

Electricity Demand and Generation Scenarios (EDGS), by MBIE, Draft 2015
<http://www.med.govt.nz/sectors-industries/energy/energy-modelling/modelling/electricity-demand-and-generation-scenarios/draft-edgs-2015>

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I welcome the chance to comment on the submissions on the draft EDGS, which come from a wide variety of interested parties. Many have commented that all eight scenarios assume continued significant growth in demand, despite there having been more or less flat demand since 2008.

I agree with the Electricity Networks Association and the several other submissions that say that further consultation on the EDGS is required.

I particularly support NZIER's comment

The consumer environment for electricity consumption and peak demand in 2015 is different than that of pre 2010 and what has emerged is that the short and medium term future environment will change further. ... **Consumers increasingly have different options for sourcing and consuming electricity** *[our emphasis]* which are likely to alter the pattern and size of peak demand. ...Declining demand growth for energy, climate change concerns, strong growth of renewable local generation of electricity, energy storage systems and demand management as well as the use of smart technology in the operational management of grids have all combined to jump start what is now regarded as potentially the most profound changes to the energy industries since the initial development of the networks. These changes appear to be neither short term nor cyclical.

I call the boldfaced phrase above, "contestable investment" by consumers. In my view this is being driven mainly by power price rises that consumers find unacceptable. They are voting with their feet. (Consumers who cannot invest to reduce their power bills are more than likely to simply turn their heaters off in winter, and this has received much publicity after two recent deaths attributed to cold damp houses.)

The asset values of both network and gentailer businesses are being increasingly challenged by consumer-owned assets ranging from new technologies such as rooftop PV and battery storage, to LED lighting, efficient appliances, and home insulation. All these, other than rooftop PV, reduce peak demands as well as kilowatt-hour demand, and therefore impact on asset planning of both transmission and distribution companies.

In fact, the network businesses are effectively no longer monopolies, yet they are still being regulated as if they were so. As NZIER and others submitted, electricity regulation is no longer fit for purpose.

Trustpower's submission noted that other jurisdictions including Australia

"now place greater emphasis in their forecasts on increasing energy efficiency and price- elasticity of energy consumption than they had done in the past. AEMO, for example, has expended considerable effort over the past two years on understanding why their forecasts for the past decade have been consistent overestimates, and adjusted their forecasting methodology to account for what it has learned."

New Zealand’s forecasts have also been consistent overestimates over the last decade, and I believe it is essential for New Zealand also to undertake a review. Forecasts were published in the Electricity Commission’s “Statements of Opportunity” (meaning opportunity for investment in transmission and transmission alternatives) in 2005, 2007 and 2010. A forecast was outlined in 2012 by Ministry of Economic Development, but not finalised. And we now have the EDGS prepared by MBIE. The table below itemises some key excerpts from this group of forecasts:

Forecasted Electricity Demand, from publication date (bolded) to a decade afterwards						
Forecast(March yr Date, publication)	2005	2007	2010	2015	After10 yr span	Forecast growth over 10 yrs
2005	37371	39394	42444	47097	47097 (2015)	26 %
2007		37820	39288	42884	44202 (2017)	17%
2010			38725	43645	47315 (2020)	22%
2015				40070	45470 (2025)	13%
Actual (calendar yr)	2004 37742			2014 39201		3.8%

This continued failure to relate forecasts to actual trends is symptomatic of an economics culture that values models above dispassionate observation, and gives little thought to reality checks. Seemingly rich in numerical detail, such forecasts actually amount to “data-free analysis”. Everything derives from the assumptions, which usually reflect a narrow view based on a business-as-usual framework.

Incidentally a Sustainable Energy Forum member unearthed a similarly dramatic set of forecasts in the transport sector, and I had described those forecasts as “wishful thinking”. The truth of that is revealed on the NZ Transport Agency’s web page: “The RoNS [Roads of National Significance] are ‘lead infrastructure’ projects – that is, **they enable economic growth rather than simply responding to it.**”

