The New Zealand Energy Strategy and the outlook for geothermal energy

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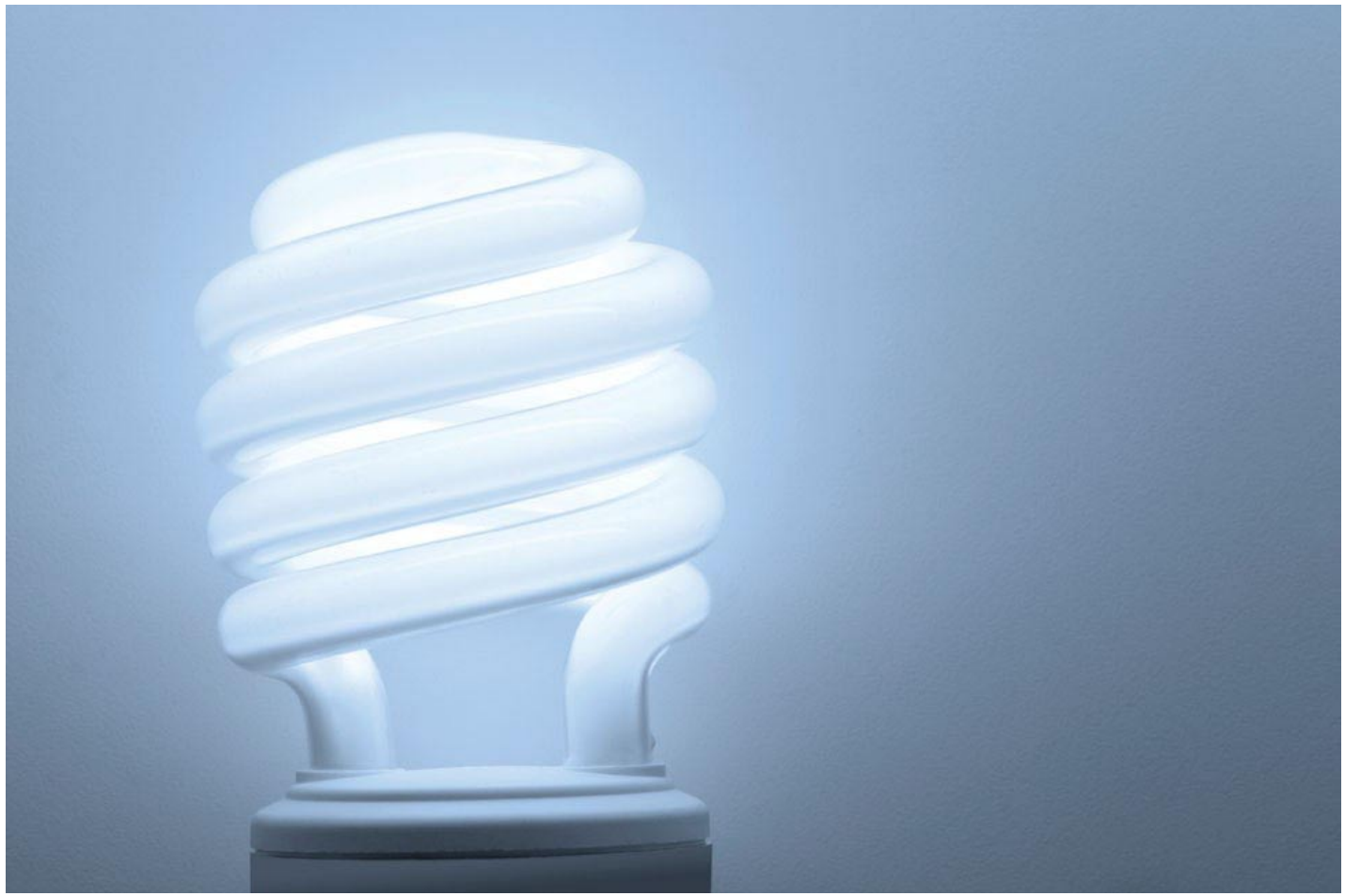
New Zealand Government

sustainability

Overview of presentation

- New Zealand Energy Strategy (NZES): the big picture
- Key NZES measures impacting on the geothermal industry
  - Emissions Trading Scheme
  - Renewable electricity preference
  - Environmental policies
  - Others
- Outlook for the geothermal industry

