

SOUTH AFRICAN WHOLESALE ELECTRICITY MARKET: WHAT NOW FOR MUNICIPALITIES?



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1. Introduction

An electricity market is defined as a system where energy is traded between producers and end-users which is typically facilitated by a system operator managing the grid [1]. There are electricity markets operating actively across the globe, whether within a sovereign state, or between nations as seen in Figure 1 [2].

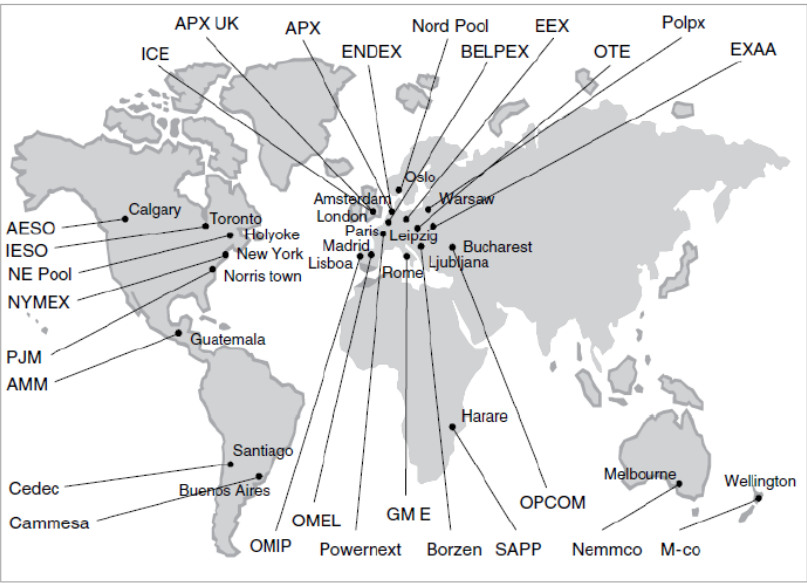


Figure 1: Energy Exchanges where energy is traded around the globe [2]

South Africa participates in the Southern African Power Pool which sees the trading of energy between countries within the Southern African Development Community (SADC), however, within South Africa currently, there is no active electricity market as the procurement of energy from a single-buyer vertical integrated model which is limited to specific parties including Eskom (now the National Transmission Company of South Africa - NTCSA), and recently other complying transmission or distribution license holders such as municipalities. This vertical model provides a monopoly particularly in the generation portion of the electricity sector as seen in Figure 2.

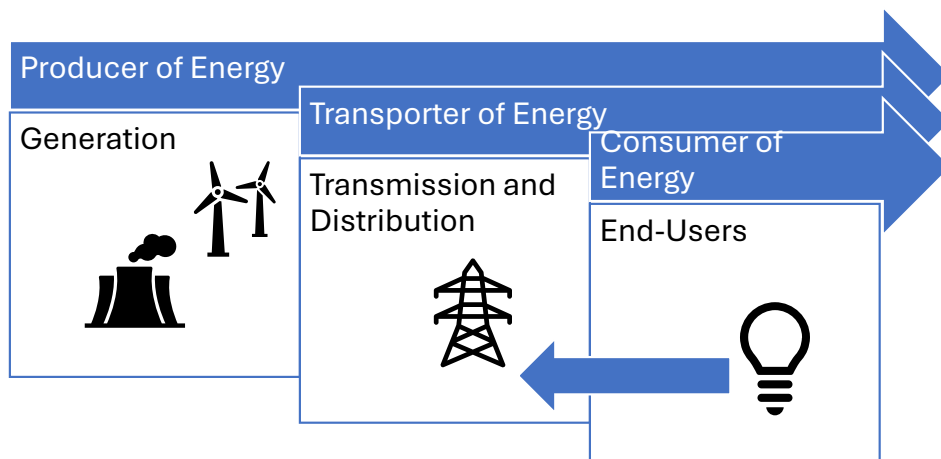


Figure 2: Traditional vertical integrated electricity sector

Local municipalities, especially those with distribution licenses tend to procure majority of their electricity from NTCSA and are responsible for providing sustainable, affordable, safe, and reliable energy supply within their networks. With this, several challenges were faced by the electricity sector in its pursuit of sustainability, including limited generation capacity, and the high cost of electricity. Electricity markets were developed to address these challenges and to reform the electricity sector in many countries by liberalising the sector and introducing much needed competition to increase efficiency, boost generation capacity, drive innovation by attracting private investment into the sector and to reduce the cost of electricity.

