



**GWM**

# Donald community power plant study

Graeme Dick

Manager Strategic Infrastructure Projects



# Clean Energy Strategy

	Current	Within 2 years	Within 10 years
Generation and storage	<ul style="list-style-type: none"> <li>• Behind-the-meter solar.</li> <li>• Pilot behind-the-meter battery storage.</li> </ul>	<ul style="list-style-type: none"> <li>• Front-of-meter generation and storage.</li> <li>• Behind-the-meter battery storage.</li> <li>• Community energy feasibility study.</li> </ul>	<ul style="list-style-type: none"> <li>• Net-generator of electricity.</li> <li>• Community energy scheme facilitator.</li> </ul>
Energy markets	<ul style="list-style-type: none"> <li>• Load-shifting to daytime solar window.</li> <li>• Standard retail electricity contracts.</li> </ul>	<ul style="list-style-type: none"> <li>• Wholesale electricity market exposure.</li> <li>• Ancillary services market participation.</li> </ul>	<ul style="list-style-type: none"> <li>• Community energy benefits sharing.</li> <li>• Local electricity retailing.</li> <li>• Direct participation in electricity market.</li> </ul>
Carbon emissions management	<ul style="list-style-type: none"> <li>• Emissions measurement and reporting.</li> <li>• Energy efficiency measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Low-emissions fleet transition.</li> <li>• Circular economy initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>• Zero-emissions fleet.</li> <li>• Generate and/or purchase carbon offsets.</li> </ul>

# Background

- Powercor / C4Net conducted an economic feasibility study for a DNSP-owned microgrid.
- Economics did not quite stack-up from the DNSP perspective.
- A battery and/or solar at the GWMWater storages site could:
  - Soak-up excess daytime solar
  - Discharge in evening when solar is no longer generating
  - Improve local grid stability
  - Provide opportunity to share benefits with community



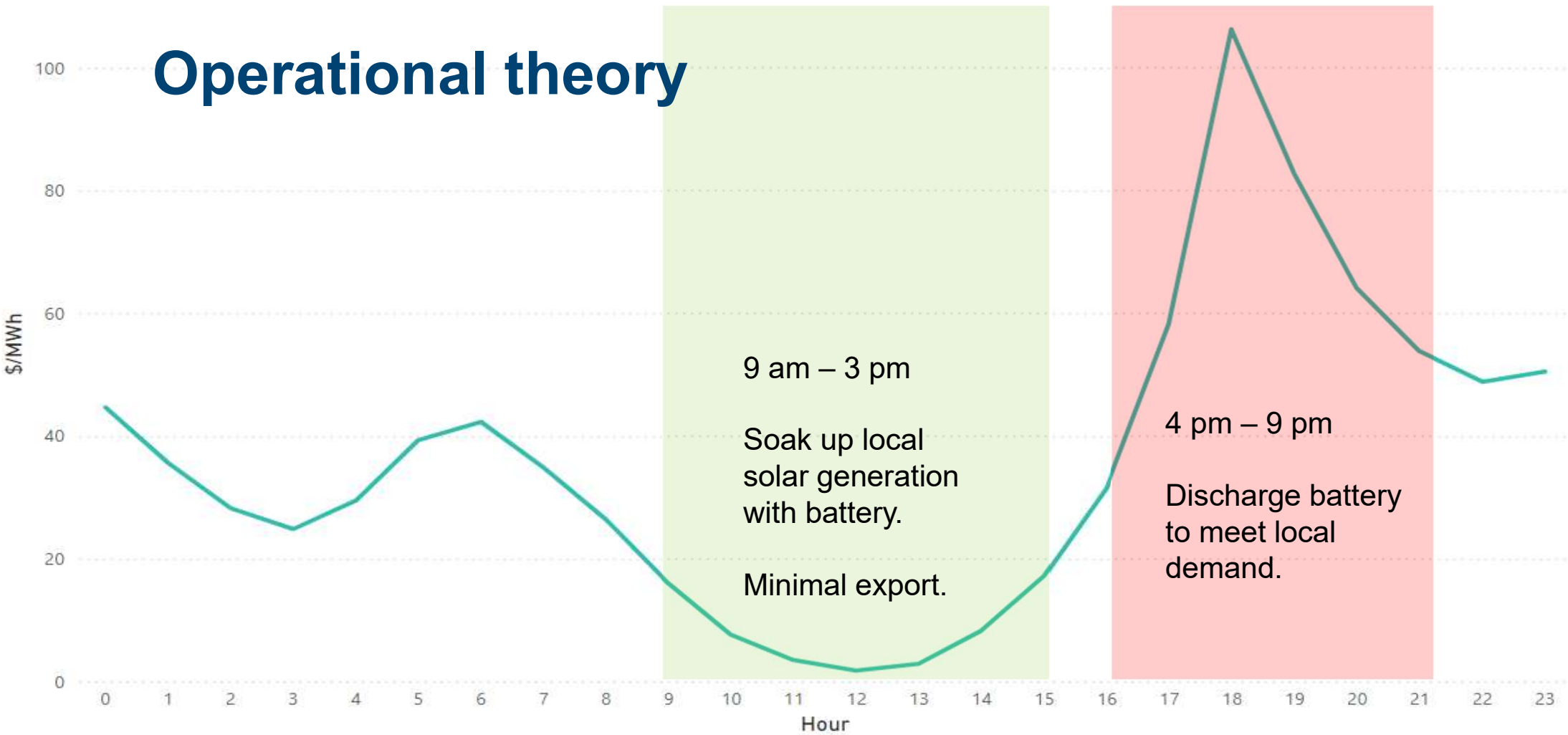
*Redundant water storage at Donald*

# Feasibility Study

- GMMWater has continued to evolve a Community Power Plant concept for Donald, focussed on providing community benefits.
- Successful in funding applications to proceed with feasibility study
- Aims to:
  - Develop concept sizing of battery / solar
  - Develop and test commercial model
  - Develop community benefit sharing model
- 1<sup>st</sup> stage of study completed
- Expect to finalise study by end 2024



