

Strategy on Security of Electricity Supply

Transmission Issues

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Grid Investment Strategy

TRANSPower



Roles of the grid

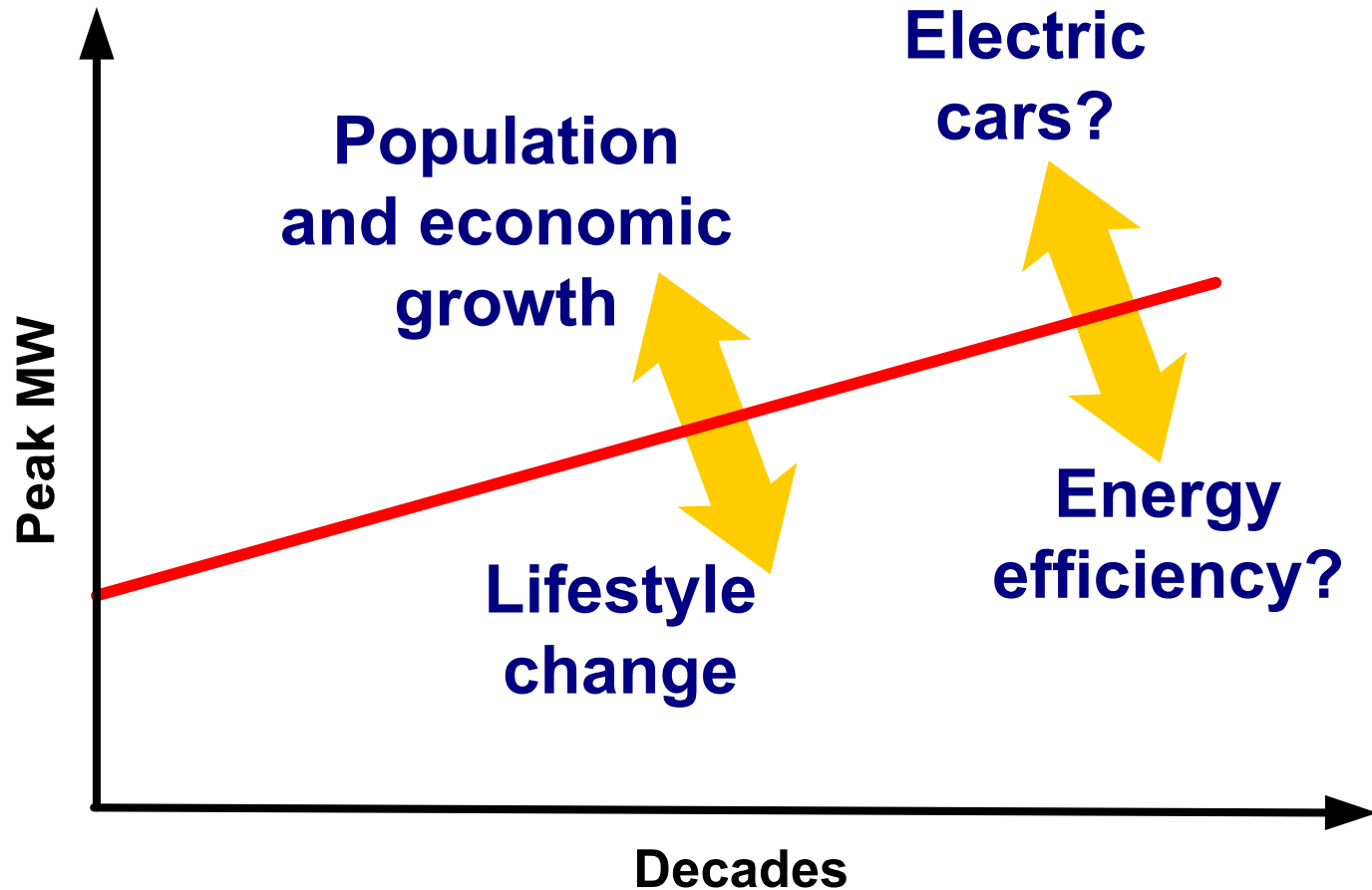
Transport

Competition

Security



Demand drives transmission needs



Generation type and locations drives (and is driven by) transmission

- 90% of electricity to be generated from renewable sources by 2025
- 10 year restriction on new baseload fossil-fuelled electricity generation
- Grid needs to support intermittent generation
 - Capacity (MW)
 - Energy (GWh)
 - Real time balancing



Systems and products for:

- Frequency management
 - AGC / frequency keeping
 - instantaneous reserves
- Scheduling and dispatch
 - wind generation forecasting
 - management of security
 - accuracy of pre-dispatch prices and quantities schedules
 - unit commitment
 - hydro firming of intermittent generation
- Market arrangements



