

# Emerging CSP Markets and Technology

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**INTERNATIONAL CSP MARKET WATCH: AUSTRALIA**  
[www.csiro.au](http://www.csiro.au)



**People** 5319

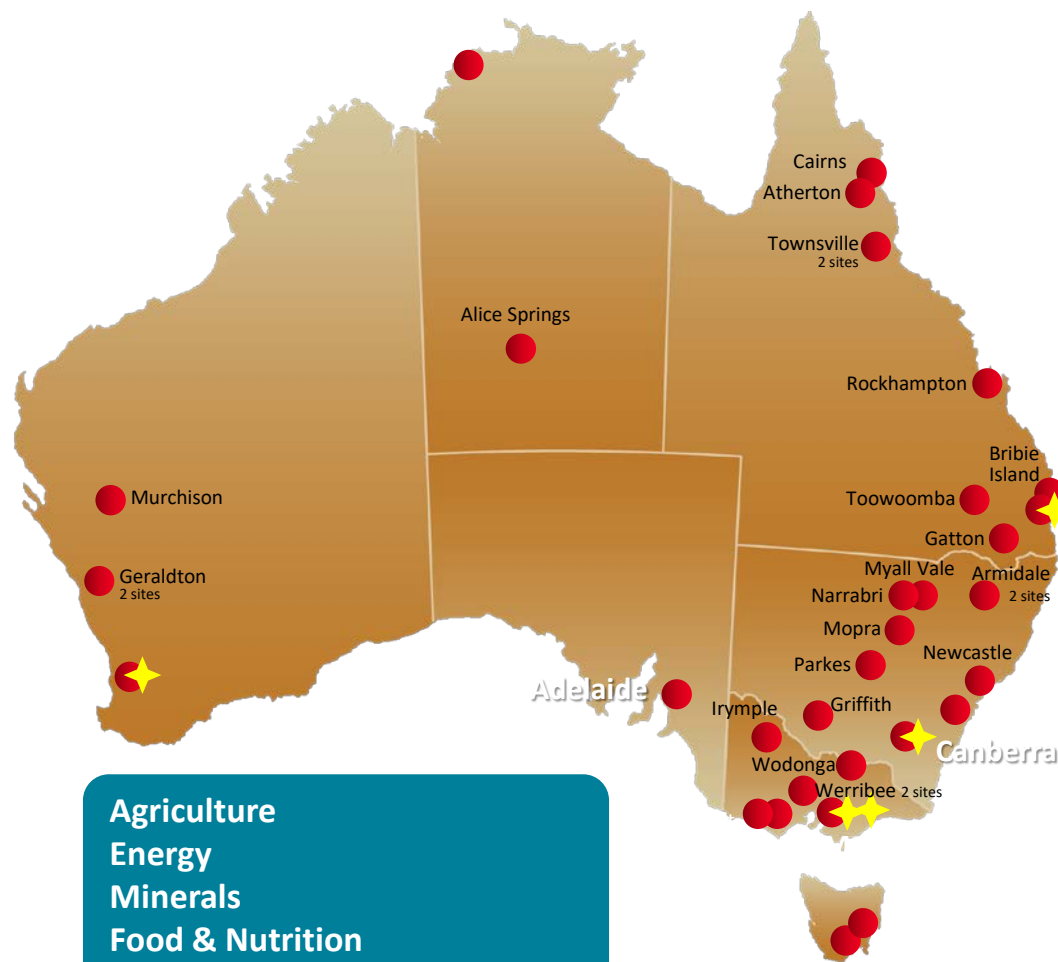
**Locations** 55

**Business units** 9

**Budget** \$1B+

**Industry** 2800+

**Top 1% global  
research org.**



Agriculture  
Energy  
Minerals  
Food & Nutrition  
Oceans & Atmosphere  
Land & Water  
Health & Biosecurity  
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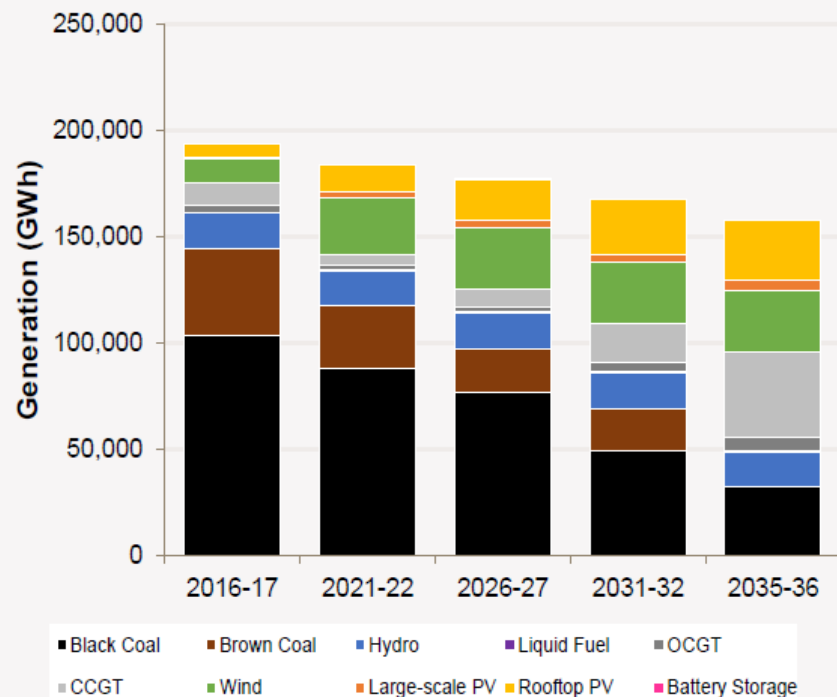
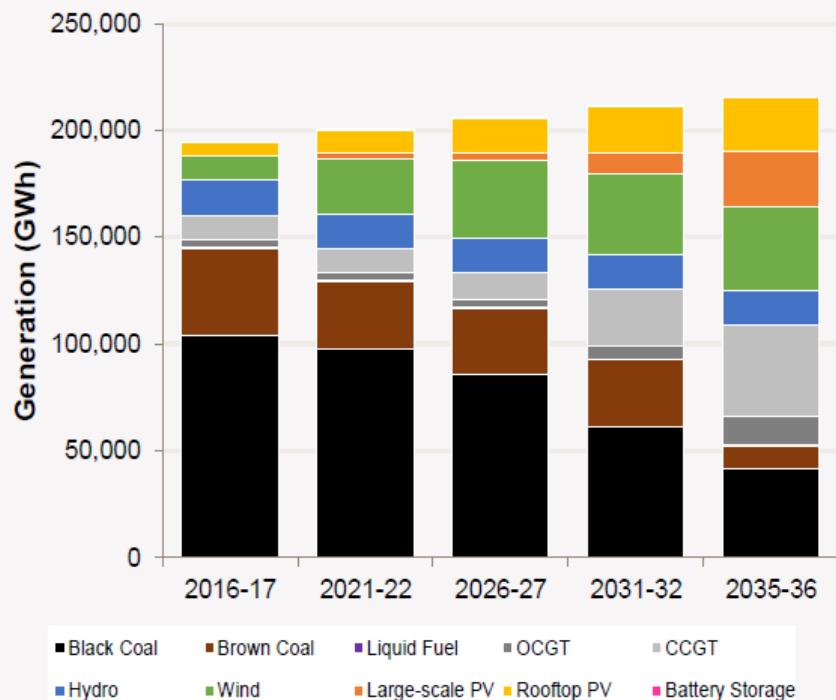
ENERGY

