



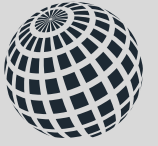
Institute for Energy Economics
and Financial Analysis

Unlocking system-wide benefits of DER: Spotlight on household solar & storage

All Energy Conference

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October 2025



Snapshot of IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) is a non-profit global impact think tank that produces a significant volume of original independent public interest research and analyses on issues related to sustainable energy markets, trends, regulations, and policies.



Evidence-based

Our analyses are thoroughly researched, fact-based, and data driven



Independent

As a non-profit think tank, our work is free from political influence, corporate and sectoral interests.



Energy focused

Our mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. We cover domestic and export energy markets.



Financial analysis

We focus on the financial issues associated with the energy transition, looking at market trends, financial risks and opportunities.



Global

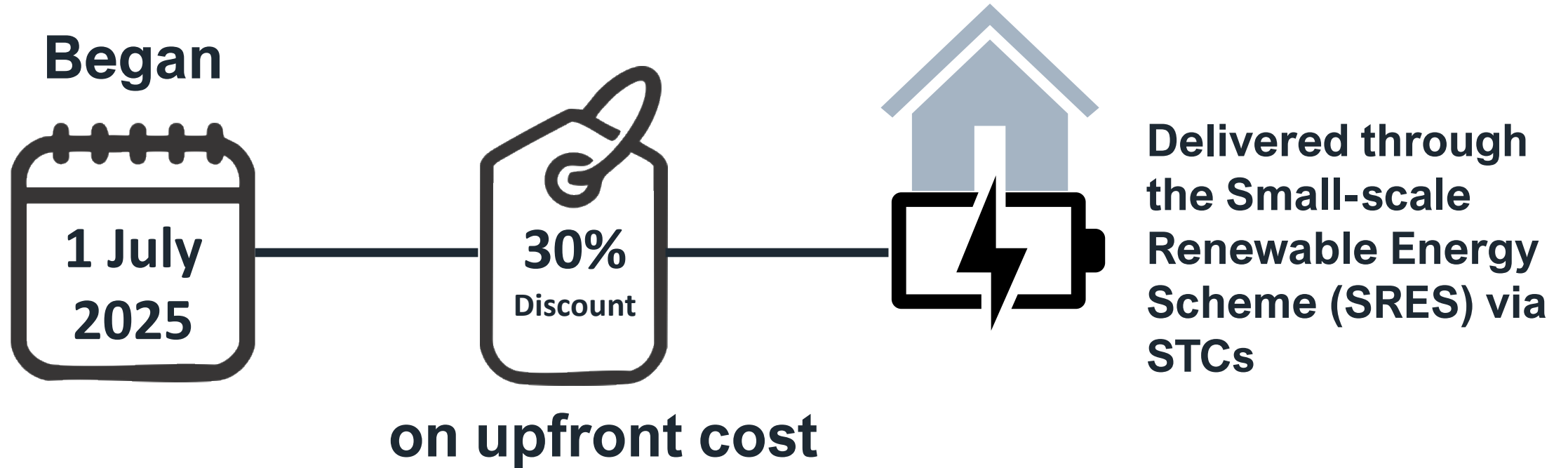
We have teams in North America, Europe, Asia and Australia.