The liberalisation of the electricity sector was implemented to introduce competition with successful reforms seen in Argentina and Chile. In Argentina, it was the deregulation and privatising state-owned entities, while Chile introduced market mechanisms and additional regulations to foster competition and integrate new technologies. Competition is seen as a positive means to manage electricity prices, creating a space for buyers and sellers to exchange energy, services, information or assets with the price being determined through the fundamental economic model, the relationship between supply and demand. Reforms required to start a transition into forming an electricity market include setting up and defining the market code, unbundling of the generators and system operators (de- or re-regulation to develop scope for a wholesale competition in generation), and eventually introducing competition in the retail market.

South Africa as a country has been facing challenges in its electricity sector with limited generation capacity causing sporadic cases of loadshedding, the ever-increasing cost of electricity seen in both the inflation of non-technical losses at many utilities and high take up of alternative electricity supply and the slowed integration of innovative technologies into the grid. These issues are at the focus of many institutions such as National Energy Crisis Committee (NECOM) driving initiatives leading to much needed policy changes, supporting programmes aimed at increasing renewable energy penetration, and emphasizing the need for private investment into the energy sector. This positive shift is facilitating the energy transition and one key component aimed at in bringing on is the development of the South African Wholesale Electricity Market (SAWEM).

SAWEM is underdevelopment and set to launch in April 2026. This proposed market is seen as a catalyst to reshape the energy sector offering increasing competition, increase private investment and creating transparent and non-discriminatory trading platform to improve energy security and ensure cost effective, reliable and fair energy distribution [3]. Despite this, the role of LMs isn't very clear and this paper presents a comparative analysis of the role of DSOs in this proposed market and where LMs in South Africa could fit.

2. The Proposed Structure of SAWEM

The proposed SAWEM represents a fundamental shift from the current single-buyer model to a multi-market, multi-participant structure designed to introduce competition, enhance efficiency, and ensure security of supply. SAWEM is not a single market but a suite of coordinated markets operating over different timeframes, from a day ahead to real-time. This structure as illustrated in Figure 3 is designed to allow for progressive refinement of schedules as operational realities become clearer. First the participants within the market is discussed to establish an understanding of the roles.

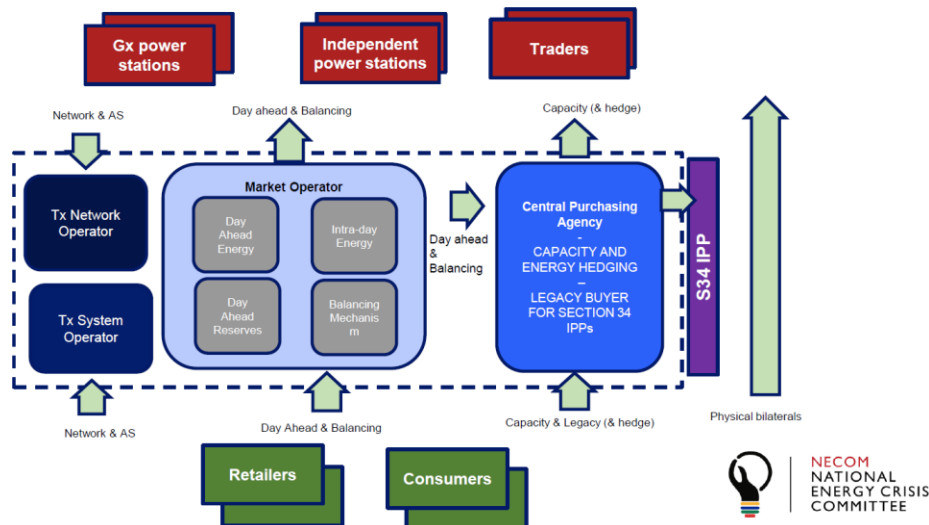


Figure 3: Proposed SAWEM Multi-Market Model [4]