# Three key policy drivers for Australia

- Committed to meeting Paris COP21 GHG targets of 26-28% reduction of 2005 emissions by 2030
- Cost of energy must stabilise or come down – Australia has gone from having some of the world's cheapest electricity to now being very expensive
- Reliability of supply is paramount

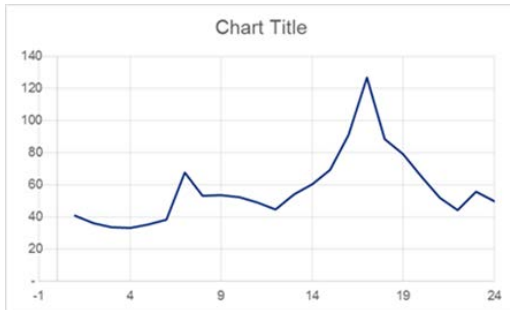
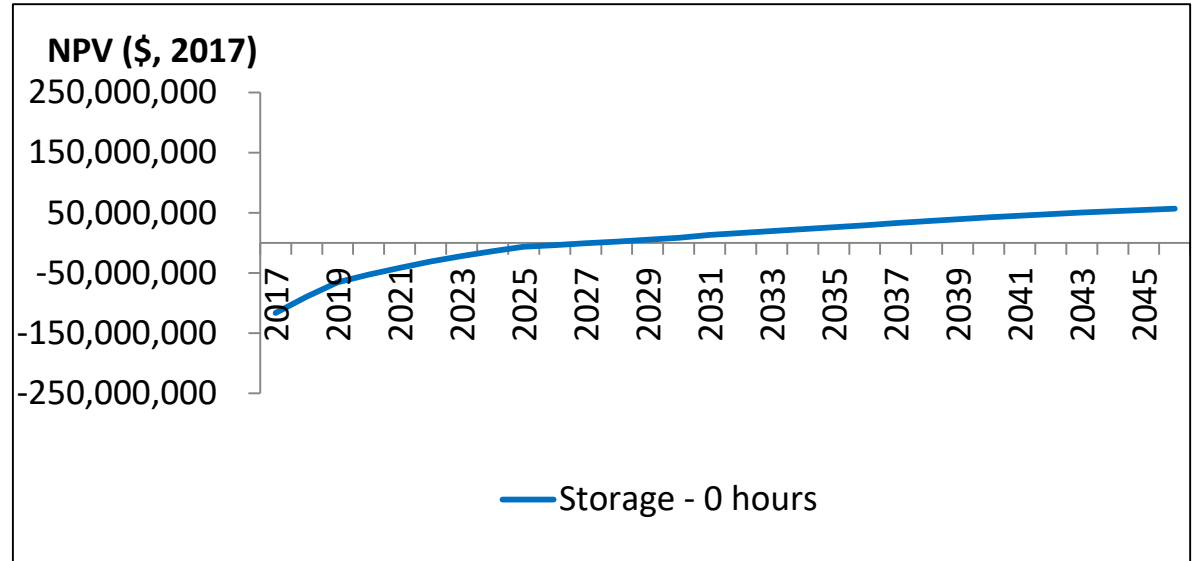
# Projected NEM generation (GWh), Neutral growth scenario (left), low growth (right)

(AEMO, 2016)

