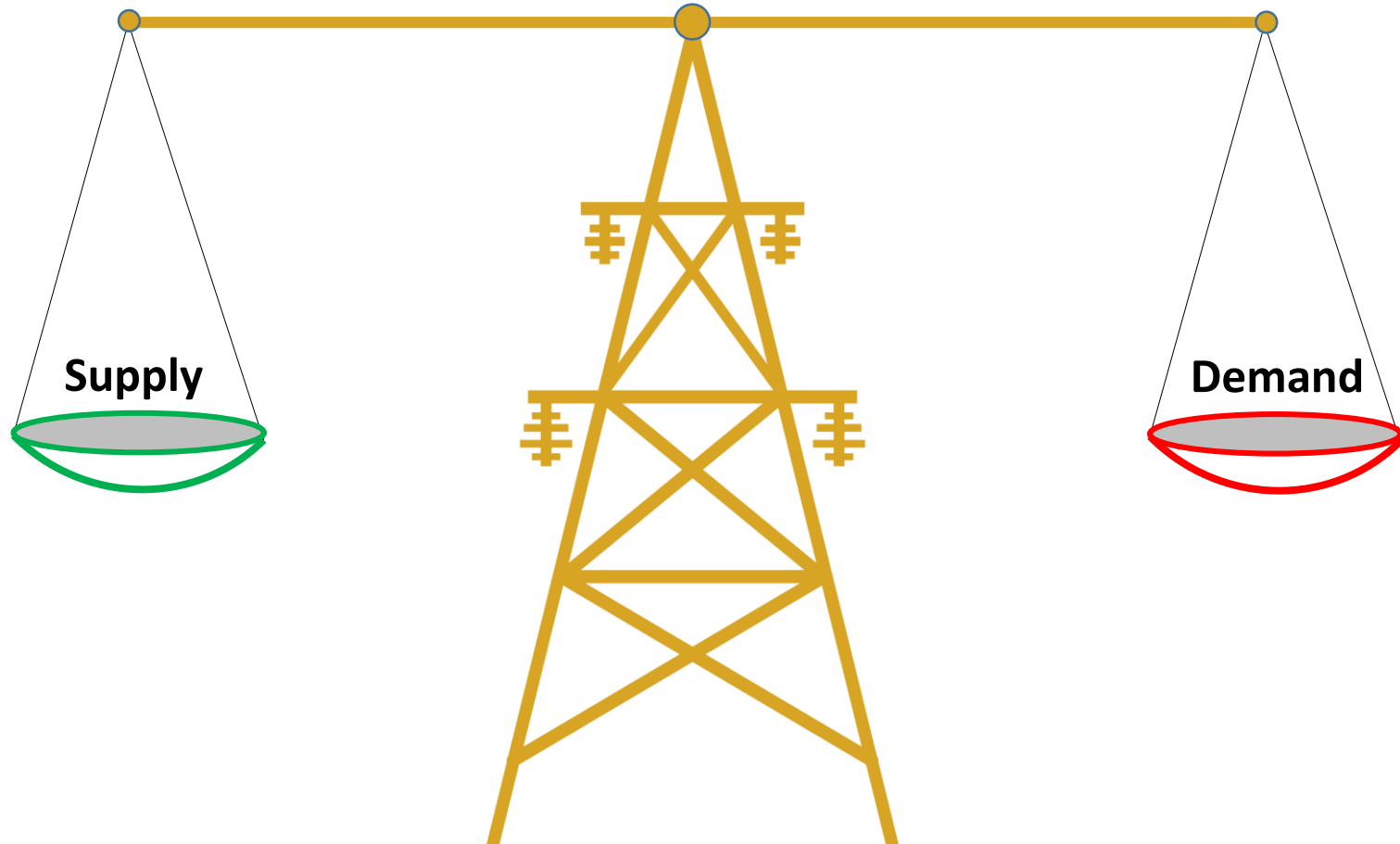
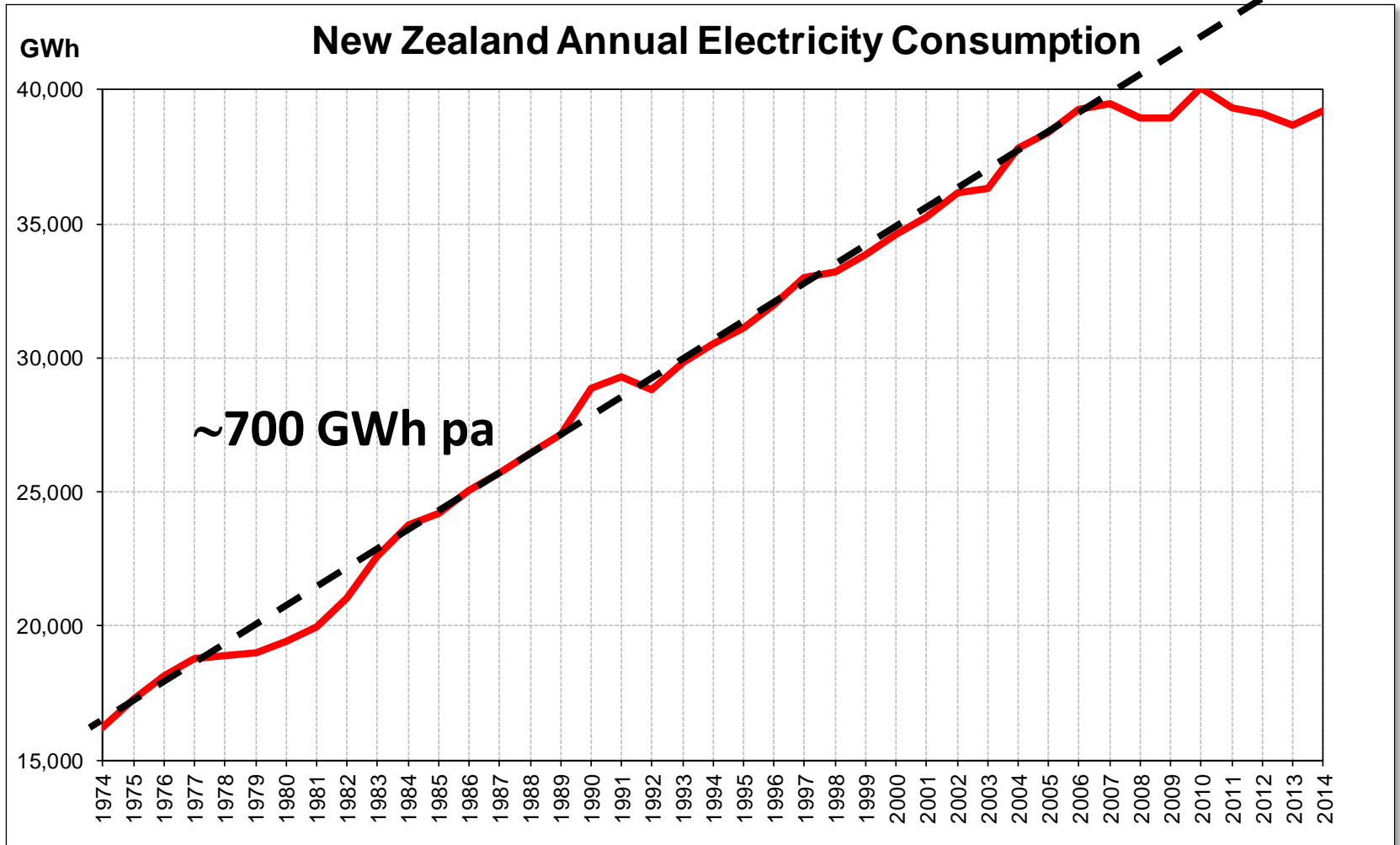


