

Providing flexibilities with large-scale BESS in industries and datacenters

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Energy Storage Summit CEE
Warsaw, 23 September 2023

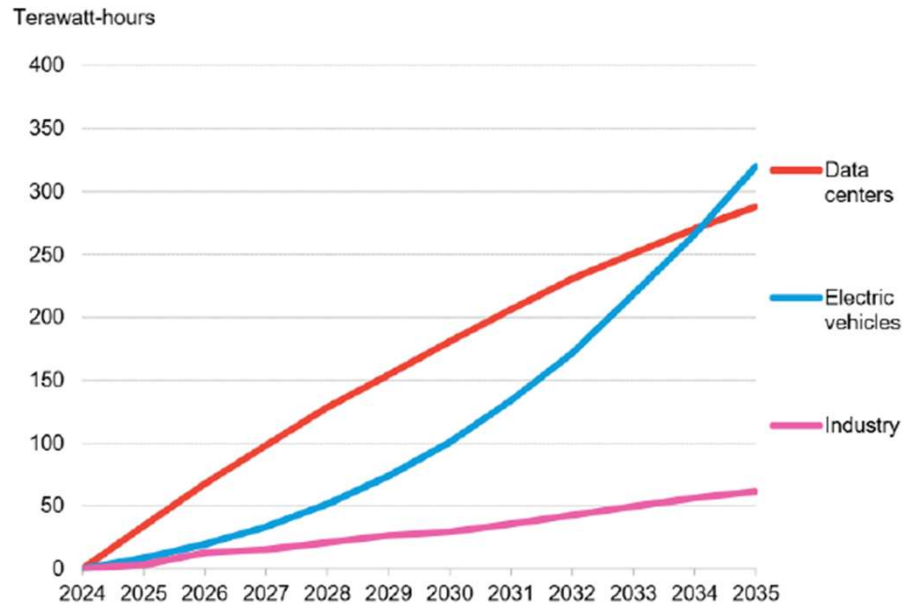


We need more...



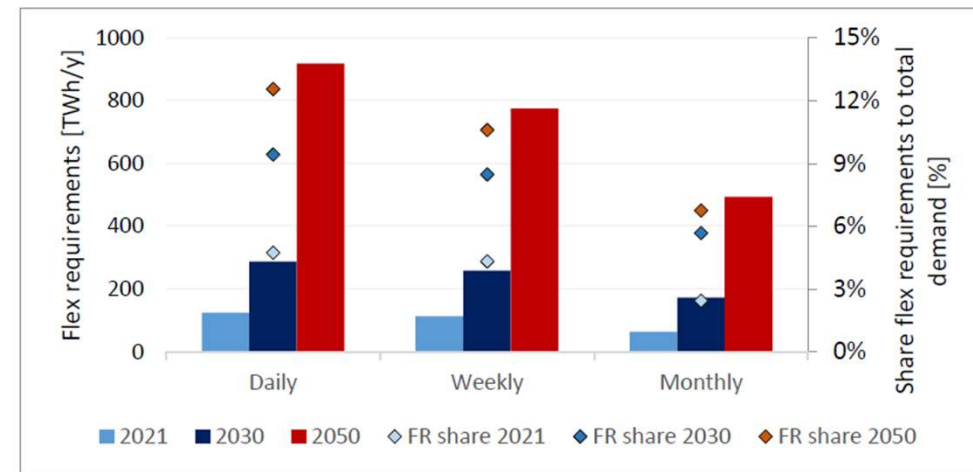
... Power

Figure 1: New electricity demand, Economic Transition Scenario USA



Source: BloombergNEF. Note: Data-center demand refers to total energy demand. BNEF's

... Flexibilities



Source: JRC analysis.