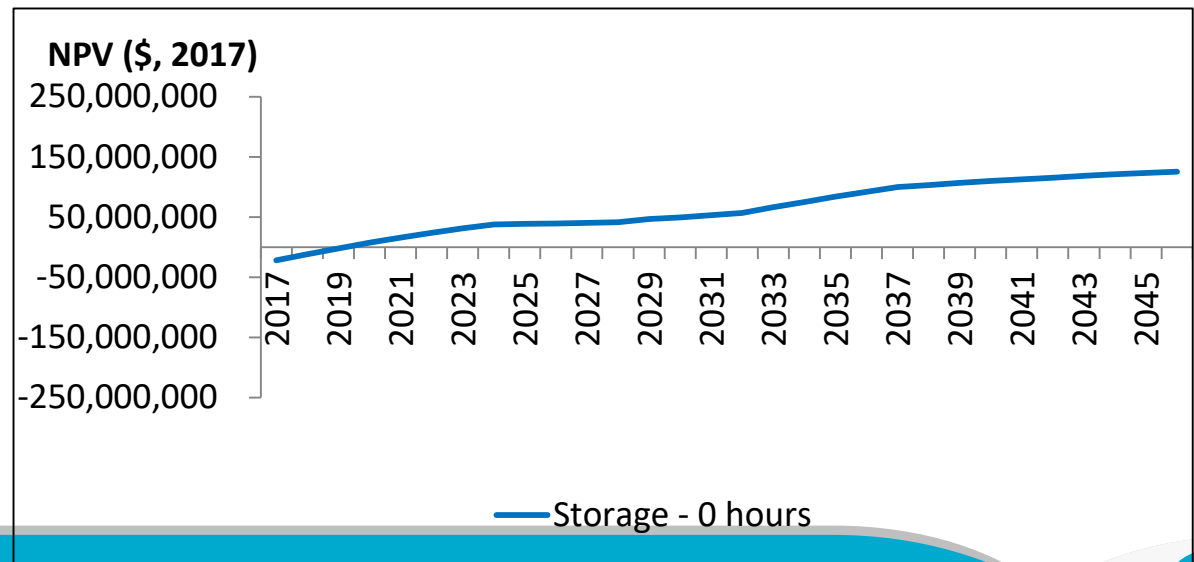


# NPV – 0 hrs storage

## NPV for CSP and thermal storage

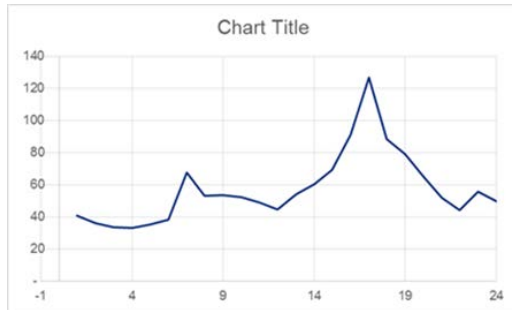
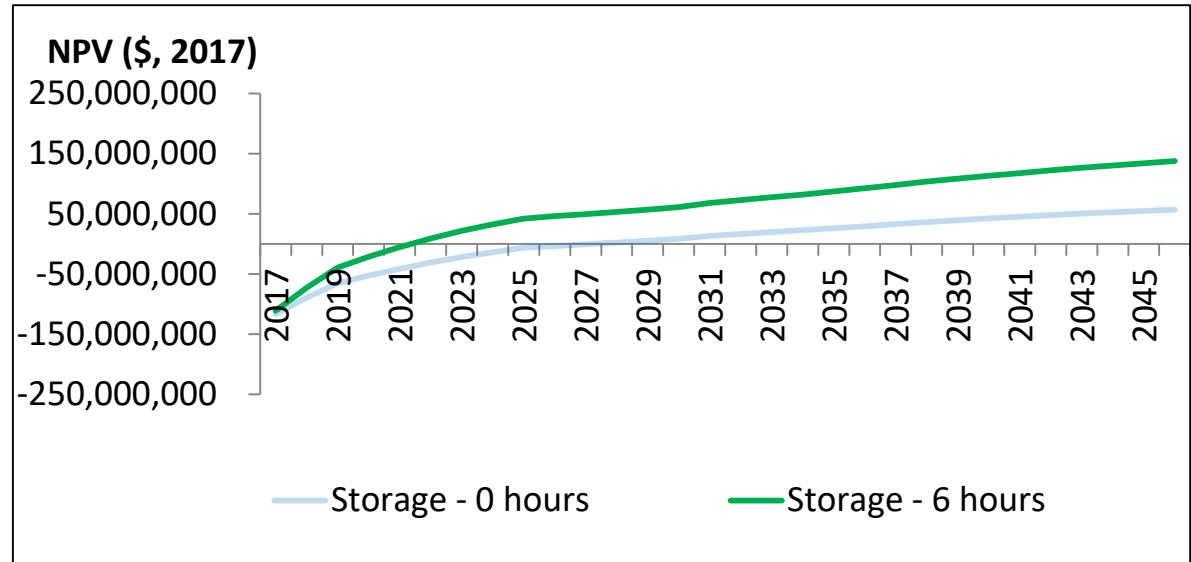


