Industrial, transport and residential demand for energy

As seen in New Zealand's Energy Outlook

Mark Walkington

Energy Information and Modelling, MED

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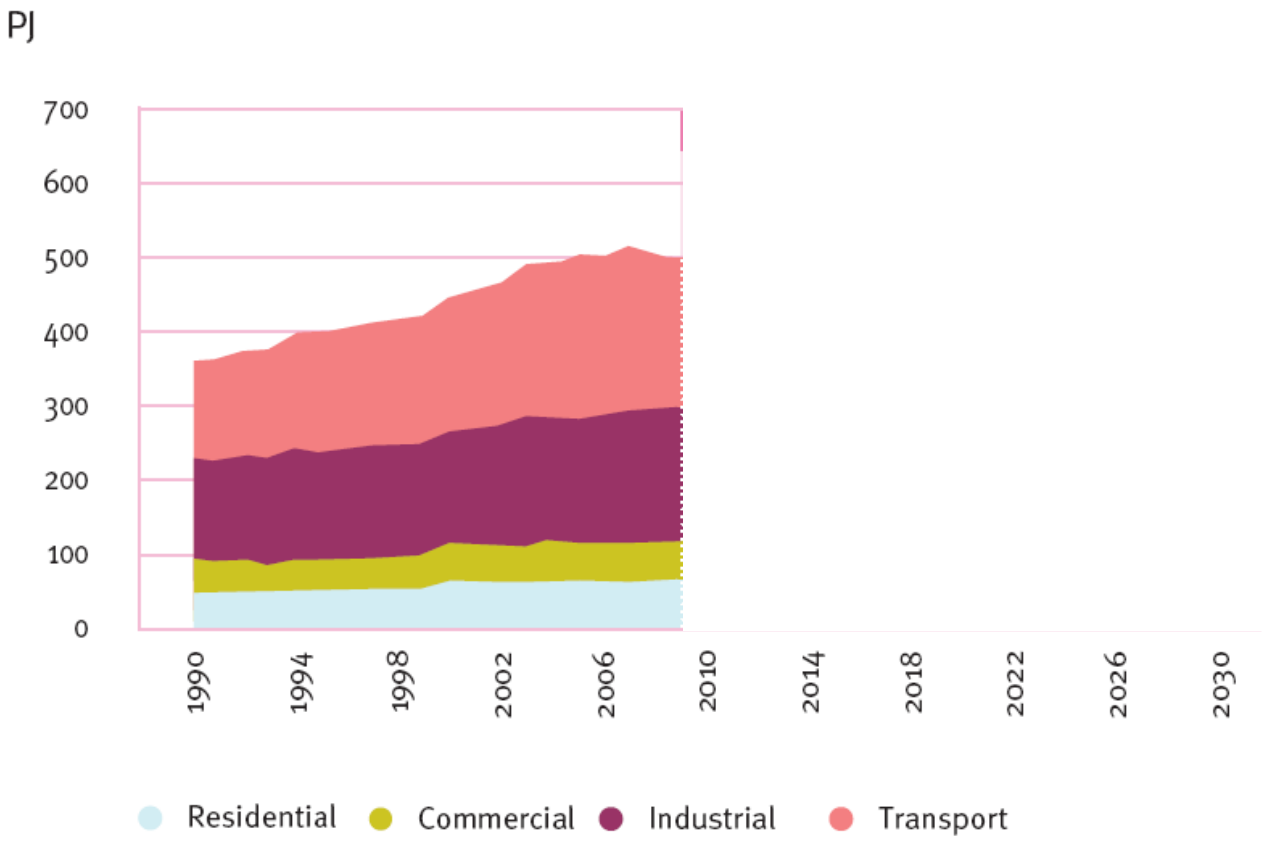
Consumer Energy Demand by Sector



