

# NZ Grid as a Renewable Energy Integration Study

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EGEE 497

# NZ Grid as a Renewable Energy Integration Case Study

NZ vs CA Electricity  
Generation Profile

NZ Electricity  
Market  
Overview

Transmission  
and Pricing

Historical  
Success and  
Failure in NZ

Potential for  
California ..?



- 268 km<sup>2</sup>
- Consumption: 38,800 GWh
- 82% Renewable Energy
- 800 MW Installed Geothermal



- 424 km<sup>2</sup>
- Consumption: 206,336 GWh
- 48% Renewable Energy
- 2,694 MW Installed Geothermal

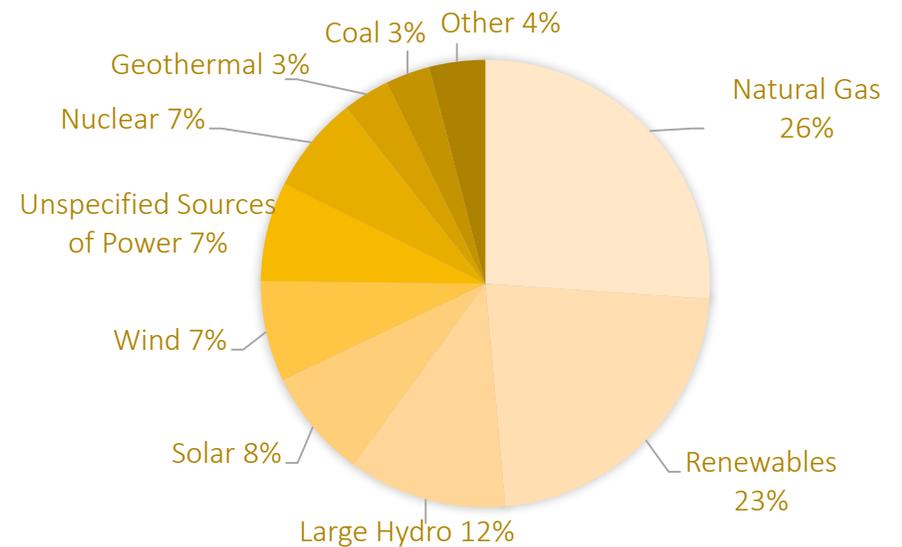
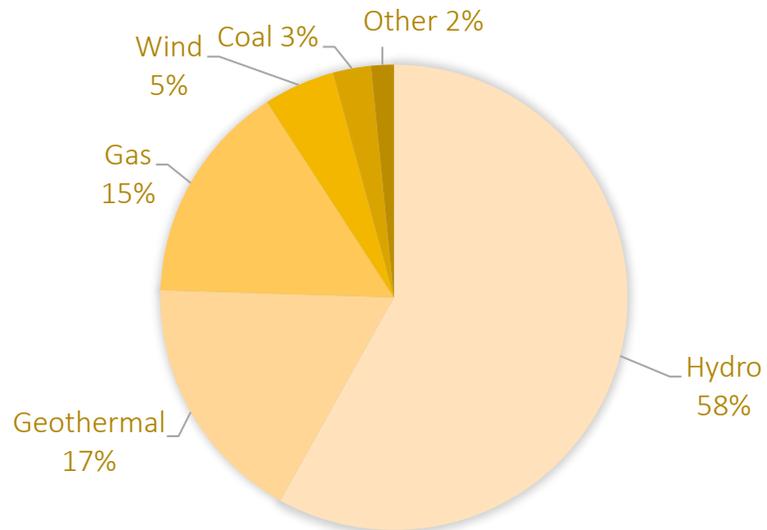
# Evolution of NZ Generation



