

FUTURE DIRECTIONS FOR ELECTRICITY

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OTAHUHU B POWER STATION



SOUTHDOWN POWER STATION

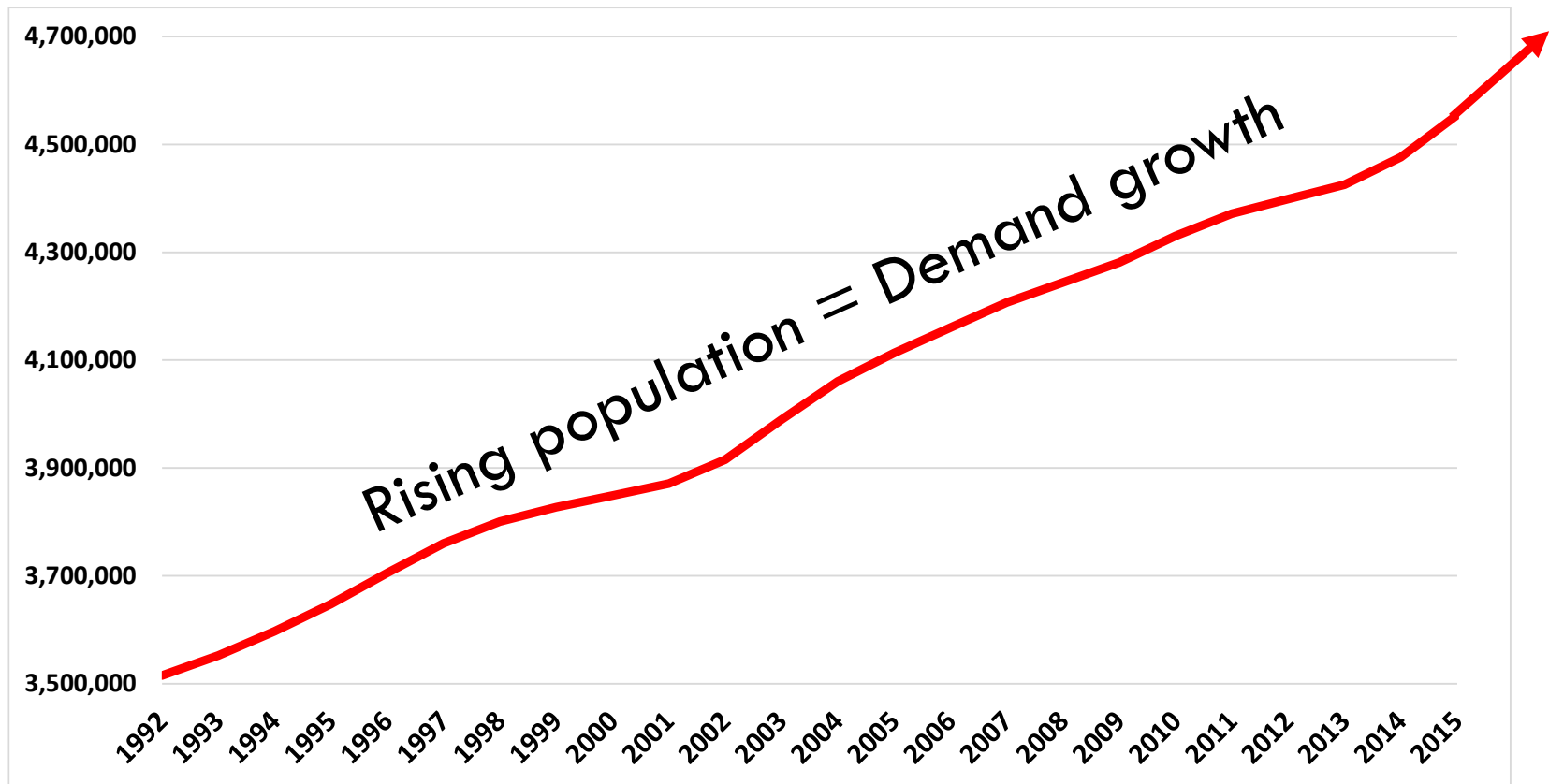


HUNTLY POWER STATION (STEAM TURBINES)