# Annual Conference 2016



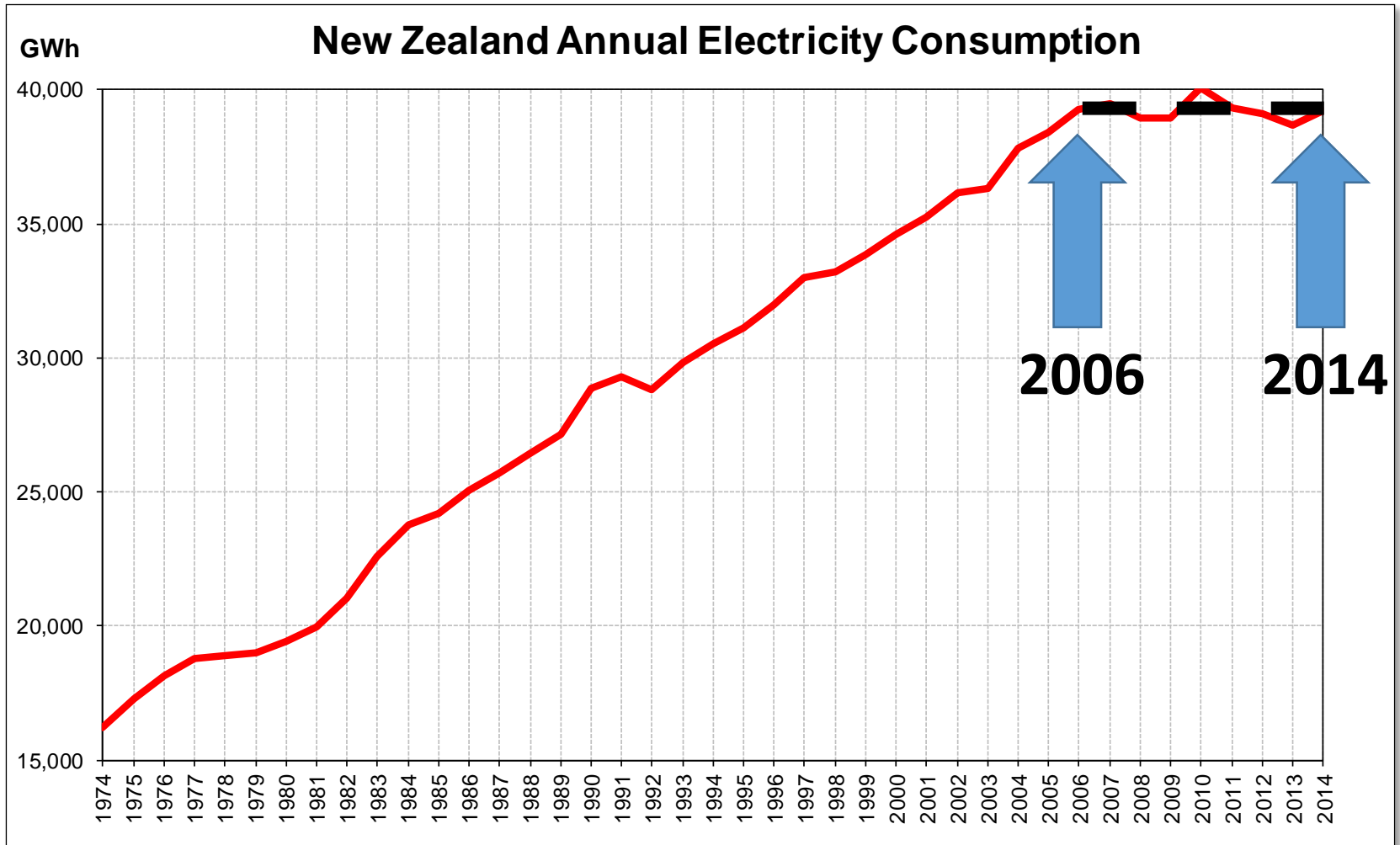
*Greg Sise, Energy Link Ltd*

# Demand Disruption



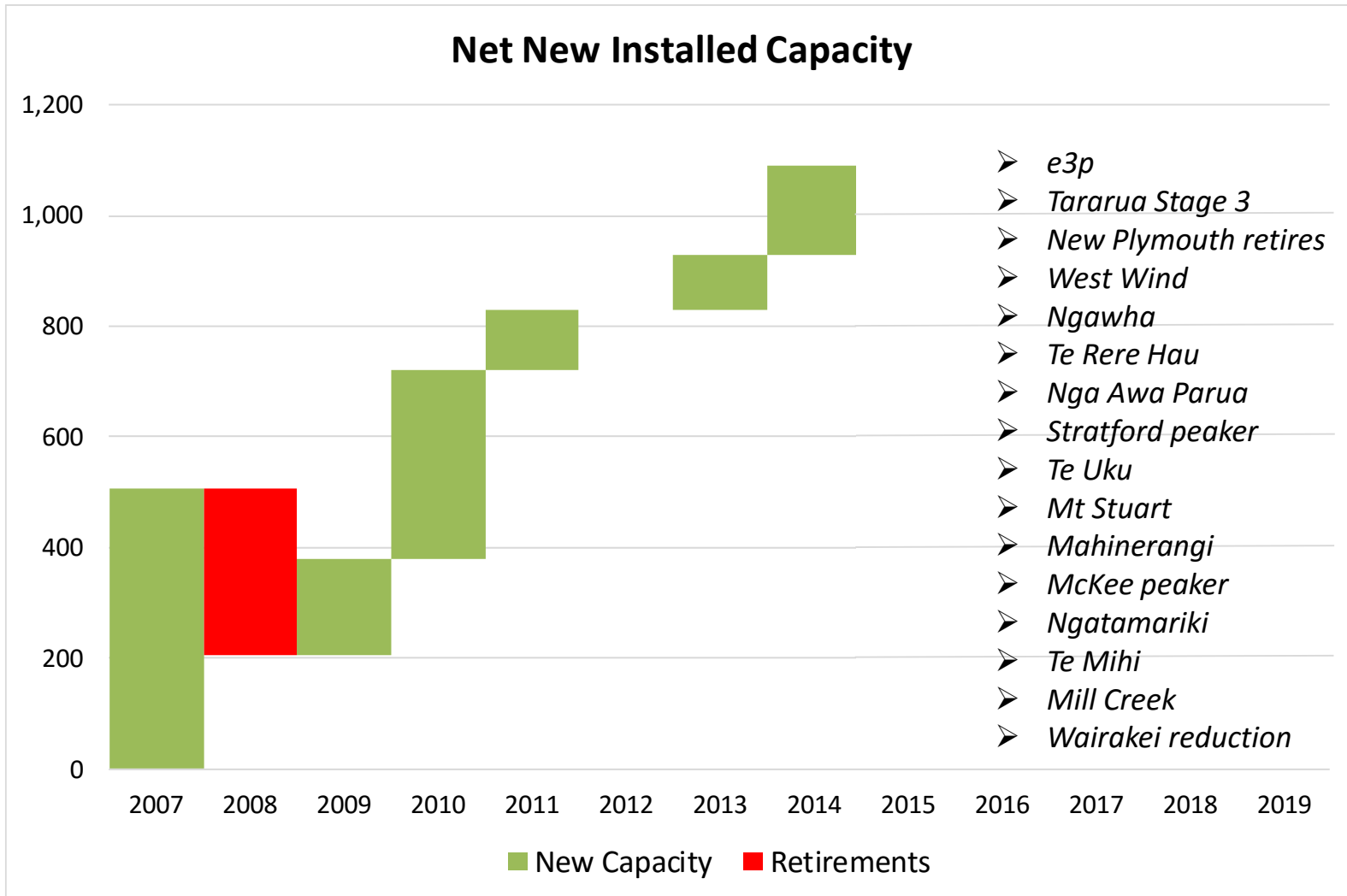
**MBIE consumption data for end users**

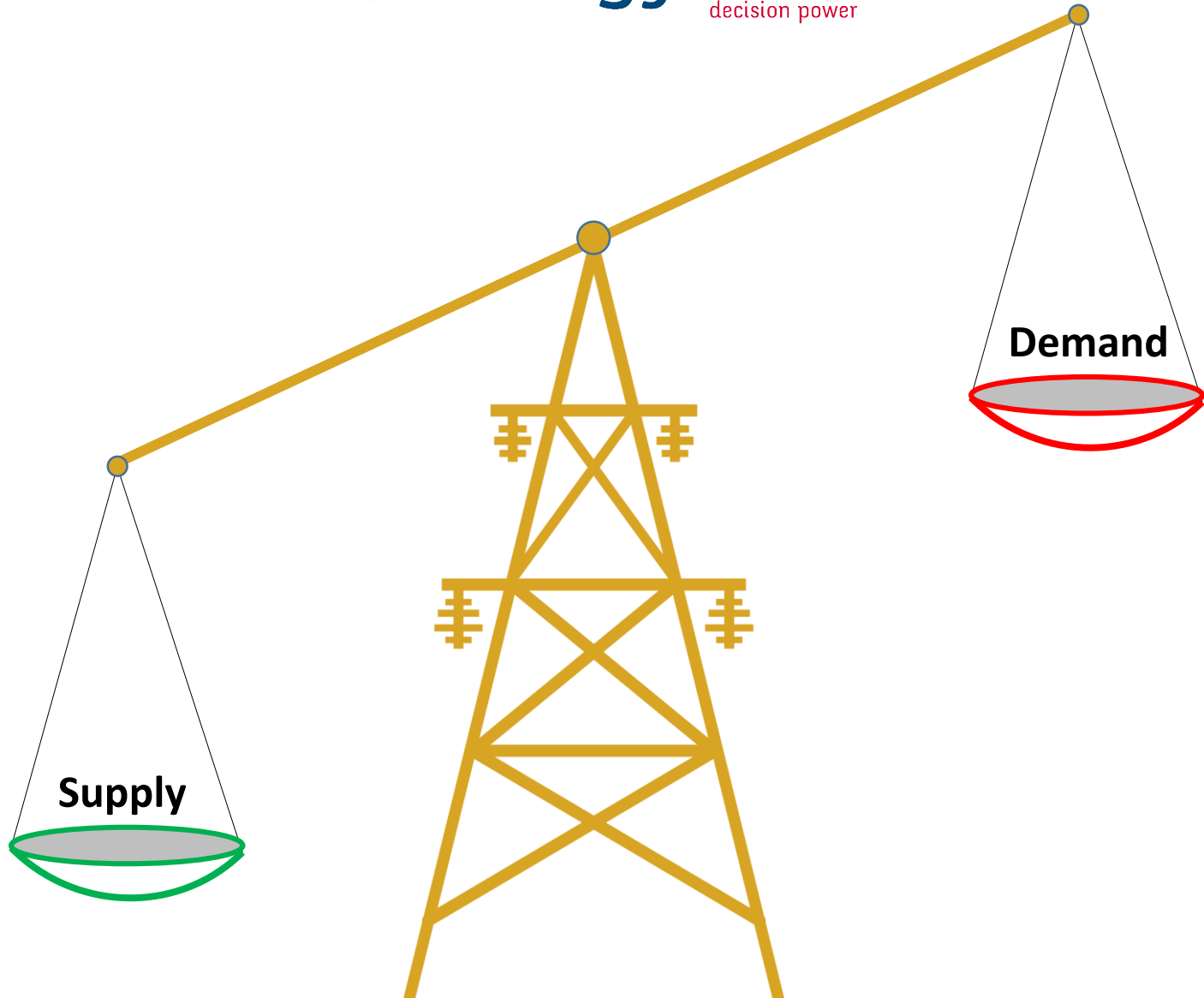