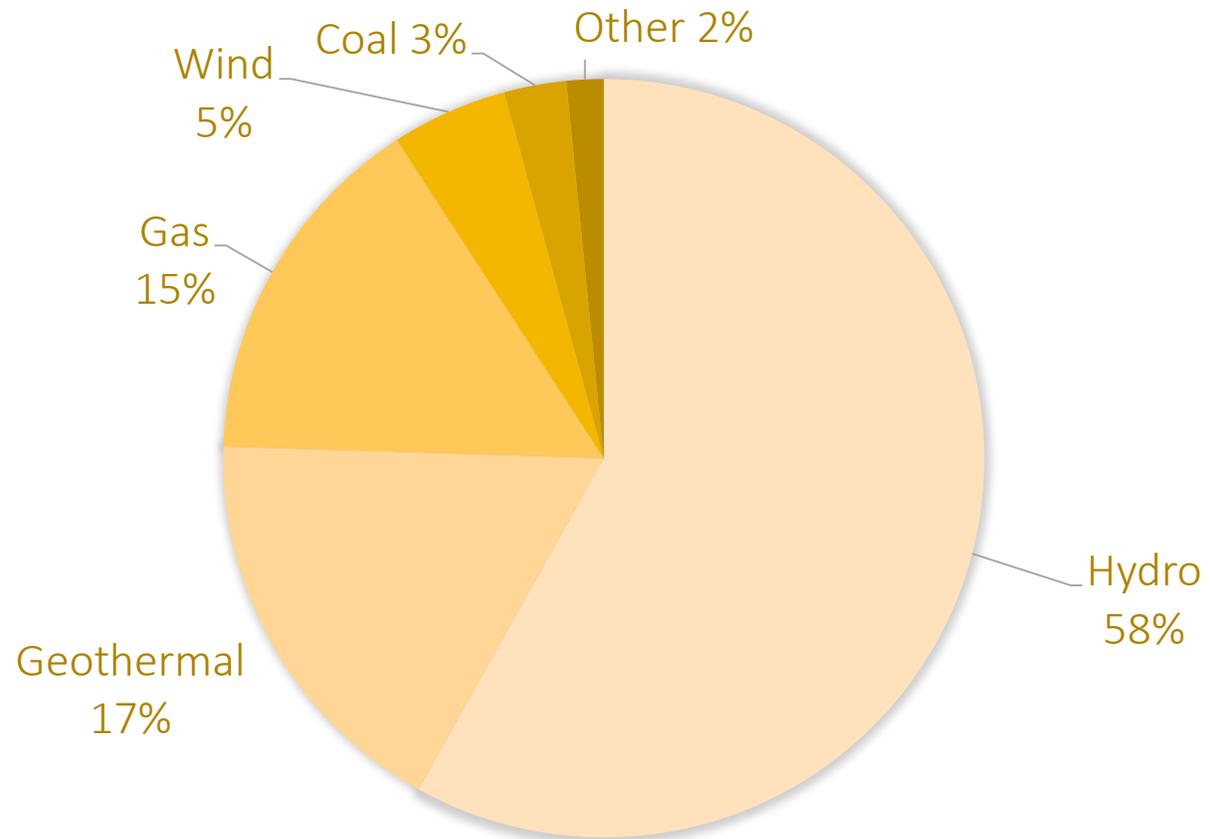
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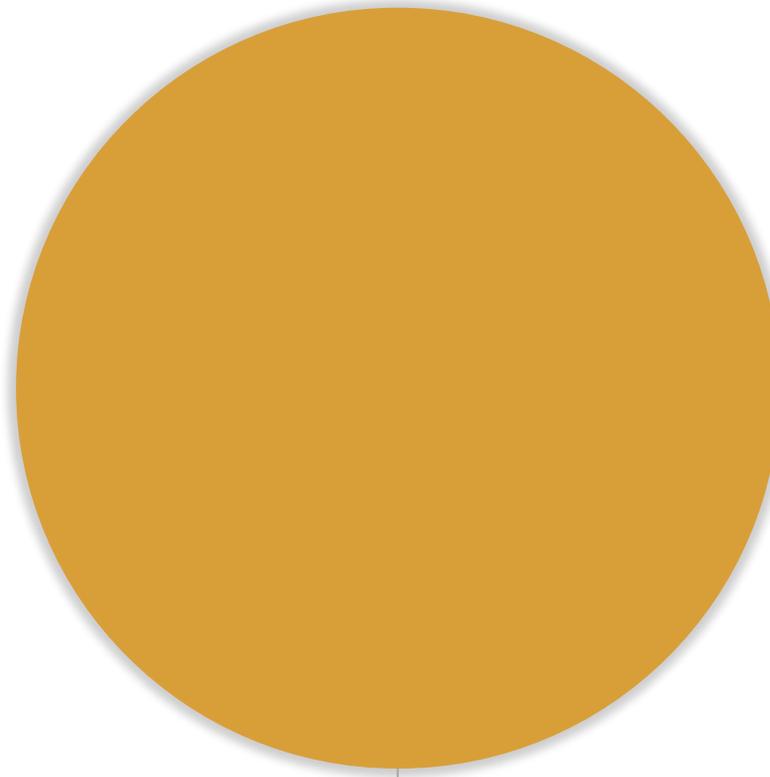