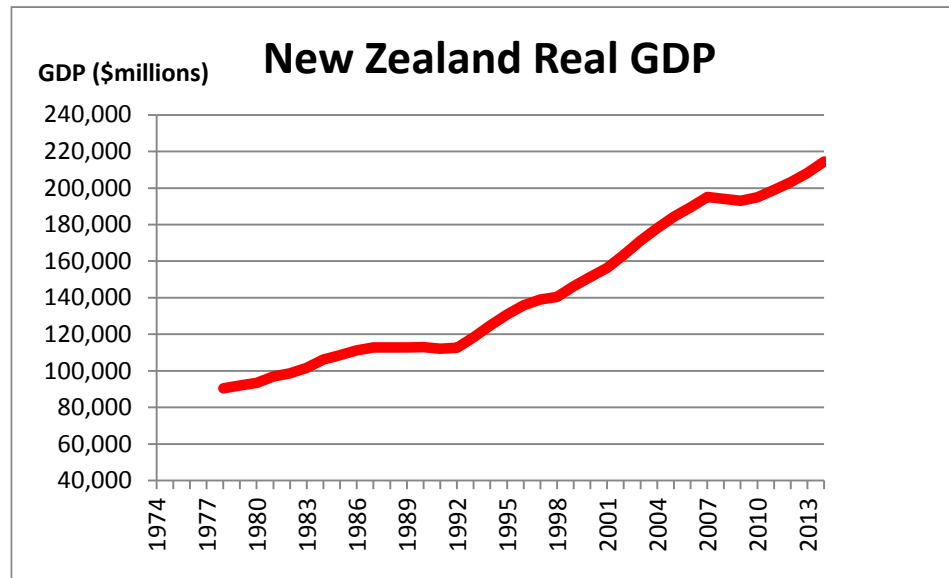


**1,030 MW OF CAPACITY GONE
BY 2019**

MEANWHILE ON THE DEMAND SIDE...



IMPROVING ECONOMY



After a pause post-GFC, world GDP is also rising

TIWAI ALUMINIUM SMELTER



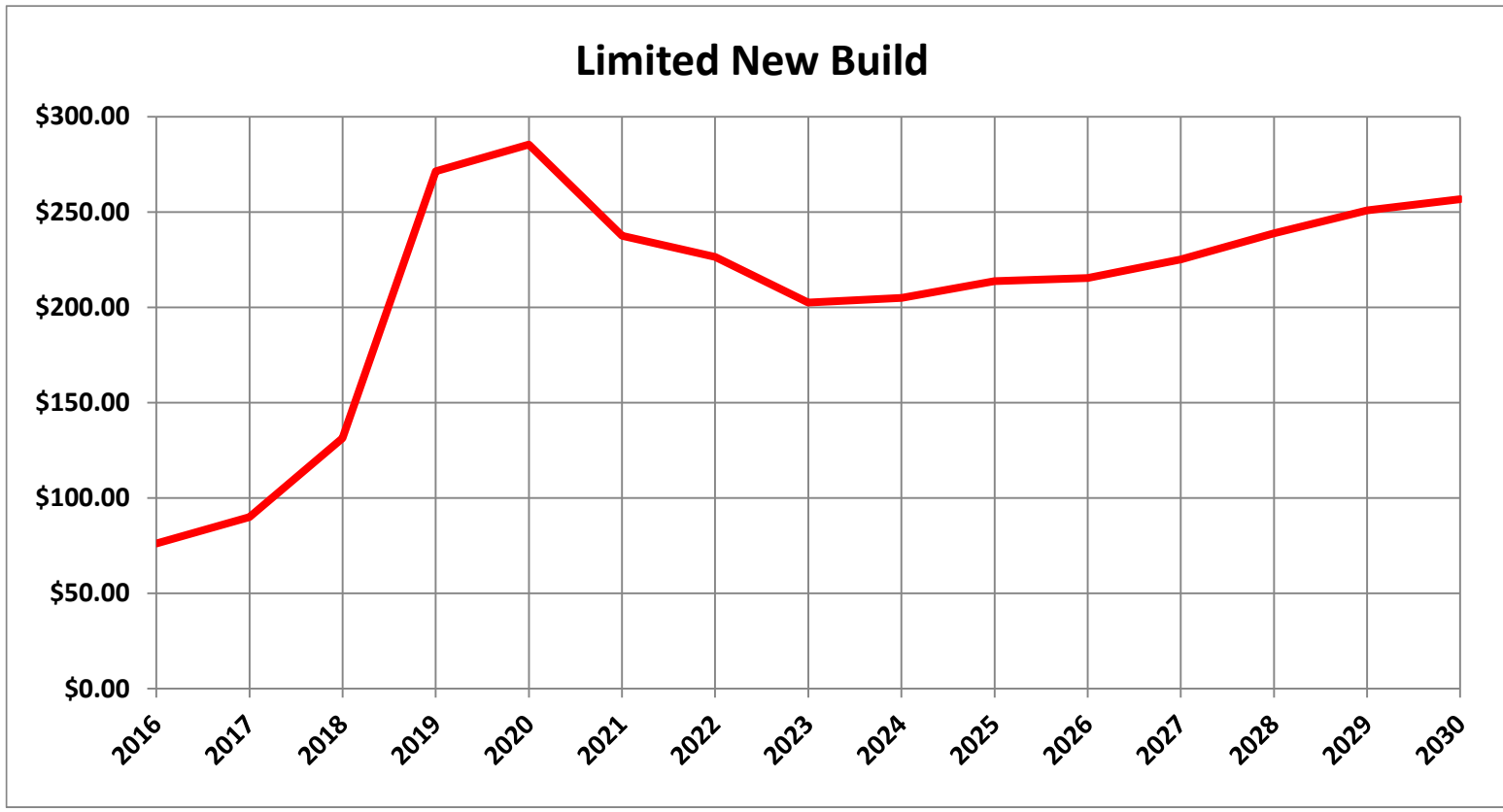
572 MW under contract, potential for 625 MW