NZES: the big picture



Our challenges

- Energy security
  - Oil
  - Gas
  - Electricity
- Climate change

Basic goal of the NZES

A reliable and resilient system delivering
New Zealand sustainable,
low emissions energy services

Our vision

- Providing clear direction on the future of NZ's energy system
- Utilising markets and focused regulation to securely deliver energy services at competitive prices
- Reducing greenhouse gas emissions, including through an emissions trading scheme
- Maximising the contribution of cost-effective energy efficiency and conservation of energy

Our vision

- Maximising the contribution of cost-effective renewable energy resources while safeguarding our environment
- Promoting early adoption of environmentally sustainable energy technologies
- Supporting consumers through the transition

Towards a carbon neutral New Zealand

Our targets:

- 90 percent of electricity generated from renewable sources by 2025
- Per capita transport emissions halved by 2040
- 250,000 hectares of new forest by 2020
- 30 PJ/year of non-transport energy savings; 20 PJ/year of transport energy savings

NZES: the key initiatives impacting the geothermal industry

Emissions Trading Scheme objectives

Support and encourage global efforts to reduce greenhouse gas emissions by:

- reducing New Zealand's net emissions below business-as-usual levels; and
- complying with our international obligations, including our Kyoto Protocol obligations;

while maintaining economic flexibility, equity, and environmental integrity at least cost in the long term.

Key features of proposed Emission Trading Scheme

- Basic principle: one tonne of CO_2-equivalent emissions will require one Kyoto-compliant unit, such as a *New Zealand Unit* (or NZU)
- NZUs are procurable initially by government sale (auction) or free allocation, then freely tradable
- Kyoto units can also be procured in other countries that are parties to the Kyoto protocol

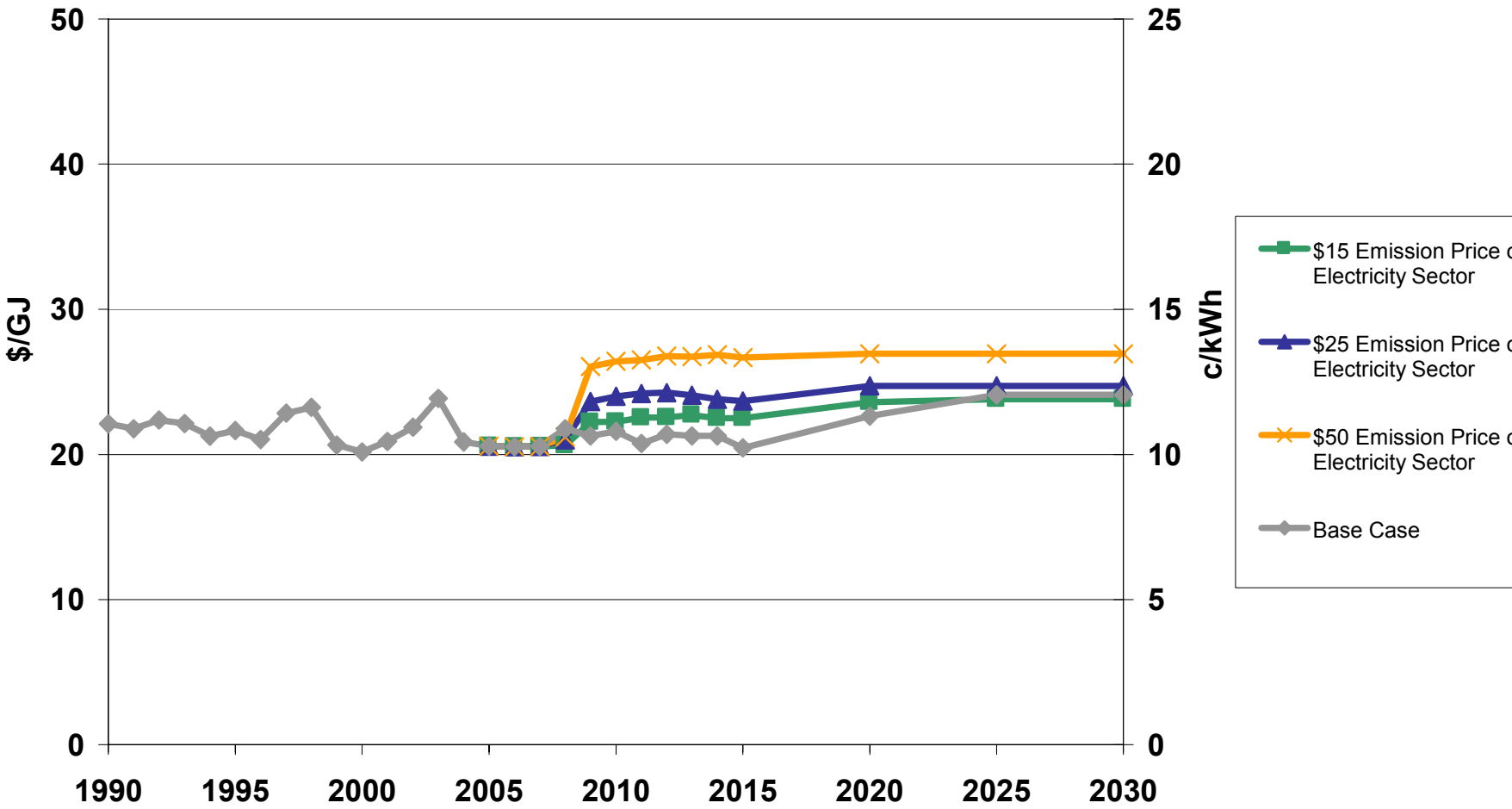
Proposed phase-in of Emission Trading Scheme