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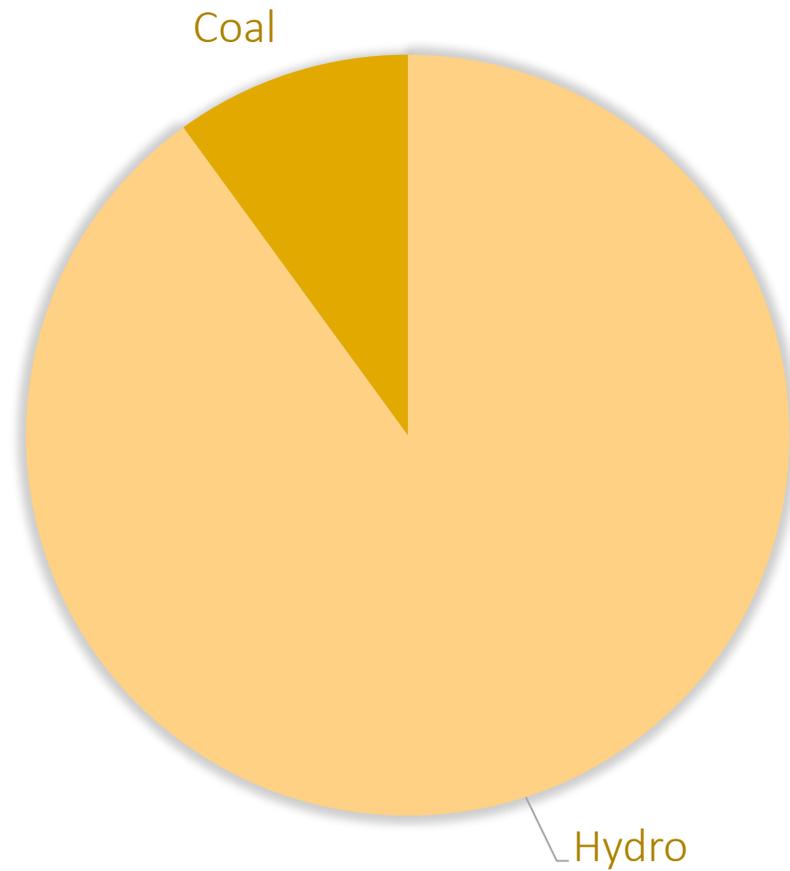
New Zealand Energy Generation Profile: 2017