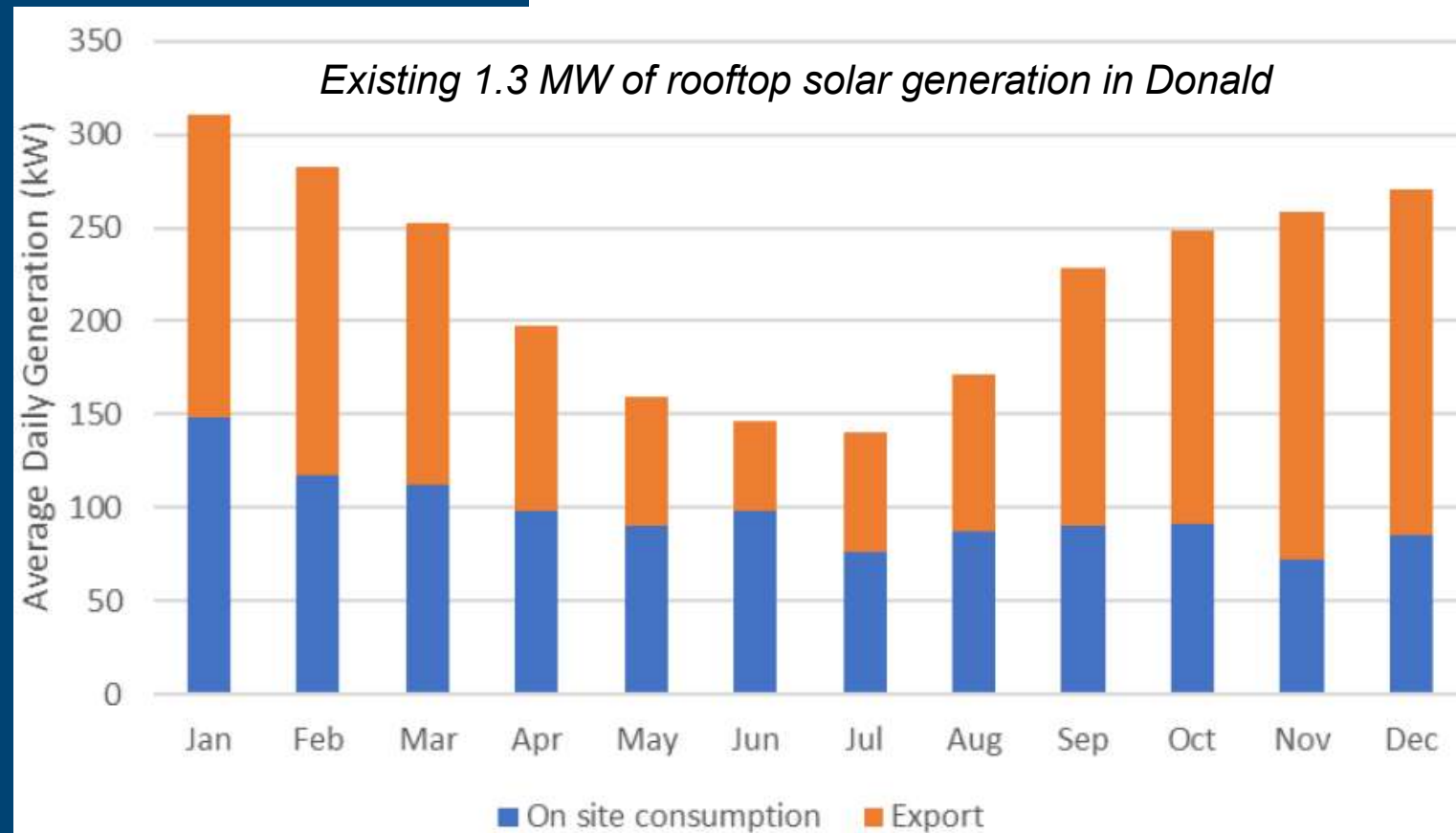
# Operational theory



Average hourly Victorian electricity spot-prices for 2021

# Key outcomes (so far)

- 1.3 MW of rooftop solar exists in Donald
- >50% of solar generation is exported
- Electricity bill for Donald is ~ \$2.5 million p.a.
- \$1.3 million is network and environmental charges
- \$1.2 million is retail charges – this is the commercial opportunity.



# Key outcomes (so far)

- Study considers a CPP with:
  - A. Extra solar plus battery
  - B. Battery only
- Sizing based on achieving at least 80% use of local generation.
- Staged infrastructure build could cater for gradual increase of community participation

Scenario	CAPEX (\$M)	\$ / MWh	NPV <sub>25yr</sub> (\$M)
Existing (no CPP)	0	100	0
1 MW solar + 3.5 MWh battery	5.5	62	1.9
2 MW solar + 7 MWh battery	9	41	- 0.2
4 MWh battery only	4	69	0.5

# From here...

- Finalise feasibility study
  - Commercial model – how to share benefits?
  - Grid implications – benefits and constraints
  - Islanding potential?
- Consult with Donald community
- Business Case
- Implementation funding
  - ARENA microgrids fund
  - DEECA 100 neighbourhood batteries
- Replication of model in other towns





# Questions



**GWM**Water

