

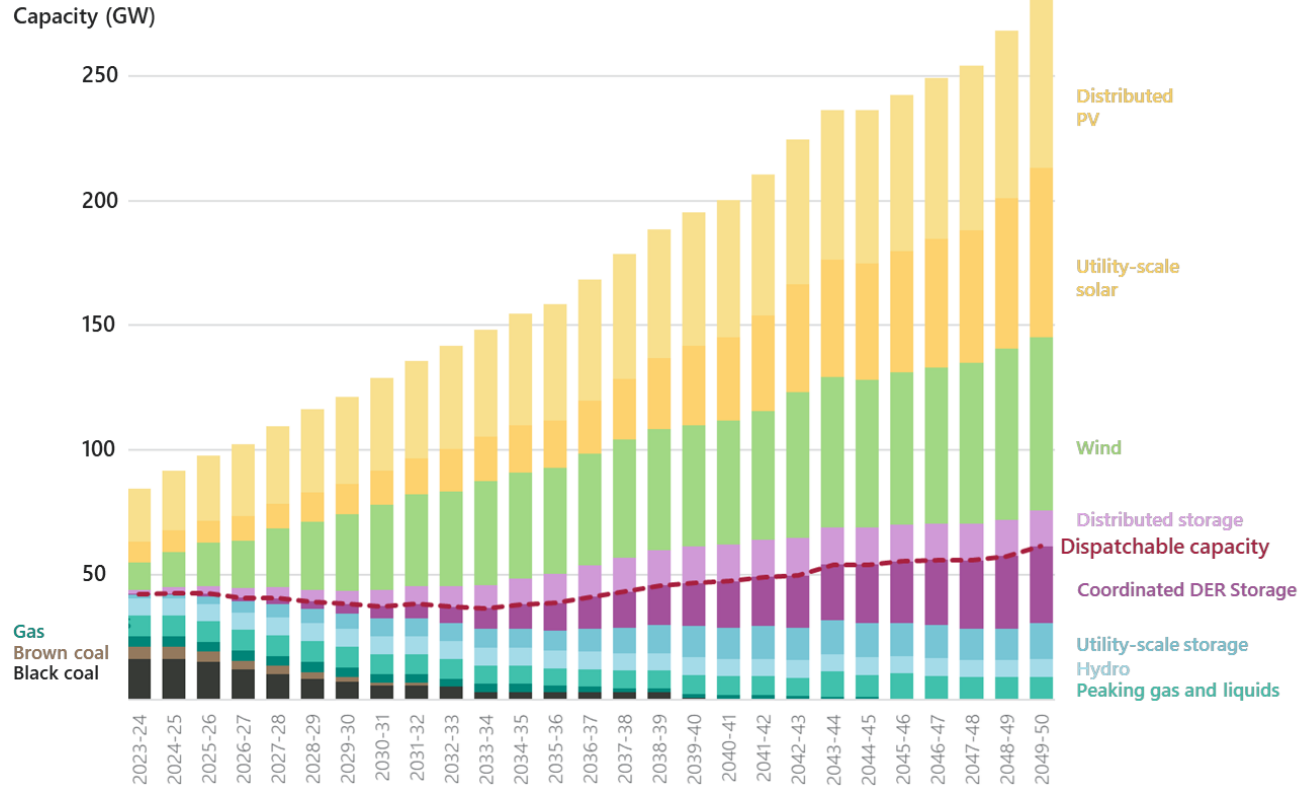


Embracing Change for Economic Prosperity

Economic Development Forum Presentation

Dr Amanda Cahill
Emerald, 15 March 2022

Forecast NEM Capacity to 2050: Exponential Growth of Renewable Energy



Source: Draft 2022 Integrated System Plan

Large-Scale (>5MW) Renewable Energy Projects in Qld

Operational, Under Construction or Financially Committed Projects since 2015, as at 31 December 2021:

Number of Large-Scale Projects	50
Investment (AU\$ billion)	10.7
Estimated Construction Jobs	7,900
Capacity (MW)	5,775
Annual Emissions Avoided (million tonnes)	13.8

Source: Qld Government: www.epw.qld.gov.au/about/initiatives/renewable-energy-targets



Up to five coal plants 'unprofitable by 2025'



l power stations will be running at a loss by 2025
y closure as the ageing generators struggle to
renewables surging into the national power grid,