## NPV for PV and battery storage

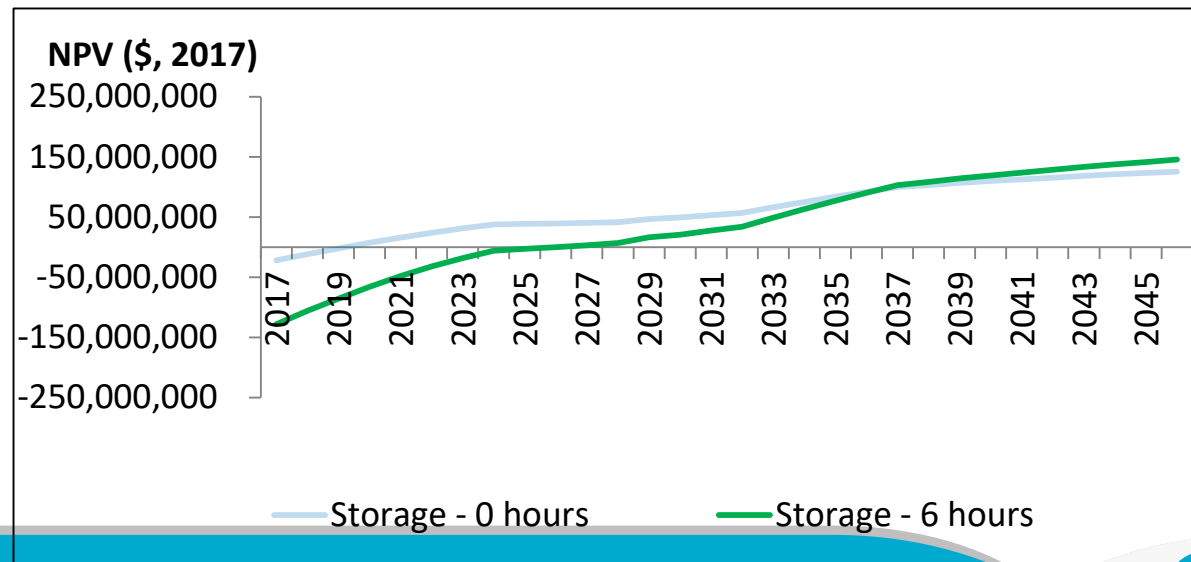


# NPV – 6 hrs storage

## NPV for CSP and thermal storage

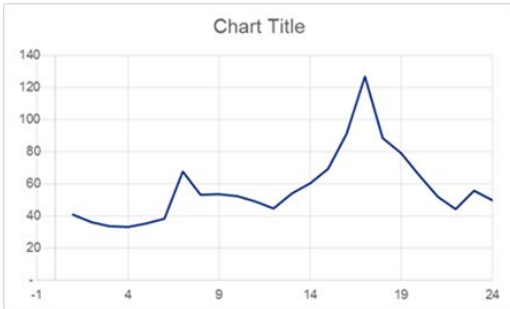
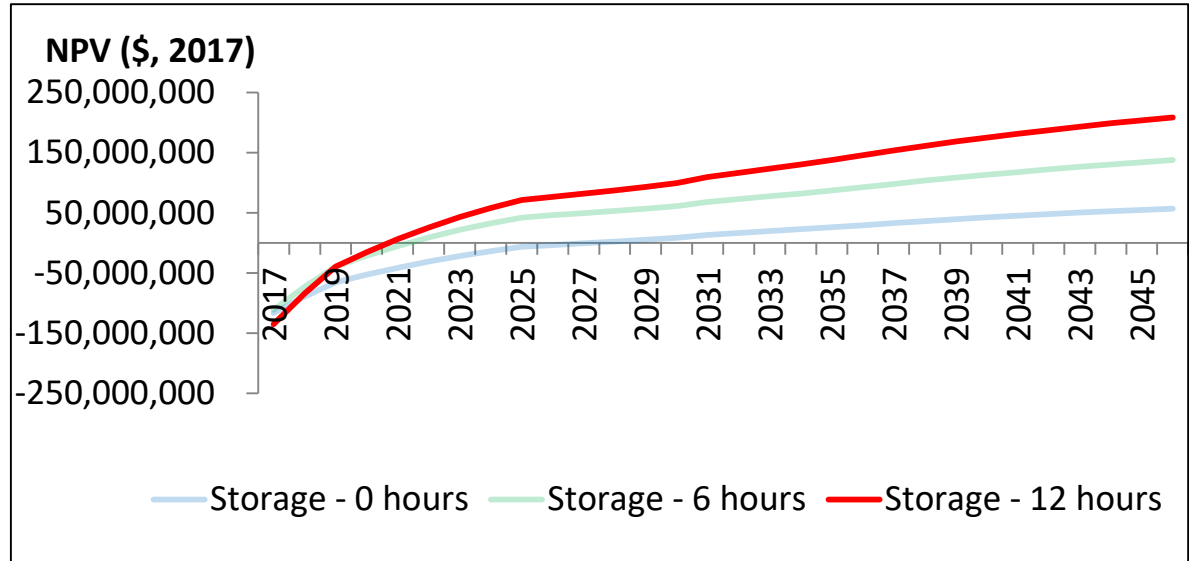