Agenda

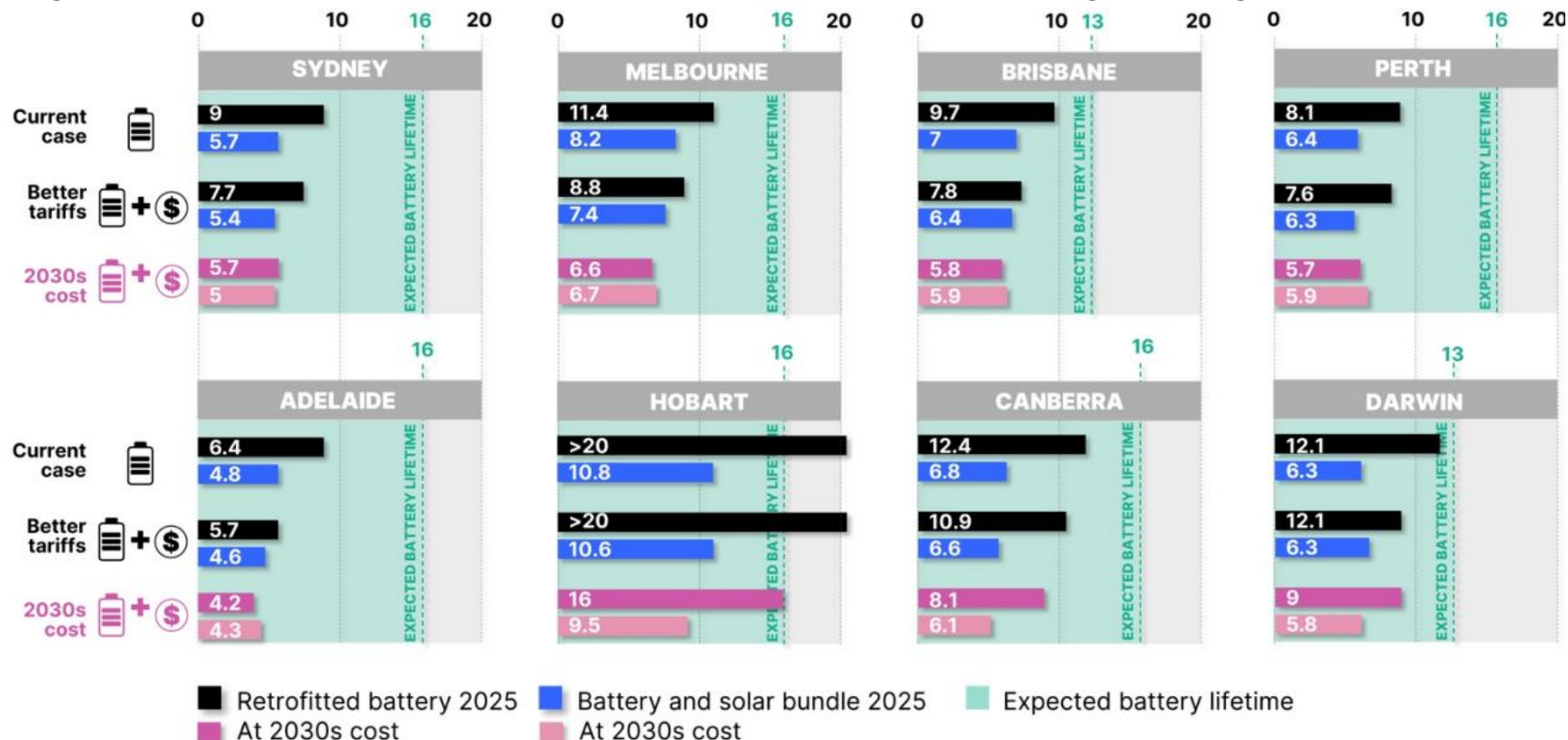
- Update on battery rebate
- Solar and battery household profiles
- Impact on broader grid & system-wide benefits
- How to unlock those benefits

Cheaper home batteries program



With the new battery rebate, solar+battery payback is typically 5-8 years, within battery lifetime in all regions

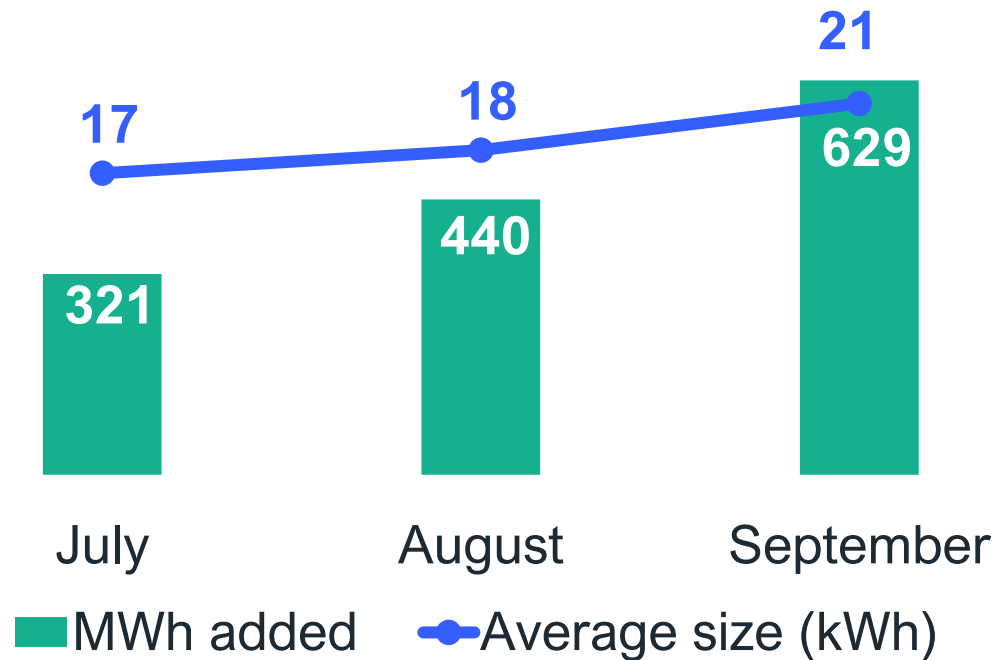
Payback period on installation of a 10kWh battery in a typical home



