



S I M E C
ZEN ENERGY

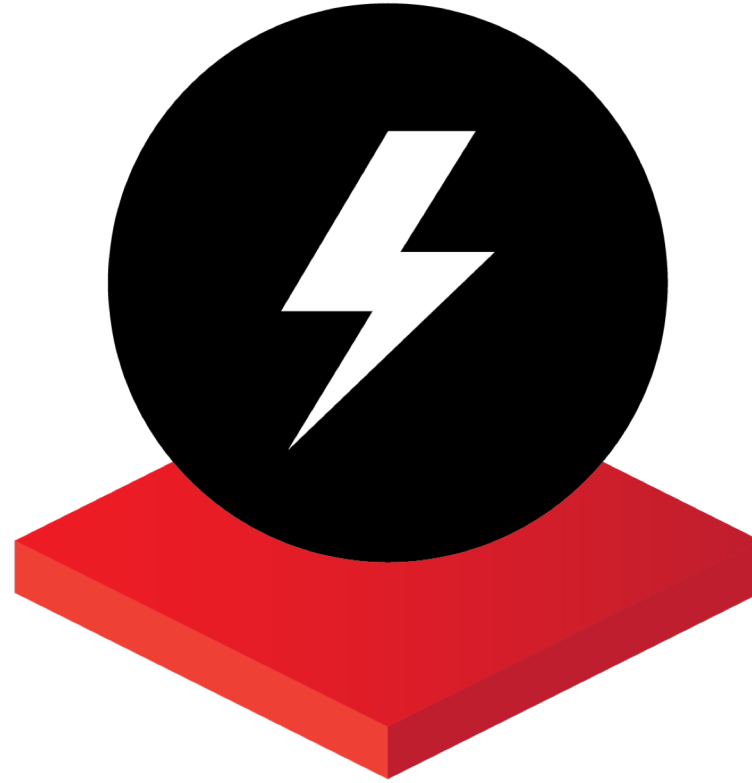
Renewable Energy A Game Changer

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CLIMATE AND ENERGY POLICY AFTER THE NEG



THREE ESSENTIAL OBJECTIVES:

- ❖ Emissions reduction
- ❖ Security and Reliability
- ❖ Minimisation of cost to households and globally competitive prices for business

REDUCED RENEWABLES COSTS AND IMPROVED BALANCING TECHNOLOGIES ARE GAME-CHANGERS

- ❖ Can now have low emissions, security, reliability and globally competitive prices

EMISSIONS REDUCTION: THE TASK

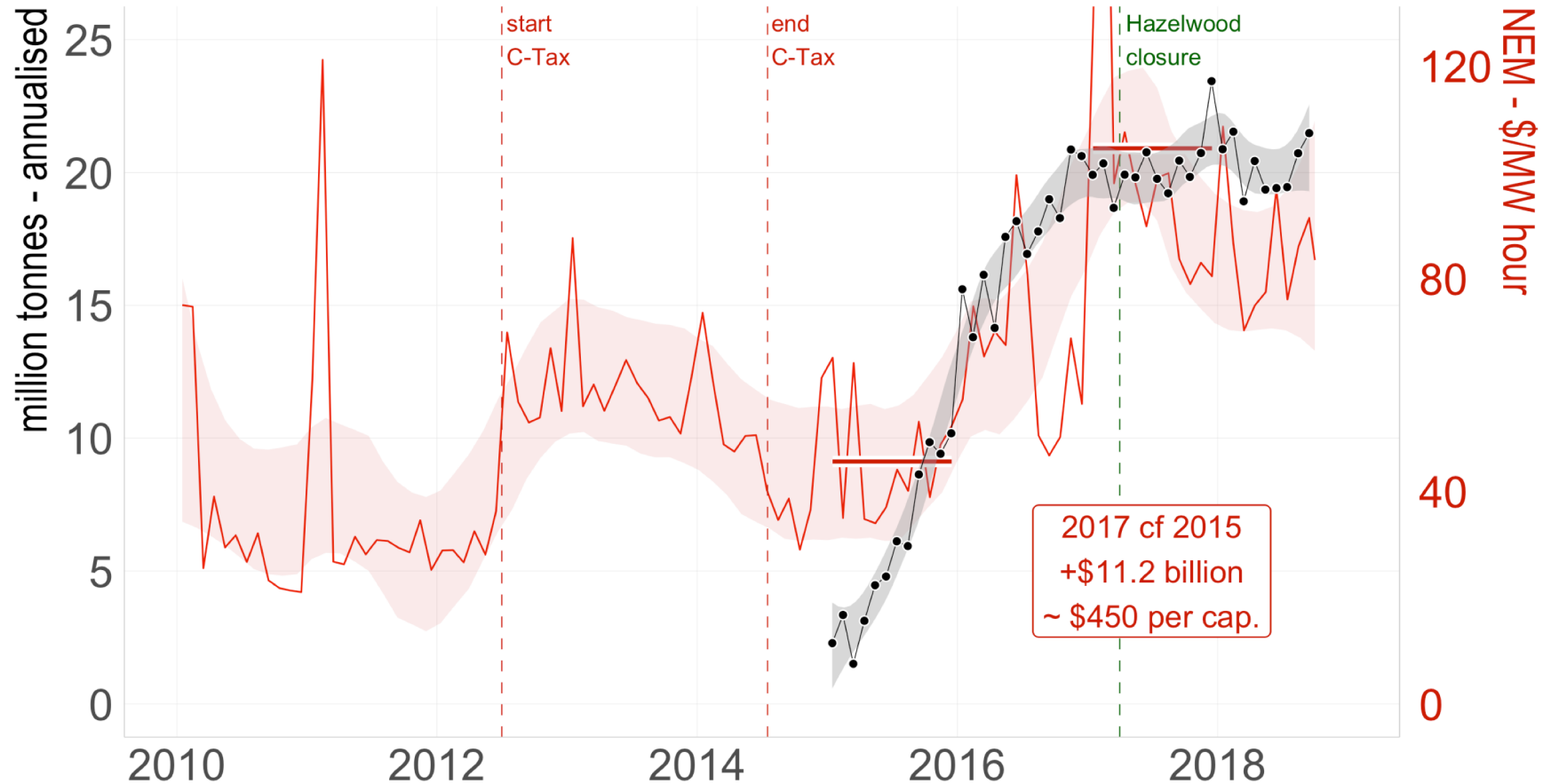
- ❖ Atmospheric physics blind to Canberra chaos.
- ❖ Zero electricity emissions required by mid century.
- ❖ Electricity decarbonisation essential for transport and much industry
- ❖ Faster electricity decarbonisation lowers economy-wide costs
- ❖ No stable energy policy without credible emissions component
- ❖ Policy instability raises investment cost and electricity prices

