

POWER INDUSTRY CHALLENGES AND THE NEED TO INNOVATE

November 2015

MIKE CLEARY
AEMO - OPERATIONS



What do utility customers want? There's an app for that

By [Herman K. Trabish](#)

Potential savings attract customers to utility-designed apps designed for demand response, energy efficiency

Hunt on emissions: \$557m for reduction

[SID MAHER](#)
NATIONAL AFFAIRS EDITOR

The Turnbull government claims it is on track to meet its 2020 emissions reduction target after paying \$557 million to secure 45 million tonnes of carbon abatement at an average of \$12.25 a tonne.

Blackout risk from push to renewables

[Mark Ludlow](#)

Australians could experience more blackouts due to the rise of renewable energy and more households going off-grid with battery storage, the national regulator warned.

Heat on to run SA with wind, sun

[DANIEL WILLS](#)
STATE POLITICAL EDITOR

PREMIER Jay Weatherill has announced plans for the State Government to become 100 per cent powered by "low carbon electricity", as he prepares to go to an international climate change conference in Paris next month.

IEA warns on wind and solar growth

[Ben Potter](#)

The world will produce electricity less efficiently in the future, thanks to the rapid growth of intermittent renewable energy sources such as wind and solar power.

Jemena chief defuses solar storm

[ENERGY](#)

The head of Victorian energy infrastructure company Jemena has backed down from his "tongue-in-cheek" remark that electricity customers going off the grid are "greedy and selfish" for not sharing their excess capacity with others.

Audi's electric revolution

DAVID MEREDITH travelled to Madrid and found it's all becoming more real as the company's storage technology advances and a user-friendly inductive-charging system is introduced

SA power price a priority

[NIGEL McBRIDE](#)
OPINION

THE major blackout across large parts of the state recently raises serious concerns and questions about the reliability and cost of power supplies.

Texas wind power is so cheap, electricity providers are giving it away

By [Robert Walton](#)

While not a new program, TXU Energy offers customers free power at night in an effort to get customer loads shifted away from peak, expensive hours. The deals are made possible by Texas' isolated electric grid and abundance of wind power, the New York Times reports, finding more than 50 retail providers have offered similar deals in recent years.

The big switch to electric cars

[Emissions](#) Global

pollution targets can't be met without big use of electric vehicles. But they will need substantial incentives to get to that point.

Tesla seeks a break to spark its move into city

[VALERINA CHANGARATHIL](#)

MULTI-BILLION dollar US entity Tesla could advance its plans to enter the Adelaide market if the right incentives come its way, it has told the State Government.

Climate summit held by business and green groups to end six-year policy war

Leaders from business, welfare, the conservation movement, the electricity sector and the union movement have moved to try to fill Australia's climate policy vacuum by starting a new slogan-free debate to help political parties find workable greenhouse policies

Global Finance Regulators Seek Climate Change Task Force

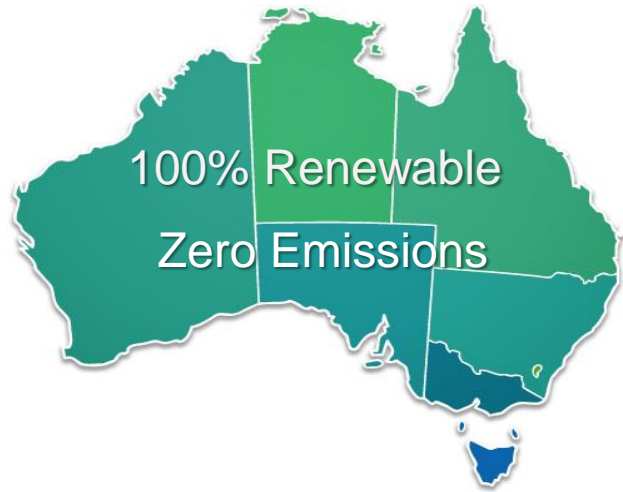
By [Jessica Corso](#)

The Financial Stability Board called Monday for the creation of a global task force of financial and environmental experts that would lay the groundwork for assessing the threats to financial markets posed by climate change, arguing that there should be a unified set of rules for disclosing climate risks to stakeholders.