# Demand Disruption



**MBIE consumption data for end users**

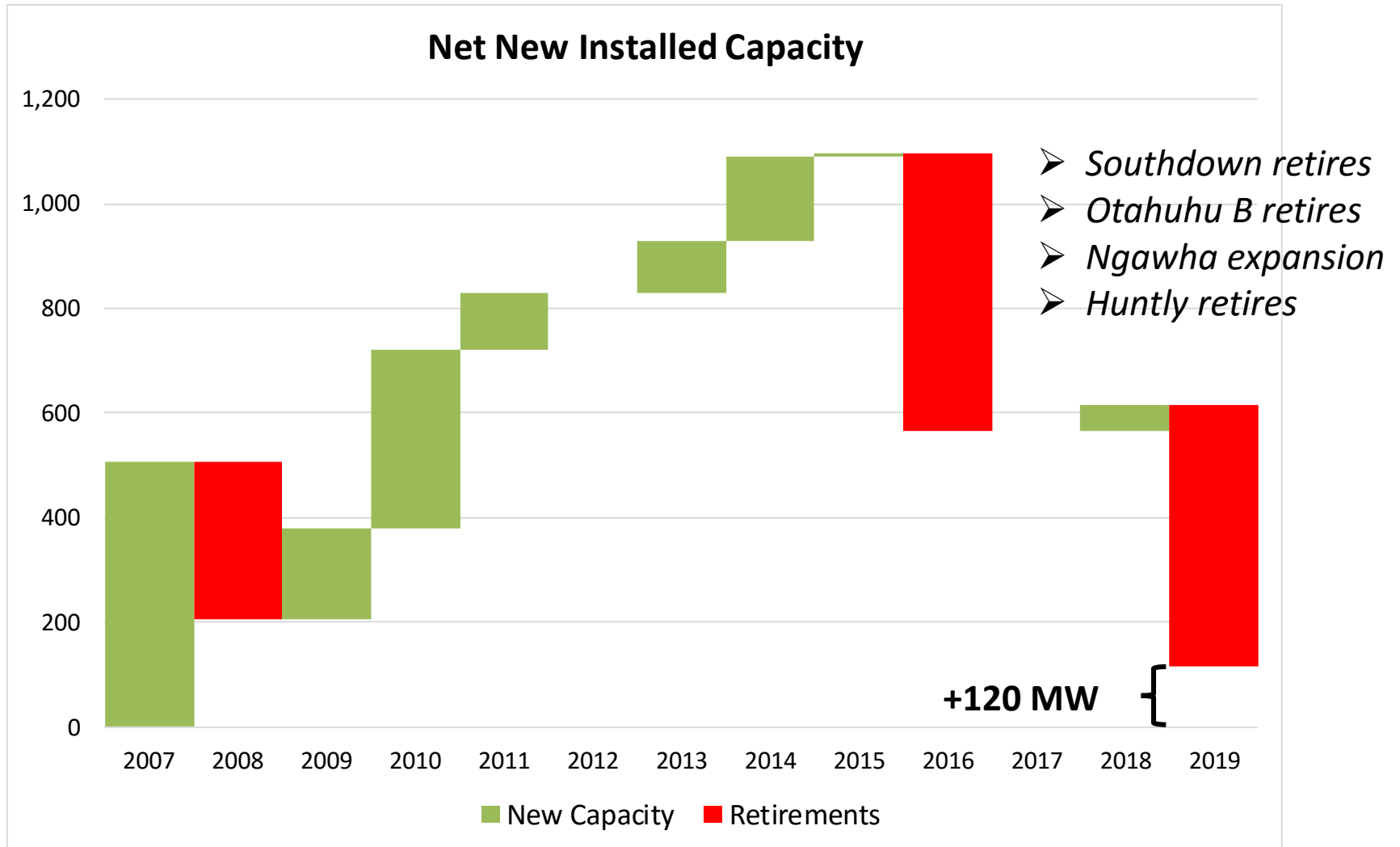
# Supply Increments



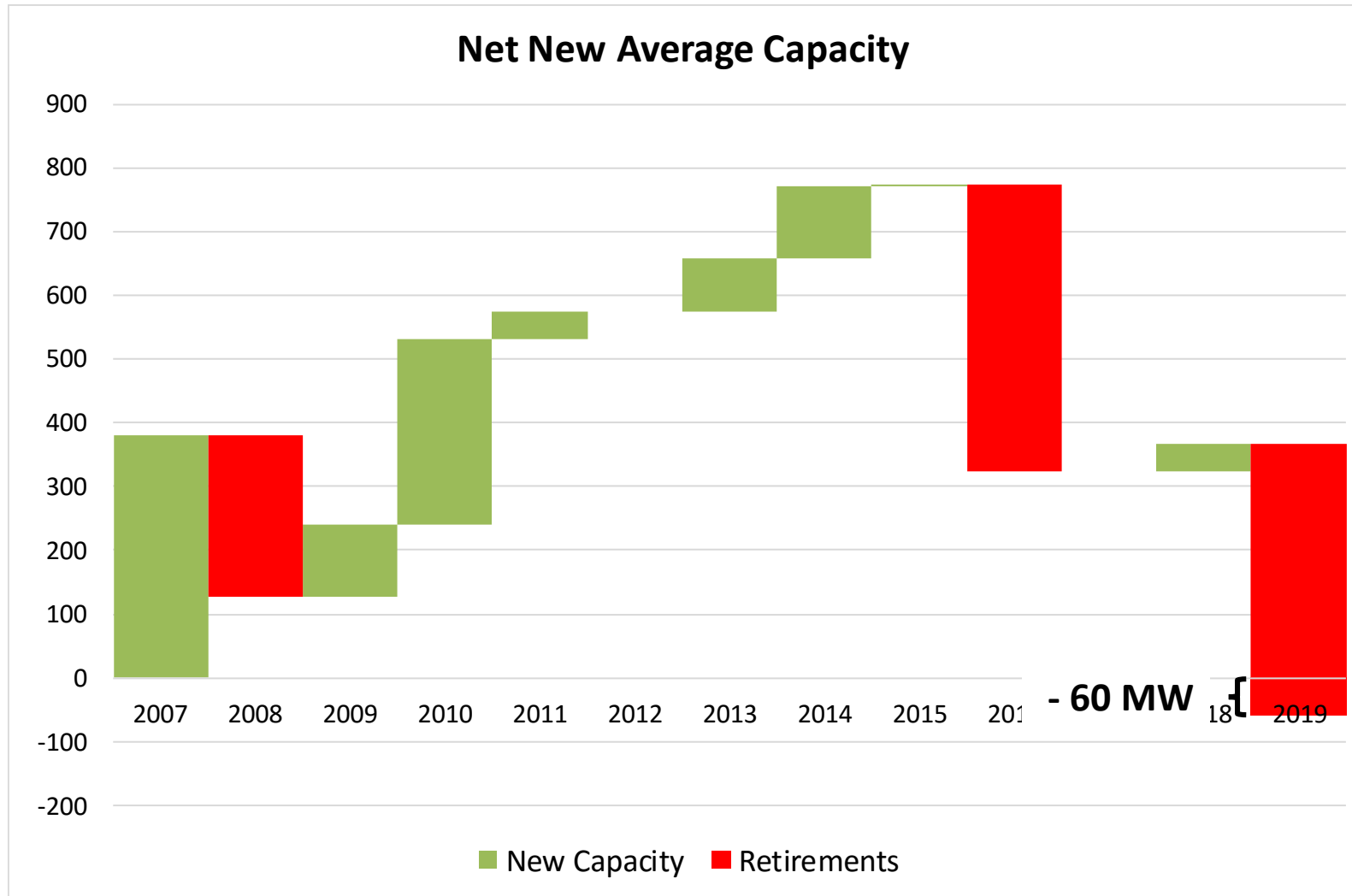


2007 => 2014

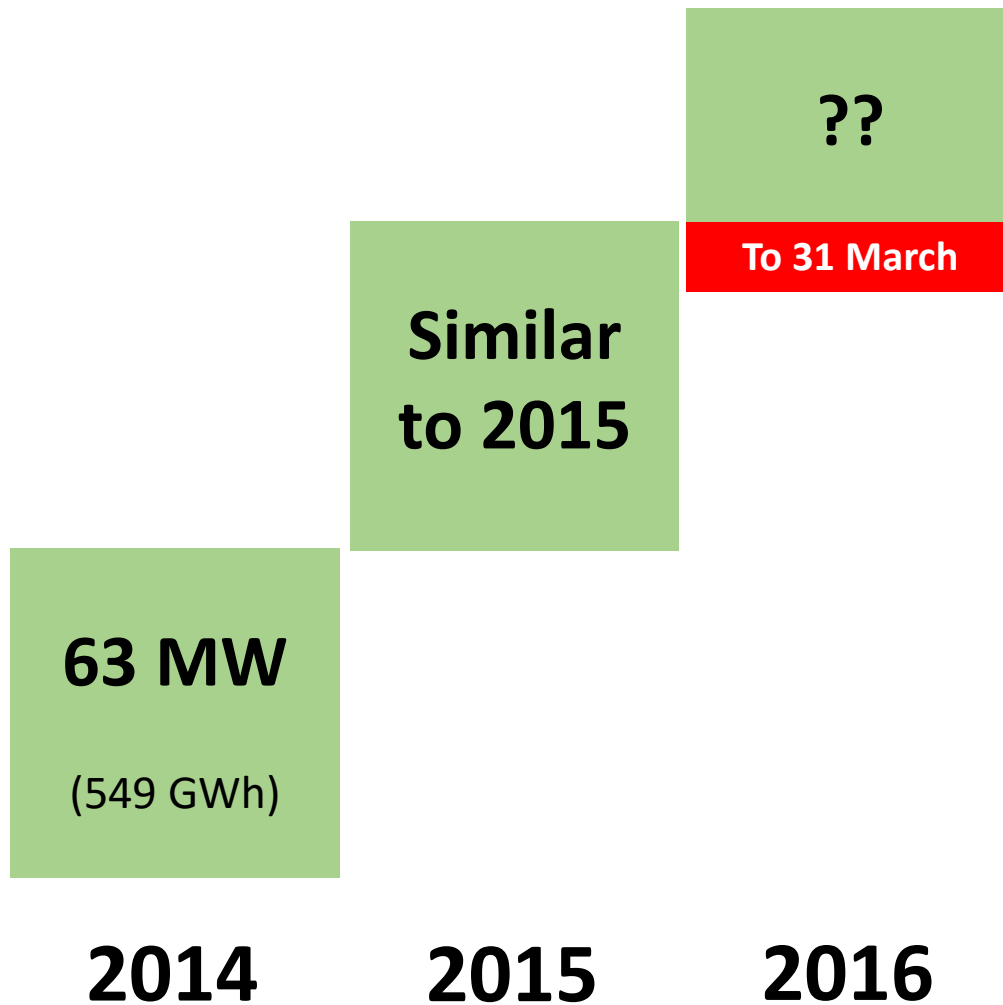
# Supply Decrements



# Supply Decrements

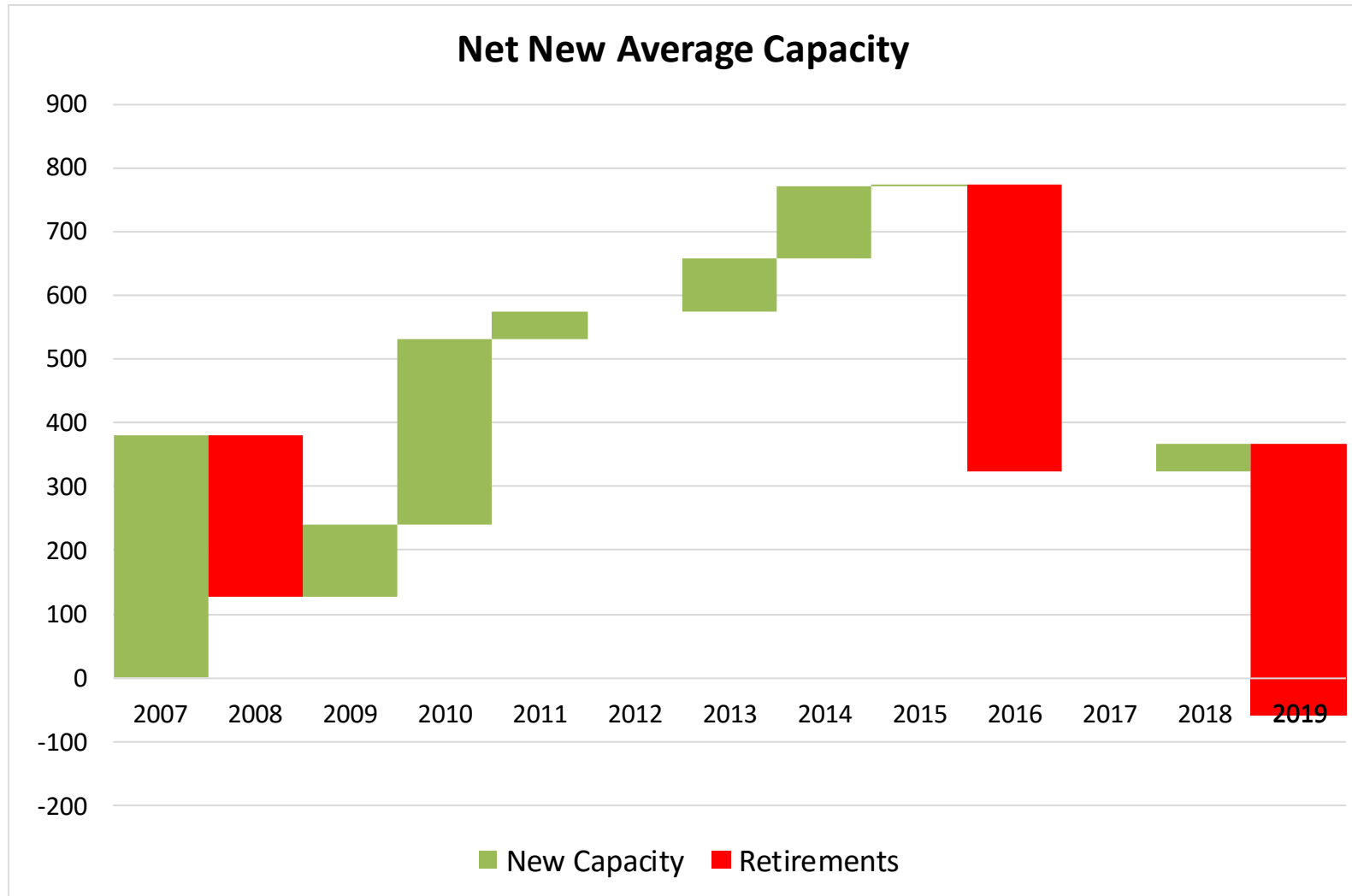