## NPV for PV and battery storage

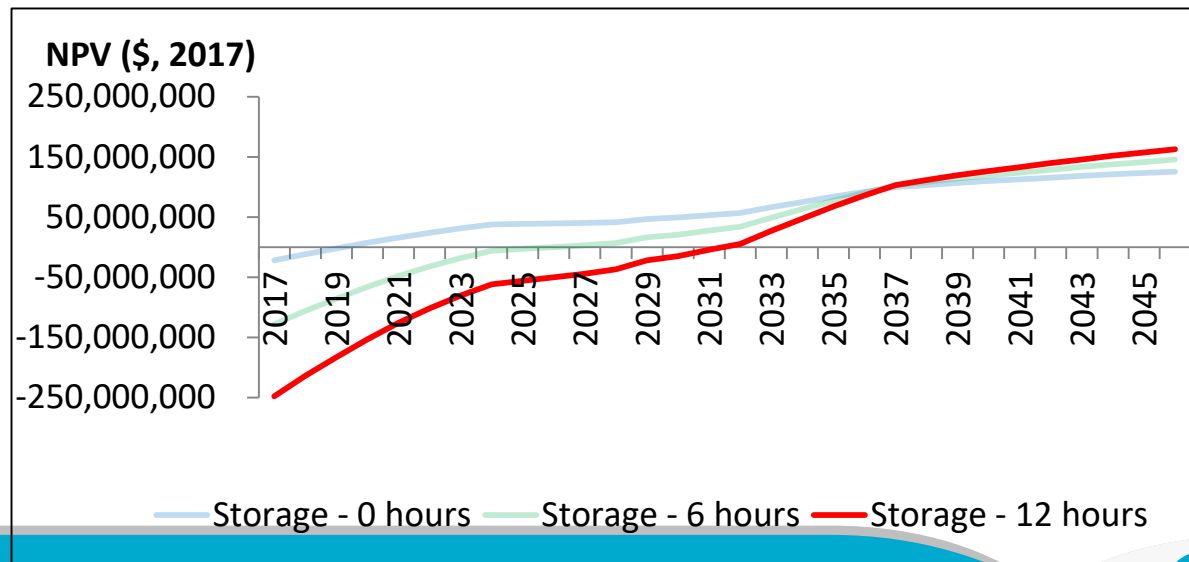


# NPV – 12 hrs storage

## NPV for CSP and thermal storage

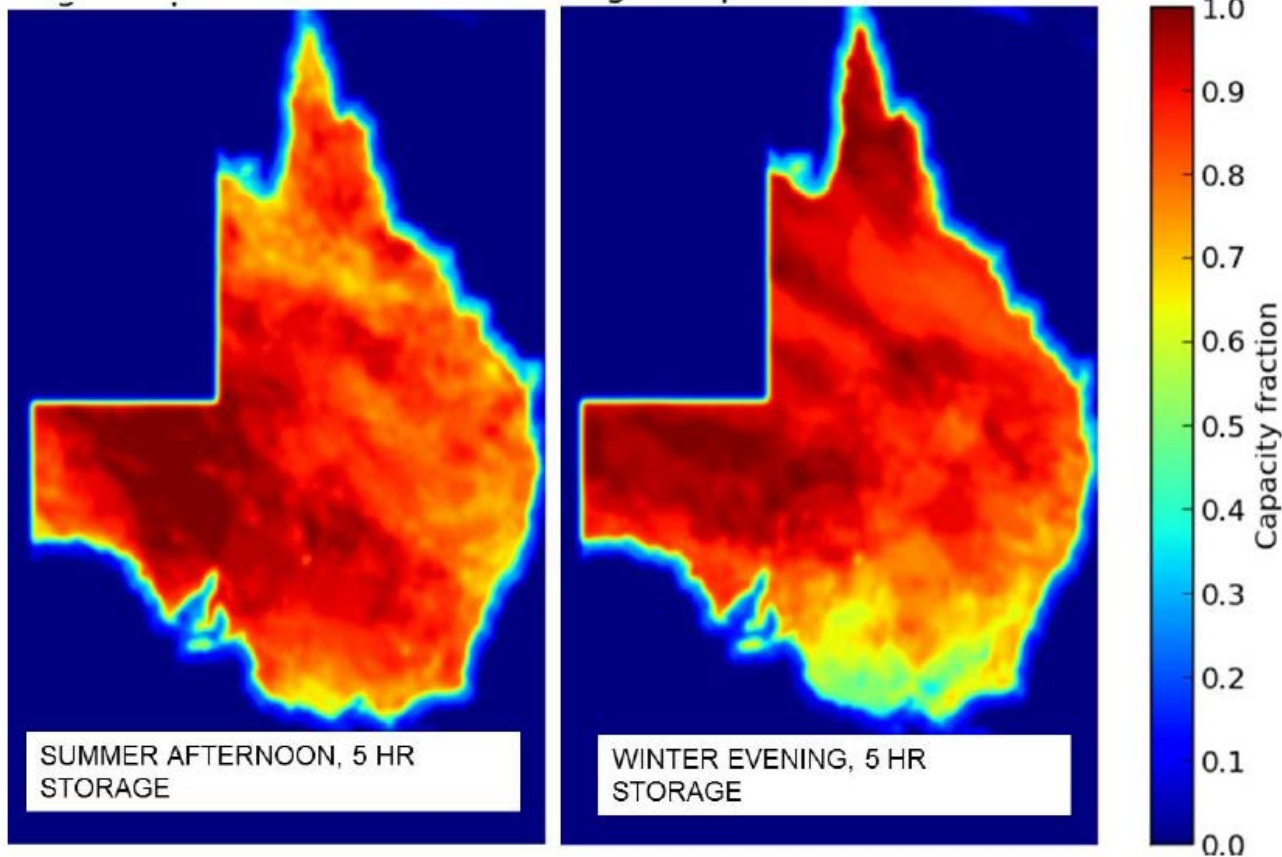


## NPV for PV and battery storage





# Average capacity factor - solar



- Modelled top 21 load events of the season in NEM
- CSP with storage could avoid the need for grid augmentation in 72% of constrained sites

