



IMQS SOLUTIONS

ELECTRICITY

OVERVIEW

Authorities (such as municipalities) responsible for supplying electricity need to optimize the resources available and maintain infrastructure to do so. Relevant decision makers and operations personnel need to be equipped with up to date information that enables them to execute effective and efficient electricity demand management.

IMQS has developed a proven software solution, namely the Electricity Demand Management Information System (ELIFT).

The fundamental information required to calculate electricity demand comes from a Municipal Treasury Database (or similar source of data) where monthly electricity meter readings are stored along with stand related information.

Once the results have been generated by the engineering software, ELIFT can display customisable views on the data and deliver relevant information based on a person's role in the electricity demand cycle.

PROBLEM(S) / PAIN POINTS

There are a host of challenges that different roles deal with on a daily basis relating to consumption and management of electricity demand management. Some examples of these challenges are listed below:

- Inability to identify and resolve illegal consumption of electricity
- Inaccurate views on consumption / demand trends which ultimately leads to poor planning of infrastructure deployments and upgrades
- Accurate information is not available for identifying and managing high consumption users.

SOLUTION(S)

For Electricity Demand Management (EDM) to be optimal, the right people need to be equipped with relevant information at the right time. ELIFT achieves this by delivering information in a number of categories which are elaborated on in the table below.

INFORMATION CATEGORY	SAMPLES OF INFORMATION
Electricity Consumption Data	<ul style="list-style-type: none">• Electricity Consumption / Demand in different categories e.g. Total by municipality, total by suburb• Usage trends for specific time periods e.g. from January-March• Usage trends for specific time windows e.g. 12am-8am, 8am-12pm etc.• Prioritised views on users based on electricity consumption• Consumer information and consumption history
Anomalies / Exceptions	<ul style="list-style-type: none">• Identification of meter anomalies / exceptions.• Variations in demand, including anomalies e.g. a sudden drop in demand from a specific stand.
Spatial Data	<ul style="list-style-type: none">• Electricity demand data is spatially represented, thereby providing graphical views of information (examples provided later on in this overview).• Consumption data based on region / suburb
Billing / Admin Data	<ul style="list-style-type: none">• Identification and tracking of unmetered stands• Identification and tracking of electrical faults• Electricity billing / tariff data

PRIMARY BENEFITS

- Vastly improved ability to continually improve service delivery to consumers
- Equipping the right people with the adequate information will drive optimisation of planning and operational processes.
- Contributes to assisting municipalities in evolving from a reactive approach to a proactive strategy in executing Electricity Demand Management
- The Electrical Demand Management Information System Module allows its users to access a multitude of electricity related information in report, graph or map format, thereby making data visual.
- Spatial integration of data allows for a better understanding of the distribution and location of various factors pertaining to electricity consumption within municipal boundaries.
- Promotes responsible and informed decisions to be made by offering at least eighteen different reports, five graphs and sixteen maps. The Electrical Demand MIS allows managers access a multitude of summarized information, thereby supporting optimized decision making, planning and maintenance deployment.

TECHNICAL / FUNCTIONAL / FEATURE INFORMATION

The primary capability of ELIFT that delivers practical results is the rich and customisable reporting features. These features are summarised in the table below and the screenshot samples that follow.

TYPE OF REPORT	FEATURES / VALUE
Electricity Demand: Report	<ul style="list-style-type: none">• The Actual Demand Summary report summarizes the electricity consumed by users as a 'Total Electricity Demand' in kV/year or an Annual Average Daily Consumption (AADC) total in kV/day.• Report is available per suburb, zone or ward report.

TYPE OF REPORT	FEATURES / VALUE
Large User Report	<ul style="list-style-type: none"> For purposes of following up on large users and site visits, the 'With User Details' report can be an effective tool. Report provides details on the stand's consumption and ownership, including account- and GIS information. The AADC (Annual Average Daily Consumption) is reported on in units of kWh/day.
Electricity Sales Graph ¹	<ul style="list-style-type: none"> Electricity sales can be viewed per year (kWh/annum) or per day (kWh/day) by making a selection from a drop down list, illustrated below. The time period for which the results should be displayed can be adjusted/ configured.
Daily & Annual Consumption Maps	<ul style="list-style-type: none"> Electricity demand for each stand can be viewed on a map.
Power Consumption Maps ²	<ul style="list-style-type: none"> The 'Daily Consumption' and 'Annual Consumption' maps are visual representations of the consumption categories.
Electricity Meters: Unmetered Stands ³	<ul style="list-style-type: none"> Stands that are metered / not metered can be categorised by colour.
Meter Anomalies: Sudden increase / decrease in daily demand ⁴	<ul style="list-style-type: none"> Sudden increases / decreases on consumption can be represented in a variety of ways. Sudden drops in daily demand can be an indication of a faulty meter or a meter being bypassed. As an example, the ratio of the average daily demands for the last 3 months to the AADC can be presented. In this scenario, the stands that should be investigated are the ones with a 3 month ratio less than one half; this may indicate that the meter is being bypassed.