# Demand Growth Returns

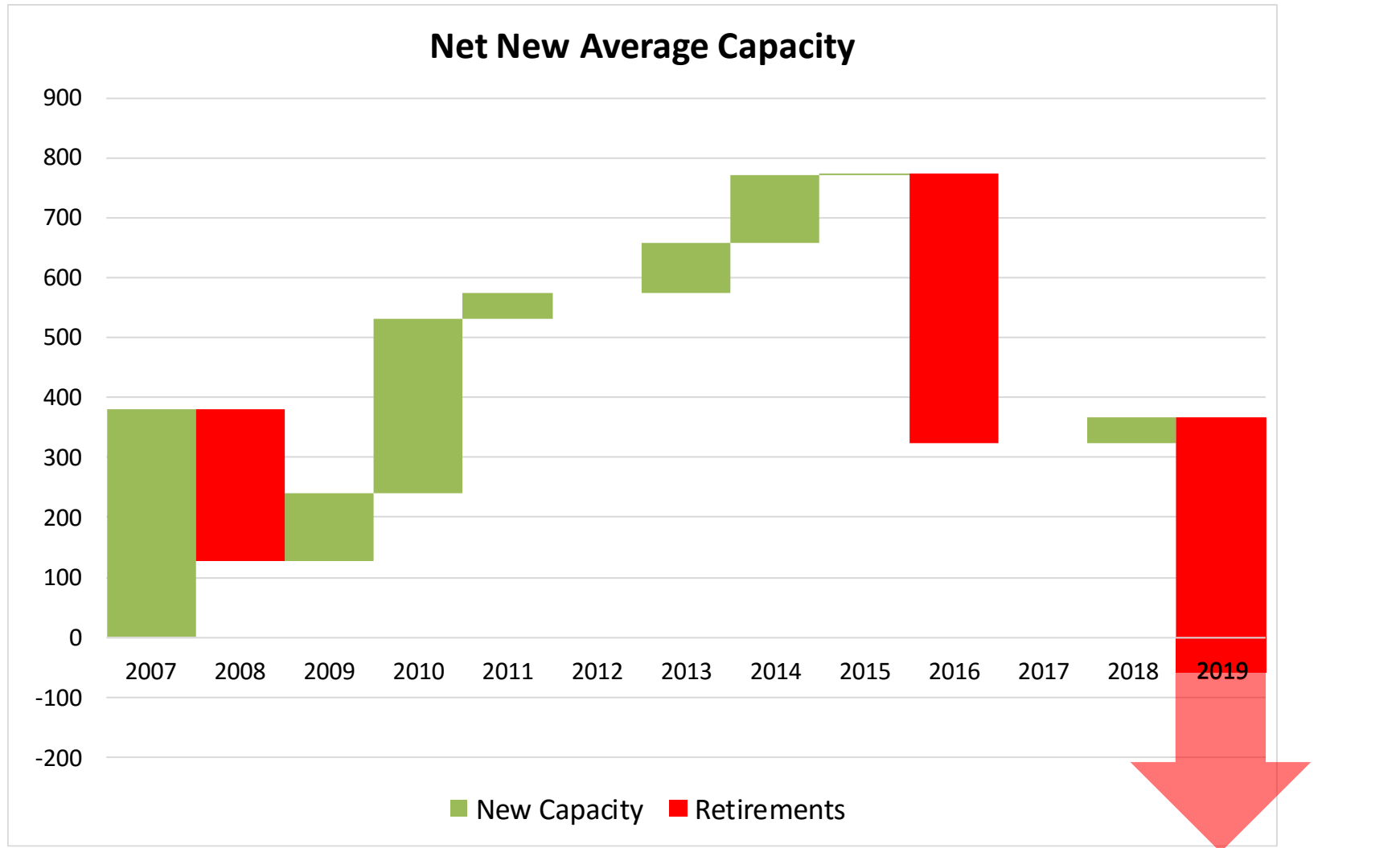




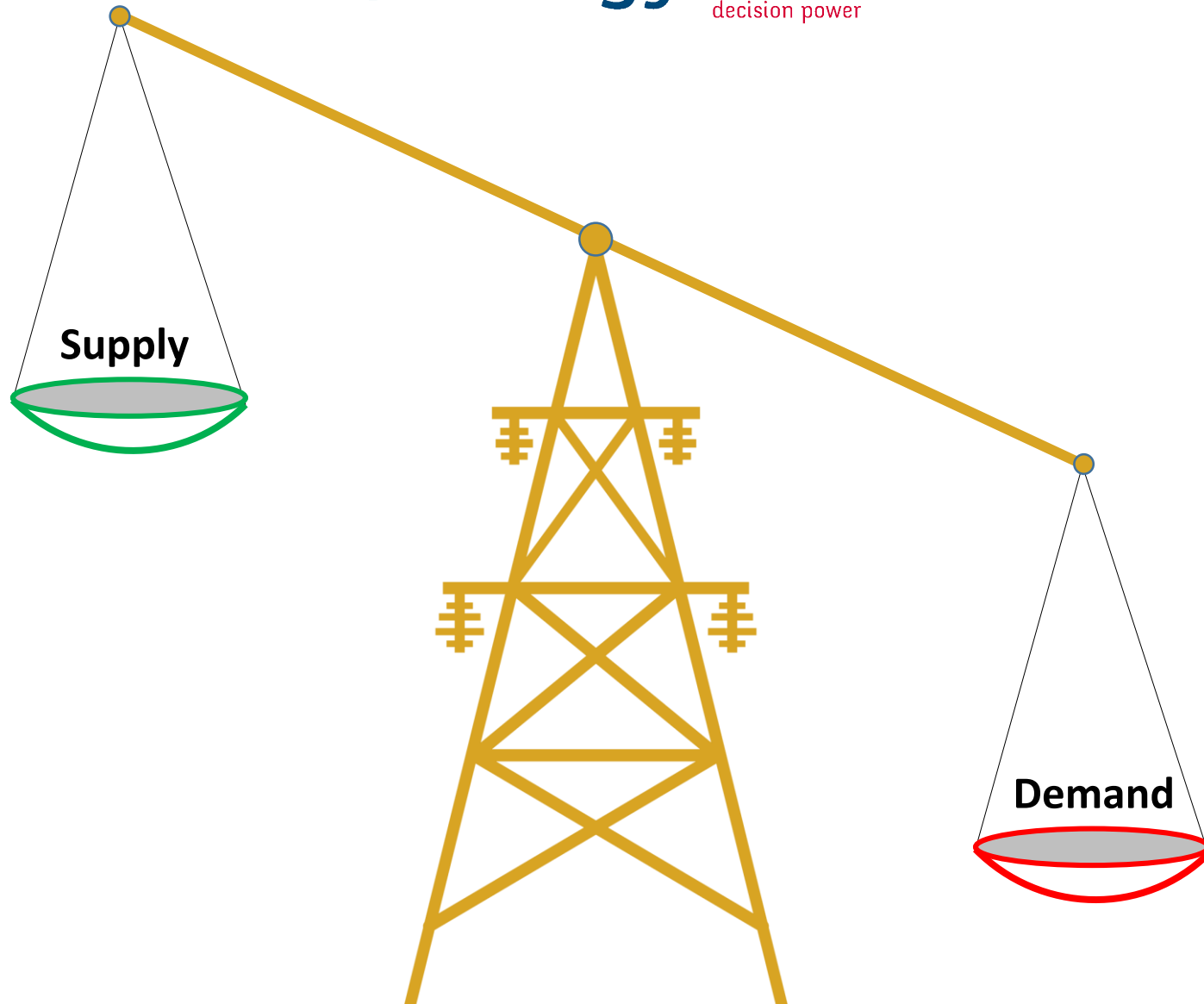
# Supply – Demand Balance



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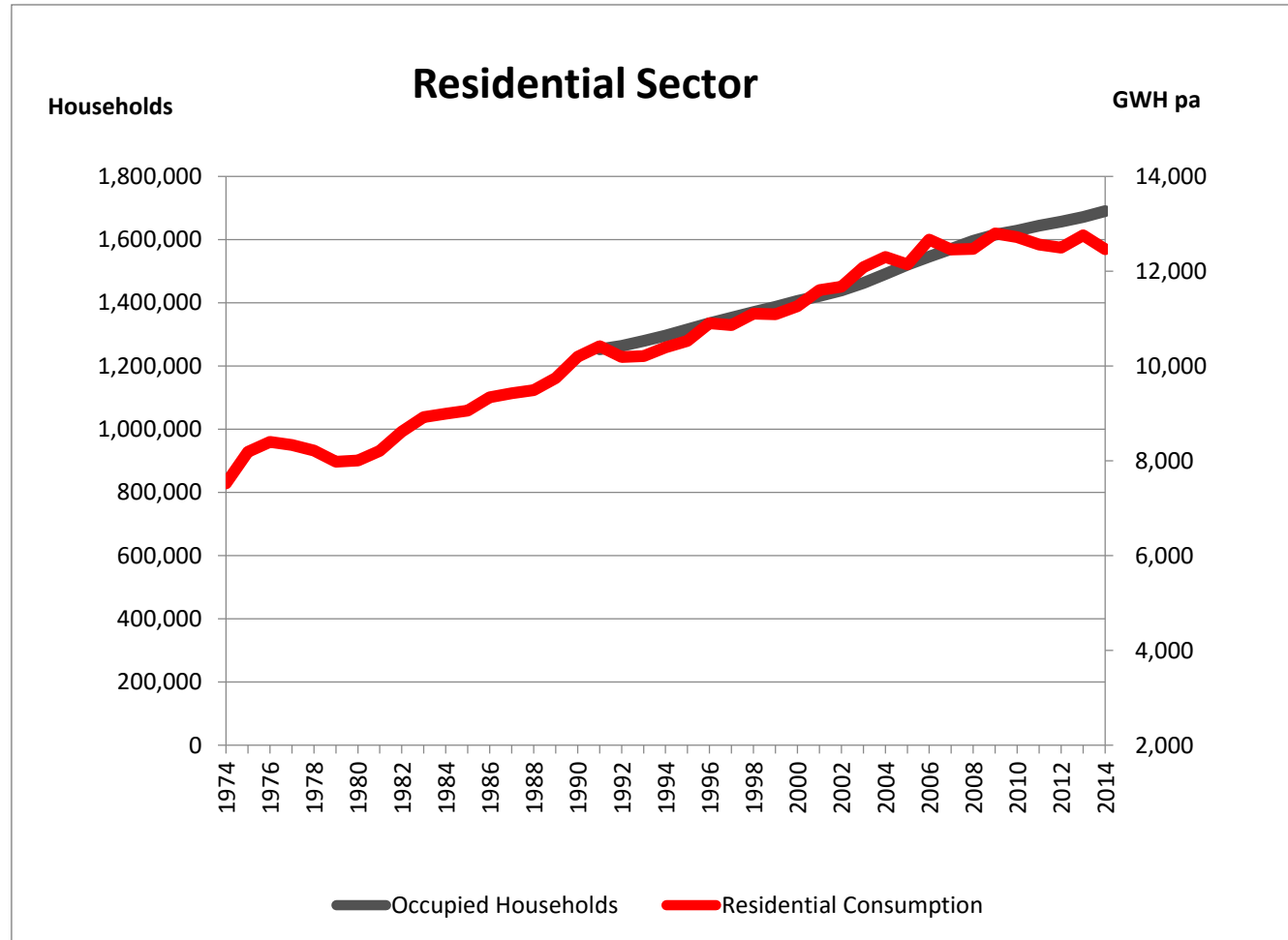