Daily, weekly and monthly flexibility requirements and their share in total demand (FR share) in the EU for 2021, 2030 and 2050



Decarbonized Flexibilities

■ Supply – Demand Balance

- PV / Wind shifting
- Arbitrage

■ Security of Supply

- Capacity contracts

■ Grid Support

- Frequency / Inertia Services
- Congestion / Curtailment avoidance
- Contingency





Saft Bordeaux factory



3 MW / 9 MWh



The project

- **Application** Industrial Site, 4 MW power connection
- **Business Case** Electricity Bill Reduction
- **Operator** TotalEnergies
- **Status** Operational 2025



Our solution

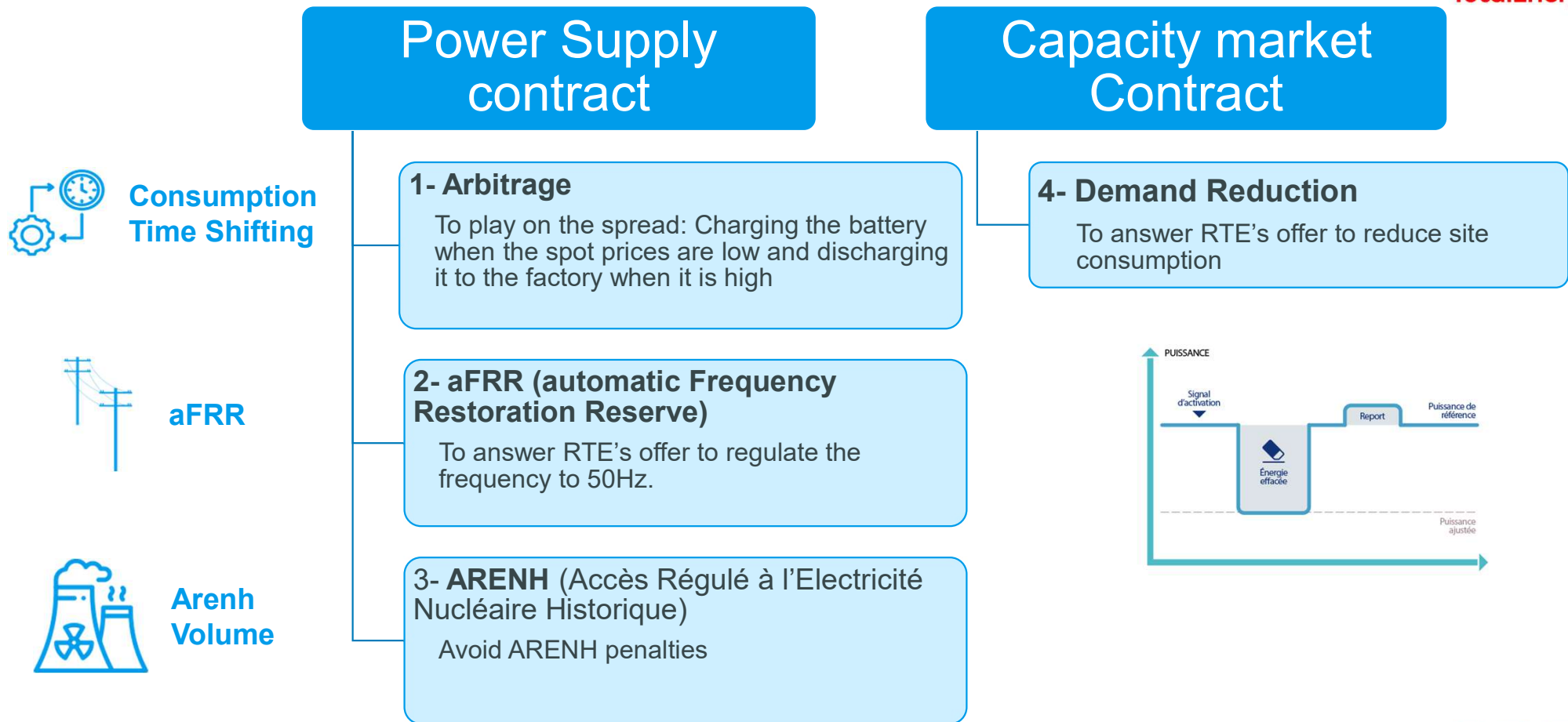
- **Scope of Works** Integrated Solution
- **Products**
 - **Battery** 3 I-Shift
 - **Conversion** SMA
 - **PMS** Powerfactors
 - **EMS** bamboo energy