“Breaking the Solar Gridlock”, UTS

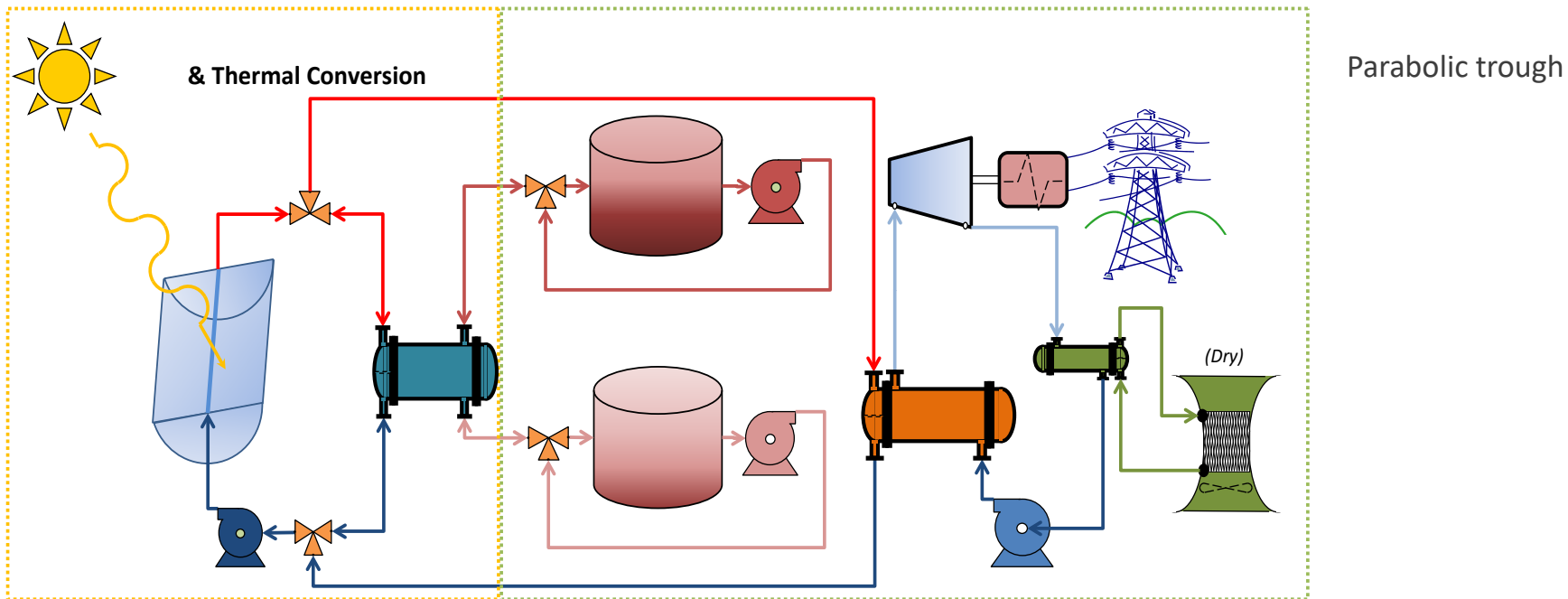
## National Solar Energy Centre, Newcastle