**Net change in overall balance - 300 MW**

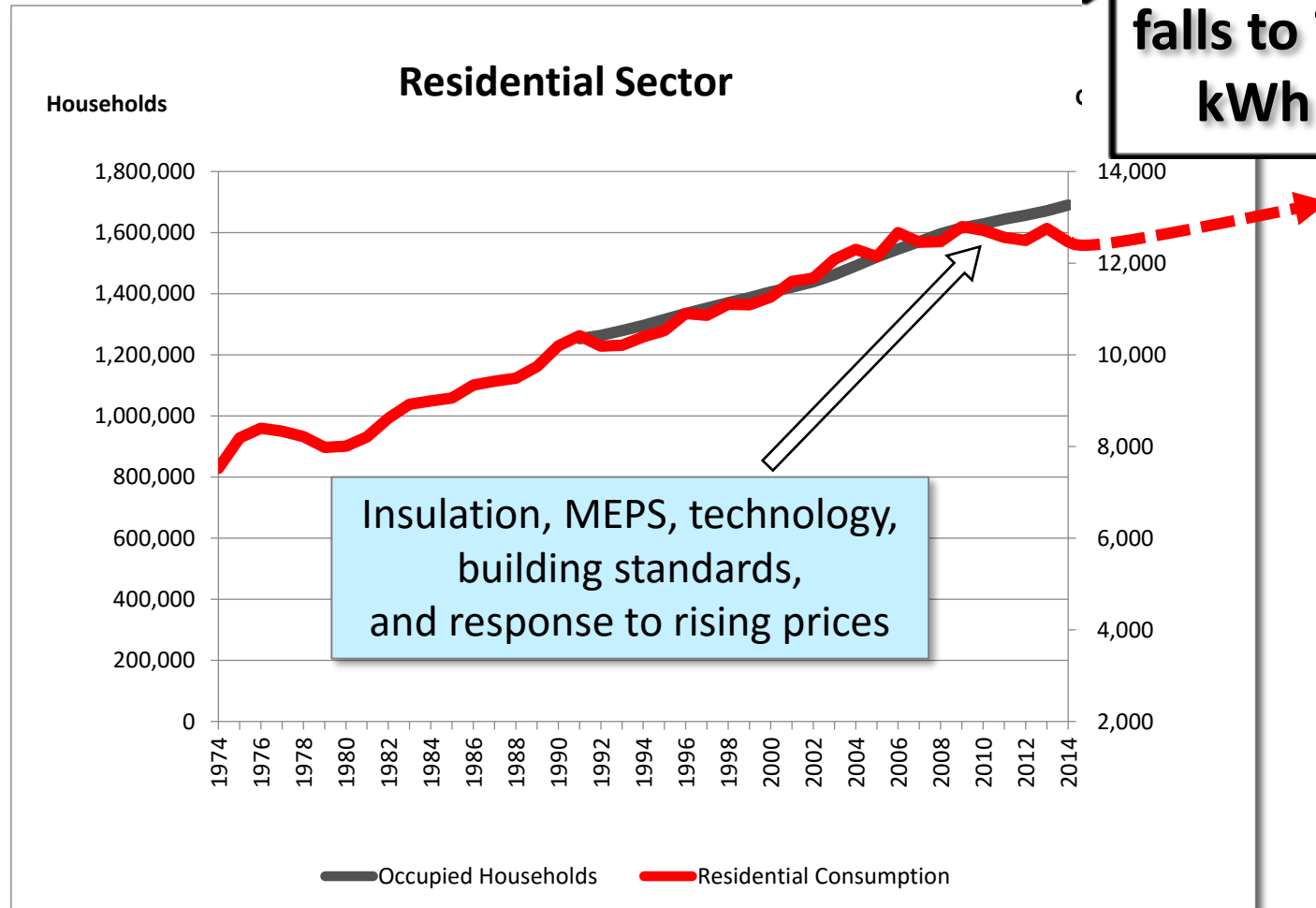


2014 => 2019

# Residential Demand

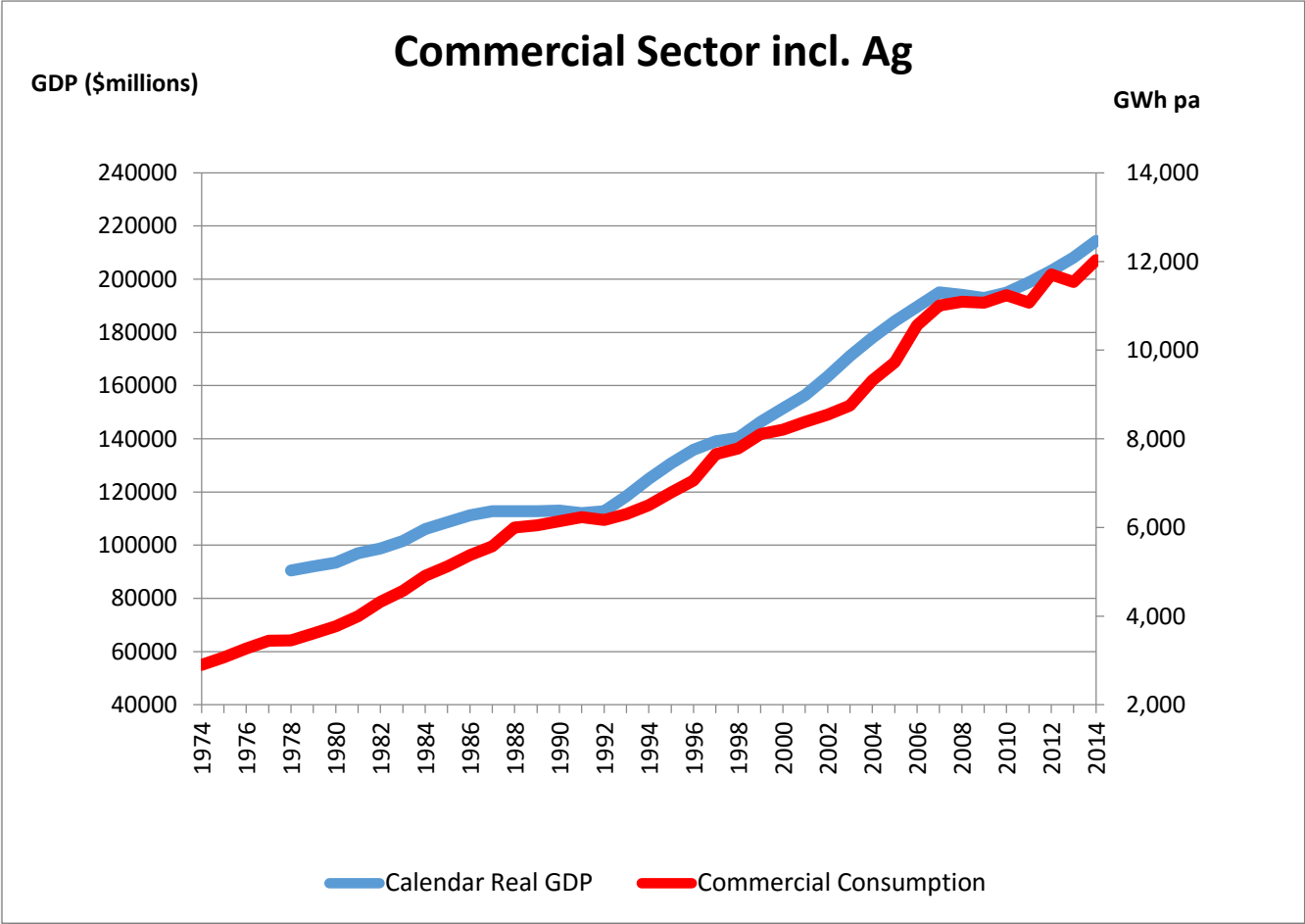


# Residential Demand

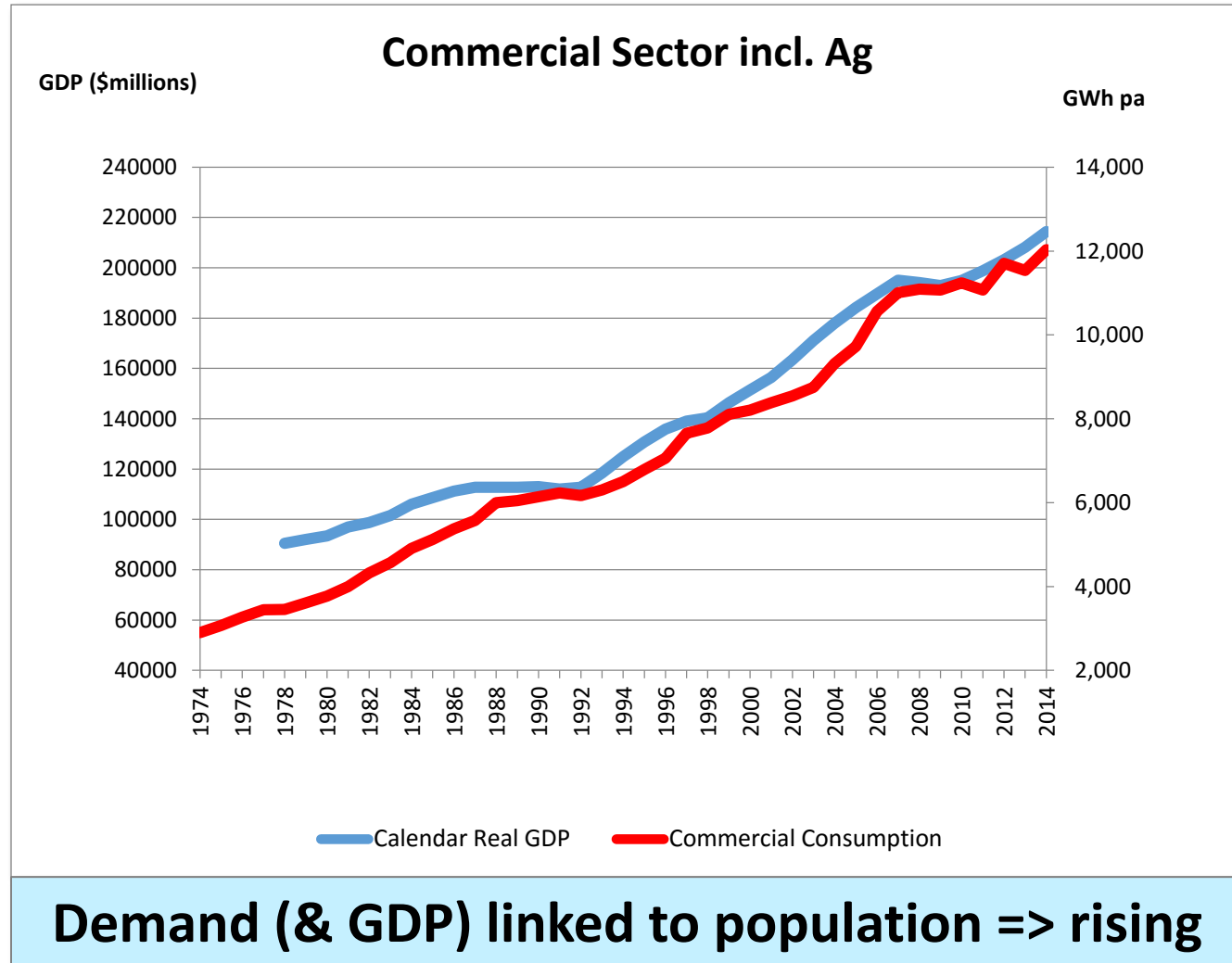


