Tallinn residential energy storage

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Short-term energy storage would help solar panel owners to increase the profitability of their electricity production, which would also help keep the Estonian power system in balance, according to an analysis commissioned by thinkt tank the Foresight Center.

M?rt Masso, expert at the Foresight Center, said that the prices of battery storage devices have fallen by almost 90 percent since 2010, making them more cost-effective for households.

"Battery storage allows micro-producers to store surplus energy in times of high production and use it for their own consumption or sell it to the grid during hours of higher demand and higher prices," said Masso.

When battery storage is used on its own, the investment will be recouped in 15-25 years, but when battery systems are combined with solar panels, the payback period is several times shorter. For example, a 5 kilowatt-hour (kWh) battery system has an approximate payback period of five years, while a 15 kWh system has an approximate payback period of eight years.

In its recently-produced short report "Electricity Storage Prospects in Households," the Foresight Center states that home battery storage could serve the interests of Estonia"s entire electricity system. For example, the use of home storage has great potential to shift consumption for several hours during the day to hours when there is more electricity in the system. This would reduce the need to use reserve capacity or other costly solutions to ensure supply.

According to the report, assuming that in 2040, there will be approximately 35,000 prosumers in Estonia, who produce and store electricity or manage their own electricity consumption, the potential for consumption management reaches approximately 400 megawatts (MW). Simulations show that home electricity storage systems account for more than a third of this potential volume.

"Depending on the capacity of the electricity storage systems and electricity consumption at homes, battery storage can cover a household"s consumption for a few hours to half a day in winter, but it leads to a consumption peak lasting 1-2 hours when battery storage is charged from the distribution network," said Masso.

Energy storage can be made more cost-effective for households through lower network charges. Lowering or completely eliminating network charges for battery storage would encourage more widespread utilization of storage, which in turn would reduce the need to increase network capacity.

The Foresight Center notes that if the state encourages households to use battery storage systems, it would be recommended to link the home consumers" storage capacity to their average daily consumption volume - this

way, their response to prices will not have a negative effect on the operation of the system, but it allows for the amount of electricity consumed or produced to be reduced according to the needs of the consumer.

The short report "Electricity Storage Prospects in Households" can be found here (in Estonian). The report is part of the Foresight Center"s research stream "Active Consumers in the Future Energy System."

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