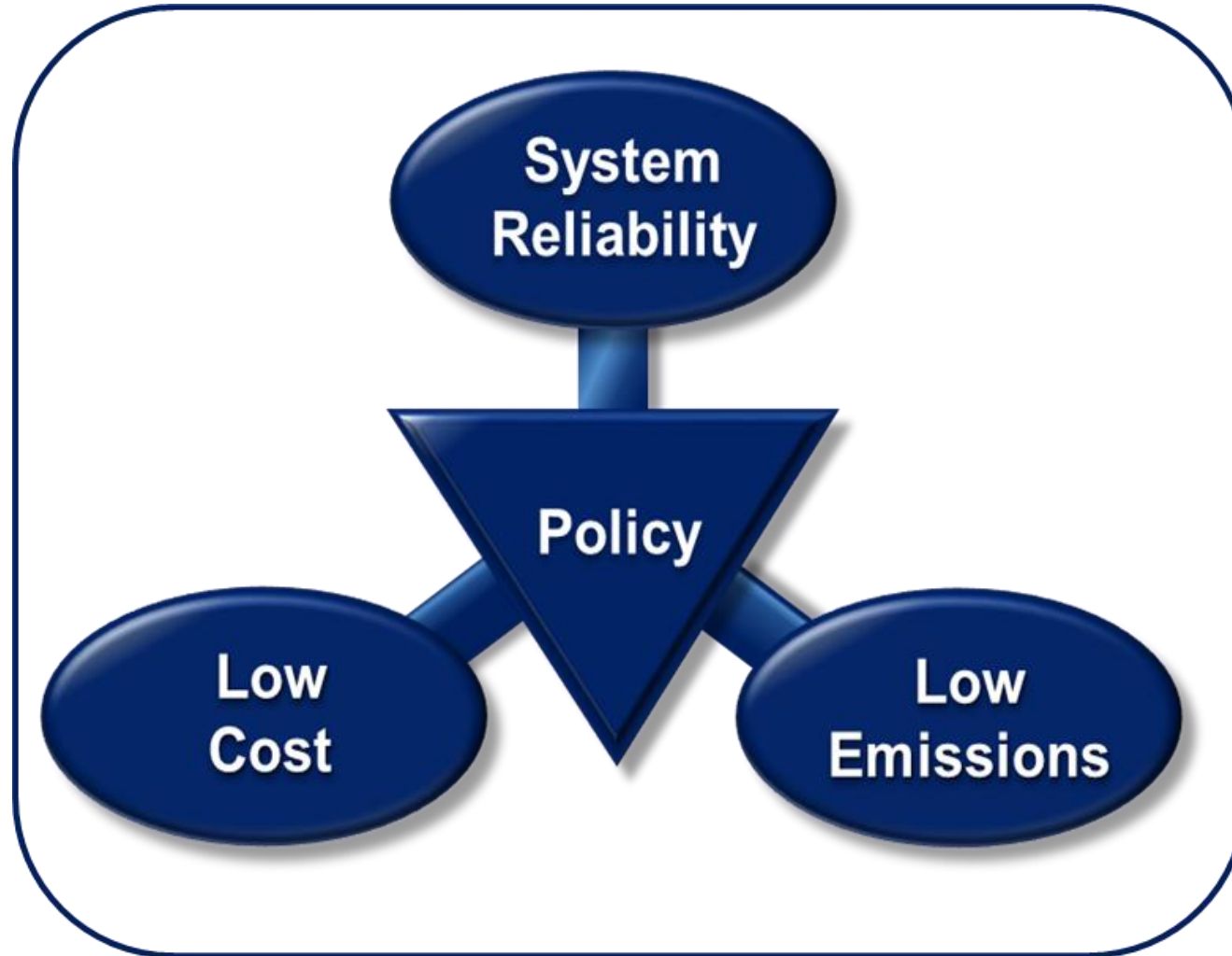
Melbourne's energy future on the roof

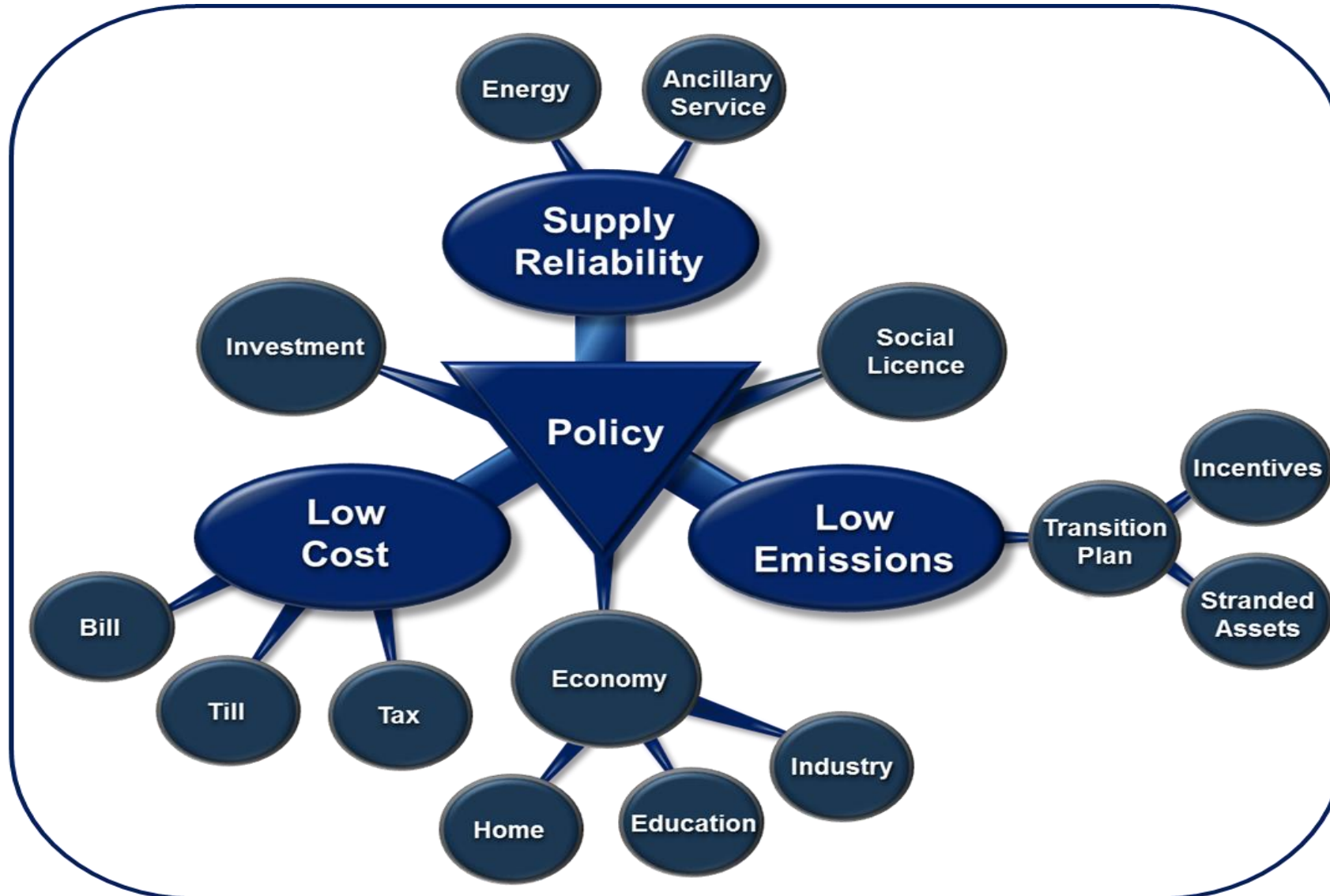
[Nick Lenaghan](#)

Central Melbourne's rooftops could potentially house 637 hectares of solar panels, a town hall study has found.