EMISSIONS REDUCTION - THE PATH: GAS AND RENEWABLES

- ❖ Gas once important transition fuel, but priced out by Queensland LNG
- ❖ Now gas only for peaking; fast response open cycle operating few hours
- ❖ Wind and solar now main path, with storage gradually assuming peaking role
- ❖ Hydro storage and batteries provide security and reliability at any scale
- ❖ Gas had security and reliability advantages

EMISSIONS REDUCTION – GAS and ELETRICITY PRICES

Gladstone LNG exports, NEM prices



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SECURITY—AVOIDING BLACKOUTS AND SYSTEMIC FAILURE

- ❖ Harder now with higher summer temperatures and raising peak demand
- ❖ Harder now with smaller steady industrial load
- ❖ Harder now with bigger weather events (SA September 2016 unprecedented)
- ❖ Harder now with older, less reliable coal generators
- ❖ Harder now with higher summer temperatures disrupting coal generation
- ❖ But AEMO now has well in hand integrating old and new technologies
- ❖ Cost of non-generator stability services falling with new technologies (eg. SA big battery)

RELIABILITY: MATCHING SUPPLY WITH DEMAND IN NEARLY ALL CIRCUMSTANCES

- ❖ Harder now with peakier load including from more extreme summer heat
- ❖ Harder now with older, less reliable coal generators
- ❖ Harder now with less reserve in coal generation
- ❖ NEG approach can provide reliability with cost and complexity
- ❖ Alternative 1: competitive capacity market run by AEMO to establish AEMO reserve capacity
- ❖ Alternative 2: transfer pumped hydro assets into Commonwealth corporation with responsibility to meet AEMO requirements for balancing supply and demand at lowest possible cost (“Snowy Energy Guarantee”)

COSTS: THREE BLOWOUTS

- ❖ **Wholesale prices:** gas prices (biggest); reduced generation capacity (big after Hazelwood); environmental costs from historical schemes (smaller, RET costs balanced by lower wholesale market prices)
- ❖ **Network costs:** companies responding to regulatory incentives
- ❖ **Retail margins:** blowout from oligopoly

COSTS: THREE REMEDIES (ACCC)

- ❖ **Wholesale prices:** more generation capacity with low recurrent costs
- ❖ **Network costs:** write-downs and regulatory rigour and reform
- ❖ **Retail margins:** new entrants

GLOBALLY COMPETITIVE COSTS FOR INDUSTRY: THE RENEWABLES GAME CHANGER

- ❖ Solar PV real costs once expected to fall a few percent per annum
- ❖ Nominal total costs actually down by five sixths, to below recurrent black coal costs
- ❖ Wind: lower rate of reduction to similar low level
- ❖ More generation and wise transmission investment reduces wholesale prices for most of day
- ❖ Gas peaking, peaking hydro, batteries, demand management to balance the day with low 24 hour average price
- ❖ Potentially lowest cost power to industrial users in developed world
- ❖ Australia economically rational home of energy-intensive processing

POLICY FOR RENEWABLES

GAME CHANGER FOR AUSTRALIA

- ❖ Need large increase in generation with low marginal costs
- ❖ Problems of policy uncertainty and oligopoly
- ❖ Addressed by ACCC Recommendation 4: available to smaller retailers; technology neutral; requirements of firm power
- ❖ Gas generators provide energy and firming together
- ❖ Coal can do so as (costly) spinning reserve
- ❖ Renewables require firming from peaking assets
- ❖ Market competition will determine lowest cost combinations

RENEWABLES GAME CHANGER: EMISSIONS POLICY REQUIRED?

- ❖ New tranche of RET or NEG would further reduce emissions and wholesale prices
- ❖ Much smaller price reduction with NEG than RET on same targets, as much benefit goes to established renewables producers
- ❖ Independent expert body (Parliamentary Budget Office) could transparently assess price effects of RET and NEG before policy decisions
- ❖ Meanwhile variations on Recommendation 4 and State contract schemes will lower prices and emissions

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REWARD FOR GOOD POLICY?

AUSTRALIA TO BECOME THE SUPERPOWER
OF THE LOW CARBON WORLD ECONOMY