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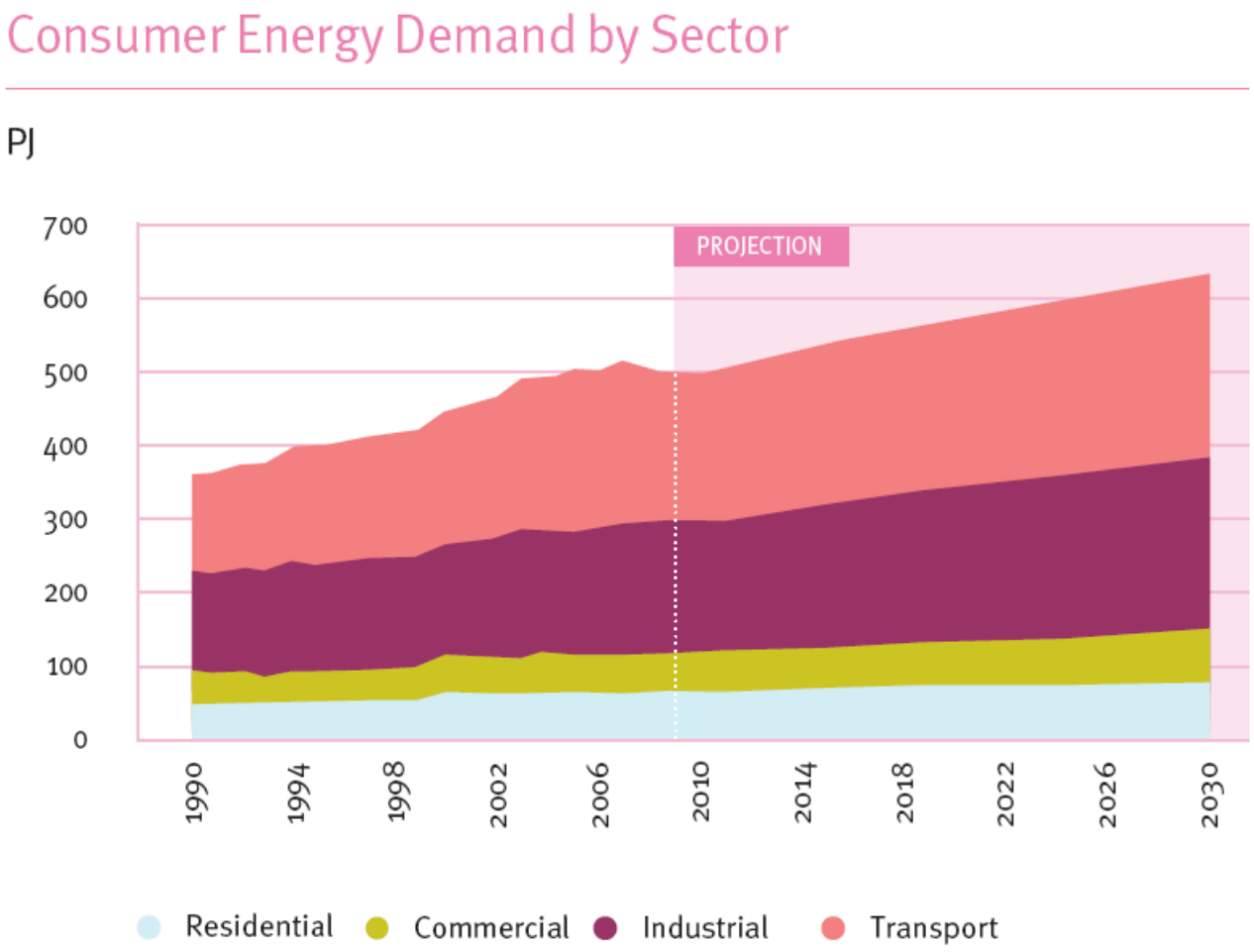
Energy Outlook – Reference Scenario



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New Zealand Energy Outlook – Reference Scenario

- the *Reference Scenario* is not necessarily our expectation of what is going to happen

rather

- the *Reference Scenario* is our expectation of what will happen if we

  - assume business as usual in terms of broad trends in key economic drivers, policy settings and technology
  - central forecasts of gross domestic product (GDP) and New Zealand dollar exchange rates
  - assumes continuation of agreed government policies such as the emissions trading scheme
  - assume current fuels and technology (i.e. no liquid biofuels or electric vehicles)

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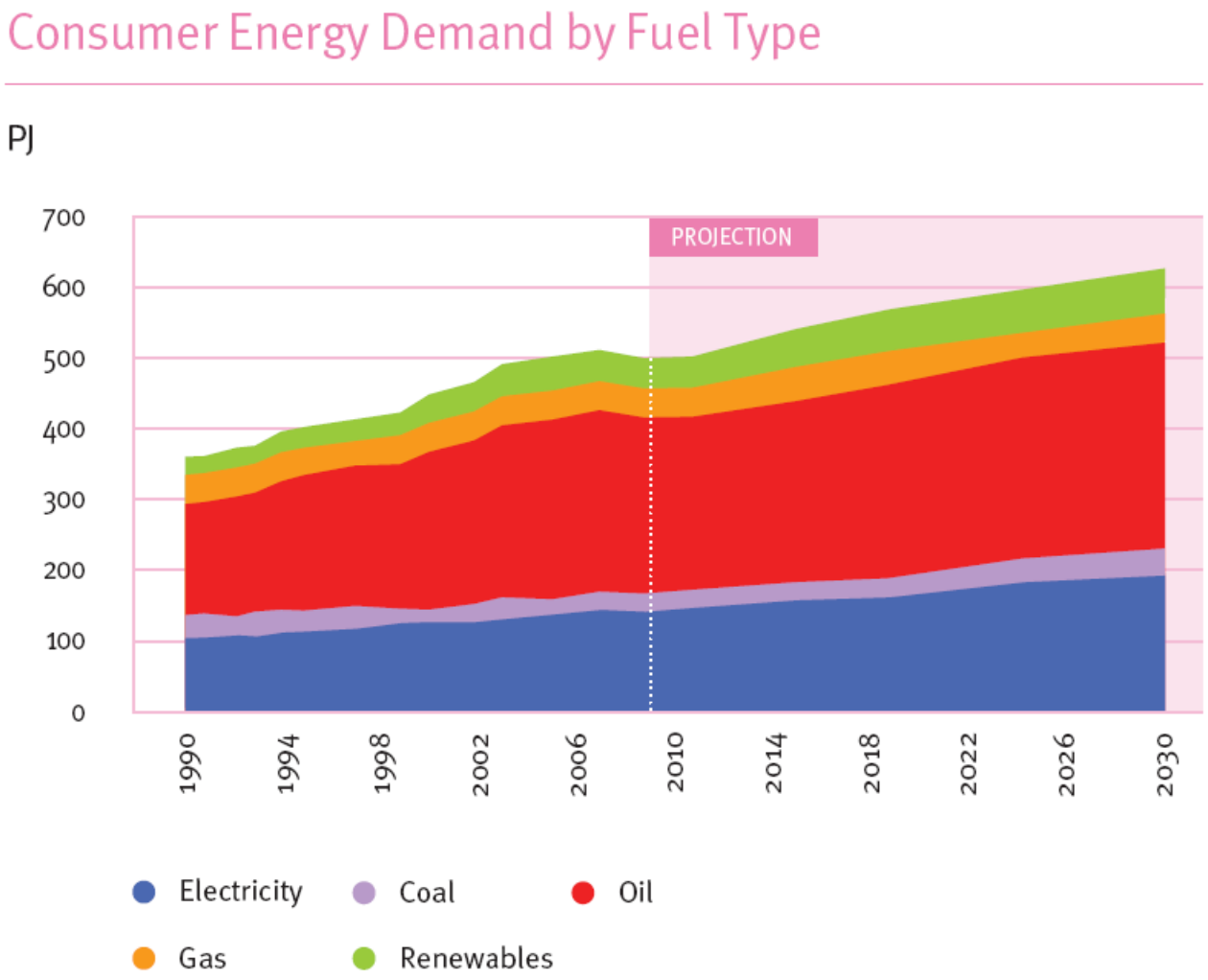
Energy Outlook – Reference Scenario