**Wind is free... solar is free...
so why not have 100% renewable
electricity... and zero emissions
in the electricity industry?**

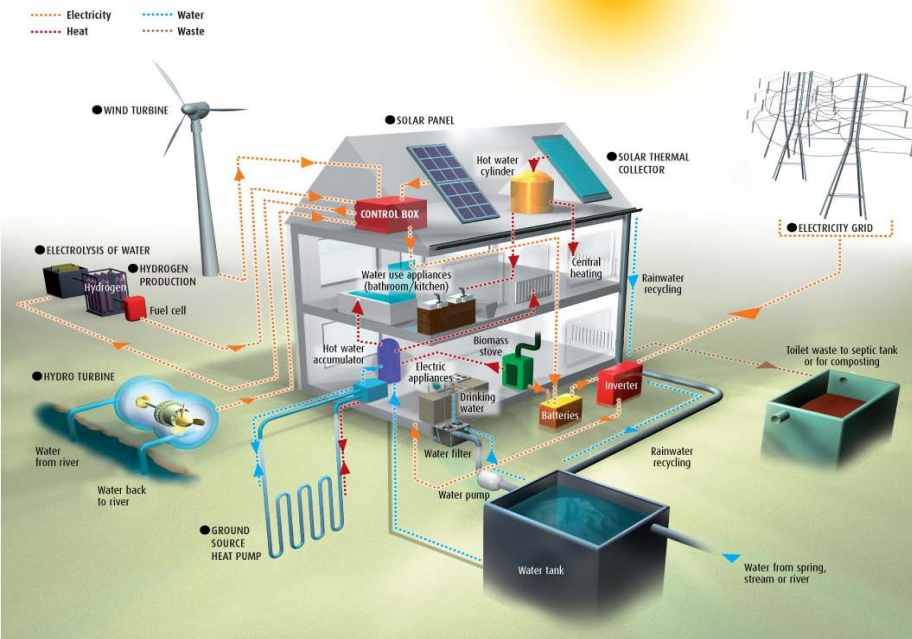






My electricity is expensive... How do I go off grid?