I-Sight connected



Revenue generation: two contracts

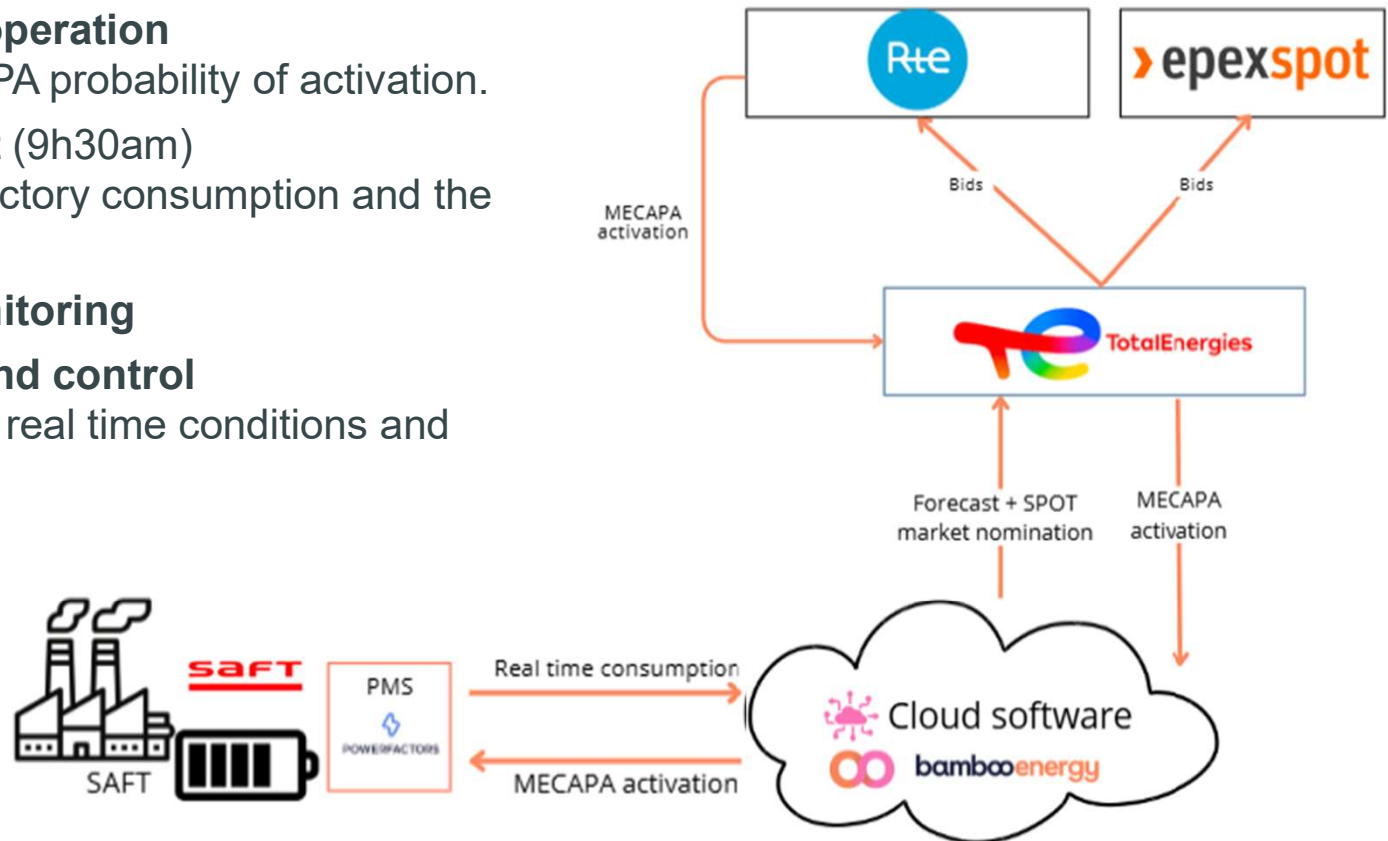


High level use case architecture



bamboenergy

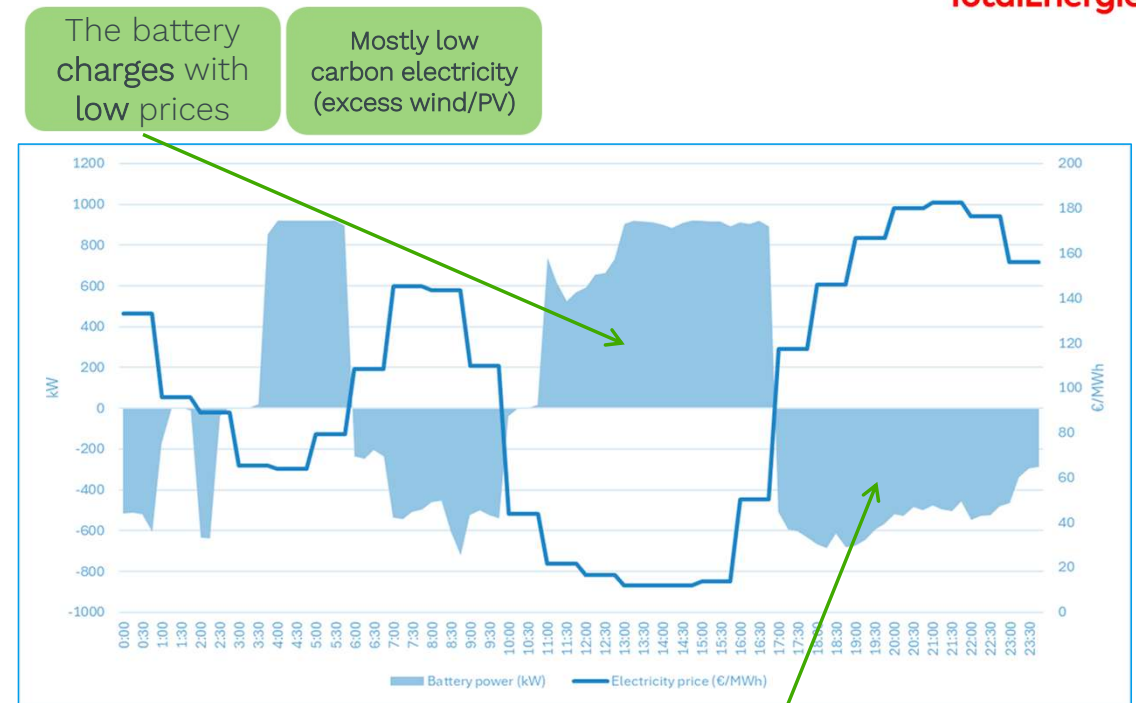
- **Day-ahead (DA) optimal BESS operation**
considering DA prices and MECAPA probability of activation.
- **Site consumption daily forecast (9h30am)**
considering both the forecasted factory consumption and the battery expected operations.
- Real time **site consumption monitoring**
- Real time **battery optimization and control**
considering DA optimal operation, real time conditions and minimizing nomination deviations
- Process **MECAPA activation**
and BESS real time control to guarantee compliance
- **Logging and reporting**
of client compliance



Technical and Economic Results



Battery parameters	
Average daily battery cycles	0,7
Average battery SoC	43%
Average charging power	566 kW
Average discharging power	-420 kW
Average charging price	36 €/MWh
Average discharging price	105 €/MWh