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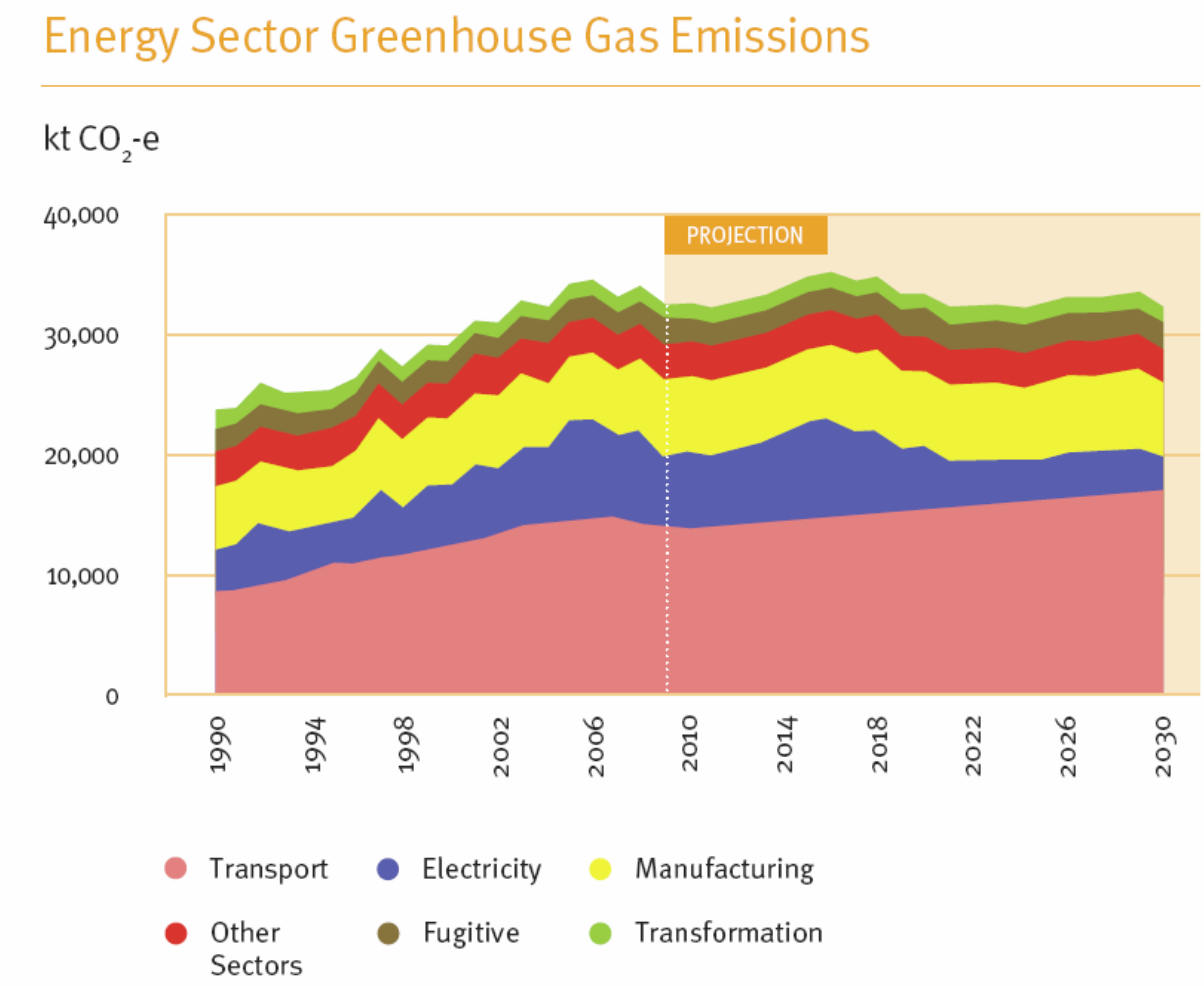
Energy Outlook – Reference Scenario