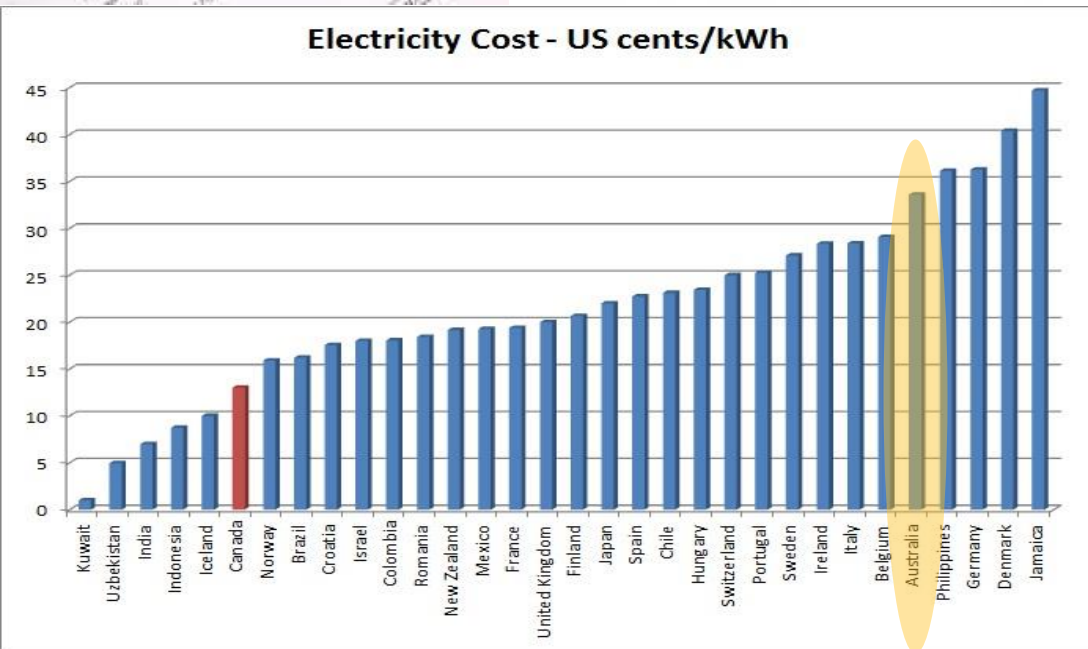
With enough renewable technologies you will only need the grid to help pay your bills