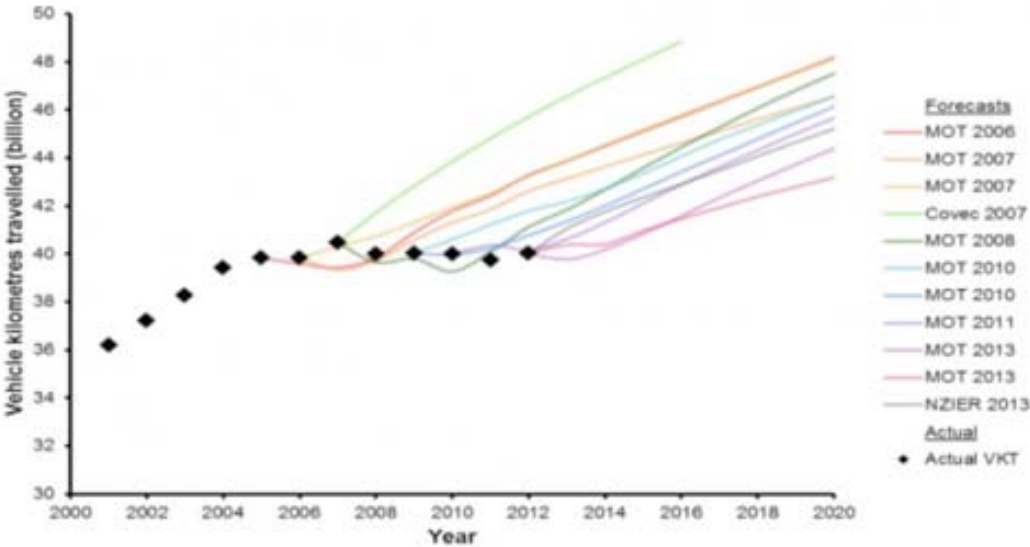


Figure 2: Historic New Zealand light vehicle traffic forecasts vs actual growth

I believe that's exactly how successive governments have treated electricity investments – as maximising their contribution to economic growth, not simply responding to economic growth. But unlike the RoNS it is consumers, not taxpayers, who funded the electricity projects. They are effectively paying LRMC prices, and these are proving to be higher than the market will bear.

Because the LRMC pricing model is based on the assumption of continuing demand growth, if the growth is actually fictitious then the need for more generation capacity is also fictitious. The EDGS scenarios, which all have the bulk generators investing in new conventional capacity, simply fail the “sniff test” reality check. Investment is still needed, but of a different nature.

Consumers are increasingly challenging the network monopolies and the quasi-monopoly gentailers as residential prices continue to rise – by 3.8% this year – and costs of competing distributed energy fall. It is those consumers who can afford to invest who are leading the “jump start [of] what is now regarded as potentially the most profound changes to the energy industries since the initial development of the networks.” It is **their investments** which will **promote economic growth**, if only they are enabled by regulators to do so.

The Smart Grid Forum submission notes that:

The EDGS do not consider battery storage explicitly yet early modeling of the integration of battery storage with PV systems suggest that low cost storage is likely to have as great, if not a greater, impact on the uptake of distributed supply as the generation technologies themselves. ... Once installed, storage can be used to supplement local generation and arbitrage electricity prices which reduces the need for mainframe peaking generation at scale.

The NZIER submission described the need for a structured independent view of possible electricity demand futures, “as consumer side dynamics is placing increasing pressure on supply side economics”. I go further, and conclude that the time is long overdue for a wide-ranging inquiry into the future of electricity infrastructure, with a view to regulating it in the public interest as defined by a wide range of New Zealanders rather than the interests of either investors (now explicitly protected by both the Electricity Authority and the Commerce Commission) or consumers. EDGS, a supply-side approach driven by an arcane economic model with no reality check, is no longer fit for purpose.

I believe the public interest includes economic growth, but growth constrained by physical realities including climate change. It includes reliable supply, but that includes consumers not self-disconnecting to cut their power bills. And reliability from demand-side arrangements, perhaps even end-use battery storage, will soon be more cost-effective than reliability from the eight additional gas turbine peakers that feature in the Low Carbon Scenario.

The public interest includes physical as well as economic efficiency. It must be defined by a wide range of New Zealanders in their own terms, not by the GEM “merit-order” model. (Note that some of the EDGS-modelled costs, and also commissioning dates, were criticised by several submissions as not reflecting their actual expectations or plans.) Physical efficiency includes the insulation and heating of the million-odd homes that would benefit, making their owners or tenants healthier and more productive.

Above all, today's failure is one of "competition", because the Electricity Authority is promoting competition only between the business entities (electricity market "participants") that they regulate. Their governance system excludes those businesses which offer contestable investment by the residential consumers whose power bills have funded today's electricity surpluses.

And the Commerce Commission still regulates network companies as monopolies, not recognising innovative competition from non-network businesses that reduce demand peaks.

When "competition" is re-defined as including small businesses that offer new technologies, then regulators will be able to promote genuine innovation (as their statutory objectives require). The new technologies could be deployed to reduce real generation and network costs instead of being considered "disruptive", and the cost savings could be passed on, at least partially, as lower power bills.

Electricity regulation could then make the national economy more productive by reducing a vast amount of energy waste. This would truly promote economic growth to the benefit of all consumers.