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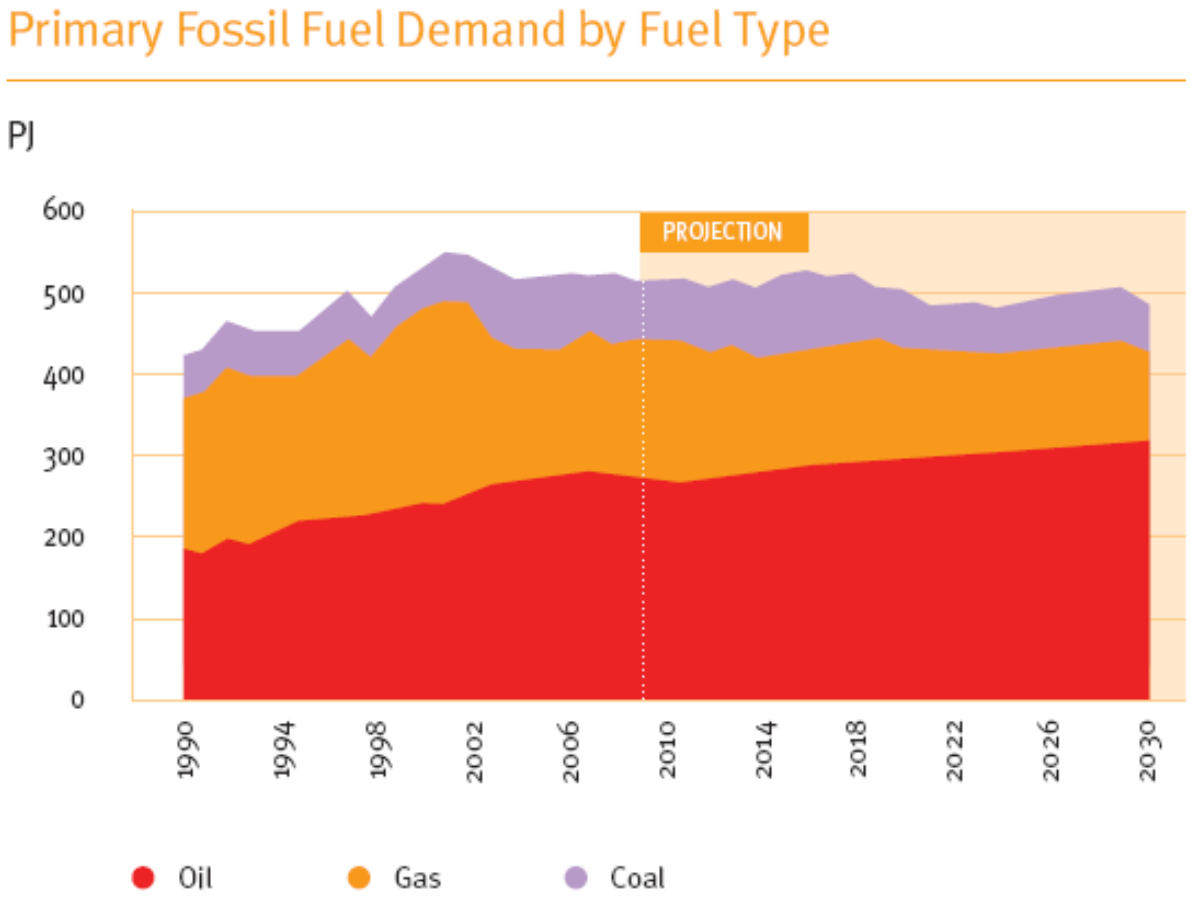
Energy Outlook – Reference Scenario



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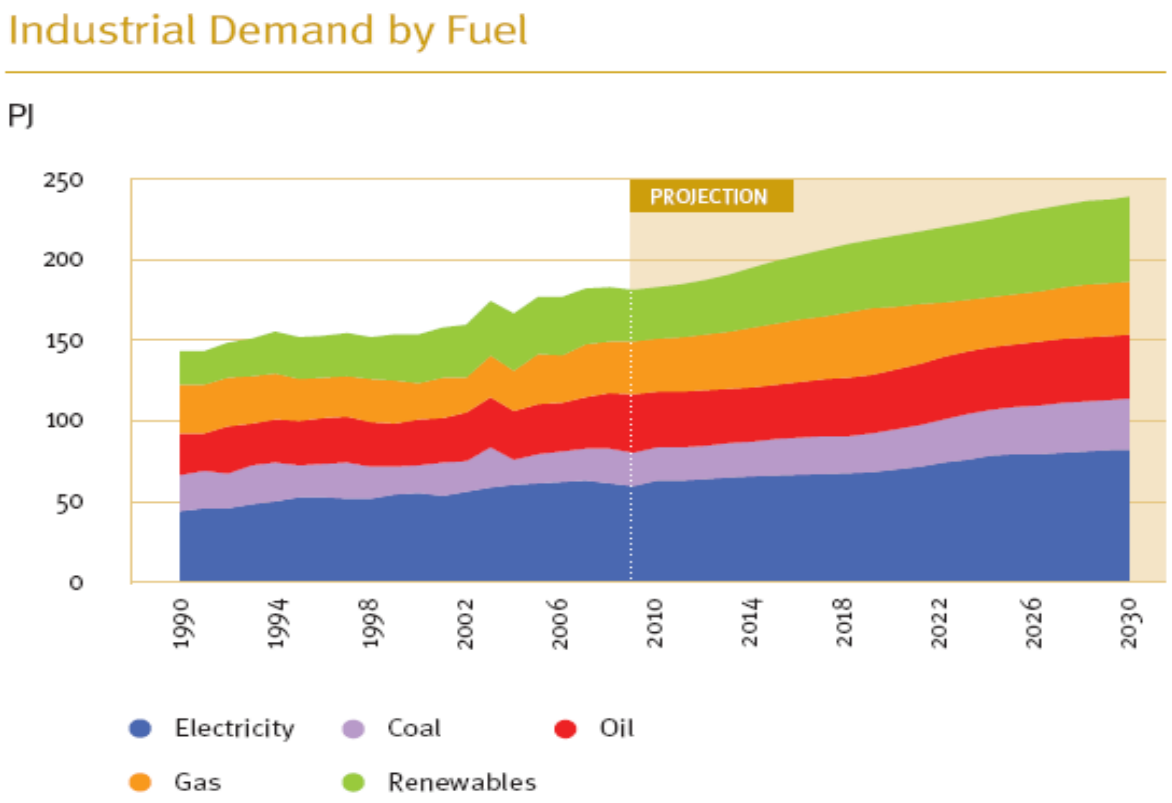
Industrial Energy Demand