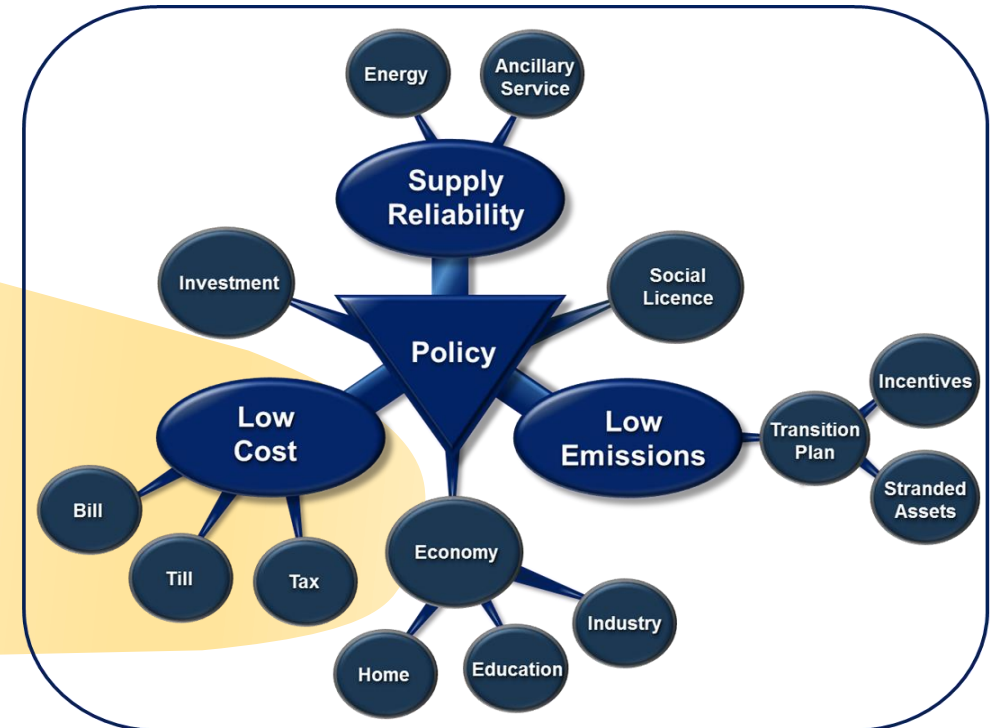
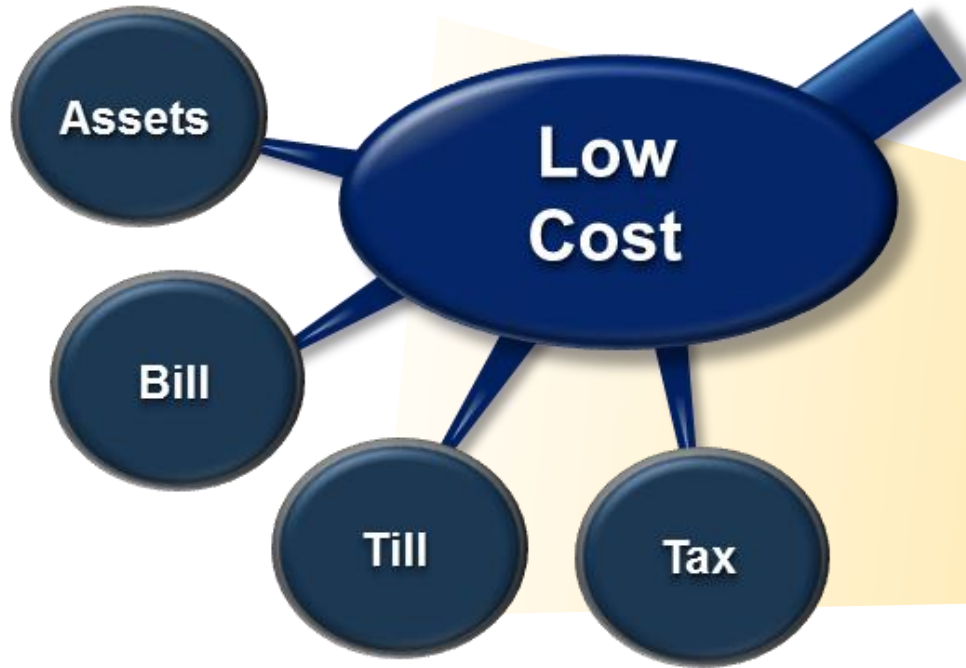
INDUSTRY CHALLENGES - QUESTIONS NUMBER 3

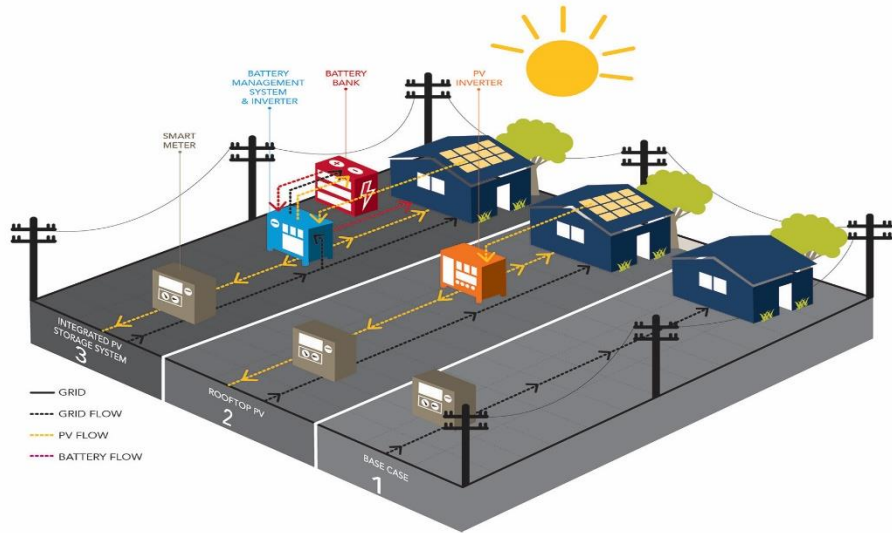


How much will the transition cost?