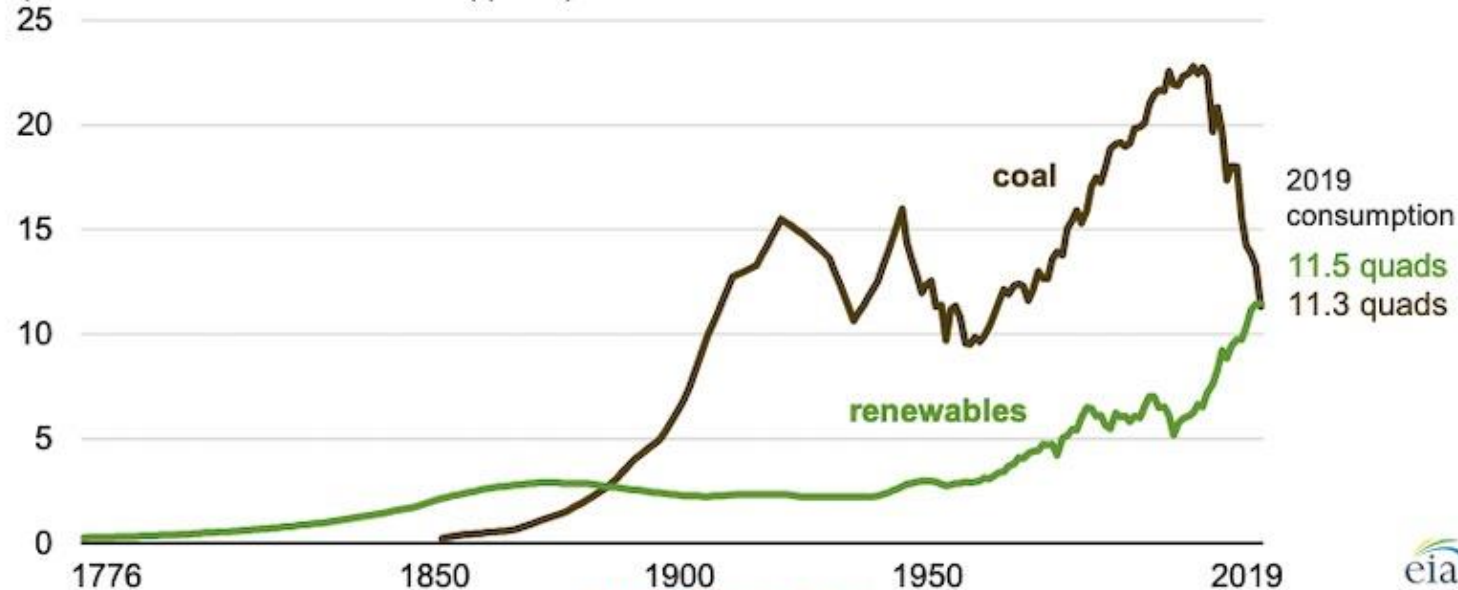
Increasingly Volatile International Coal and Gas Markets

- Increasingly uncertain future for coal and gas with major trading partners adopting more ambitious emissions goals, such as Japan (46% by 2030), South Korea (40% by 2030) and India (45% by 2030)
- World's biggest financial institutions increasingly pulling out of funding new projects. For example, at the Glasgow Climate Talks (Nov 2021):
 - Banks, insurers and financiers worth \$130 trillion committed to climate action
 - 21 countries (including the US) committed to stop publicly funding fossil fuel projects
 - 40 countries pledge to end the use of coal for electricity
- Chinese ban on Australian coal maintained by efforts to diversify its energy mix and develop domestic coal supplies and gas pipelines to Central Asia

US Energy Trends

U.S. coal and renewable energy consumption (1776-2019)

quadrillion British thermal units (quads)



Source: U.S. Energy Information Administration, *Monthly Energy Review*



Firming the Energy Supply

A range of firm, dispatchable resources are emerging to firm variable renewable energy sources including:

- Need diversity in both technologies and geographical sources (why transmission upgrades are needed)
- Differences in wind resources – Qld vs Southern States, Offshore vs Onshore
- Differences in solar resources – cloud cover, times of day
- Batteries (household and utility scale, short and long term) and hydro (pumped and hydro-electric dams), concentrated solar thermal
- Gas to play ongoing, but intermittent role over time

Mercedes-Benz to use green steel “as early as 2025”



Energy Forecasts (AEMO, 2021)