Source: IEEFA, [A focus on homes, not power plants, could halve energy bills](#). Note: Payback periods for installing a household battery in all capital cities. Our calculations assume the household has already upgraded to efficient electric appliances and installed 8kW rooftop solar. Rebates are excluded in "2030s costs" scenario but included in others. Battery lifetime assumed to be 13 years in warm climates, and 16 years in cool/temperate climates. SolarQuotes. [How Long Do Solar Batteries Last?](#) 18 August 2023.

Distributed storage buoyed by federal rebate is quickly growing, and system sizes are larger than expected

Small-scale battery capacity added (MWh)
and average size (kWh)



~100,000

Total batteries installed,
1 July to ~end October

~2000MWh

Total capacity added,
1 July to ~end October

50kWh

Size of first battery installed in
the ACT

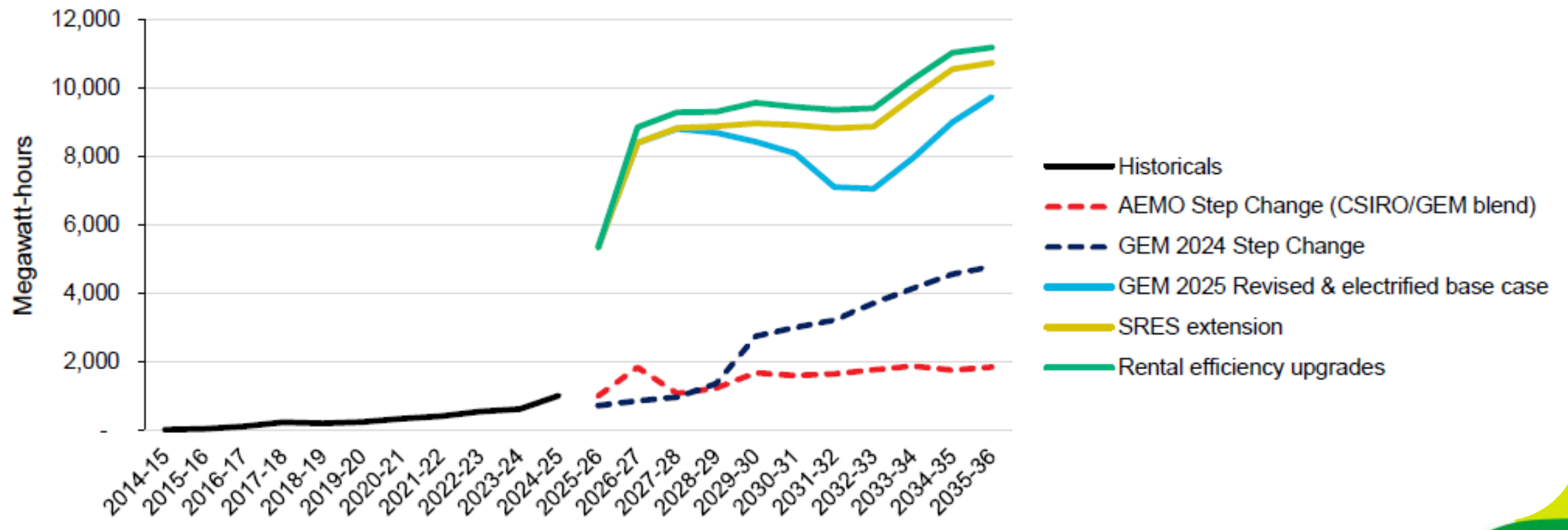
Source: STC data to 5 October

Source: Tristan Edis, Renew Economy, [Australians install 100,000 home battery systems in 17 weeks, and they are getting bigger](#)