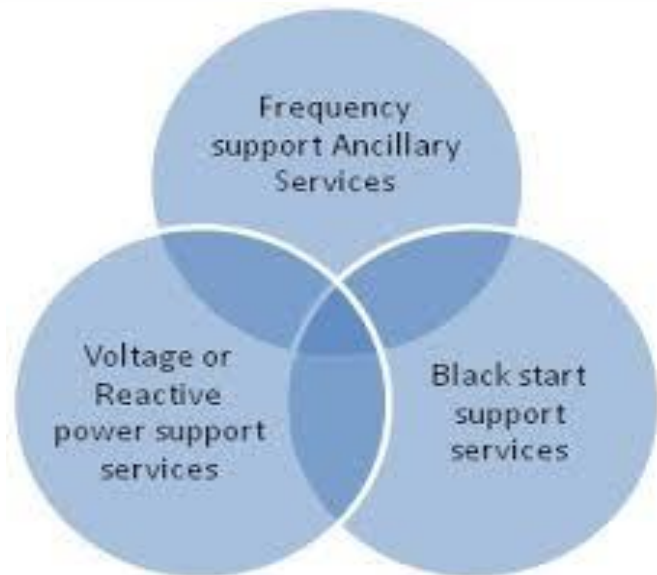


TOTAL COST OF ELECTRICITY






What is frequency control, voltage control, security constrained economic dispatch... ancillary services?



NEW TECHNOLOGY - ?



Hot Water

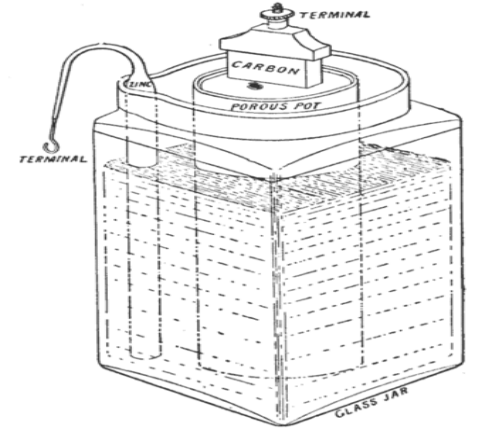
WITHOUT FIRE
WITHOUT COST
WITHOUT INCONVENIENCE

A Climax Solar Water Heater

Set on or set into flush with your roof will give you the luxury of hot water without the discomfort of manipulating a stove and heating the interior of your house.

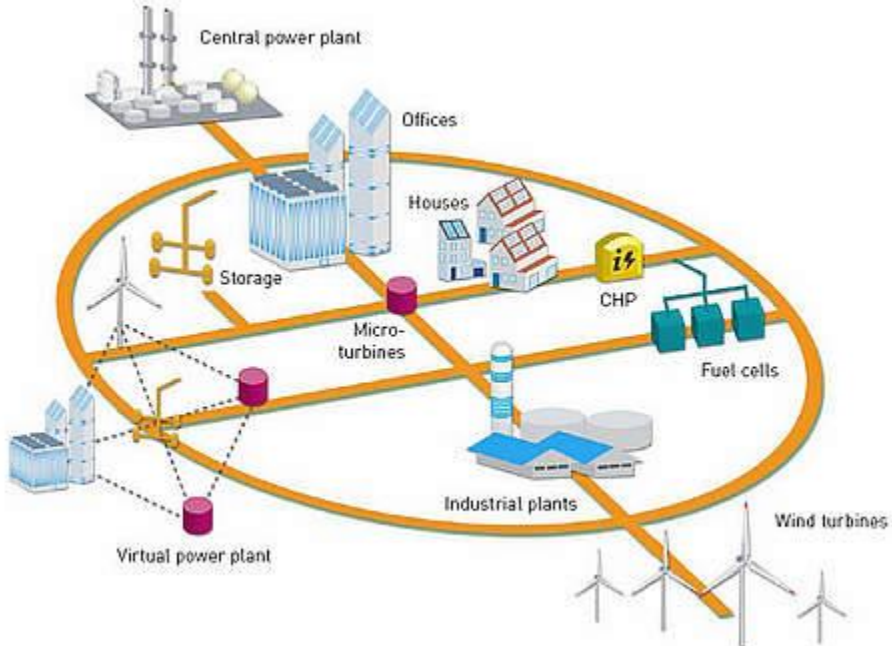
Over 2,000 in use in this locality. Any user will tell you that the heater has more than paid for its cost, and once known is indispensable.