- The scheme will eventually encompass all emission sources and all greenhouse gases:
  - 2008 Forestry
  - 2009 Liquid fuels (primarily transport)
  - 2010 All stationary energy and industrial processes
  - 2013 Agriculture, waste, all other emitters

ETS and geothermal

- Obligation to comply in the stationary energy sector generally falls to the 'fuel supplier', which for geothermal means the geothermal operator
  - "An obligation would be placed on the extraction of geothermal fluid for electricity generation or industrial process heat, and not on retail operations such as motels and public baths." (p. 84)
  - "We anticipate that large geothermal field operators (rather than owners) would be the most suitable point of obligation for emissions from the extraction of geothermal fluid." (p. 84)
- Obligation to purchase units will be self-assessed with enforcement via audit

Price Impacts



Preference for renewable generation

- “The government has stated a clear preference that all new electricity generation be renewable, except to the extent necessary to maintain security of supply…
- The government expects all generators, including state-owned enterprises, to take its views into account when considering new generation investments..
- The government will consider regulatory options to reinforce the governments objectives for limiting new fossil fuel generation.” (NZES, p. 80)

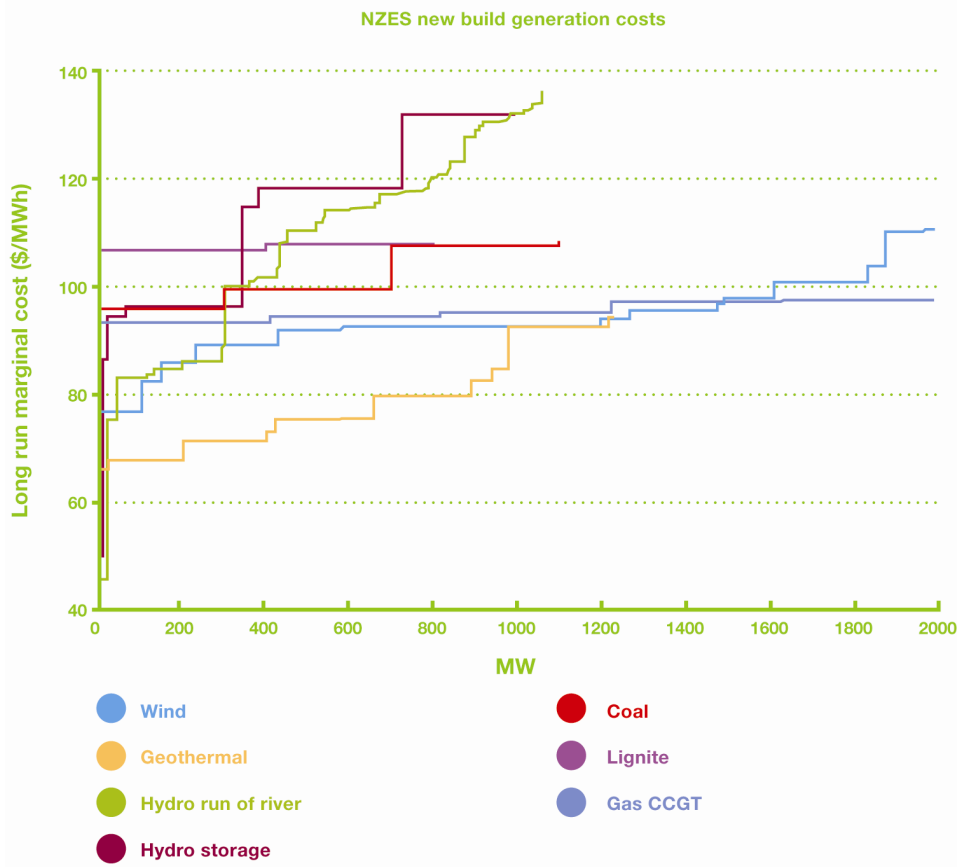
Other NZES actions impacting on geothermal