New GEM projections anticipate much larger distributed battery capacity than forecast by AEMO

Annual additions of distributed battery capacity

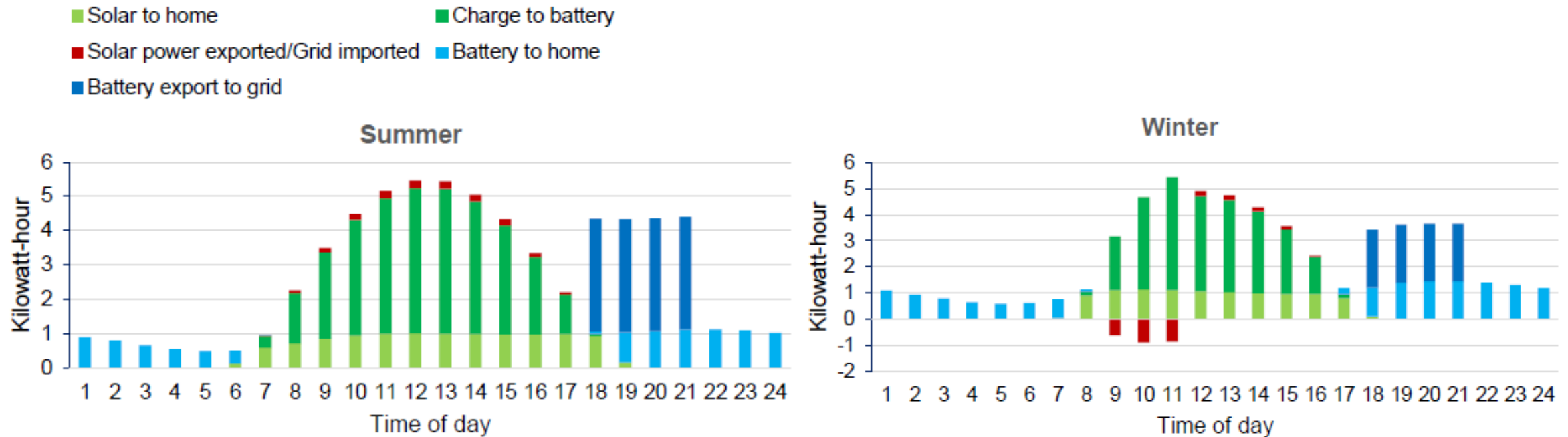
Updated GEM projections relative to prior projections and historicals



Source: Green Energy Markets, [A re-evaluation of the potential for growth in rooftop solar and small-scale batteries](#)

Households with 10kW solar and 25kWh batteries are increasingly self-reliant and have export capability