- Renewables (2008 16% - 12% biomass, 4% geothermal) sees the greatest growth even in this BAU scenario



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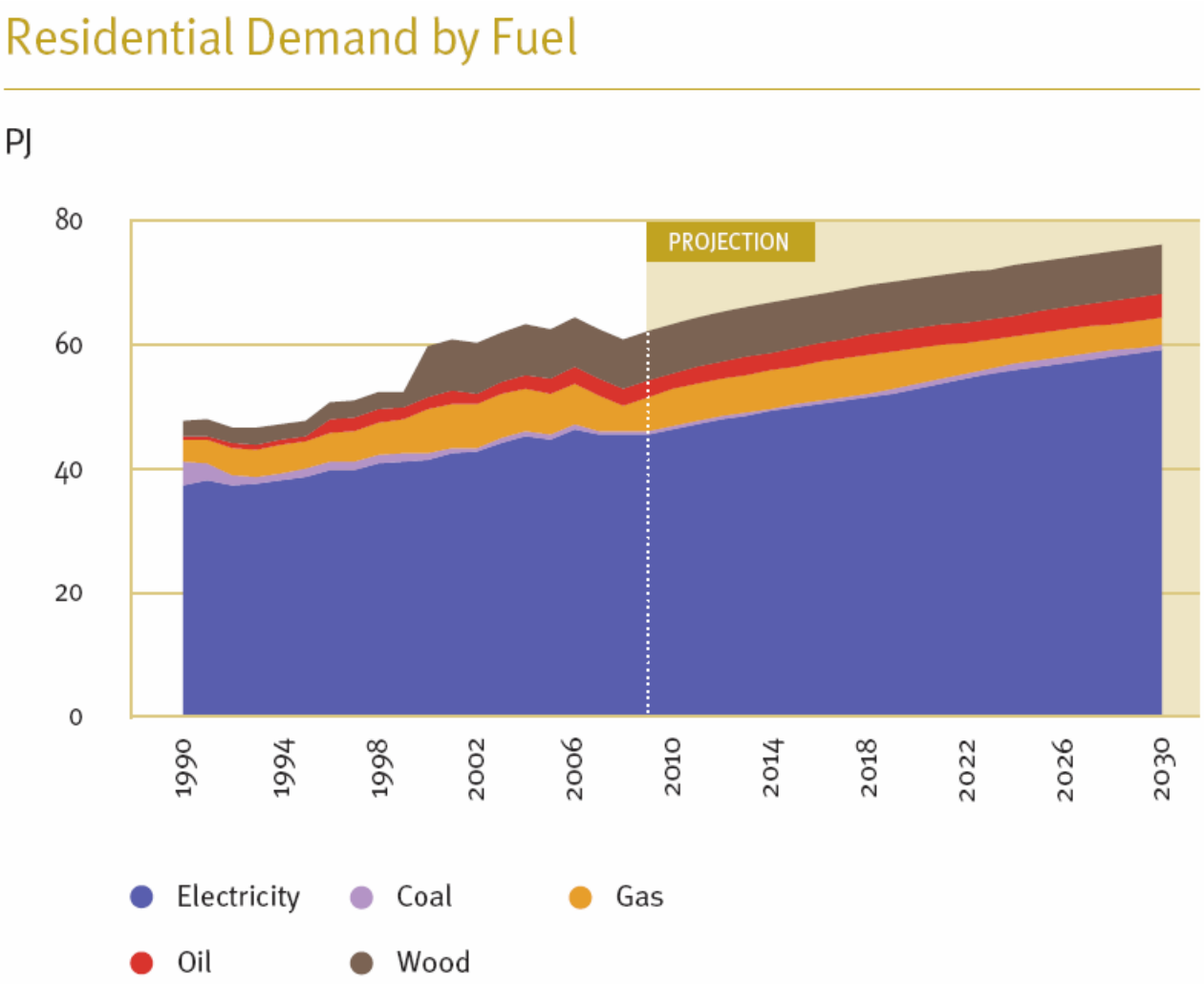
Residential Energy Demand