11% savings on electricity purchase cost





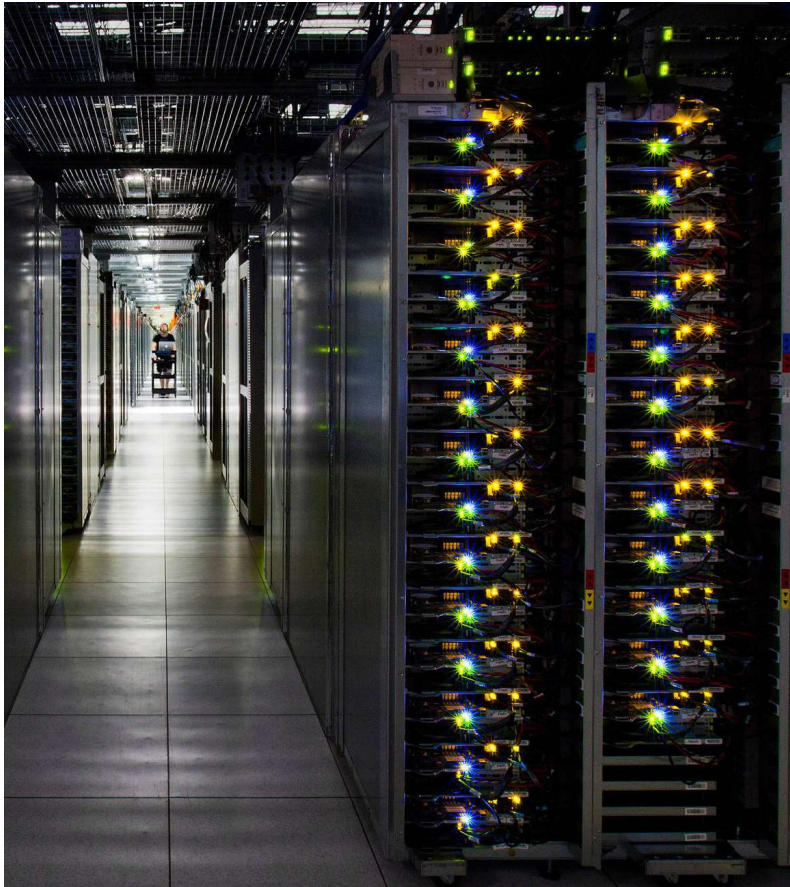
Takeaways



- ✓ **Replicable and easy to implement** model
- ✓ **“Grid-Friendly”**
- ✓ **Economic and Environmental** Benefits
- ✓ ...which can be further enhanced
 - when providing Ancillary services and/or local flexibilities
 - in case consumption profile shows peaks
 - by integrating on-site renewable generation



Datacenters: Challenges beyond Power



Provide clean electricity to large, power hungry DataCenters

Power generation

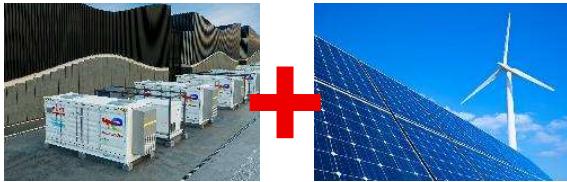
- Satisfy increasing energy consumption
- Deliver clean power = non dispatchable renewables

Grid infrastructure

- Provide Grid connections
- Cope with impact a large single power consumer can have on grids
 - Peaks
 - Variable loads
 - Incidents



The role of Battery Energy Storage



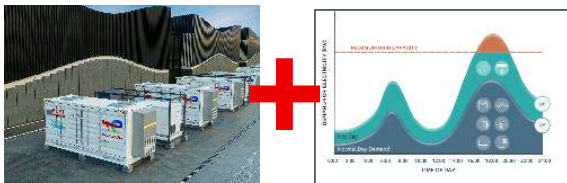
SUSTAINABILITY

- Maximize contribution of clean electricity PPA's
- Integrate local renewable generation



BACKUP

- Substitute diesel generator backup
- Merge UPS and backup functions into single, permanent microgrid



FLEXIBILITY

- Demand reduction: partial or total reduction of power drain from grid
- Grid services : Frequency, Capacity, ...