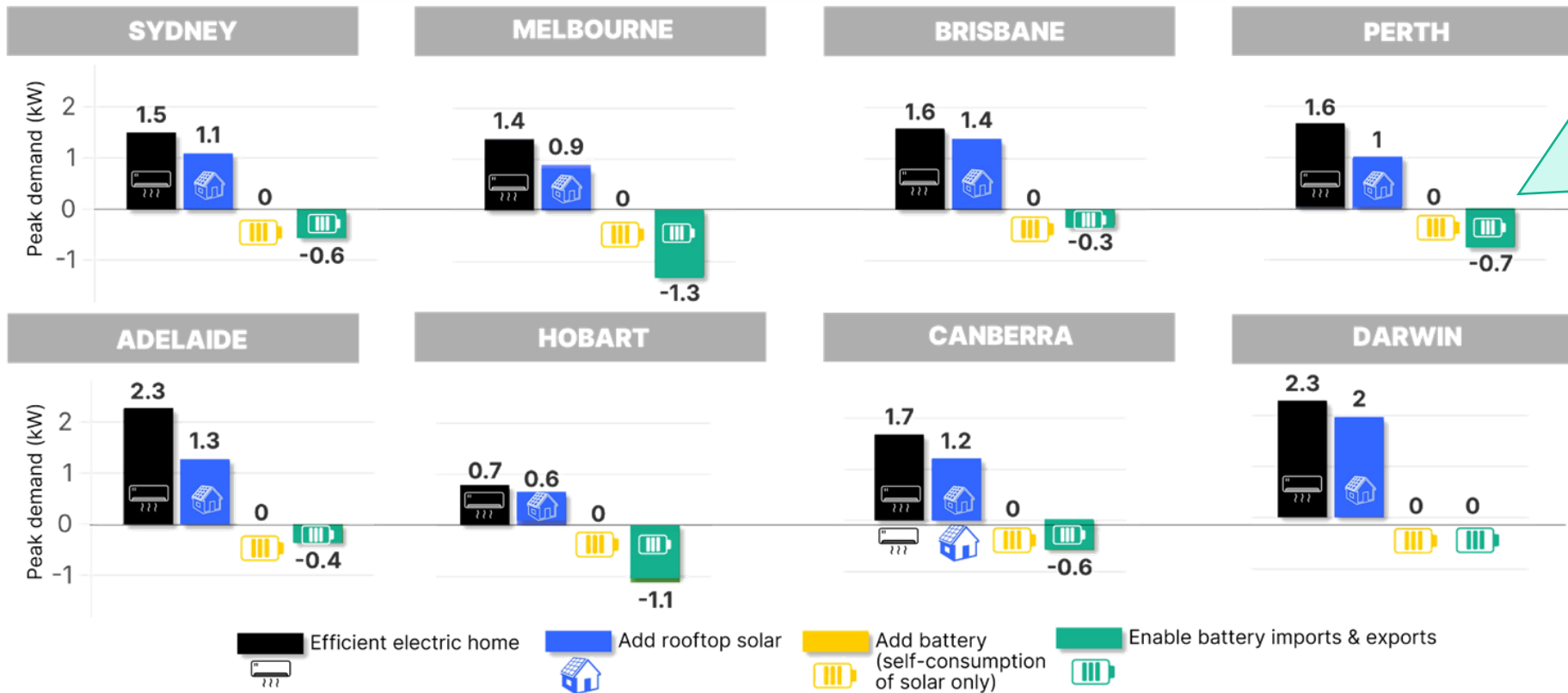
Time profile of electrified household generation and usage – NSW, 10kW solar/25kWh battery



Source: Green Energy Markets, [A re-evaluation of the potential for growth in rooftop solar and small-scale batteries](#)

Households with 8kW solar, 10kWh battery & efficient appliances slash their peak demand to zero

Impact of rooftop solar (8kW) and batteries (10kWh) on average January peak demand