Climax Solar Water Heater Co.
338 S. Broadway Los Angeles, Cal.
DEPARTMENT "D"



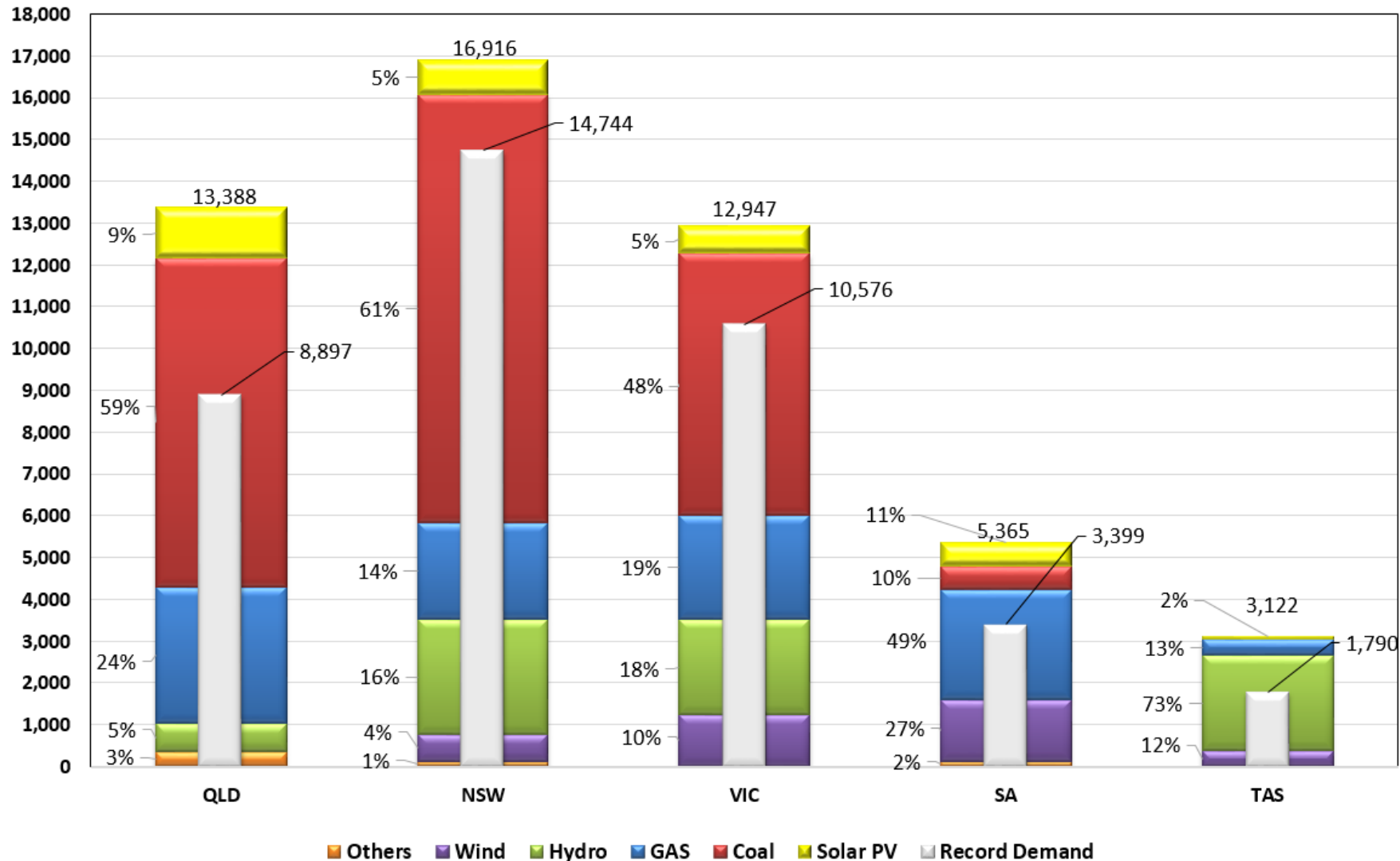


How long will it take?