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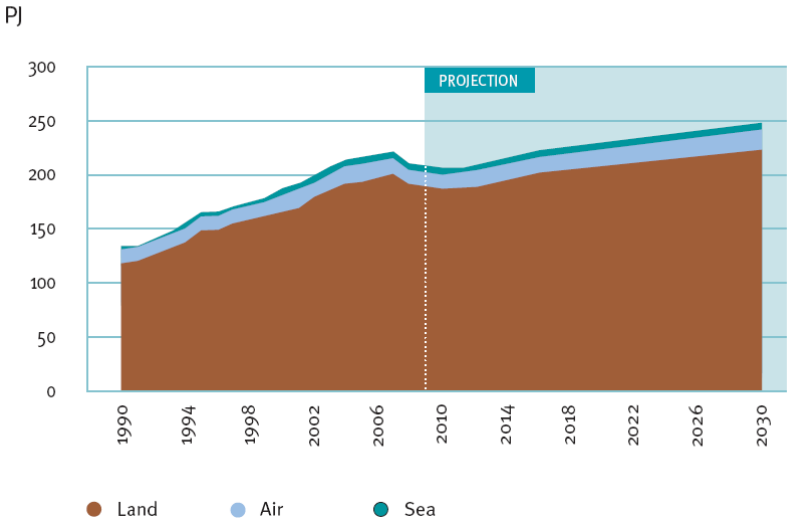
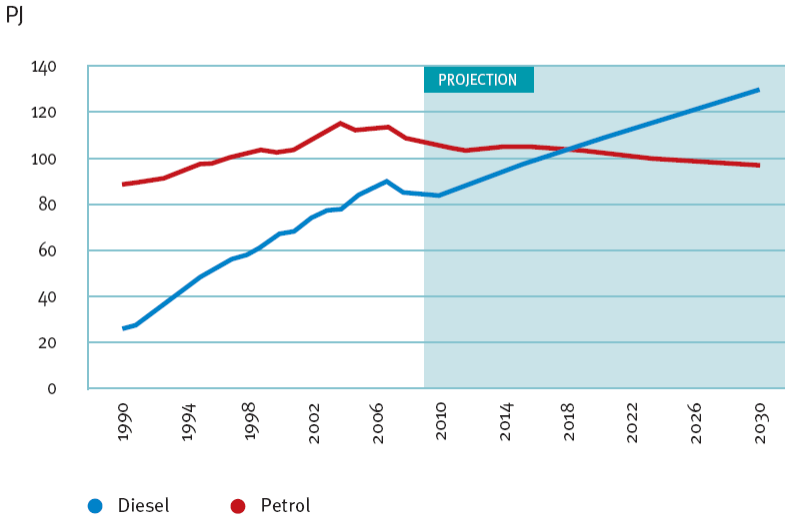
Transport

Transport Demand by Mode



Land Transport Demand by Fuel



- **Energy demand dominated by road transport (domestic only shown)**
- **Heavy fleet demand sees much greater growth**
- **Light fleet has greater efficiency improvement and diesel uptake**

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New Zealand Energy Outlook

Key messages from the *Reference Scenario*

- Total energy sector emissions flatten off, but remain ~40% above 1990 levels in 2030.
- Emissions from transport continue to grow while emissions from electricity decline.
- New Zealand remains addicted to oil, but demand growth slows significantly compared to historical rates. Growth is expected to be in diesel rather than petrol.

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Oil demand has peaked in developed world says IEA

Date: 29 January 2010

The International Energy Agency's Chief Economist, Fatih Birol, says

" that oil use in the developed, industrialized countries peaked in 2006-7 and will never return to those levels because of greater fuel efficiency and the use of alternatives. Mr Birol made the statement to journalists. "

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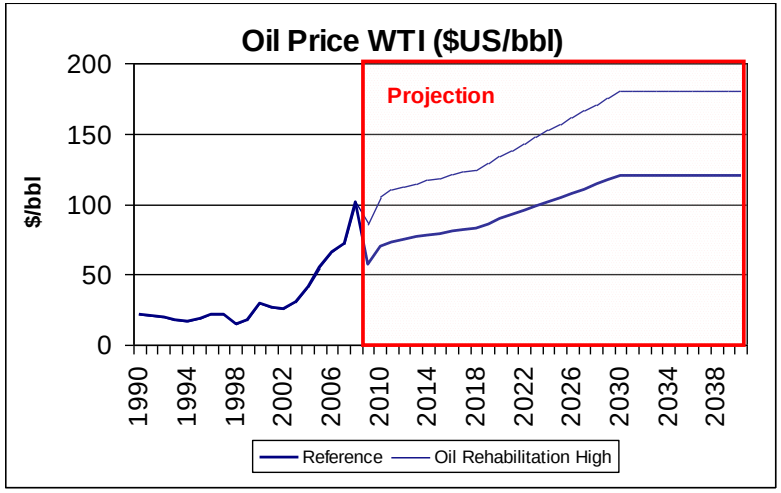
Oil Rehabilitation scenarios *(unpublished)*

