NYSERDA ON-SITE POWER CONFERENCE

Status of the current market

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SMALL-SCALE PV AND STORAGE
Still a very small market, but we expect increasing uptake in the next 5-10 years.

Biggest markets are Japan (50k), Germany (30k) – driven by subsidies.

Italy growing market, also driven by subsidies.

Australia a growing market – driven by competition among retailers and market design.

US – biggest markets are Hawaii and California. Little incentive due to market designs.

Attractiveness for storage contingent on two factors: (1) high retail rates and (2) a low feed-in-tariff for excess generation

- Difference needs to be large enough to offset the cost of the battery
- In most markets, cost of storage not low enough and difference not high enough to make it work (exceptions are Germany and Australia. Germany has a subsidy.)
- Even in leading markets, payback is long (19 years). Economics are not fantastic.

In the US, net energy metering (NEM) eliminates the incentive to pay to store excess generation

- Free storage
In US retail rate structures need to change to improve economics, including implementing time-of-use rates, demand charges, or altering net-metering policies. These changes might also erode PV economics.

Time-of-use rates, where they exist, do not currently have a big enough difference between on- and off-peak rates for storage to make economic sense.

Demand charges where consumers have to pay a fee based on their peak demand, storage is used to shave peak demand, particularly for commercial and industrial consumers – this is a drive in North America and South Korea, but not yet Europe.

Storage for back-up power is a luxury limited to a small segment of the US market. Europeans don’t need back-up power as grid is very reliable.

Costs far too high to justify disconnecting from grid altogether

Battery warranty life still too short, progress being made on battery and costs coming down.

Safety – lithium ion batteries can catch fire if not properly installed or maintained. Not currently an issue, but are concerns, especially following Samsung Galaxy. Also one fire spikes concern.

Future expectations – growing from 400MWh today to 760GWh in 2040 to become $250bn market
THE CONSUMER ADOPTION CURVE

Source: Bloomberg New Energy Finance, NY times
SMALL-SCALE PV AND STORAGE UPTAKE

Illustrative multi-generation diffusion (% of addressable market)

Cumulative global small-scale PV and storage diffusion (GW)

Source: Bloomberg New Energy Finance
By 2024, the total installed energy storage capacity will reach 45GW / 81GWh.

The top five markets are Japan, India, the United States, China, and Germany. They represent 70% of the global total in 2024 (in terms of MW).

Utility-scale storage deployments dominate in terms of total installed power output (MW) in 2016. They make up 84% of total installed capacity. Behind-the-meter energy storage becomes increasingly important throughout the 2016-24 period, and in 2021 it becomes the larger of the two market segments.
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