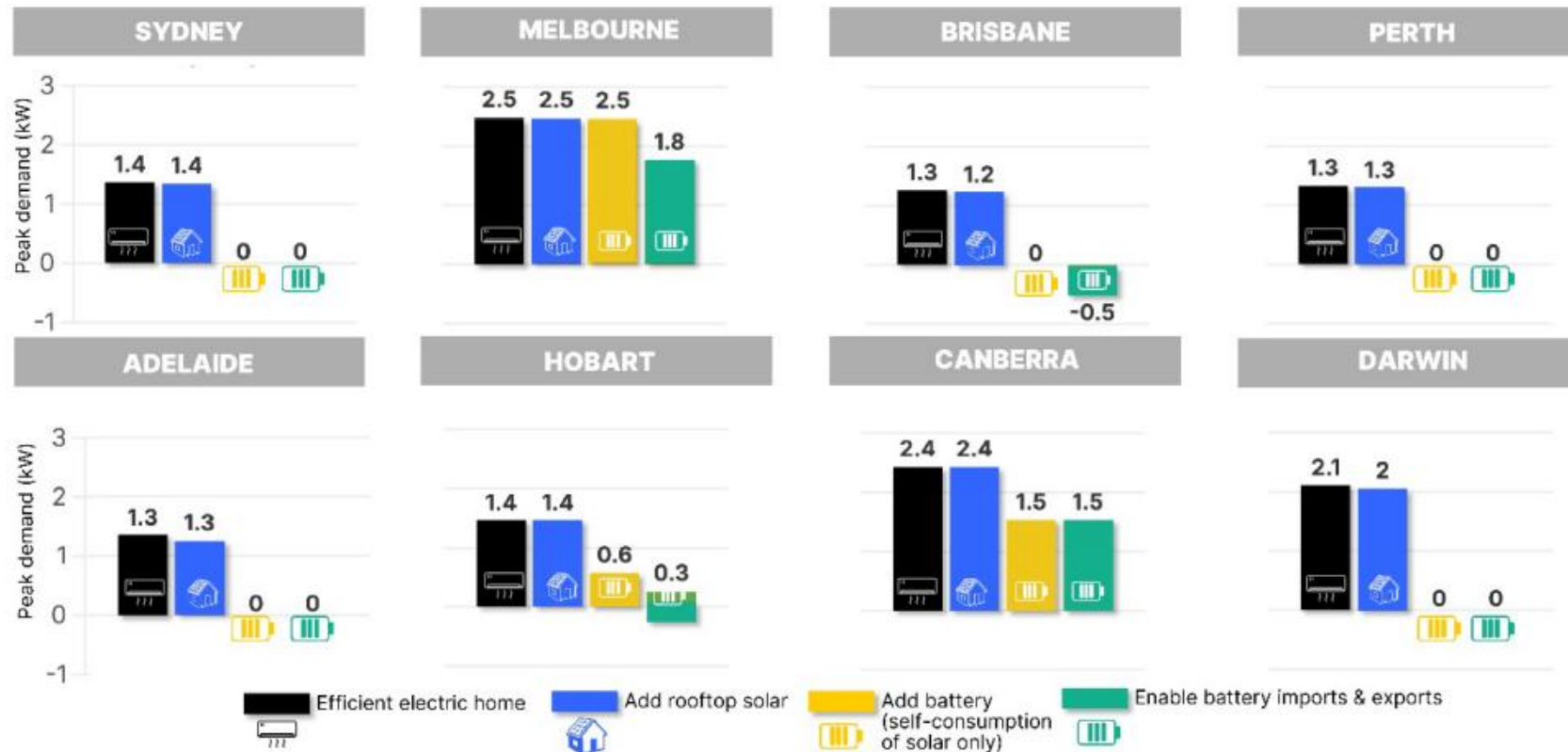


Even with a 10kWh battery only, the household has significant ability to export to the grid in peak periods

Source: IEEFA, [A focus on homes, not power plants, could halve energy bills](#)

Battery imports & exports enable further peak demand reductions in winter in southern regions

Impact of rooftop solar (8kW) and batteries (10kWh) on average July peak demand



Melbourne & Hobart: importing from the grid to the 10kWh battery in low wholesale price periods enables battery to better cover load in peak periods

Source: IEEFA, [A focus on homes, not power plants, could halve energy bills](#). Note: Figure shows impact of rooftop solar and batteries on peak demand for an average July day, in each capital city. Based on households that have already upgraded to efficient electric appliances.

Optimising household battery operation can support the broader grid

In general, exporting from the battery in the peak period and importing in winter daytime in particular regions can maximise peak demand reductions

Potential benefits on offer from well-integrated DER:



Network costs

A review of economic regulation of distribution networks could ensure benefits flow through to consumers



Centralised generation and storage costs



Wholesale spot price peaks

Economic benefits from well integrated DER (NPV to 2040)

(solar, storage, EV V2G, demand flex)

\$11 bn

\$8 bn

\$10 bn

Source: IEEFA, [DER could provide \\$19 billion economic boost by 2040](#)



How could we encourage optimisation of distributed batteries?



Improved tariffs with software:
Customers with appropriate tariff signals, integrated with the battery management system



Well designed and regulated VPPs:
Batteries in a control program such as a VPP that import from and export to the grid at certain times

What else do we need to do to unlock the potential of solar and storage?