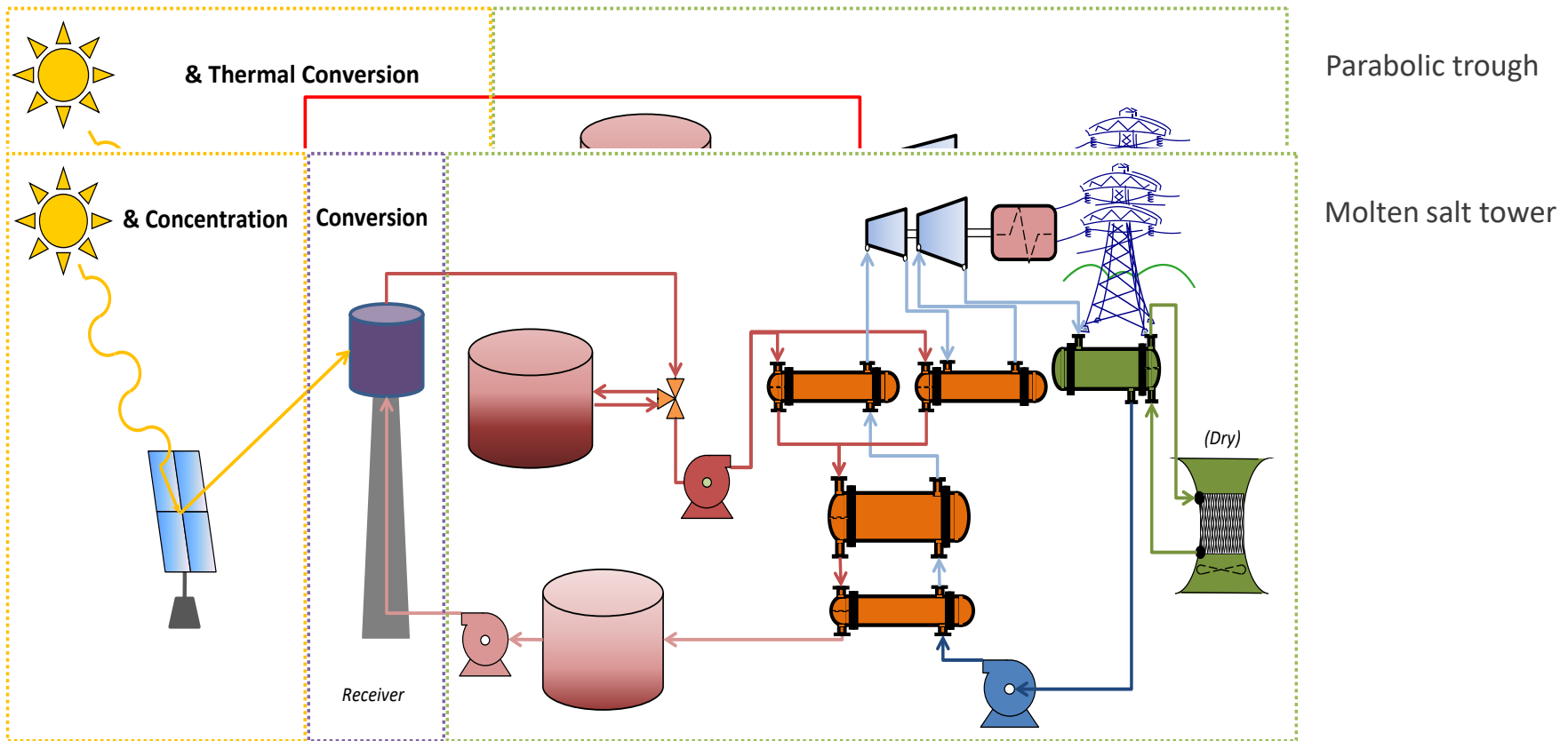




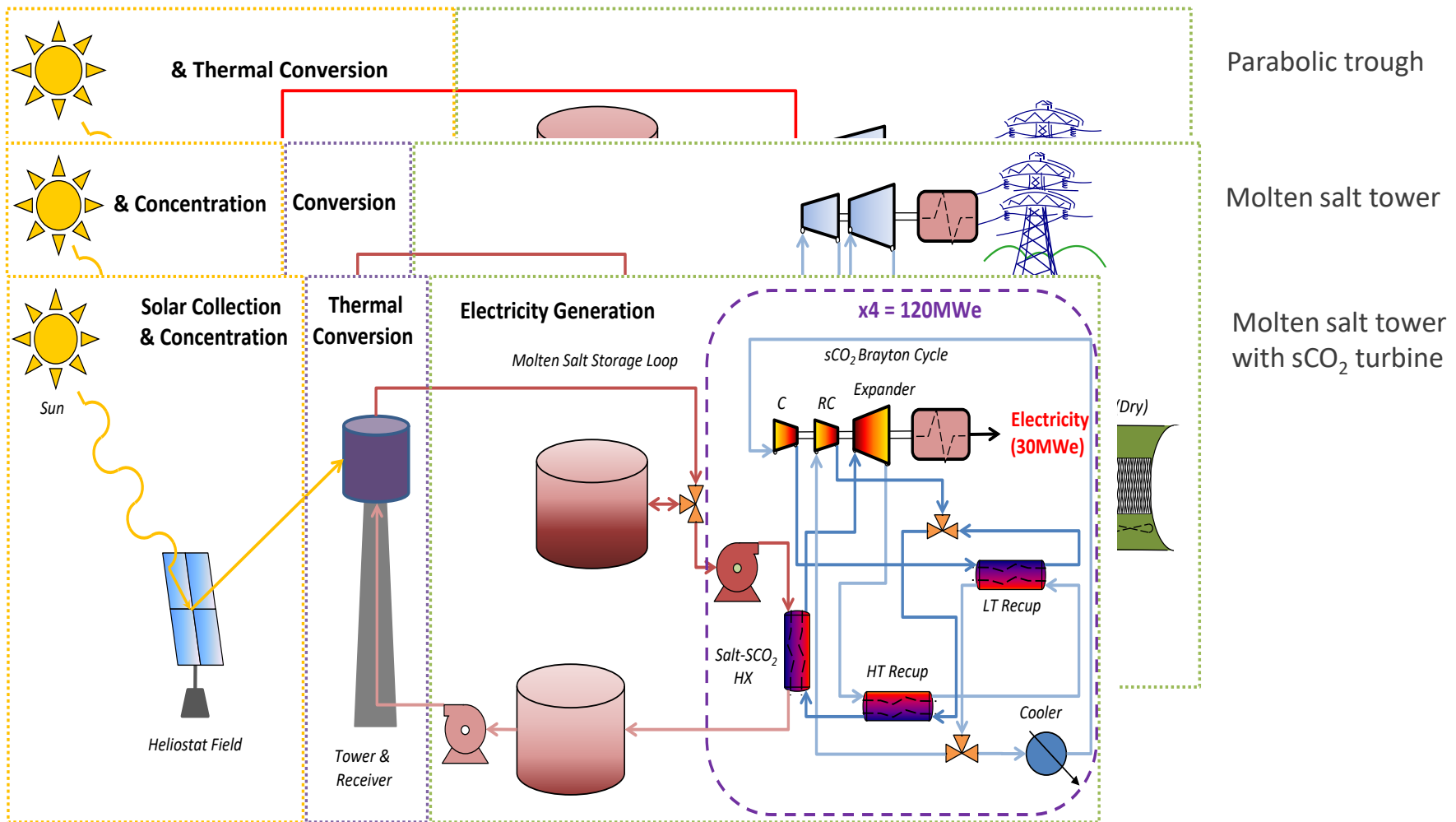
# Possible roadmap for s-CO<sub>2</sub> CSP cycles