- Pace of change likely to accelerate as world increases ambitions to reduce emissions over next 10 years
- 14GW (of current 23GW) of coal fired electricity likely to retire by 2030
- Renewable energy exports become significant export earner, with Australia remaining a global energy player
- Will need to quadruple National Electricity Market consumption to support expansion of hydrogen production
- Hydrogen transforms transport and domestic manufacturing sectors
- Households progressively shift to gas-hydrogen blend and eventually 100% hydrogen use

Current Fossil Fuel Energy Generation (Central Queensland)

LGA	Name	Fuel Type	Owner	Year Est	Approx Closure	Capacity (MW)	Status
Gladstone	Gladstone Power Station	Coal	NRG Gladstone Operating Services	1976	2036	1680	Existing
Gladstone	Yarwun	Gas	RTA Yarwun	2010	?	180	Existing
Banana Shire	Callide B	Coal	CS Energy	1988	2028	700	Existing
Banana Shire	Callide C	Coal	IG Power/Callide	2001	2050?	840	Existing
Banana Shire	Fairview Gas Field	Gas/diesel	Santos TOGA	2013		45.6	Existing
Rockhampton	Stanwell	Coal	Stanwell Corporation	1993	2046	1460	Existing

Renewable Energy Projects: Central Highlands Region

LGA	Name	Fuel	Owner	Year Est	Capacity (MW)	Status
Central Highlands	Blackwater Solar Farm	Solar	Renewable Energy Developments		150	Proposed
Central Highlands	Bluff Solar Farm	Solar	Infigen Energy		100	Proposed
Central Highlands	Comet Solar Farm	Solar	Hadstone Energy		235	Proposed
Central Highlands	Crinum Creek Solar Farm	Solar	Adani Australia		100	Proposed
Central Highlands	Dingo Solar Farm	Solar	ESCO Pacific		85	Proposed
Central Highlands	Emerald Solar Park	Solar	RES Australia	2018	72	Existing
Central Highlands	Gregory Solar Farm	Solar	Renewable Energy Developments		215	Proposed
Central Highlands	Lilyvale Solar farm	Solar	FRV Services Australia Pty Ltd	2019	100	Existing
Central Highlands	Rolleston Solar Farm	Solar	RES Australia		90	Proposed
Central Highlands	Tieri Solar Farm	Solar	FRV Services Australia Pty Ltd		77	Proposed

Renewable Energy Projects: Banana and Rockhampton Regions

LGA	Name	Fuel	Owner	Capacity (MW)	Status
Banana Shire	Banana Range Wind Farm	Wind	Lacour	180	Proposed
Banana Shire	Moura Solar Farm	Solar	ESCO Pacific	82	Construction
Banana Shire	Smoky Creek Solar Farm	Solar	Edify Energy	450	Proposed
Banana Shire	Theodore Solar Farm	Solar	Juwi Renewable Energy Pty Ltd	70	Proposed
Rockhampton	Boulder Creek Wind Farm	Wind	Epuron	180	Proposed
Rockhampton	Bouldercombe Solar Farm	Solar	Eco Energy World	200	Proposed
Rockhampton	Bouldecrombe Battery Project	Storage	Genex	50	Proposed
Rockhampton	Boulder Creek Wind Farm	Wind	Epuron	180	Proposed
Rockhampton, Central H/lands	Fitzroy RE Zone (5 projects)	Wind, Solar, Storage	Energy Estate, RES	4,000	Proposed
Rockhampton, Banana	Mount Hopeful Wind Farm	Wind	Neoen Australia	700	Proposed

Renewable Energy Projects: Gladstone Region

LGA	Name	Fuel	Owner	Capacity (MW)	Status
Gladstone	Aldoga Solar Farm	Solar	Acciona Energy	250	Proposed
Gladstone	Gladstone A&B	Wood	NRG Gladstone Operating Ptd	10	Existing
Gladstone	Gladstone Abattoir Solar Farm	Solar	Asia Pacific Agri-corp	78	Proposed
Gladstone	Raglan Solar Farm	Solar	Eco Energy World	240	Proposed
Gladstone	Rodds Bay Solar Farm	Solar	Renew Estate	250	Proposed
Gladstone	Rodds Bay Solar Farm	Storage	Renew Estate	82	Proposed

Managing Economic Change for Long Term Prosperity

1. Honest and fact-based conversations and decision making
2. Strengths-based approach to diversify and build on all economic sectors
3. Long-term economic, social and environmental wellbeing as the primary goal of planning and decision making
4. Building local leadership and reinvigorating democracy and participation

Central Queensland Energy Futures Summit & Gladstone Economic Transition Roadmap