**Demand linked to population => rising**

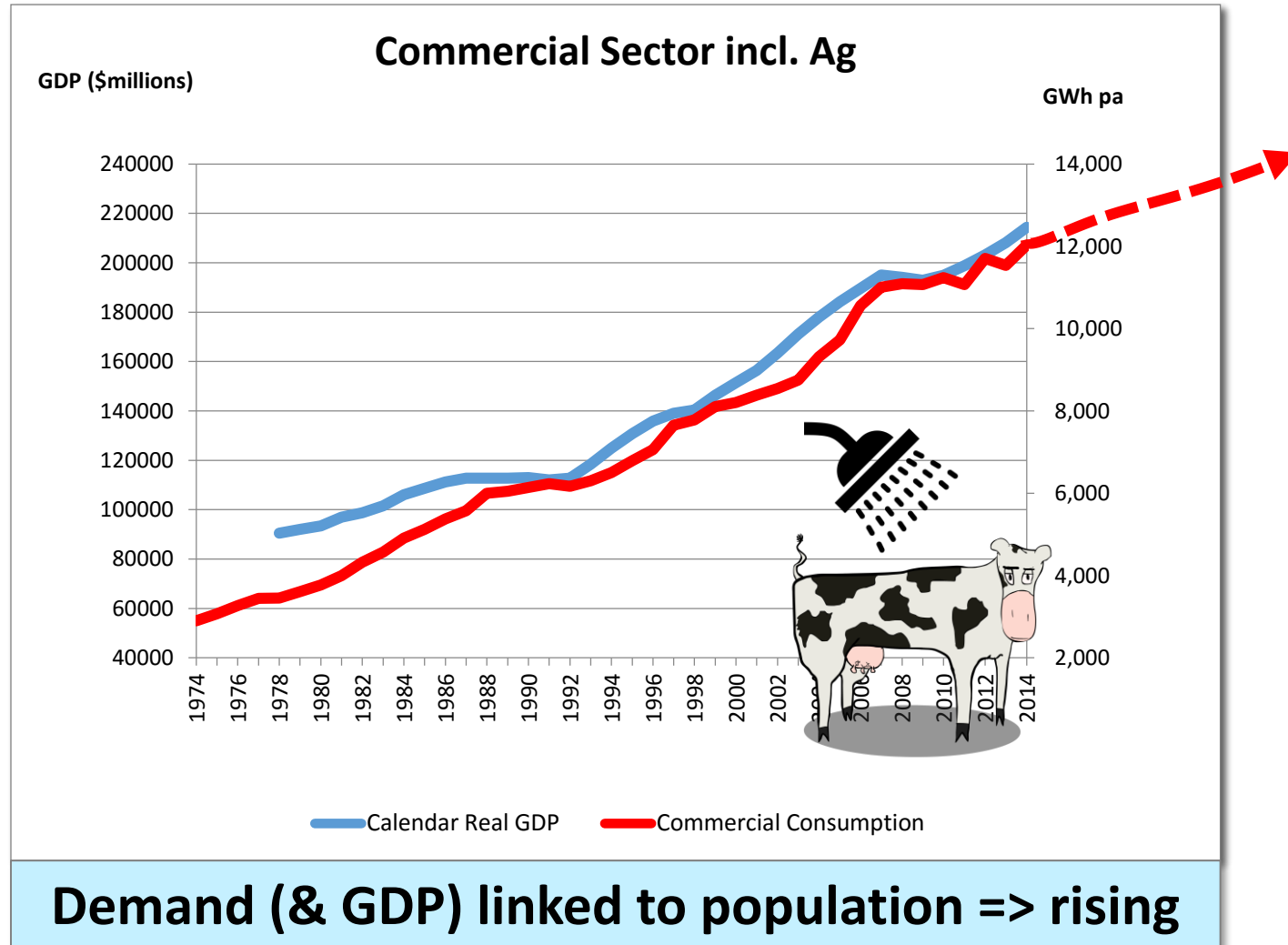
# Commercial & Primary Sectors



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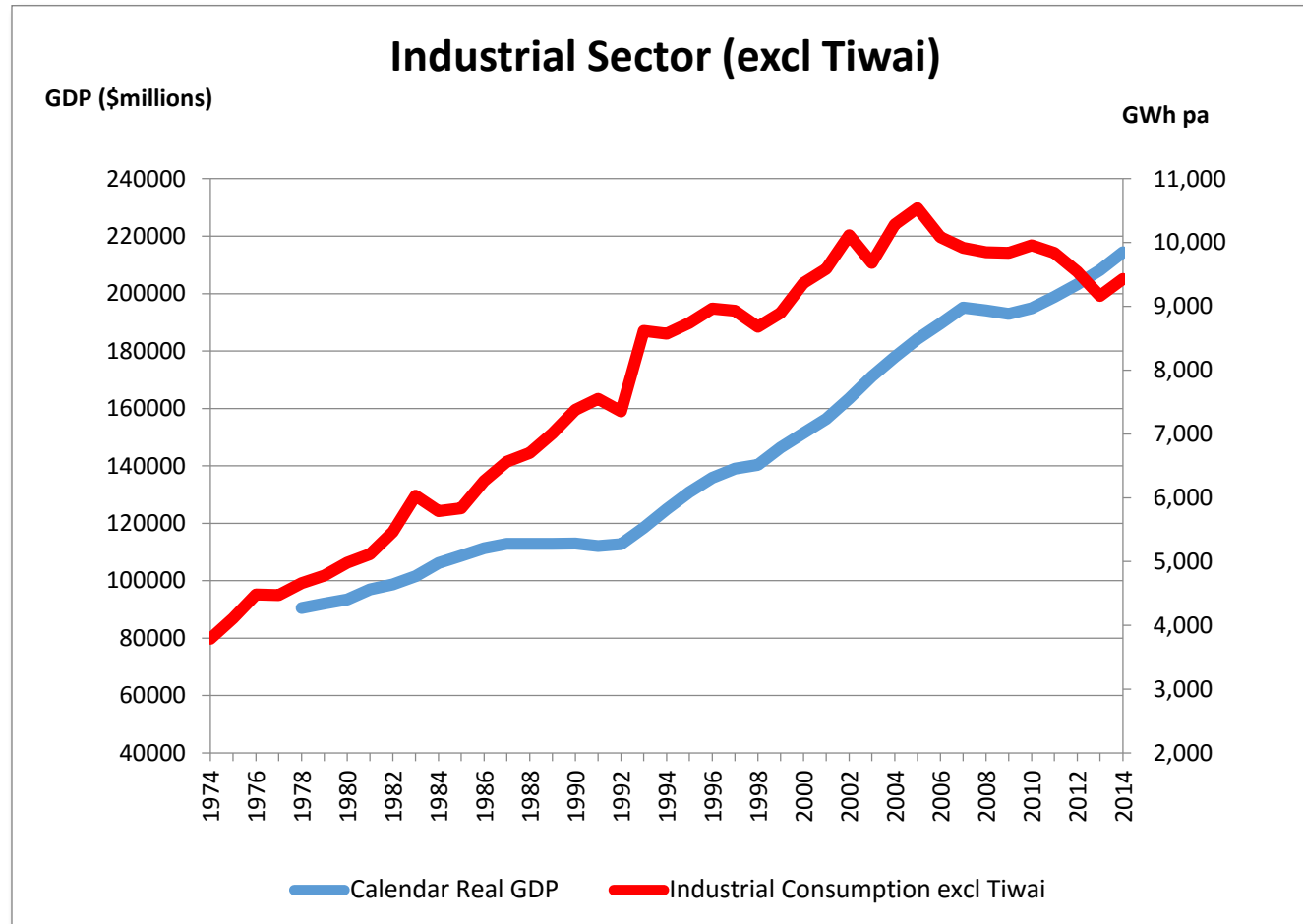