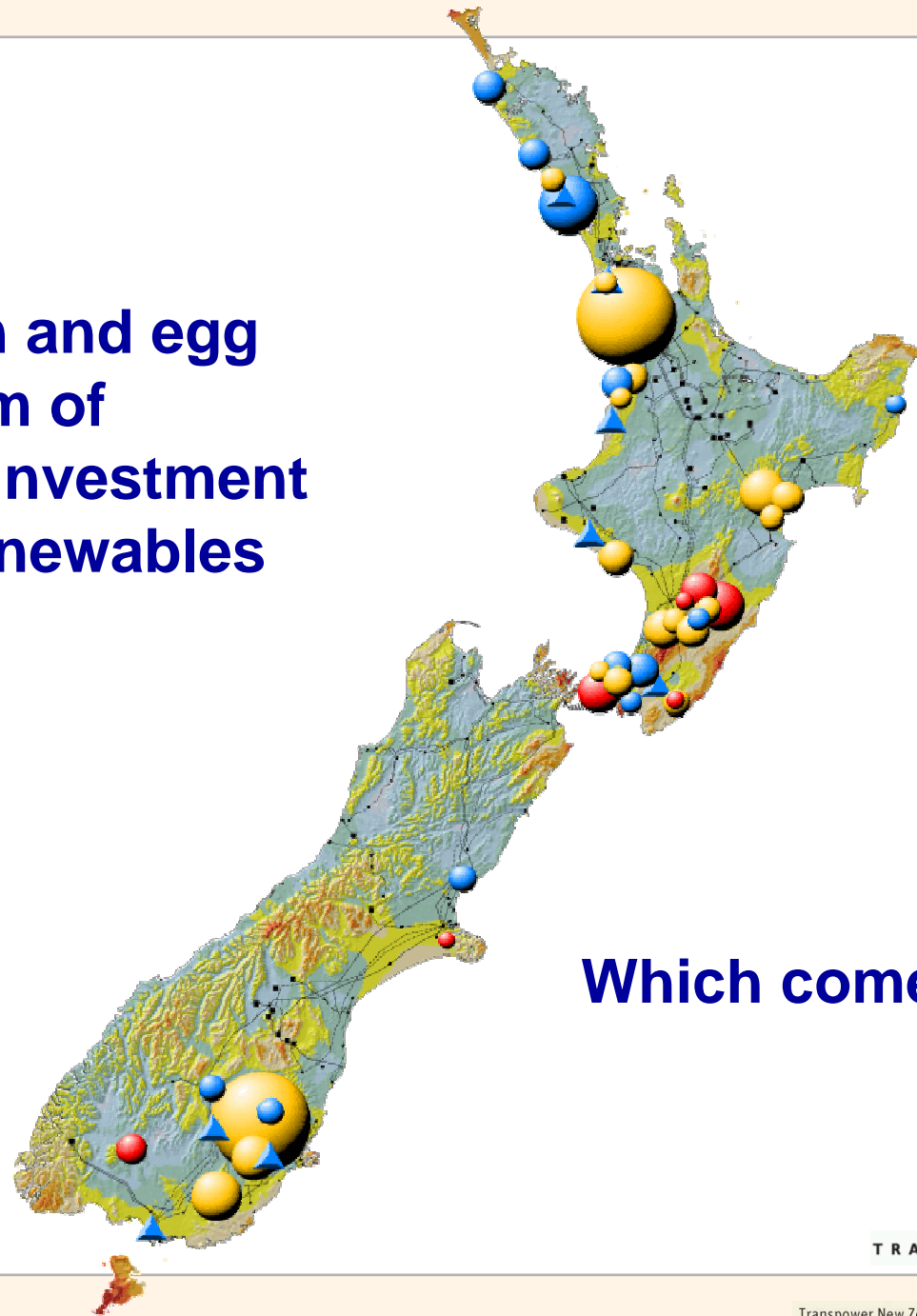
Annual Planning Report 2006

Possible futures

	Renewable generation development	Grid implications
A	Some	Some additional investment over normal investment levels
B	Significant	Significant additional grid investment required
C	Extensive	Major additional grid investment Thermal generation close to load is replaced with renewable generation more distant from load



**The chicken and egg
problem of
transmission investment
to enable renewables**



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Which comes first?



Summary

- Transpower is an enabler of the NZES vision
 - but enabling it has significant transmission implications
- Market and dispatch systems and products
 - needed to maintain security with high proportions of intermittent generation
- Strategic grid investment
 - to encourage sufficient generation, mostly renewable
- Making it happen
 - EGRs, RMA, NES, NPS ...
 - innovative and constructive (but secure!) approaches



Roles of the grid

- Transport
 - the energy from where it is transformed into electricity, to where the customer wishes to consume.
- Security of supply
 - ensuring backup/reserve generation and transmission to minimise disruption to customers.
- Competitive prices
 - enabling customer choice, generation competition and a two-sided market.