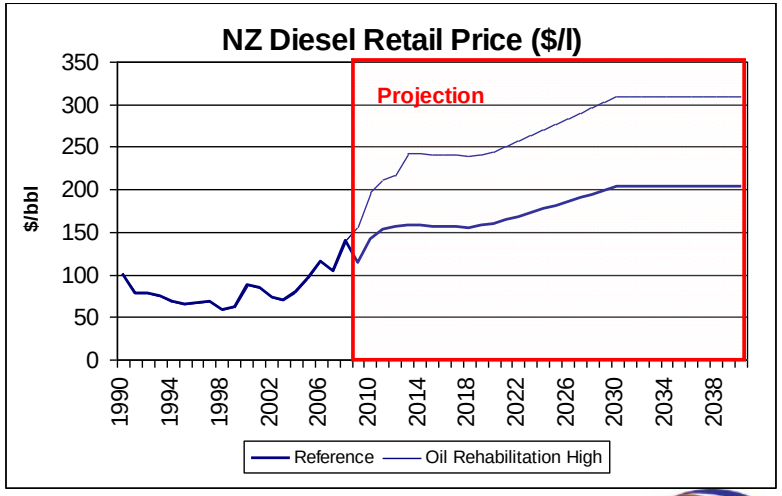
Key Assumptions

- High oil prices to $180 /bbl *(high scenario)*
- CO_2-e prices $100 /t CO_2-e
- technology developments overseas and in NZ
- greater fuel efficiency and the use of alternatives

Drive the uptake of

- Electric vehicles
- Second Generation Biofuels





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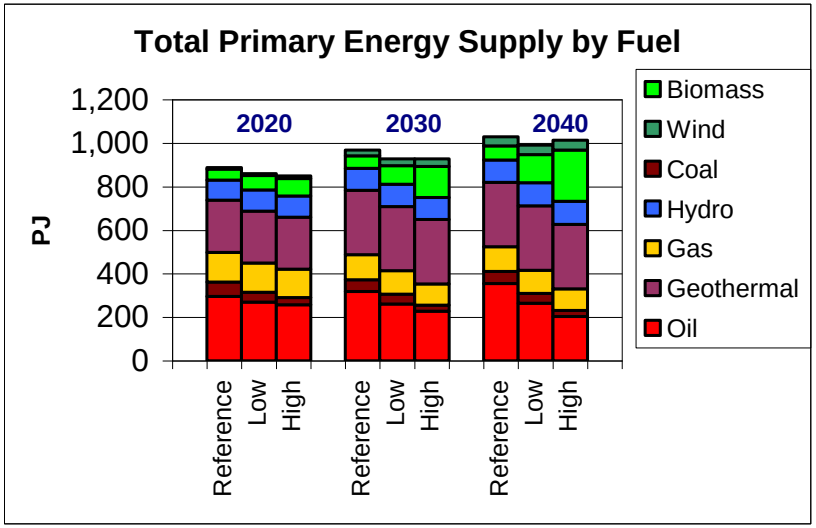
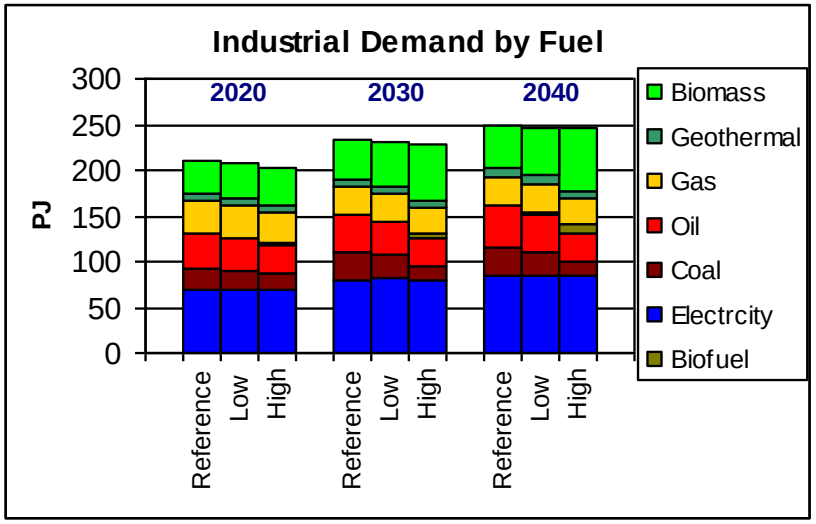
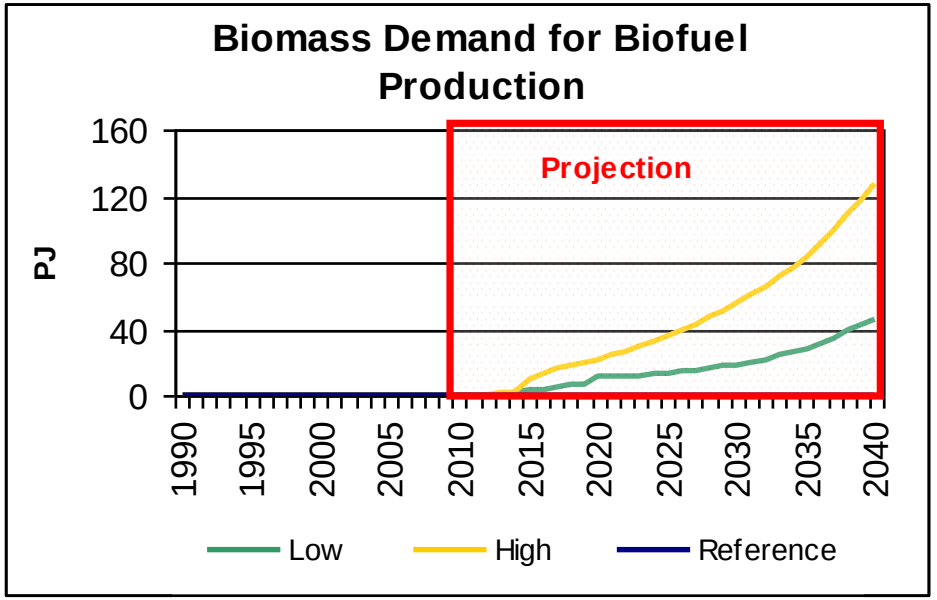
New Zealand Energy Outlook – Oil Rehabilitation scenario



