Comments on Cape Town's Draft Energy Strategy

Congratulations on the draft document which I am sure will be well received by hard pressed residents of Cape Town. I have the following comments which reference sections of text (in italics) in the document:

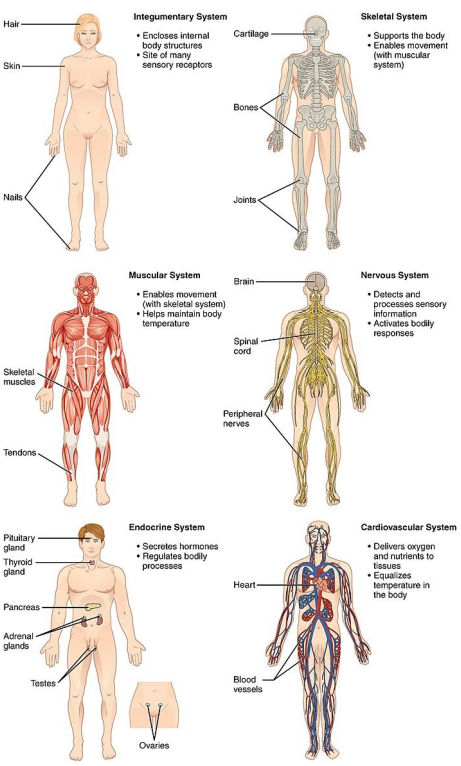
Pilot alternative public lighting solutions for un-electrified informal settlements

When travelling some years ago to the Yunnan province of China, which covers approximately the same latitudes in the north as South Africa in the south, almost every street light in the cities that we visited was powered by its own solar panel, presumably with a battery of sufficient capacity. Having a similar climate and solar potential, has the City also considered this option? The savings in cables alone might justify the investment, although our enterprising cable thieves may not approve.

Cape Town is a leading Electric Vehicle friendly city in South Africa, with the City pro-actively introducing EVs into the public sector over time and enabling EV charging infrastructure to develop in support of the industry.

Perhaps *electric vehicles* (EV), especially used for commuting, might provide backup power by plugging into community micro-grids at night. Known as *vehicle to grid*, a fleet of EVs could provide battery power to micro-grids over peak demand periods and load shedding. Perhaps it is time to look beyond the present to a future that may take years to achieve. The one positive legacy that will be left by the ANC is similar to that left by war: destruction of the old makes way for the new. Joseph Schumpeter recognized *creative destruction* to be essential to progress, and we should not lose the opportunity by trying to fix what has been broken (or stolen) but to map out a new path. Support for bus rapid transit is correct and should be expanded to include private vehicles. The minibus should eventually be replaced by *autonomous electric vehicles* that can be summoned by a form of ride hailing, which in turn will use artificial intelligence to minimize costs and waiting times. The suburban rail network should be transformed into corridors for such vehicles. The long haul rail network should return to its original role of transporting bulk goods and containers, and should not carry passengers at all.

Design of enhanced distribution grid communications network and increased functionality as a distribution system operator.



This should be a communications system for **all** City resources, not just for the grid, preferably using low cost *Internet of Things* (IoT) technologies, perhaps with *satellite constellations* for connectivity. It helps to think of the city as being like a body which has a number of independent but interdependent *systems*:

a circulatory/cardiovascular system to circulate blood, deliver oxygen and nutrients and remove waste products;

a digestive/excretory system to absorb nutrients and remove waste;

a muscular/skeletal system to enable the body to move;

and endocrine, immune, renal, reproductive, respiratory and other systems that all rely on:

a nervous system to collect and process information from senses and cause physical actions via the muscular and other systems.

One does not have to be a doctor to understand the analogy among the systems of a body and the functions of a city. It makes no more sense for the city to have separate communications networks for each resource (or directorate) than it would for a body to have separate nervous systems for each of its functions.

This type of *silo thinking* hampers the flow of information among parts of an organization in which different teams create unique processes and use their own specific

tools to do work. Cape Town is an excellent example of how a bureaucracy is expanded, not only by increasing pay, but also by adding new directorates, the purpose of which is often obscure. Each is like a little empire, complete with emperor and courtiers, whose primary goal is to compete for status (and therefore funds) with others. No wonder that its cost to its productive citizens tripled in a decade.

The cost of providing and maintaining electricity infrastructure is fairly distributed across customers

The problem here is similar to that which faces a censor: who decides what is fair? A tariff should be based on actual cost and equal for all customers. Obscure and unequal tariffs have a major negative impact on the business confidence required to promote investment in the city.

Up-to-date and comprehensive energy datasets and related analysis are made available to applications and are accessible by all energy system stakeholders to enable evidence-based decision-making.

This data should be made available in near real time via web services to all residents to enable them to intelligently and automatically manage their demand for resources.

The strategy takes a system-wide perspective on energy, which means not only looking at electricity, for which the City currently has a significant mandate, but also engaging in broader energy-related matters over time.

Given global experience, the City should get out of the business of supplying energy to make room for the private sector to do so at lower cost and with greater reliability. It should not consider expanding its mandate except where immediate and significant cost benefits accrue to citizens.

From the centralised supply of unreliable and costly energy, relying mainly on fossil fuels…to an increasingly decentralised supply of reliable and cost-effective energy, relying on carbon neutral sources of energy.

Decentralisation and privatisation are the key qualities of any successful economic policy.

Consideration of the energy mix on a daily basis is critical – there is a need to balance the time of supply of different generation sources with the demand profile of different electricity customers.

Mankind has over many millennia evolved the best way to do this: use price determined by supply and demand, which implies a real time *market* for electricity.

Looking further into the future, there are opportunities for new types of fuel, such as hydrogen, which the City commits to investigating to understand the role of different actors in these new energy value chains and how these energy types can benefit the local energy system more broadly.

Hydrogen, in this context, should be seen not as a fuel but only as a form of energy storage, primarily for mobile applications. Observe the fortunes of Tesla versus Toyota before investing in hydrogen.

Regards Chris Marshall, June 2023

References

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