2.1. Key Market Participants and Their Roles

The latest market code released June 2025 defines roles and responsibilities, breaking down the traditional vertically integrated utility into separate functional entities as illustrated and translated in Figure 4. Main sections/participants within the traditional vertically integrated model remain within the wholesale market with new roles and responsibilities defined in the market code. Each participant actively operates in their chosen in the case of sellers, retailers and network operators or default roles as in the TSO.

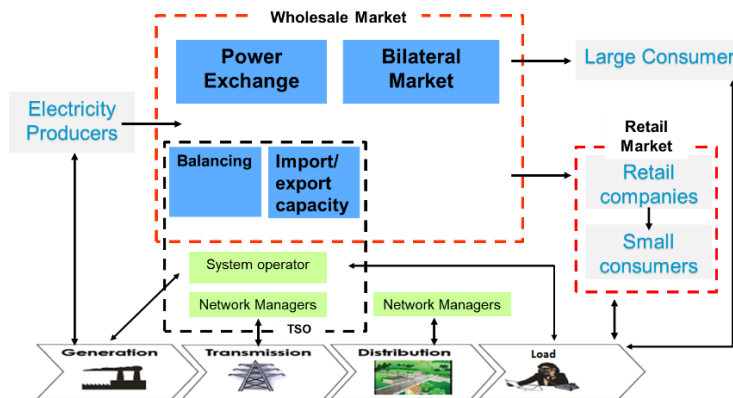


Figure 4: Translating roles within the traditional vertical integrated system to a wholesale market

These new roles and responsibilities within the proposed SAWEM are defined as follows:

Market Operator

The central administrator responsible for operating the Day-Ahead Market (DAM) and Intra-Day Market (IDM) platforms, calculating prices, performing financial settlements, and maintaining the registry of participants and trading units (SAWEM Market Code, 2025, Sec. 3.1) [5]. NTCSA has made an application for a license to be the market operator with the application remaining under consideration by NERSA [6].

System Operator (SO)

Responsible for the real-time security and reliability of the power system (grid stability). The SO issues dispatch instructions, determine the reserve requirements, and manages the physical balancing of the system, using the schedules provided by the market operator (SAWEM Market Code, 2025, Sec. 3.3) [5]. The SO will have access to all technical information and also all the economic data (bids/offers/contracts) to perform optimisation. This role from a transmission standpoint will be likely be filled by NTCSA who owned the bulk of the transmission network in the country.

Balance Responsible Party (BRPs)

A licensed entity (generator, distributor, trader) that is financially responsible for maintaining the balance between its electricity injections and withdrawals. Every unit of energy must be accounted for by a BRP (SAWEM Market Code, 2025, Sec. 3.4) [5]. These parties are also Market Participants, a subset of BRPs that actively participate in the DAM and IDM by submitting bids and offers (SAWEM Market Code, 2025, Sec. 6.1) [5].

Network Operators (Transmission & Distribution)

Responsible for building, maintaining, and operating the physical network infrastructure and for billing "use-of-system" charges. Critically, DSOs are designated as the Default Retailers in their areas of jurisdiction if a licensed retailer fails (SAWEM Market Code, 2025, Sec. 3.5) [5]. LMs can easily fulfil this role due to their possession of distribution licenses and direct connection to NTCSAs network. They must actively manage their local grid to facilitate connections for:

- Embedded Generation: Customers (e.g. large factories, shopping malls) generating their own power and feeding excess back into the NTCSA or municipal grid.
- Wheeling: Allowing third-party generators (e.g. a solar farm in their area) to sell power directly to a large customer (mine, large corporates, plants etc..) using the NTCSA or municipal grid as a highway, for a wheeling fee.