- EC and Transpower developing new planning processes and guidelines to coordinate transmission and renewables investment
- The government is developing a National Policy Statement on renewable energy under the RMA

Outlook for geothermal energy

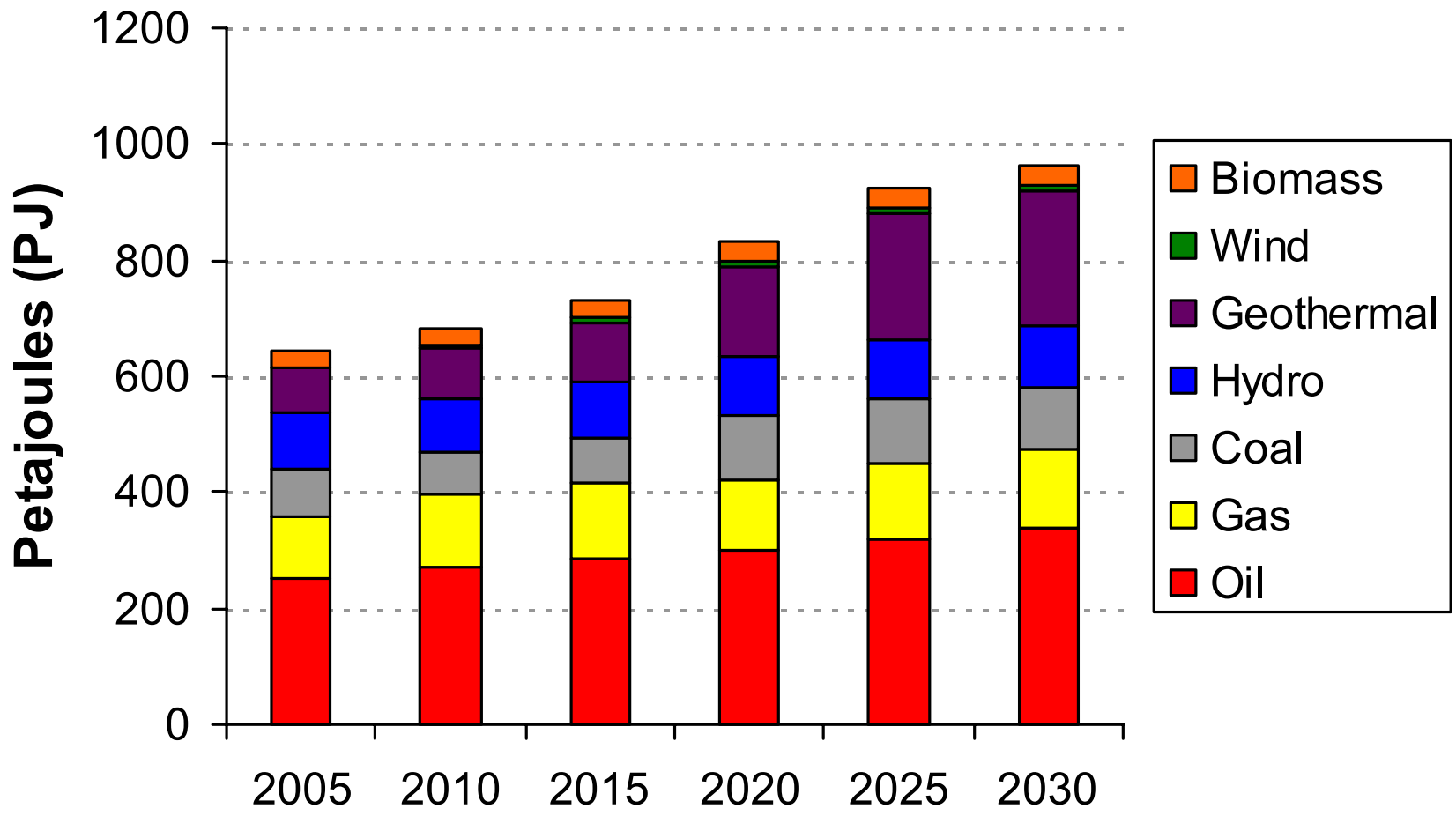
Geothermal makes economic sense

Figure 5.7: Typical costs for new electricity generation (updated August 2007)[24]