MEANWHILE, THE NEW POWER STATIONS...

- 1.
- 2.
- 3.
- 4.
- 5.

None, Zero, Zilch

LEADING TO...



July 2015 new build schedule assumed only Southdown was gone

LEADING TO...



LEADING TO...

Shortages from winter 2019



RESULTING IN...



Energising New Zealand
Policy Document



BUT HOW COULD THIS HAPPEN?



Tiwai future uncertain
Risk of closure

No one prepared to risk investment in new plant that may not be needed for years

HOW BAD IS THE CLOSURE OF TIWAI?

- Dramatic fall in spot prices
- Years for prices to recover
- Intense competition for contracts to replace Tiwai
- Further plant closures
- Will it close? Many views.



WILL HUNTLY CLOSE?

- Mixed signals
- Maybe not closed if it could be contracted
- But it is now 30 years old and won't last forever



WILL GOVERNMENT RESCUE THE MARKET?

- Will act if under pressure
- Track record is variable
- There are other precedents, some of which are palatable
- Market solution would be better

BASE CASE BUILD SCHEDULE

| Year | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---------------------|----------|------------|------------|------------|------------|
| MW Installed | 0 | 120 | 380 | 590 | 650 |

An opportunity not seen for years

OPPORTUNITIES AND RISKS

| | |
|---|------------------|
| Capacity constraint – meeting the peaks | Opportunity |
| Energy constraint – dry years | Opportunity |
| Customer compensation payments | Risk |
| Scarcity pricing | Risk/Opportunity |
| Tiwai helps capacity constraint, but not the energy constraint | Opportunity |
| Expansion of demand response | Opportunity |

OPPORTUNITIES AND RISKS

Who captures the premium for keeping the lights on in the face of uncertainty around Tiwai?