This requires sophisticated grid management (technically and financially) to efficiently handle bidirectional power flows. With the key roles and responsibilities within the market defined, now the dynamics of the market can be assessed.

2.2. Electricity Trading Methods

The proposed multi-market model within SAWEM present various methods for participants to sell and procure electricity. To enable transparent and efficient trading, the market is structured into different segments, each serving distinct purposes in balancing supply, demand, and risk.

Day-Ahead Market (DAM)

This is meant to be the primary market for scheduling electricity transfer and reserve capacity for each hour of the following trading day. Market Participants submit bids (to buy) and offers (to sell) for energy, which are cleared by the market operator using a least-cost dispatch method which is displayed in Figure 5 that co-optimises energy and reserves, resulting in a System Marginal Price (SMP) for each hour [5].

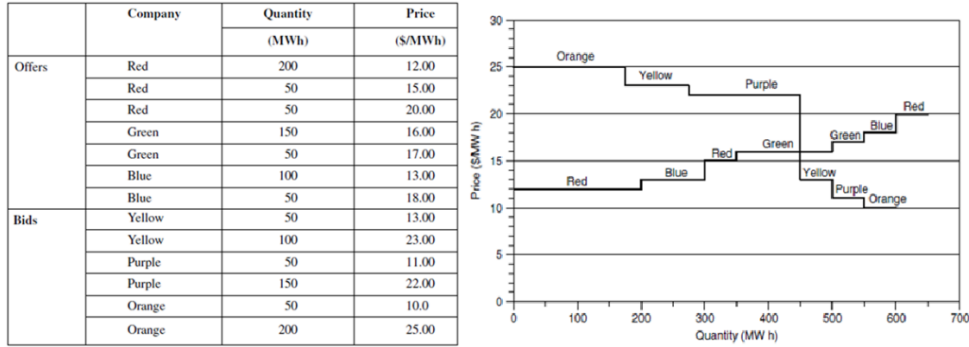


Figure 5: Least-cost dispatch method

Intra-Day Market (IDM)

Operating in multiple sessions after the DAM gate closure and up to one hour before real-time, the IDM allows participants to adjust their positions based on updated information (e.g. weather changes, plant outages). This provides crucial flexibility to balance portfolios before the physical delivery period begins (SAWEM Market Code, 2025, Sec. 10) [5].

Balancing Mechanism

In real-time, the SO manages system stability by issuing dispatch instructions to BRPs. Ex-post settlements then calculate financial penalties or rewards for deviations from scheduled positions, ensuring BRPs have a strong incentive to balance their portfolios (SAWEM Market Code, 2025, Sec. 13) [5].

Bilateral Contracts and Contracts for Difference (CfD)

A financial agreement between two parties for the physical delivery of electricity at a pre-agreed price and volume. These must be registered with the Market Operator, and both parties retain full balance responsibility for their positions (SAWEM Market Code, 2025, Sec. 9.4) [5]. Larger power users may opt for such agreements with generators. CfD is a financial derivative contract that hedges spot price risk by settling the difference between a pre-agreed strike price and the market's reference price. It does not confer balance responsibility and is settled financially outside the market clearing process (SAWEM Market Code, 2025, Sec. 10.2) [5]. Price risk reducing mechanism for retailers or buyers when participating within the market.

The multi-market model of SAWEM provides options for participants to engage according to the risk appetite and capability. For municipalities, this structure offers a potential pathway for market participation. The DAM presents the foundational avenue, allowing participants to potentially procure a portion of their bulk energy needs at a transparent market price, moving beyond a single-supplier model. The IDM offers a crucial risk-mitigation tool, enabling participants to make adjustments and correct imbalances as demand forecasts are refined closer to real-time.

