765.22 | R 19 280.00 |
| Already paid: BQ fee | R 90 805.00 | R 104 425.75 |
| Security Dep: | R 1 193 913.04 | R 1 373 000.00 |
| Early Term: | | R 473 800.00 |
| **Total Cost** | **R 6 291 544.71** | **R 7 709 076.42** |
| | | |
| | | **R 16 836 952.84** |

*Table 1: Cost to increase NMD in Robertson and Montagu*

Eskom is still processing and preparing the budget quotation. We expect to receive the budget quotation in October 2022.

### 7.2 Eskom network upgrade

The following feedback was received from Eskom regarding the upgrading of Eskom's network to increase the capacity to the Langeberg Municipality:

"*The budget for the servitude and EIA for the new Bacchus-Klipdrif 132k line is currently included in the 5-year plan. Eskom is however aiming to get the remaining jobs of the project, on the 6 to 10-year plan. This will however be dependent on budget availability at the time.*"

Previous cost estimates were around R200m, but this is unconfirmed, especially since it is in Eskom's medium to long term planning.

## 8. Tariffs

The market trend and specifically Eskom is moving toward a tariff structure that is more representative of the consumer trend to consume less energy while still requiring the base generation (maximum demand) from the Municipality. This requires a tariff that have a fixed cost portion that is representative of the cost to Municipality to maintain the infrastructure and capacity and a lower focus on energy (kWh) charges.

One way to look at this would be to take the load factor of a client into consideration. The load factor is the ratio at which the electrical connection is utilized. It is calculated by dividing the energy consumed by the total energy that could've been consumed if the connection was used at 100% of the available capacity. As an example, for a 50kVA notified maximum demand, if the energy was consumed at the full capacity of the connection it would be 50kW for 24 hours for 30 days = 36 000kWh. The actual measured consumption might be 18 000kWh meaning that the load factor is 50%. If the load factor is below a pre-defined threshold, the fixed cost charges will be proportionally higher because less energy would've been sold.

It would be recommended that specialists / Consultants assist with the development / revision of these tariffs. NERSA requires that any new tariffs / changes to existing tariffs should be based on a Cost of Supply study. This would also have to be outsourced to specialists / consultants and could be included in the scope of the tariff review.

## 9. Wheeling

What is electricity wheeling? Wheeling is the act of transporting electricity / energy / electrons from a generator to a remotely located end-user(s) through the use of an existing distribution or transmission system. This may also be across multiple different distribution networks, such as through Eskom to a municipality[5].

As an example, George Municipality has established a wheeling policy and tariff and has a few pilot projects running. Langeberg could probably leverage on what was already done here to assist with local implementation.

Wheeling can be seen as a revenue stream for the Municipality where Generators (customers) with surplus energy sell to off takers (customers) and the Municipality charge a wheeling tariff for the use of the network. It comes down to the same principle as the Municipality buying from Eskom, adding a markup and selling to its customers; we're effectively cutting out the buying and selling portion, and only receiving the "mark-up" or wheeling.

It is imperative that the Langeberg Municipality implement wheeling as soon as possible.

## 10. Estimated Timelines

### 10.1 Eskom

Eskom has indicated that the capacity upgrade required to increase the Langeberg NMD is in the planning for the next 5 – 10 years.

Also, Eskom has started the Environmental Impact Assessment of a new Battery Energy Storage System in Ashton. The timeline for - and the impact of this project is not yet clear.

### 10.2 Alternative Generation

The following high-level program illustrates the typical expected timeline for implementation of alternative generation.

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[5] https://www.westerncape.gov.za/110green/energy/wheeling

| Activity / Description | 2022 2nd half | 2023 1st half | 2023 2nd half | 2024 1st half | 2024 2nd half | 2025 1st half | 2025 2nd half | 2026 1st half | 2026 2nd half |
|---|---|---|---|---|---|---|---|---|---|
| Report to Council | 1 | | | | | | | | |
| Budget | | 1 | | | | | | | |
| Procure experts | | 1 | | | | | | | |
| RFP | | | 1 | | | | | | |
| Evaluation | | | 1 | | | | | | |
| Council Approval | | | | 1 | | | | | |
| PPA signed | | | | 1 | | | | | |
| IPP financial close | | | | | 1 | 1 | | | |
| IPP Construction | | | | | | | 1 | 1 | |
| IPP Generate Energy | | | | | | | | | 1 |

## 11. Conclusion

Langeberg Municipality has a suitable load profile to consider Solar PV as an alternative source of energy.

There are various sources of Renewable Energy available. MFMA Circular No 118 should be noted and incorporated into Municipality's strategy to procure alternative energy.

Renewable alternative energy will not contribute / assist significantly with the demand capacity shortage from Eskom. Alternatives like peak shaving might have to be considered.

The upgrading of the Eskom network to allow additional capacity (maximum demand / base generation capacity) into the Langeberg electrical network will be required to ensure secure and dispatchable electrical capacity that is required for economic development. The timeline for the upgrade is between 5 and 10 years.

The Langeberg electrical tariffs will have to be revised, based on a cost of supply study and the alternative energy mix (from procuring in bulk and from smaller consumers, also called prosumers.)

Wheeling need to implemented as soon as possible as an alternative supply of revenue and to remain relevant in the current market conditions and trends.

A team of experts, Transactional Advisors or TA's, will be required to assist the Municipality through the process of procuring alternative energy. It is recommended that the TA's facilitate the process of going to market (request for proposal.)

## 12. RECOMMENDATION

1. That Council note the status quo report.

2. That Council consider in future budgets for the estimated amount of R 16 836 952 (excluding VAT) payable to Eskom for the upgrading of the Notified Maximum Demand for Robertson and Montagu with two and one MVA respectively.

3. That consideration be given to the possible appointment of a team of experts (Transactional Advisors) to assist the municipality in the process of procuring alternative energy.

**This item served before the Engineering Services Portfolio Committee on 11 October 2022**
**Hierdie verslag het voor die Ingenieursdienste Portefeulje Komitee gedien op 11 Oktober 2022**
**Aanbeveling / Recommendation**

1. That Council note the status quo report.

2. That Council consider in future budgets for the estimated amount of R 16 836 952 (excluding VAT) payable to Eskom for the upgrading of the Notified Maximum Demand for Robertson and Montagu with two and one MVA respectively.

3. That consideration be given to the possible appointment of a team of experts (Transactional Advisors) to assist the municipality in the process of procuring alternative energy.

**This item served before the Executive Mayoral Committee on 19 October 2022**
**Hierdie item het voor die Uitvoerende Burgemeesterskomitee gedien op 19 Oktober 2022**
**Aanbeveling / Recommendation**

1. That Council note the status quo report.

2. That Council consider in future budgets for the estimated amount of R 16 836 952 (excluding VAT) payable to Eskom for the upgrading of the Notified Maximum Demand for Robertson and Montagu with two and one MVA respectively.

3. That consideration be given to the possible appointment of a team of experts (Transactional Advisors) to assist the municipality in the process of procuring alternative energy.

**This item served before an Ordinary Meeting of Council on 24 October 2022**
**Hierdie item het gedien voor 'n Gewone Vergadering van die Raad op 24 Oktober 2022**
**Eenparig Besluit / Unanimously Resolved**

1. That Council note the status quo report.

2. That Council consider in future budgets for the estimated amount of R 16 836 952 (excluding VAT) payable to Eskom for the upgrading of the Notified Maximum Demand for Robertson and Montagu with two and one MVA respectively.

3. That consideration be given to the possible appointment of a team of experts (Transactional Advisors) to assist the municipality in the process of procuring alternative energy.