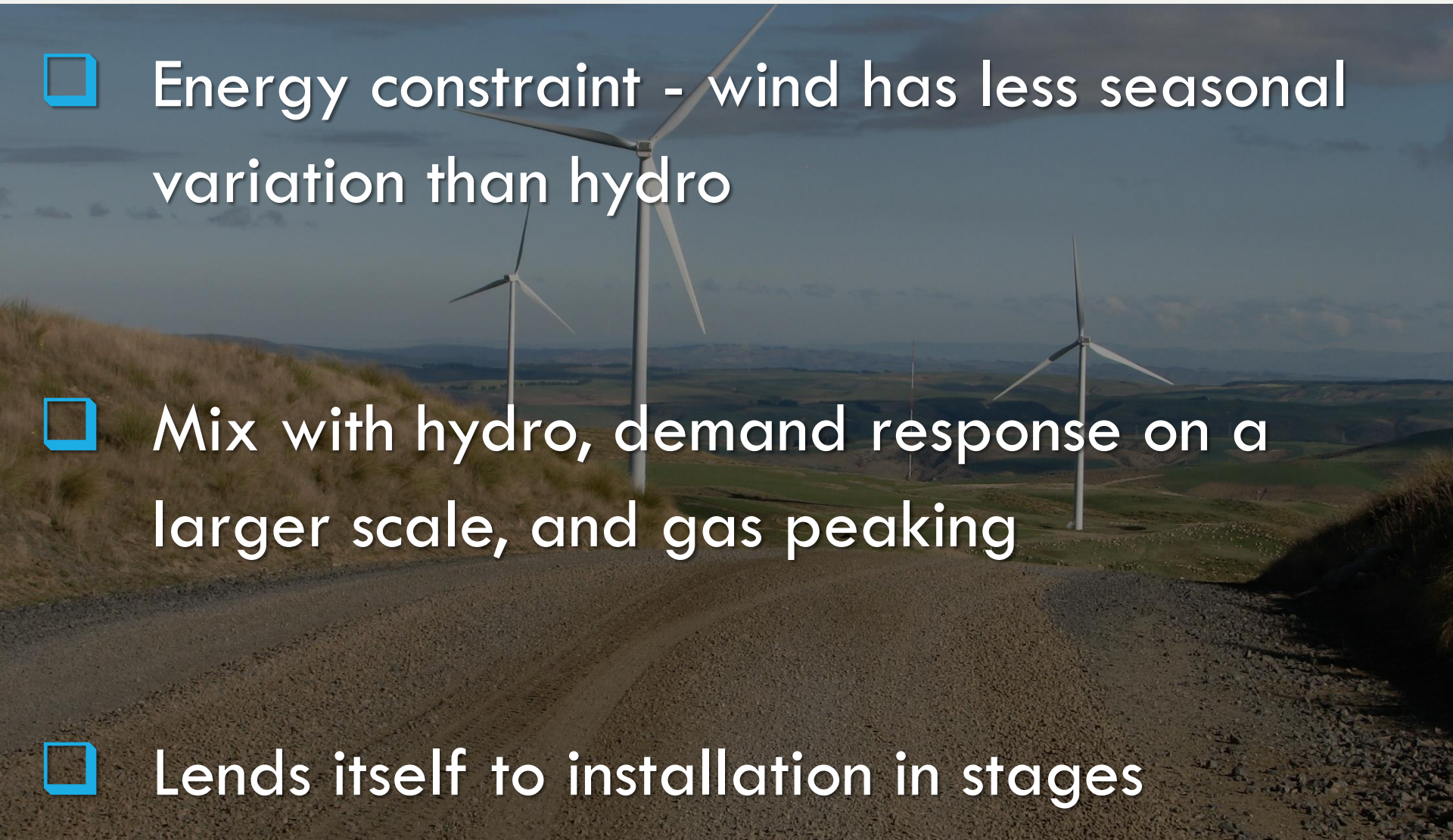
WHO ARE THE NATURAL PLANT BUILDERS?

- Those with low variable costs – renewables
- Those with the most flexible access to gas

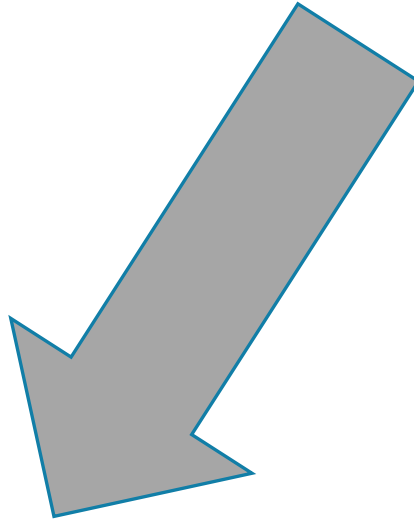
STRATEGIES

- ❑ Smaller investments may be preferred to larger
- ❑ We don't need to over-build
- ❑ Contracts – how big can the premium in hedges and retail be?
- ❑ Risk averse consumers highly sought after
- ❑ Act soon to pre-empt Government involvement

THE WINDS OF CHANGE...

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- A photograph of a wind farm on a hillside. Several white wind turbines are visible against a blue sky with light clouds. The foreground shows a gravel path leading up the hill.
- ❑ Energy constraint - wind has less seasonal variation than hydro
 - ❑ Mix with hydro, demand response on a larger scale, and gas peaking
 - ❑ Lends itself to installation in stages

2015



The beginning
of the end?

OR

A step along the way
to a better market?



THANK YOU

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Plan and Execute Your Energy Strategy with Confidence