Texas, USA

X-Elio / Brookfield – Bell Solar



100 MW / 246 MWh



Key Points

- Co-located at X-Elio's 128 MW solar PV plant in Texas
- The BESS enables 24/7 clean energy under a PPA with **Google**



The project

- **Application** Energy Shifting
- **Location** Texas, USA
- **Status** under construction
- **Completion** 2025



Our solution

- **Scope** Integrated solution
- **Products**
 - **Battery** 82 I-Shift
 - **Conversion** Power Electronics
- **Technology** LFP



Press Release



SaFT



Sweden



Microsoft – GVX21

15 MW / 23 MWh



Key Points



- **Data center integration:** Replacing diesel generators with battery storage in a large Microsoft data center located in Stockholms län, demonstrating the feasibility of powering datacenters with BESS
- **Paving the way** for wider adoption and a more sustainable digital infrastructure
- **Fully-tested configuration:** FAT at Saft factory Bordeaux prior to deployment, to ensure performance, reliability and resilience of the system



2 battery containers IHE + PCS/MVPS + microgrid controller

4 systems of each
4.6 MWh/3MW,
15 year lifetime

80min back-up,
holistic safety, arctic
conditions

Forming of 20kV
microgrid

Full system factory
test, on-site stress
testing

Training of
maintenance team
and fire brigade

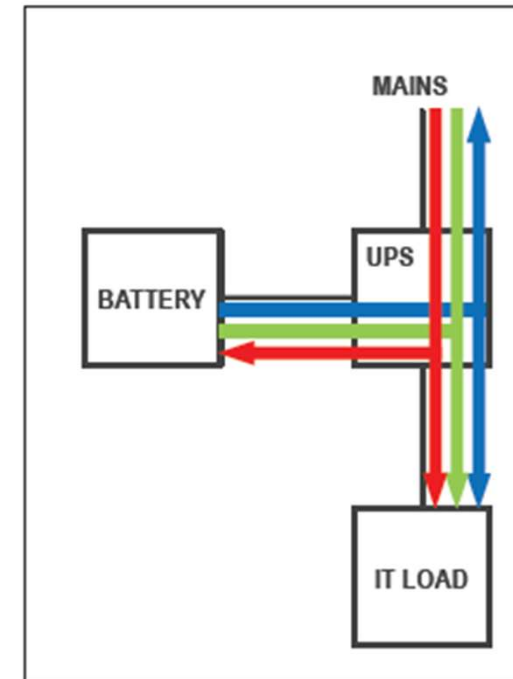


Grid Interactive Datacenter



Implementing Microgrid based on BESS and grid-forming PCS enables multiple functions

- ❑ Power-Backup
- ❑ Optimised use of renewable energy (local or PPA)
Electricity Bill reduction through arbitrage
- ❑ Smoothing of load variations
- ❑ Ancillary Services
- ❑ Demand-response
 - Remunerated flexibility
 - Faster (and less costly) grid connection with flexible power usage contracts



- Increase demand (charging)
- Reduce demand (power sharing)
- Feed back to grid whilst supporting IT load



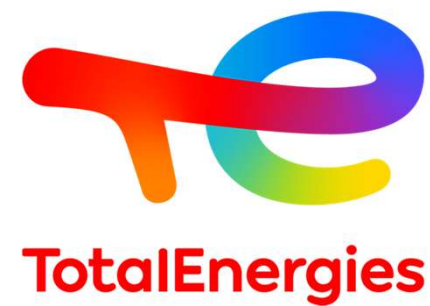


Conclusion



- Large Industries and DataCentres evolve from passive power consumers to interacting system participants
- BESS are technically proven solutions, control systems will evolve as new use cases develop
- Viable economic models exist already today
- BESS are critical to enable growth and sustainable grid integration of future datacenters





Thank you !

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