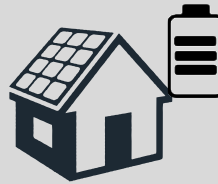


Key challenges	Today	On the horizon	Ways to unlock potential
Enable solar & storage to support the grid (e.g. imports/exports)	• TOU, flat rate tariffs, limited FiTs • VPPs	NEM Review: • Higher portion of fixed NW costs? • Dynamic NW tariffs?	• Improved tariffs with software • Well designed and regulated VPPs • Reviewing economic regulation of distribution networks
Overcome upfront cost hurdle	• SRES covering solar, batteries and heat pumps	• STC value reducing, SRES ending 2030 • \$2.3bn battery rebate funding may run out	• Strategies for rental properties • Financing solutions
Ensure systems are in place to support high uptake	• Fragmented DOE implementation	• DER technical standards	• Align DOE implementation across states

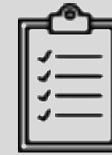
Conclusion



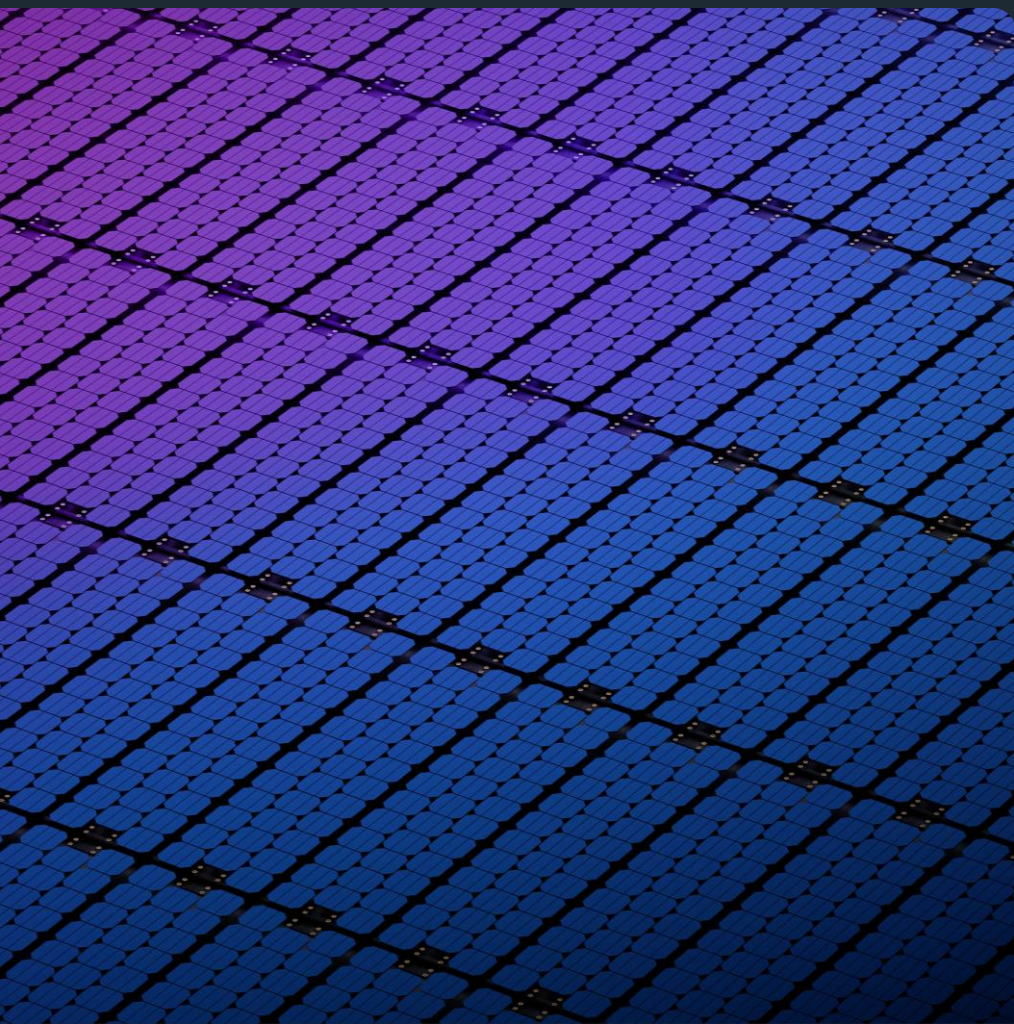
Household battery uptake is occurring **quickly**, and the systems being installed are **large**.



Households with solar and storage are increasingly **self-reliant** and have **export capability**, which can deliver **peak demand reductions** which can flow through to **system-wide benefits**.



These **benefits** can be **maximised** by improving **price signals**, **VPPs**, **reforming economic regulation** of distribution networks and ensuring the systems are in place to enable high uptake.



Thank you

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