# Evolution of NZ Generation

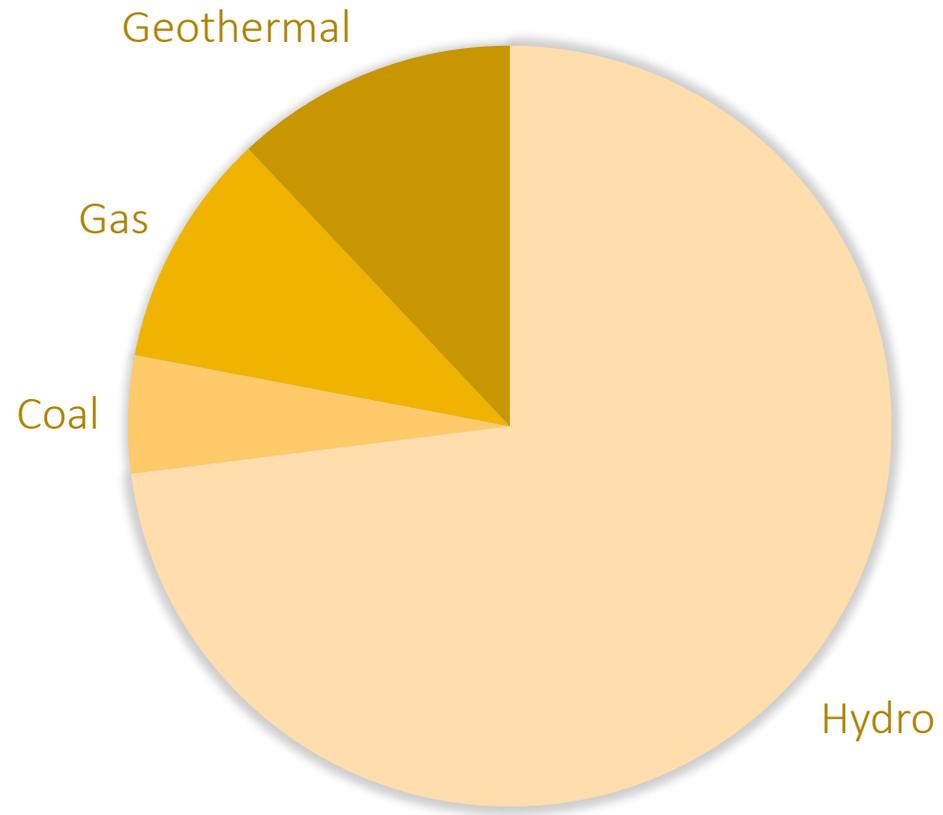


Hydro 100%  
\*pre-1958

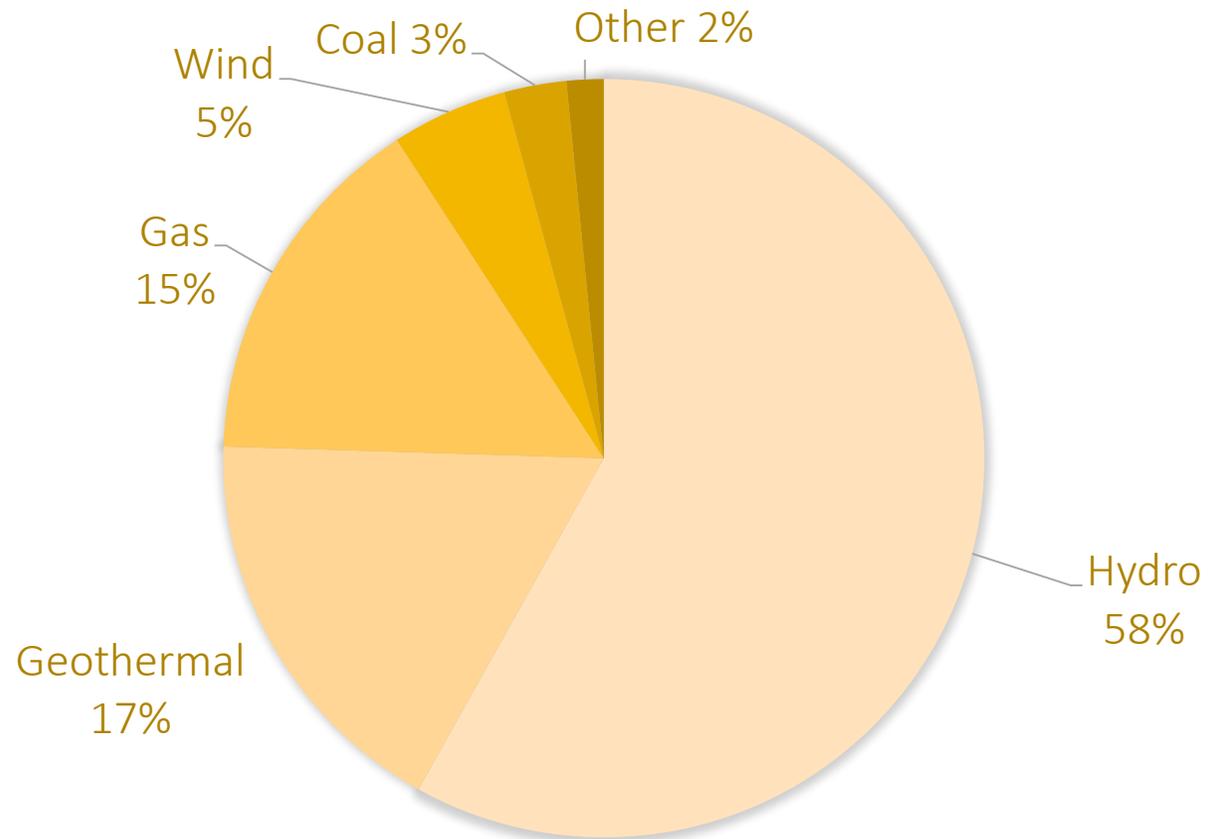
# Evolution of NZ Generation



# Evolution of NZ Generation



# Evolution of NZ Generation



New Zealand Energy Generation Profile: 2017

# NZ Electricity Market Overview



½ Hour  
Intervals

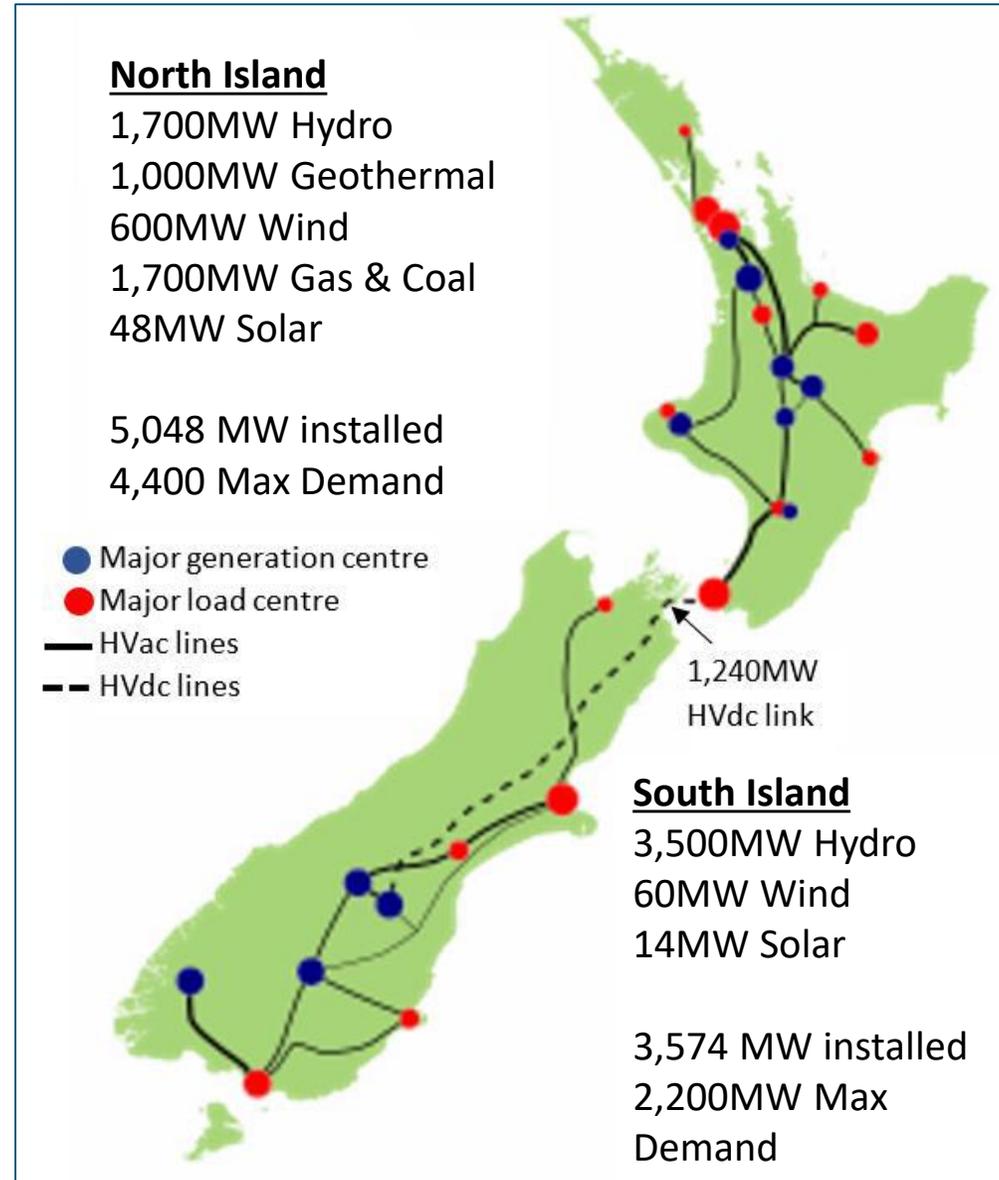


Spot Market



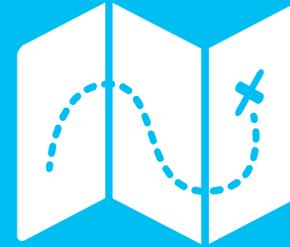
Locational  
Pricing

# Transmission and Pricing

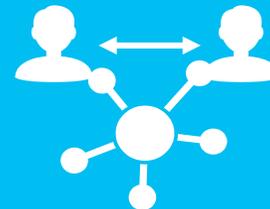


# Historical Success and Failure in NZ

- ✓ Locational Marginal Pricing
- ✓ Ancillary Service Co-optimization
- ✓ Spot Market

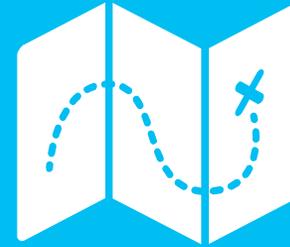


- X Government Control
- X Vertical Integration
- X End-User Pricing

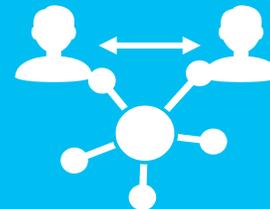


# Potential for California

- ✓ Locational Marginal Pricing
- ✓ Ancillary Service Co-optimization
- ~~✓ Spot Market~~



- ~~X Government Control~~
- ~~X Vertical Integration~~
- X End-User Pricing



# Questions?

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