Beyond the spot markets, Bilateral Contracts provide a route for participants to negotiate directly with generators for tailored energy products, offering potential price stability. Finally, CfD emerge as a sophisticated, low-exposure instrument for hedging against the spot price volatility of the DAM, allowing the participant to lock in a predictable cost without the need for physical delivery or complex scheduling. In concert, these mechanisms provide a spectrum of options, from basic participation to advanced portfolio management, potentially enabling municipalities to strategically engage with the market at a level that matches their evolving capacity.

3. SAWEM Against Existing Markets

The design of the SAWEM reflects a hybrid of existing international models, adapted to unique local socio-economic challenges. Its mandatory gross pool, where all energy must be traded through a central market, is a model successfully implemented in Ireland through its Integrated Single Electricity Market (I-SEM). Like SAWEM, the Irish model emphasizes a DAM, IDM, and Balancing Mechanism, with a strong role for the SO (EirGrid) and explicit balancing responsibility for participants [7]. This contrasts with energy-only markets like Chile, which operates a merchant transmission system and a predominantly bilateral contract model with a spot market, requiring robust grid access regulation [8].



Figure 6: I-SEM Market Structure and Timeframes [2]

The transition poses an existential threat to municipal distributors, a challenge with international precedent. In Chile, following market liberalisation in the 1980s, many small, inefficient municipal distributors were consolidated or acquired by larger private entities due to an inability to compete, manage costs, or invest in network reliability [9]. South Africa's case is uniquely acute, as municipalities are not just utilities, but organs of the state tasked with social welfare, using electricity revenue cross-subsidies to fund services for indigent households. The rise of Small-Scale Embedded Generation (SSEG) can initiate a "utility death spiral" [10], where lost revenue from departing paying customers due to poor service delivery and high cost of electricity, can potentially be amplified by the market options particularly for energy intensive industries to seek alternative suppliers, and forces higher tariffs on remaining customers, accelerating the cycle. This threatens the financial viability of municipalities and their ability to fulfil their social mandate.

Proactive municipalities must therefore evolve into DSOs actively participating in the market, focusing on efficient network management, offering wheeling services, and potentially aggregating distributed energy resources to create new revenue streams, a transition being navigated by utilities in Ireland (ESB Networks) and elsewhere [11]. As seen in the Irish context with the refinement of its wholesale market from the Single Electricity Market (SEM) to I-SEM under the supervision of the SEM Committee made up of representatives from the Commission for Regulation of Utilities (CRU), Utility Regulators (UR) and independent members with recommendations being supplied by EirGrid and the System Operator of Northern Ireland (SONI), constant modification based on policy changes, market conditions, technology requirements and lessons learnt is crucial [12]. The success of SAWEM will depend not only on its technical design but on how well policy mitigates this municipal crisis, ensuring the energy transition does not exacerbate inequality.

4. Limitations and Opportunities

The transition to the SAWEM redefines the roles of municipal utilities, introducing a complex mix of profound limitations and transformative opportunities. While the Municipal Finance Management Act (MFMA) provides a framework for traditional service delivery, its structural design can often be misaligned with the

dynamic, long-term, and market-based requirements of SAWEM participation [13]. This creates significant barriers that must be navigated to unlock new potential revenue streams and operational models.

The core limitation is rooted in a fundamental misalignment of budget allocations and contract timeframes. The MFMA’s requirement for annual appropriations (Sections 16 & 24) legally prevents municipalities from binding future councils to the 20-year financial commitments of standard Power Purchase Agreements (PPAs) without appropriately navigating a long and complex process to seal such agreements, which few municipalities have been able to achieve, creating untenable risk for investors and the market [13]. This is compounded by a crisis of creditworthiness; given widespread municipal financial distress, most lack the financial standing to provide the bank guarantees required to participate as reliable off-takers or to meet the stringent credit cover requirements mandated for BRPs and Market Participants under SAWEM (Sections 15.10) [14]. When the AG analysed the financial statements of the 229 municipalities in 2022-23 FY, it was found that 53% of them have indicators of financial strain as seen in Figure 7. This results in significant doubt about the ability for the LM to continue operating. Furthermore, the operational complexity of acting as a BRP, managing the balancing mechanism (Chapter 13) and intricate settlement processes (Chapter 15), demands a high level of technical, trading, and financial sophistication that can potentially exceed the current capacity of most municipal administrations.