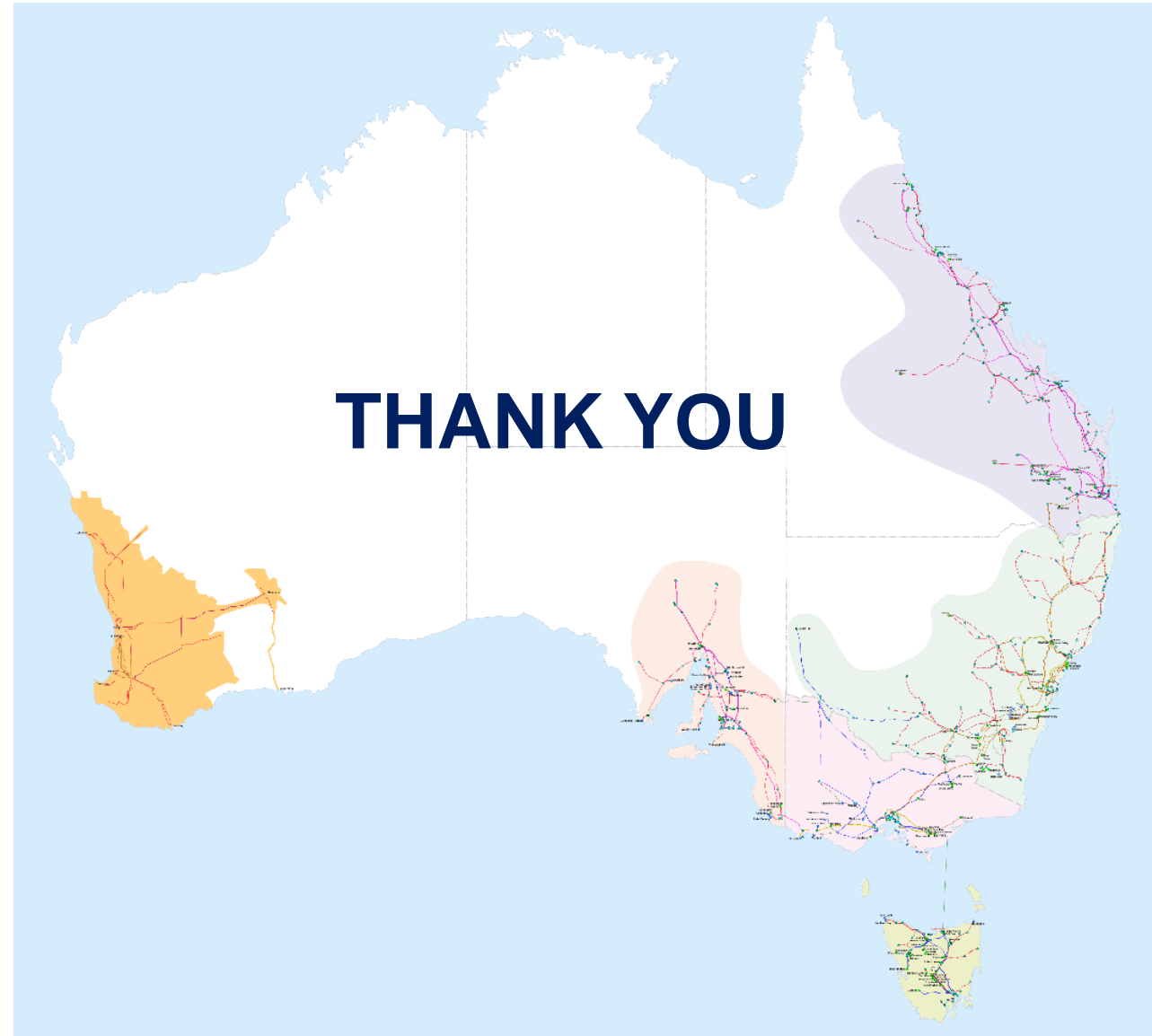
INSTALLED CAPACITY IN THE NEM

NEM Installed Capacity : 51,738 MW (51.7 GW)



Wholesale Electricity Market (WEM):

- WEM commenced operation in **September 2006**.
- The South West Interconnected System (SWIS) incorporates **7,802 km** of transmission lines.
- Total of **\$500 million** was transacted in 2014-15.
- There are more than **1 million customers** in the WEM.
- **5,788 MW** – total registered generation capacity. Including 513 MW of Non-Scheduled Generation.



National Electricity Market (NEM):

- NEM commenced operation as a wholesale spot market for electricity in **December 1998**.
- Incorporates around **40,000 km** of transmission lines and cables.
- The NEM supplies about **200 terawatt hours** of electricity to businesses and households each year.
- **\$7.7 billion** was traded in the NEM in 2014–15.
- Supplies around **9 million** customers.
- **45,000MW** - total electricity generating capacity.