Sensitivity	2010	2015	2020	2025	2030	2040
	Primary Energy Supply Biomass (PJ)					
Reference	39	45	50	56	58	64
$100/t	39	44	49	55	56	63
Medium	39	49	65	75	86	128
High	39	57	81	112	146	236





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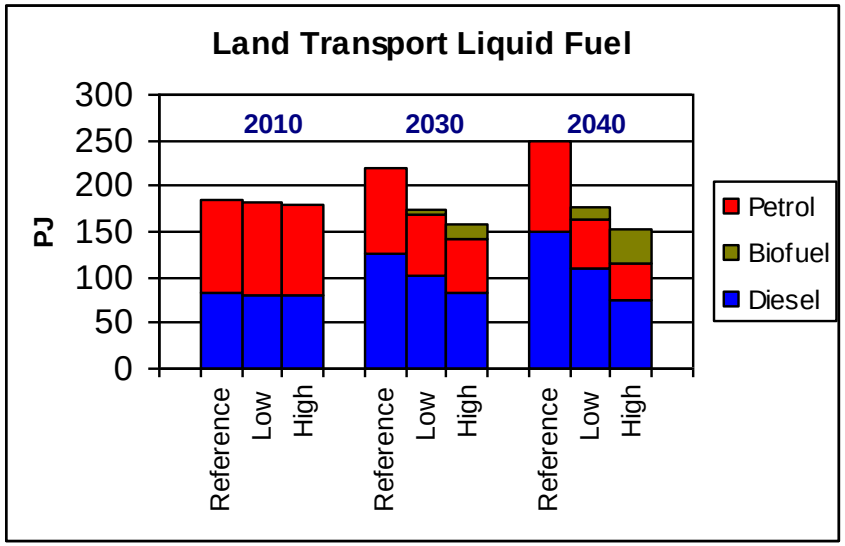
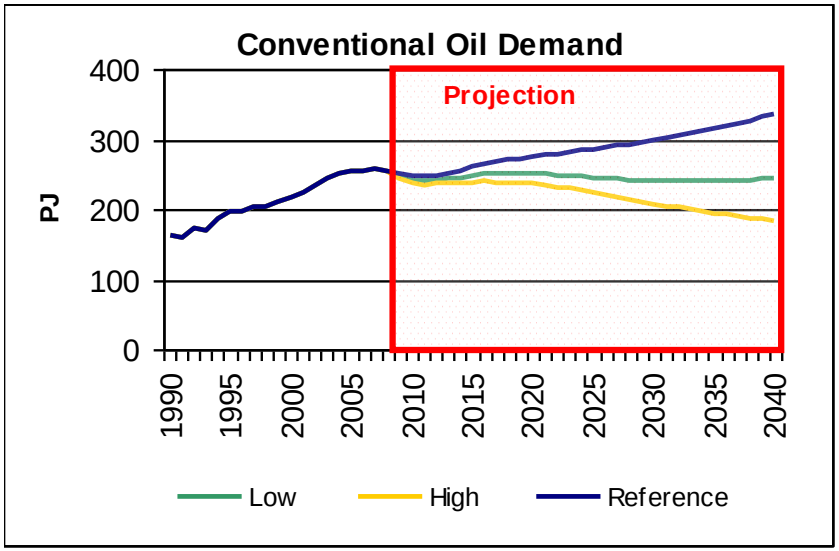
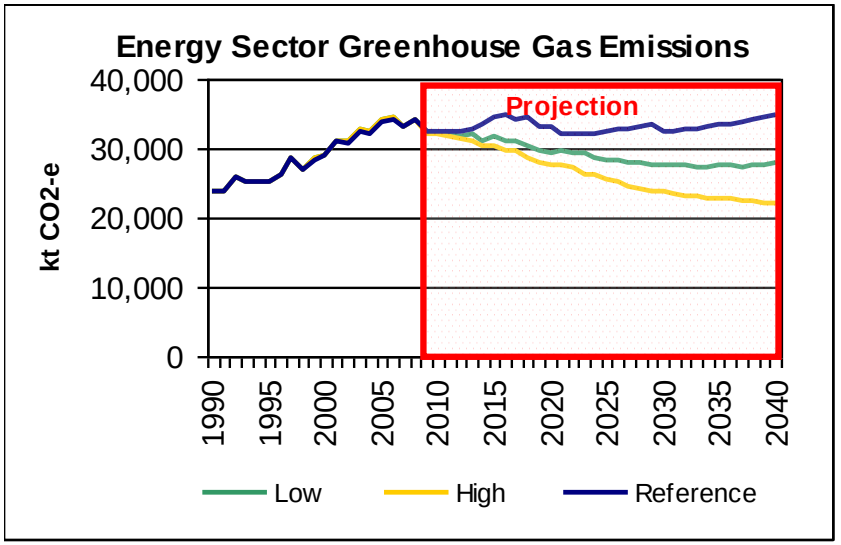
New Zealand Energy Outlook – Oil Rehabilitation scenario

- Oil product demand does not return to 2006 levels
- GHG emissions 5% below 1990 levels by 2040







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