TYPE OF REPORT	FEATURES / VALUE
Stand properties ⁵	<ul style="list-style-type: none"> • Every stand has detailed properties that can be viewed which include: <ul style="list-style-type: none"> ▪ Consumption Information (e.g. monthly consumptions, readings) ▪ Meter Information (e.g. serial number, adjustment codes, 1 month- and 3 month ratio) ▪ Owner & Consumer information ▪ Stand Details (e.g. plot id, site value, improvements, land-use and zoning codes)

Please see figure 1

Please see figure 2

Please see figure 3

Please see figure 4

Please see figure 5

[illegible]

The screenshot shows the BQMS Map Viewer interface for Centurion Electricity SWFT (2009/07). The map displays a residential area with streets like GANNET CIRCLE, THEO'S STREET, and RUMBLE STREET. The map is color-coded by electricity tariff, with a legend on the left showing categories like ENDOM1C2, ENDOM1C4, ENDOM1C6, etc. The interface includes a top menu bar with options like Map, Survey, Theme, End, Selection, View, Tools, Electricity, MyCity, GPS, Help. Below the menu is a toolbar with various icons. The bottom status bar shows 'Swift Record 1 of 1', 'Count', 'Selected', 'Type', 'Scale: 1:4,832', and 'Images: 1'.

Figure 3: Unmetered Stands

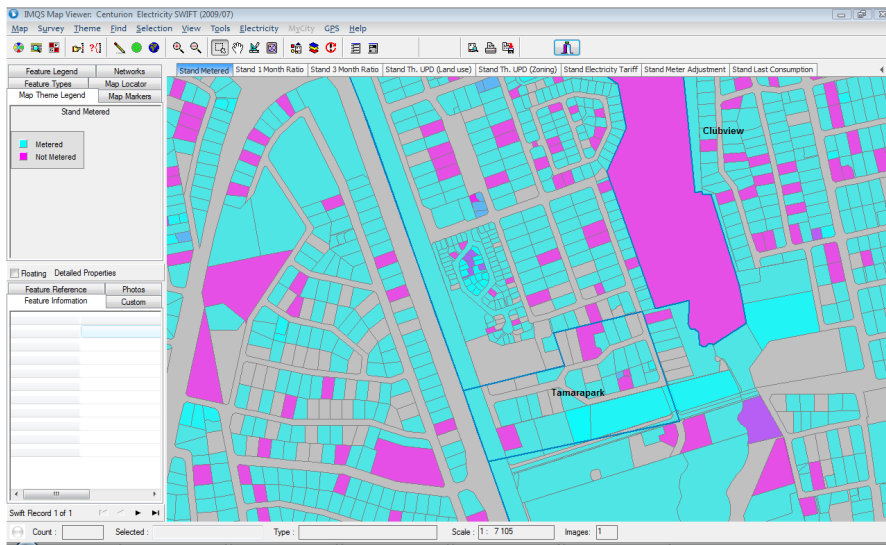


Figure 4: Increase in Daily demand

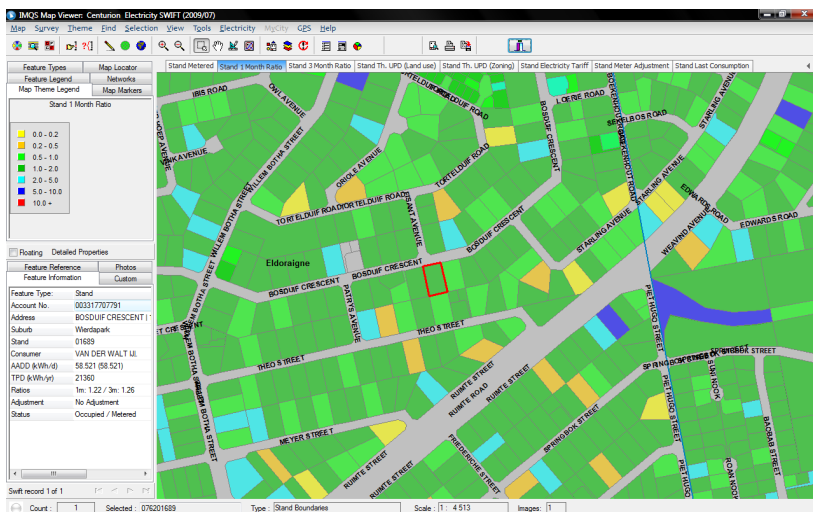


Figure 5: Stand Properties