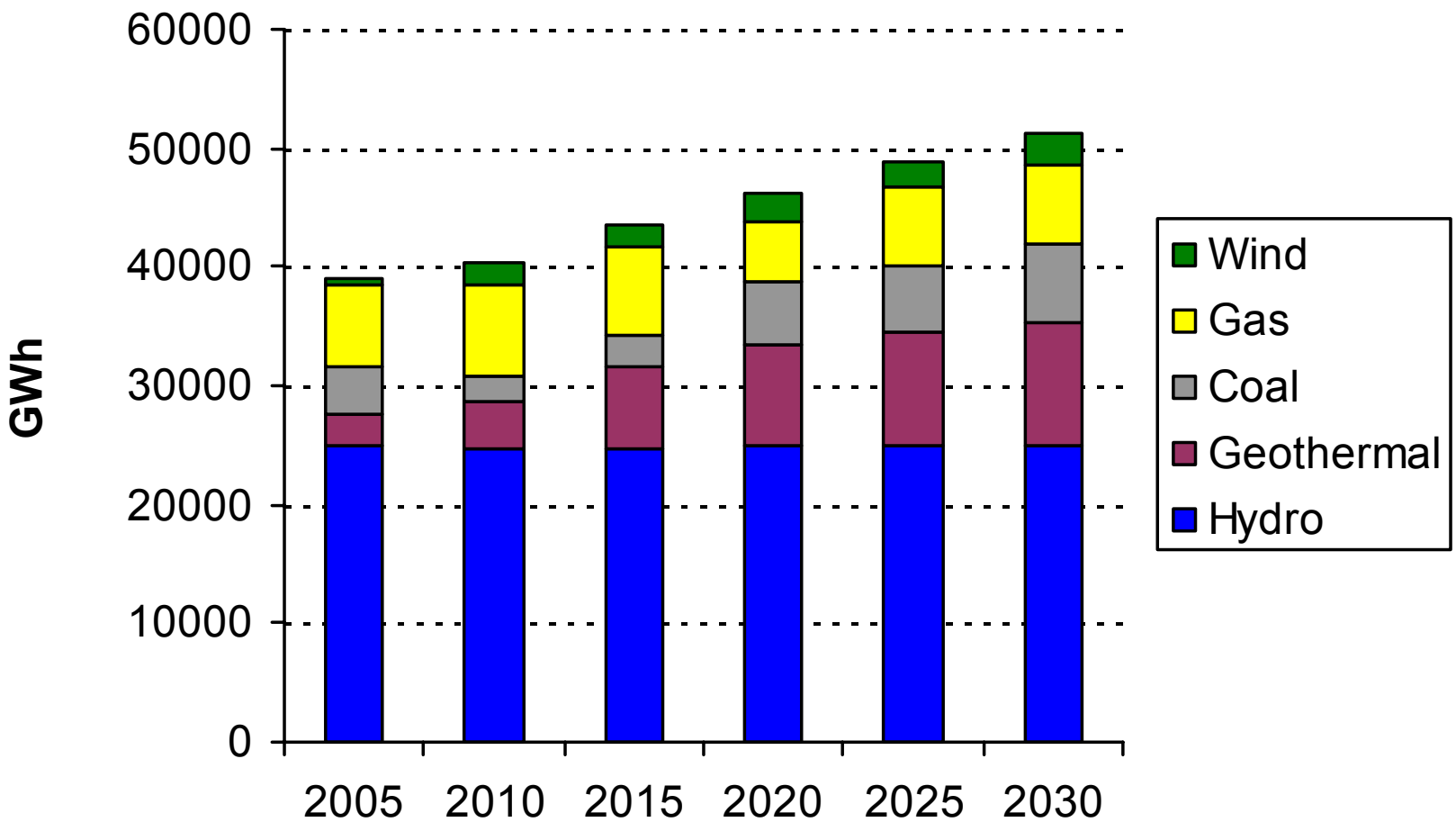


Source: Ministry of Economic Development

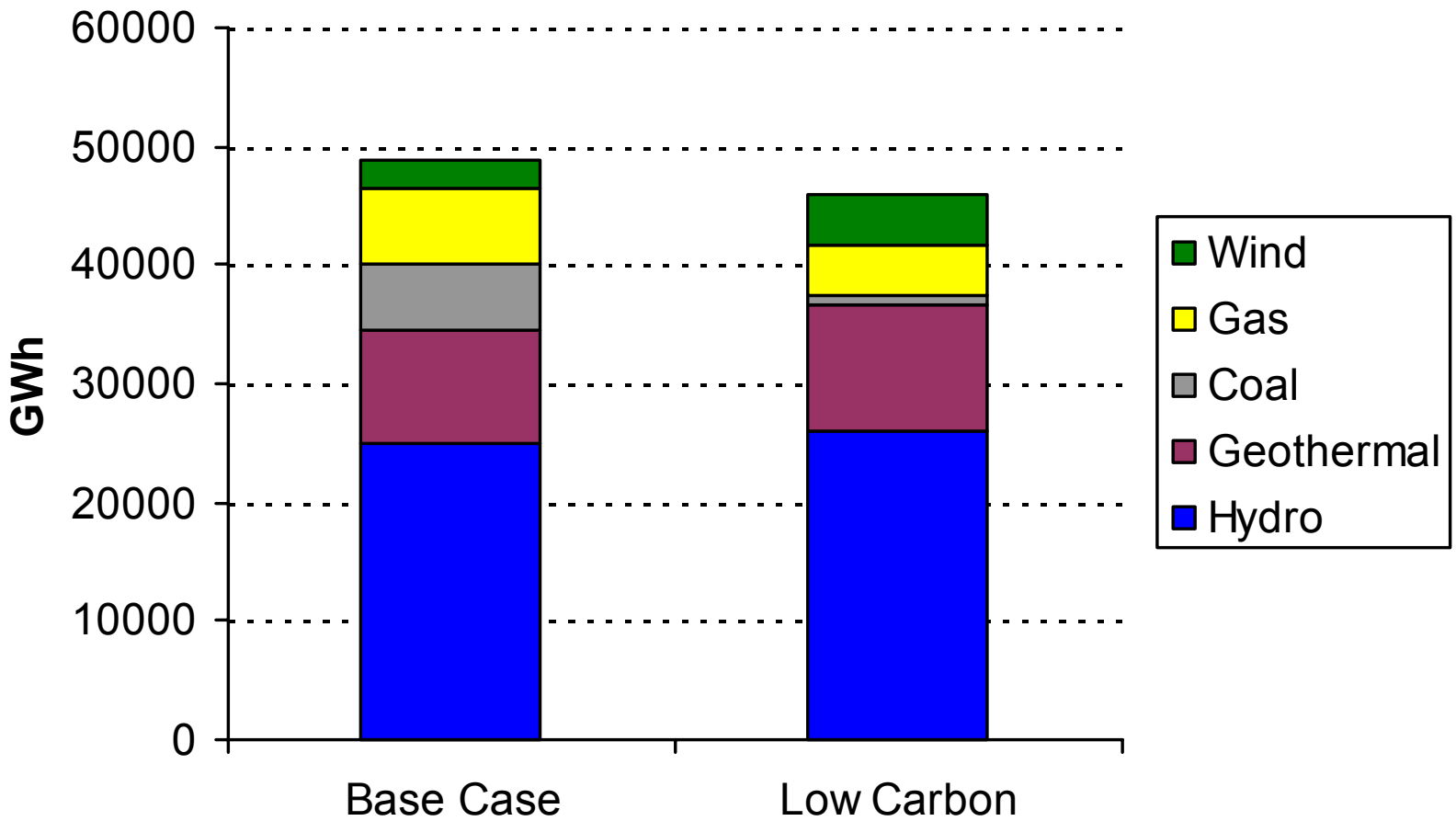
Base case primary energy supply



Projected electricity supply



Impact of NZES on 2025 electricity supply



Questions?