# Commercial & Primary Sectors



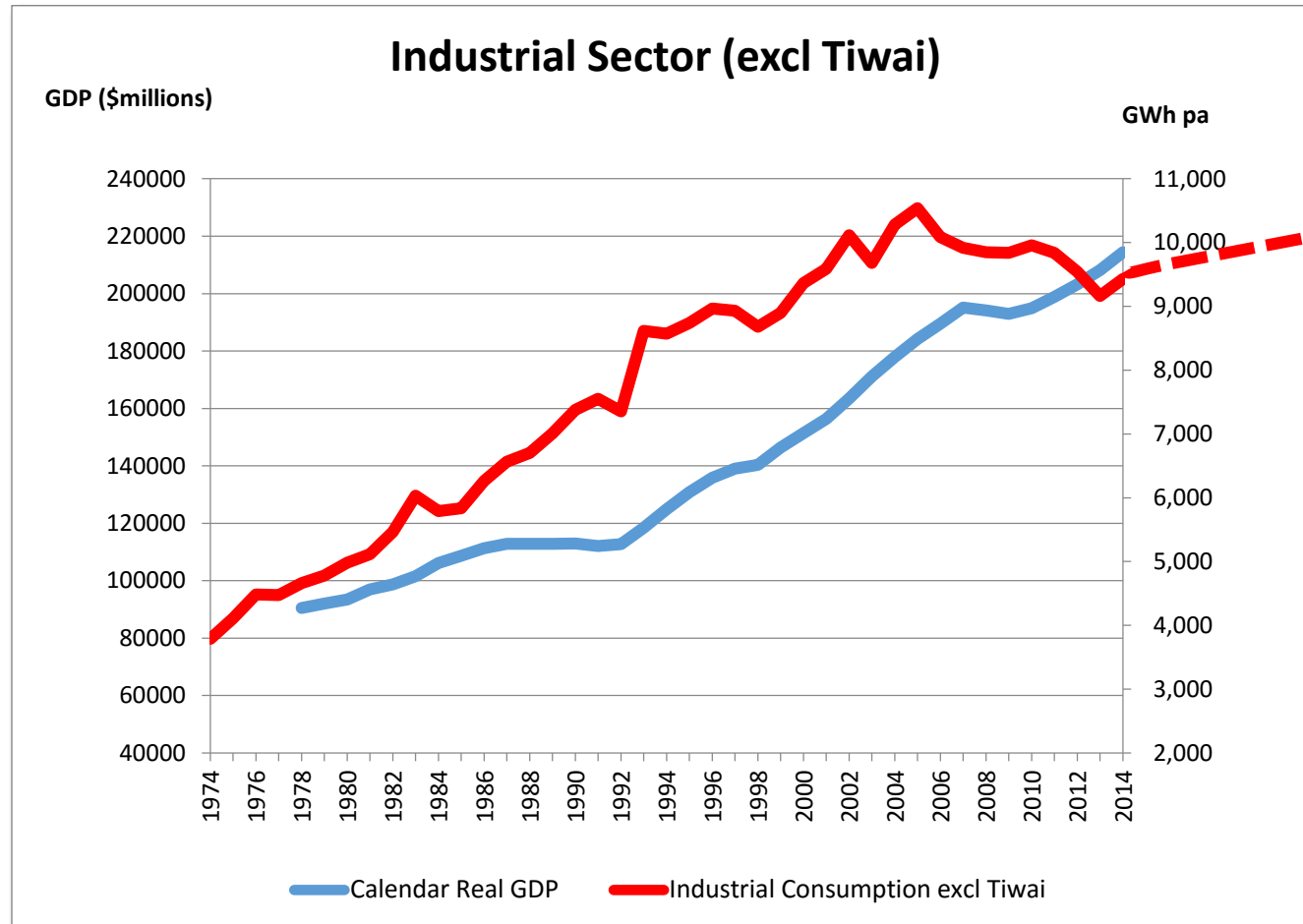


# Industrial Excl Tiwai Smelter



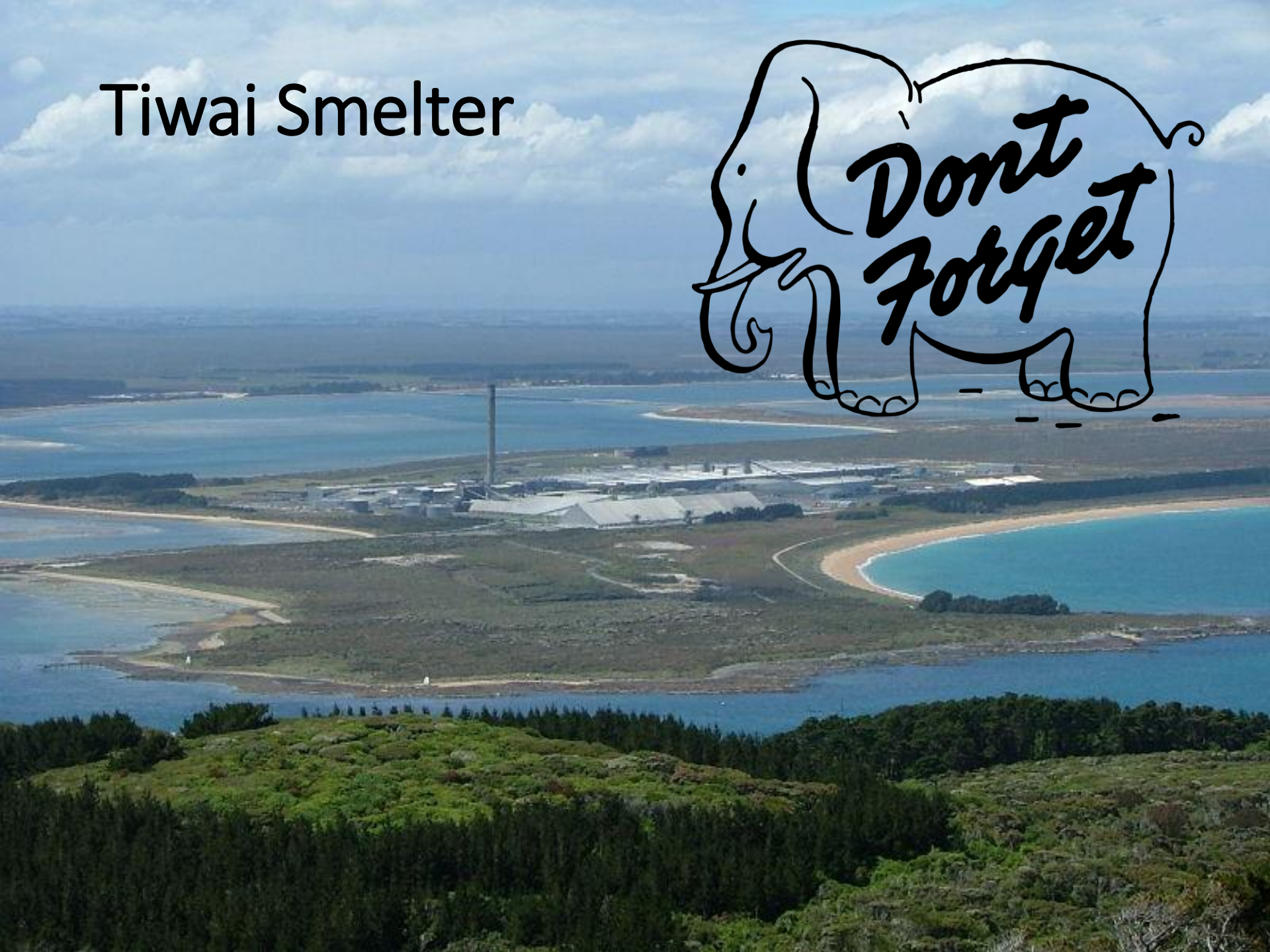
**Linked to population, GDP, and global commodity prices**

# Industrial Excl Tiwai Smelter

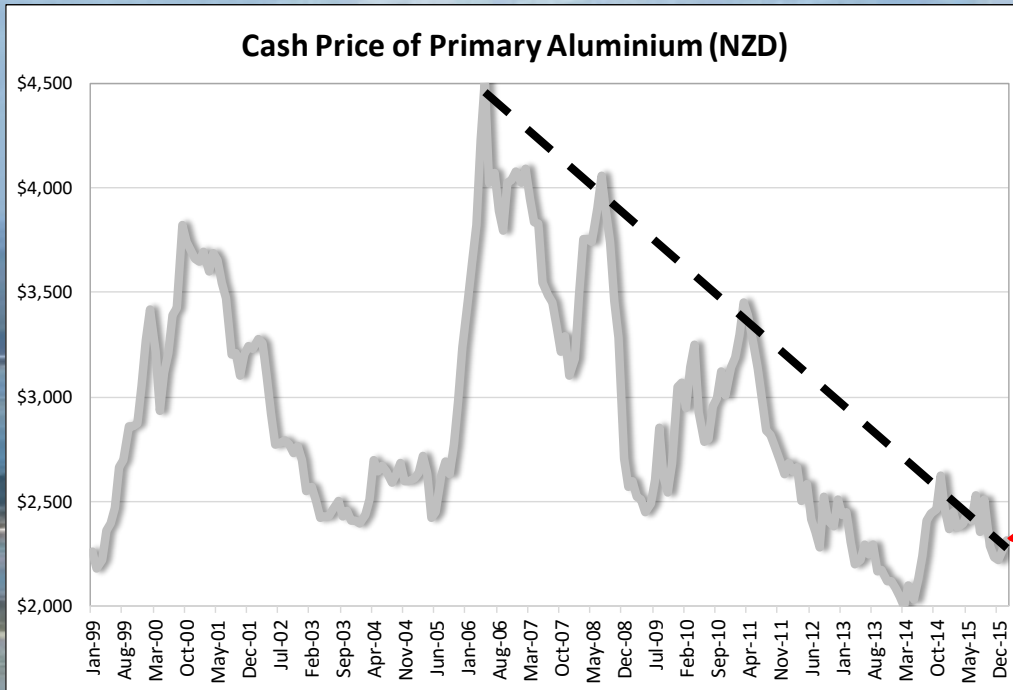


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# Tiwai Smelter



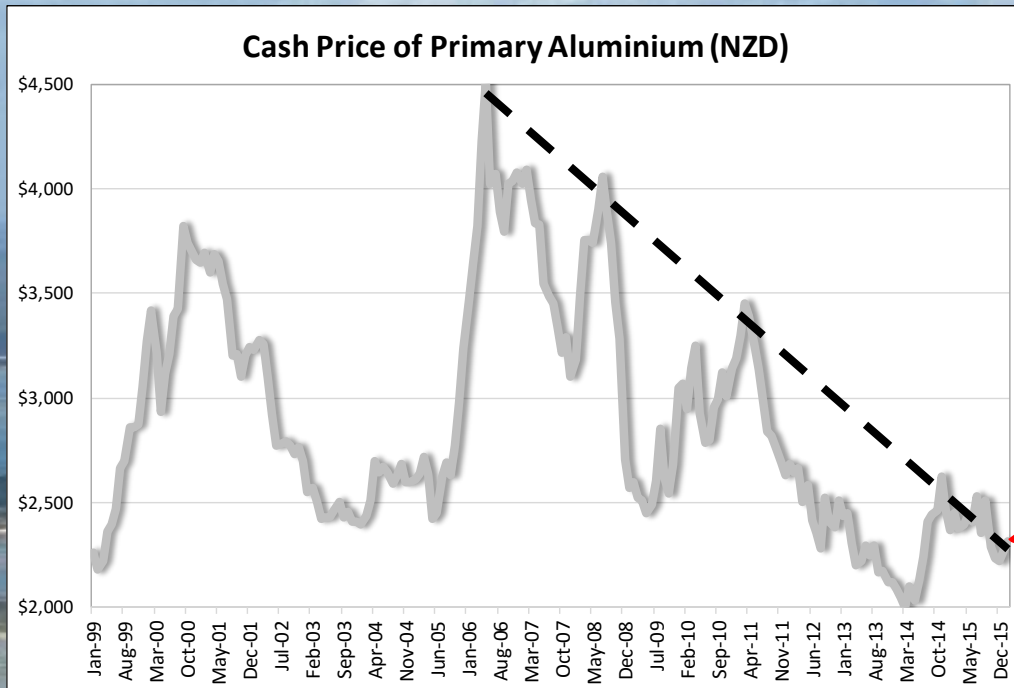
# Tiwai Smelter



- Low aluminium prices are the problem



# Tiwai Smelter



- Low aluminium prices are the problem
- Rio Tinto expects cash flow positive in 2016
- TPM proposal likely to improve cash flows
- 572 MW => 625 MW? 572 MW => 400 MW?

# Huntly Rankine Units



# Huntly Rankine Units

- 500 MW currently in service
- Officially closes end of 2018
- That is, unless...



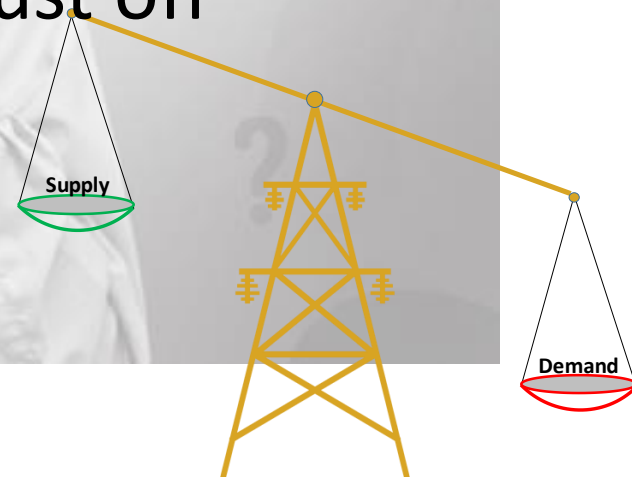
# Should We Be Concerned?





# Should We Be Concerned?

- Huntly might remain for a few more years
- Capacity issues in the North Island
- Transmission build may be required
- Uncertainty over the TPM
- Time is of the essence
- Are generators blowing the dust off projects put on hold...?



# What About Solar and EV?





# What About Solar and EV?



- Agent-based model for solar uptake

- Uptake limited by



- mismatch between peak demand and peak solar

- energy and network prices

- PV & battery prices

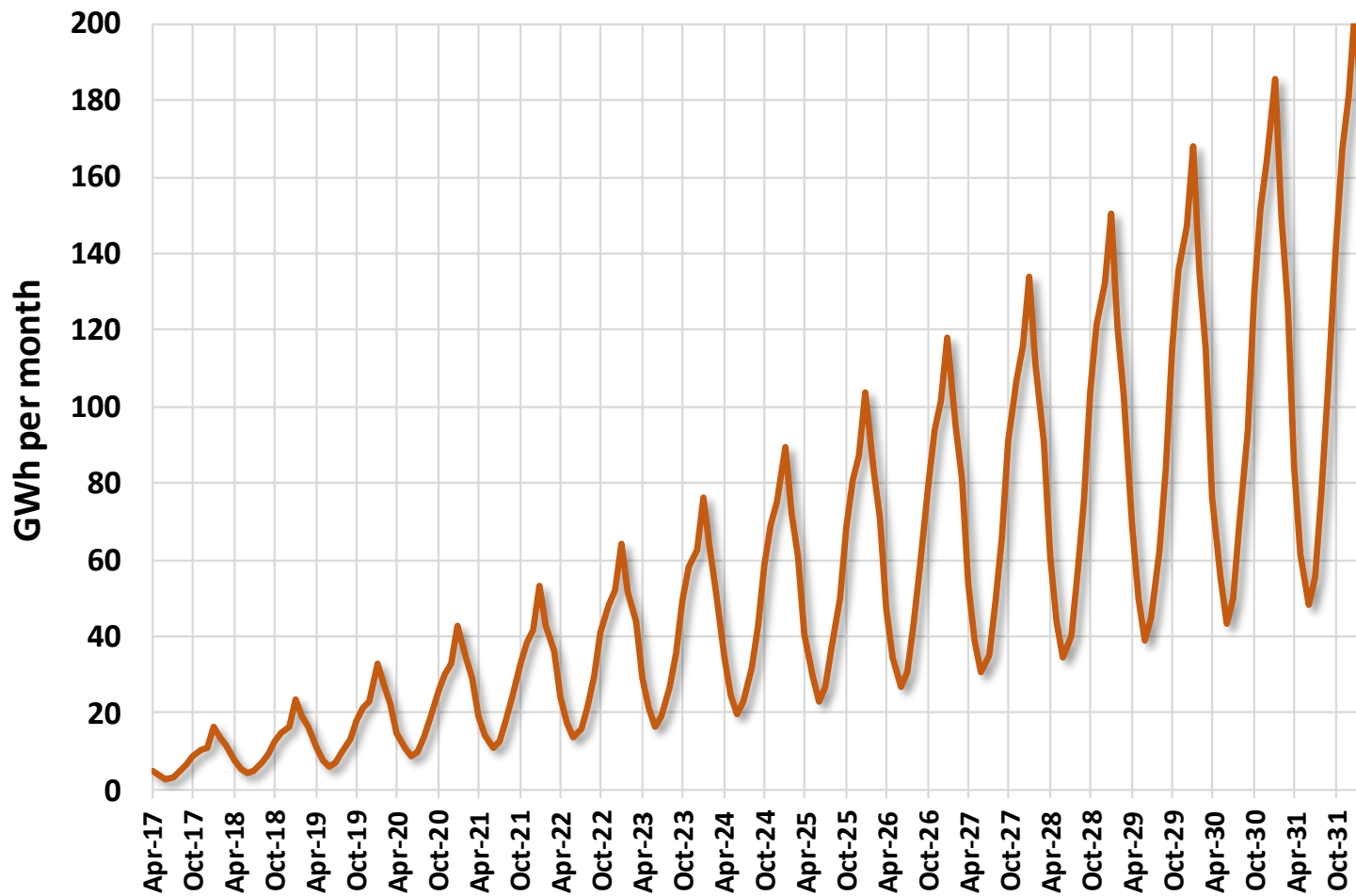
- Nevertheless, solar will appeal to many