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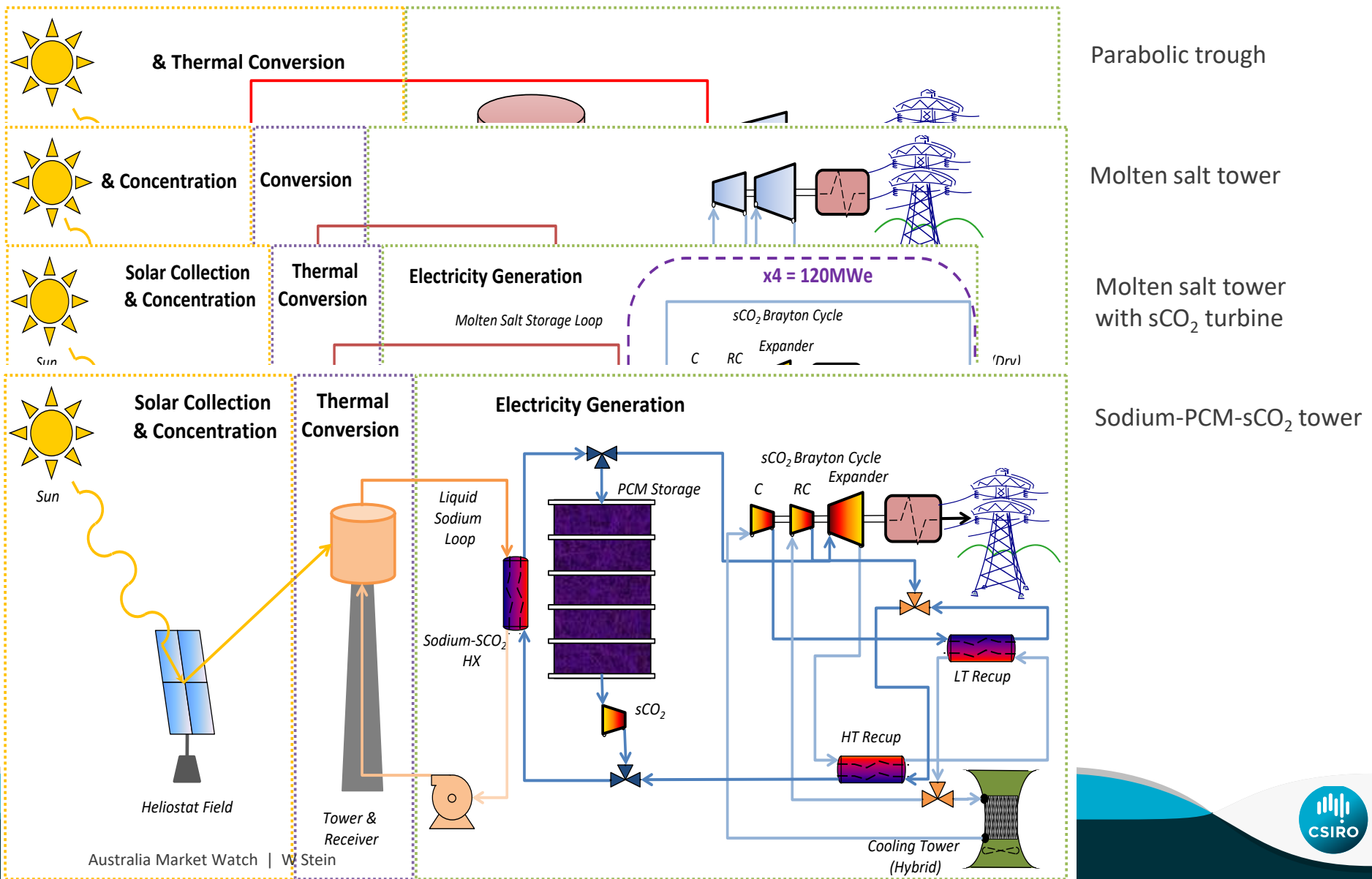


# Possible roadmap for s-CO<sub>2</sub> CSP cycles

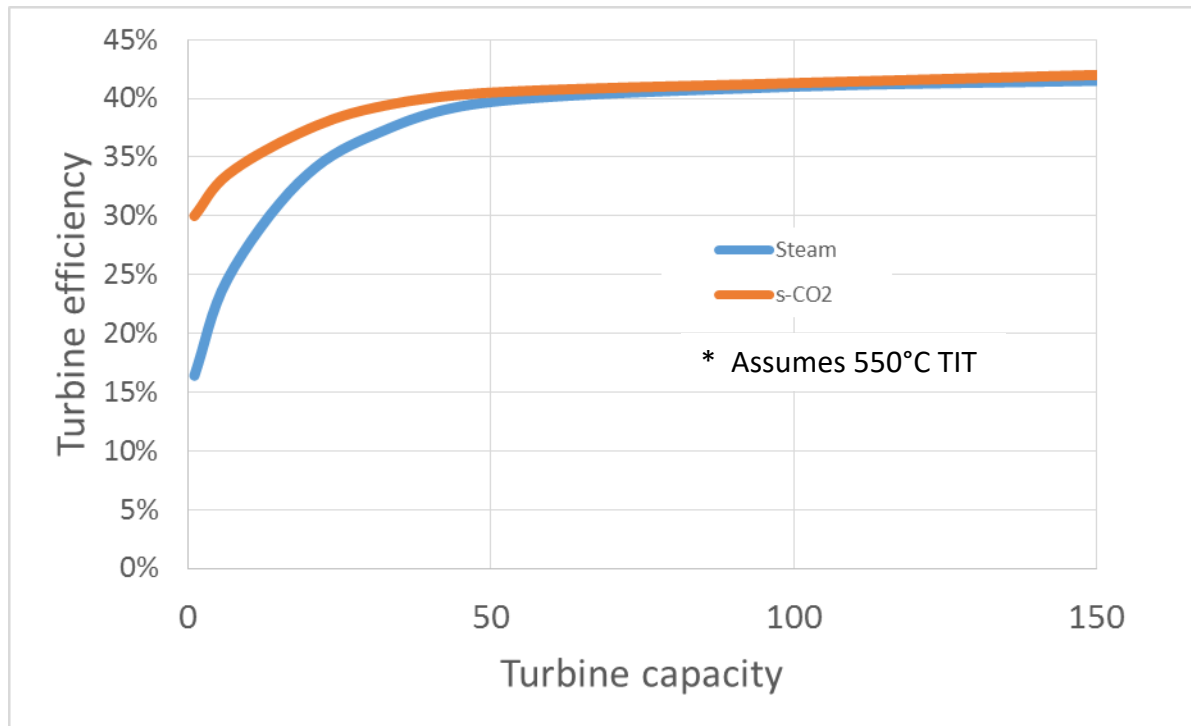




# Possible roadmap for s-CO<sub>2</sub> CSP cycles



# The impact of turbine capacity on efficiency at today's sub-critical steam temperatures





# S-CO<sub>2</sub> System Demonstration



# Thank you

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