

Some drivers for long-term generation and demand scenarios

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Strategies project, Package 1

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Perspective: retail mass market and small-scale energy service providers

- Domestic energy users: core principle is that household energy must be affordable and sustainable in an environment of challenging climate change policies and peak oil and gas prices
- cost-effective opportunities for demand reduction could defer investment in poles and wires
- detailed regional analysis of demand trends is needed to get the investment right

Context of long term scenarios

- Massive social change, globally, due to peak oil and climate change
- Political tension between short-term and long-term objectives, always with us
- DEUN has that tension, in spades.
- Proposed drivers of future electricity scenarios: should include fuel price trends, control of capital, technology development, culture change

Fuel prices

- Main issue: where will the natural cap be on price of fossil fuel?
- Biofuels, probably, but they have many unrecognised costs
- Some of those “costs” are actually benefits – can improve soils through use of trees; can improve (or destroy) viability of underdeveloped regions (NZ as well as Africa)
- Peak oil and gas are with us now – Maui!
Global peak coal believed by many to be only a few decades away

Control of capital

- Will investment decisions be driven by commercial gain or security of energy supply in national interest?
- Can investment in energy efficiency defer investment in centralised supply – how can capital requirements of end users be managed?
- How can “regulation” whether through Transpower SCI, or Electricity Commission, or Commerce Commission, better align short-term with long-term objectives?
- How to manage risk of Transpower stranded assets as global structural change bites?
- Remember consumers also get stranded assets – e.g. nite-store heaters

Technology development a major driver

- “double burners” in 1970s saved NZ from frightening trend in electric space heating
- Wind turbine development, large and growing inroads in world electricity supply
- Biomass boilers penetrating European markets – Austria, Finland, now entering UK
- NZ developments include down-draft boilers plus flue gas scrubbing, >>90% efficiency in condensing boilers.
- Water heat produced by these, offers huge opportunity for dual-fuel management, electric vs wood fired water heat, especially for rest homes, tourist lodges, mid-size commercial
- Wood residues could provide ~50 PJ/yr energy, maybe rather more
- Advanced meters COULD open electricity markets to retail consumers
- Wood now being packaged as a convenience fuel (certified dry), demand growing ~20%/yr – could make a real difference in ability of consumers to contribute to dry-year security

Culture change a major driver

- NZED culture led to 17c/kWh electricity being soaked up by a new 2c/kWh potline
- Same culture transformed an originally widely competitive market design into a trading platform for retailer-generators, to increase their asset values and minimise risks
- Poles and wires are still preferred by electricity market design to price-responsive demand, and targeted energy efficiency investments
- Therefore this initiative by Transpower, to get stakeholder engagement on long-term transmission planning, is hugely welcome

Analysis requirements, conclusion

- Forecasting based on trends is very important – but demand trends need to be separated to find the drivers.
- Centralised data set offers very rapid analysis systems, already have revealed demand response to conservation campaigns, some indication of irrigation demand trends.
- Need further types of query to the data set, to pick up trends in heat pumps
- Heat pumps seem to be a major driver of demand peaks, hence such analysis worth while
- Conclusion: Long term scenarios should fully accommodate technology development that can allow local energy supply and energy efficiency to compete with poles and wires.
- Note UK long-term scenarios give much room for this type of development: *Ofgem's LENS project*,
<http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/lens/Pages/lens.aspx>