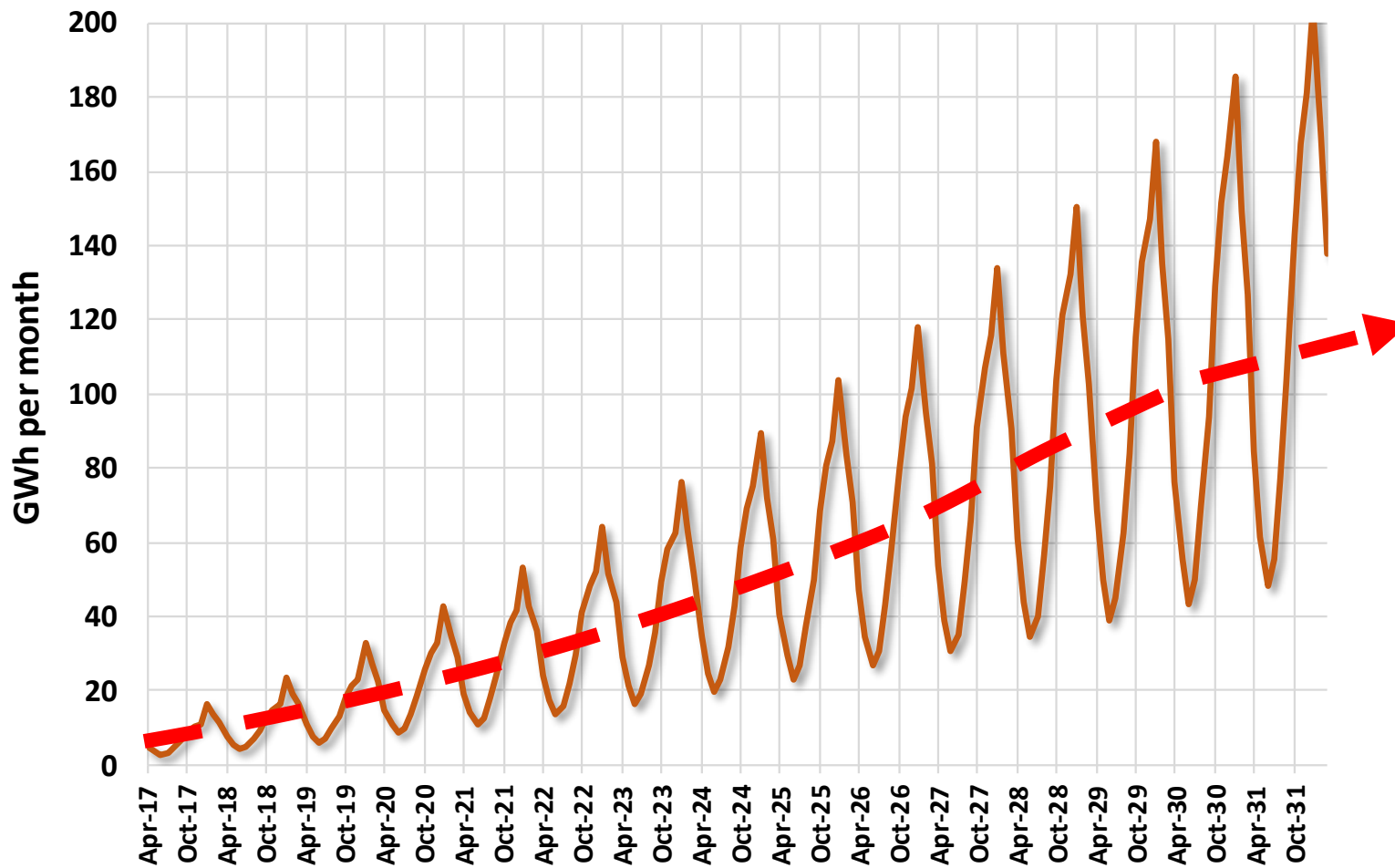
Out to 2030, solar is likely to generate more than EVs will consume



# What About Solar and EV?



# What About Solar and EV?





# What About Solar and EV?





# What About Solar and EV?

- EV uptake constrained by
  - new versus used vehicle additions to fleet
  - convenience => range & charging times
  - convenience => charging infrastructure
  - lifetime cost of vehicle
- Eventually, who will bother with the ICE?

Net decrease of 800 GWh by 2032 (<2%)

After that we expect EVs will start to dominate

# The Very Long Term





# The Very Long Term



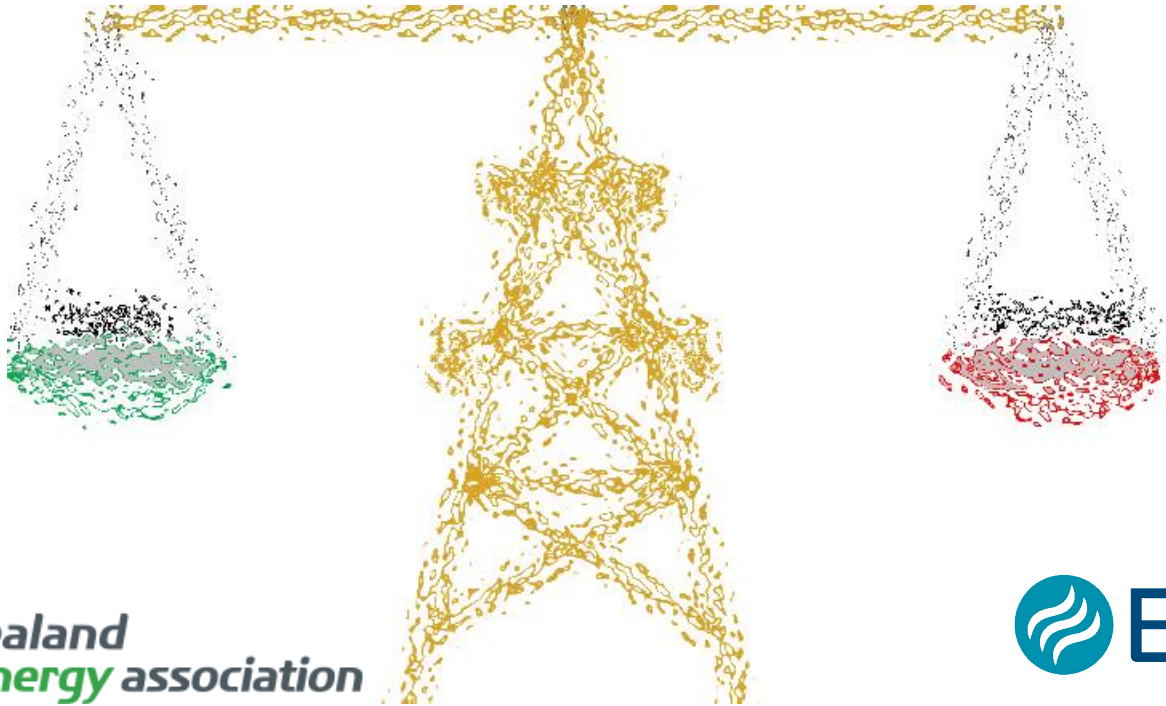
- The future belongs to renewable electricity
  - proviso: NZ needs gas-fired plant to supplement hydro



# The Very Long Term



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- But the divide between the demand and supply sides becomes increasingly fuzzy

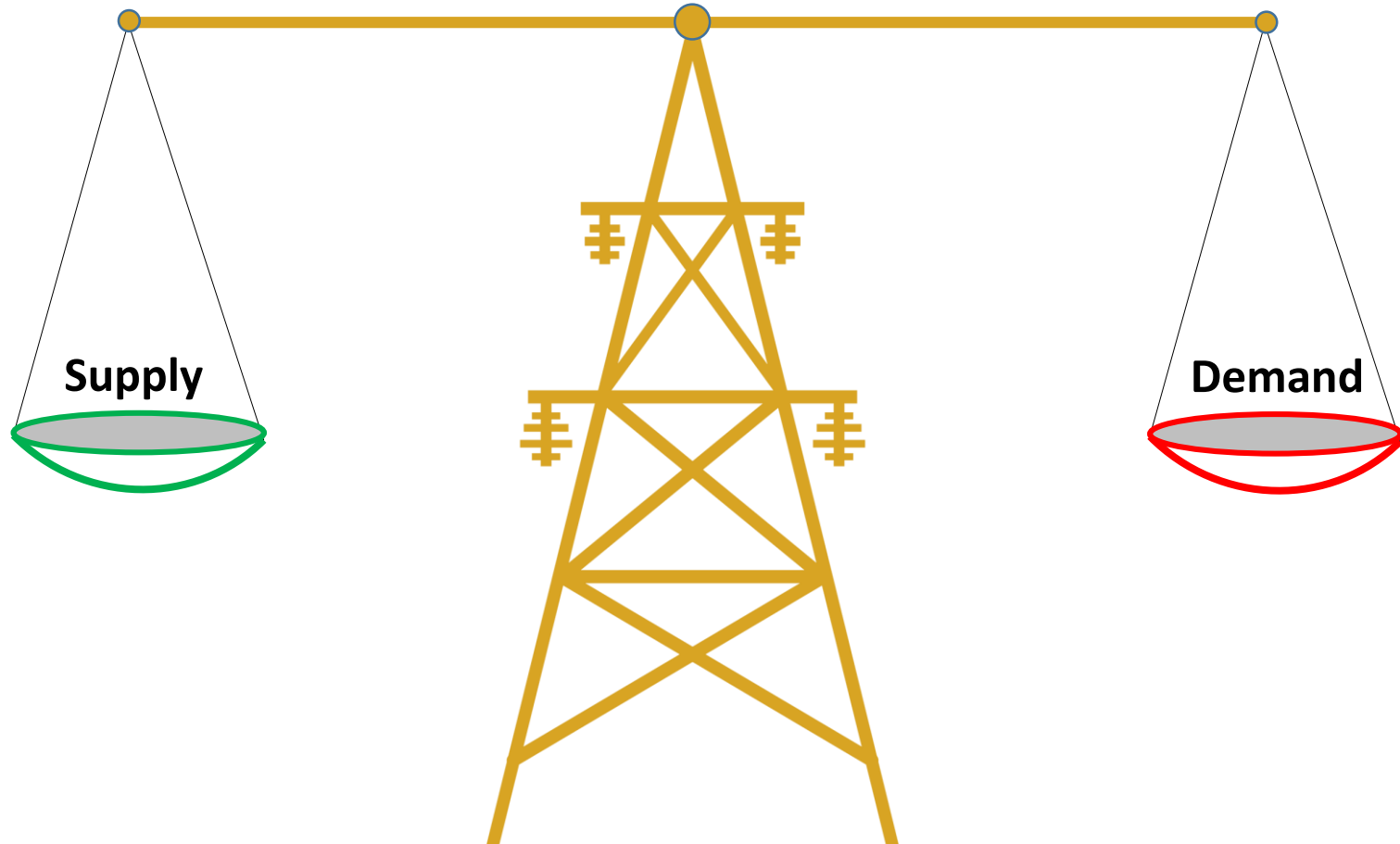


# The Very Long Term

- The future belongs to renewable electricity
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# Annual Conference 2016



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