Figure 7: Municipalities in concerning financial position and consecutive years in this position [15]

Municipalities that choose not to actively engage with the SAWEM risk financial and operational decline. By remaining passive bulk buyers of electricity, they remain fully exposed to escalating wholesale tariffs without the tools to manage this cost. Municipal utilities particularly those in good financial standing may forgo critical opportunities to generate new revenue streams through activities such as wheeling third-party power across their grids or selling their own excess generation into the market.

Furthermore, utilities with good grid management will miss the chance to leverage demand-side participation to reduce their own energy costs. This passive approach cedes control, potentially allowing large commercial and industrial customers, their primary revenue base, to bypass them entirely to secure cheaper, cleaner power through direct agreements with independent power producers (IPP). Ultimately, non-participation can accelerate the "utility death spiral" locking municipalities into a cycle of rising costs, fleeing customers, and deteriorating service delivery, which disproportionately harms the indigent households that rely on them for essential services.

Despite these formidable constraints, SAWEM presents pivotal opportunities for strategically positioned municipalities. Critically, the market code designates the Distributor as the Default Retailer, preserving their foundational role in the value chain [5]. Beyond this, municipalities can evolve into active DSOs, generating new revenue by managing wheeling transactions for third parties across their networks. Proactive municipalities can also participate as Generators/Sellers, monetising excess power from their own embedded generation (e.g. solar PV) in the Day-Ahead and Intra-Day markets. Additionally, opportunities exist in Demand-Side Participation, where municipalities can aggregate their own load (e.g. water pumping, lighting) to act as Demand-Side Units (DSUs), receiving payment for reducing consumption during peak periods and helping to stabilise the grid.

Realising these opportunities requires good financial management, market understanding and innovative models that work within the confines of existing legislation. A potential viable pathway is the 'NTCSA Buffer' model, whereby the NTCSA acts as the central off-taker for long-term PPAs, selling power to municipalities via simpler, shorter-term agreements that align with the MFMA's annual budget cycle. This shields municipalities from direct long-term risk. This must be supported by clarification from National Treasury on using the Medium-Term Revenue and Expenditure Framework (MTREF) for energy projects and the development of standardised agreements to reduce procurement and negotiation burdens.

Conclusion

This paper presented a review of the proposed SAWEM considered aspects of the market against active models around the world and looked at the potential opportunities and gaps in the participation of LMs in the market. The study assessed the current SAWEM market code against the capability for LMs to participate within the market, and touched on the limitations that will prevent LMs from actively participating and thriving within the proposed model.

The municipal utility journey in SAWEM will be one dependent on the capability and capacity of the utility. While a few well-resourced metros and LMs may develop the capacity to act as sophisticated Market Participants, for most, the immediate future lies in leveraging their default retailer status and DSO potential, supported by NTCSA as a critical intermediary. This approach balances ambition with pragmatism, enabling access to the new market while mitigating existential financial and operational risks.

With all this said, the SAWEM design should also not be an exact blueprint, but rather an evolutionary process, as in the case of Ireland, where with new challenges, new market conditions and changes to technology bringing refinement to the market. It's expected that the proposed SAWEM will need to adapt and be crafted over time to sustain such changes. It becomes critical for metros and LMs to be actively involved in the market to prevent falling behind, and a passive participant, missing out of opportunities within the market. Their involvement in the development of the market over time can be from inserting representatives (AMEU and/or SALGA) in market advisory committees to share challenges and

experiences that can be considered in the refinement of the market model. Institutions such as AMEU/SALGA supporting metros and LMs, will also play a key role in facilitating discussion platforms, and advocating for necessary policy changes supporting the sustainable participation of municipal utilities within the market. Without this, the existence of our electricity utilities will be threatened, continuing the financial downward spiral affecting the most vulnerable constituents.

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