

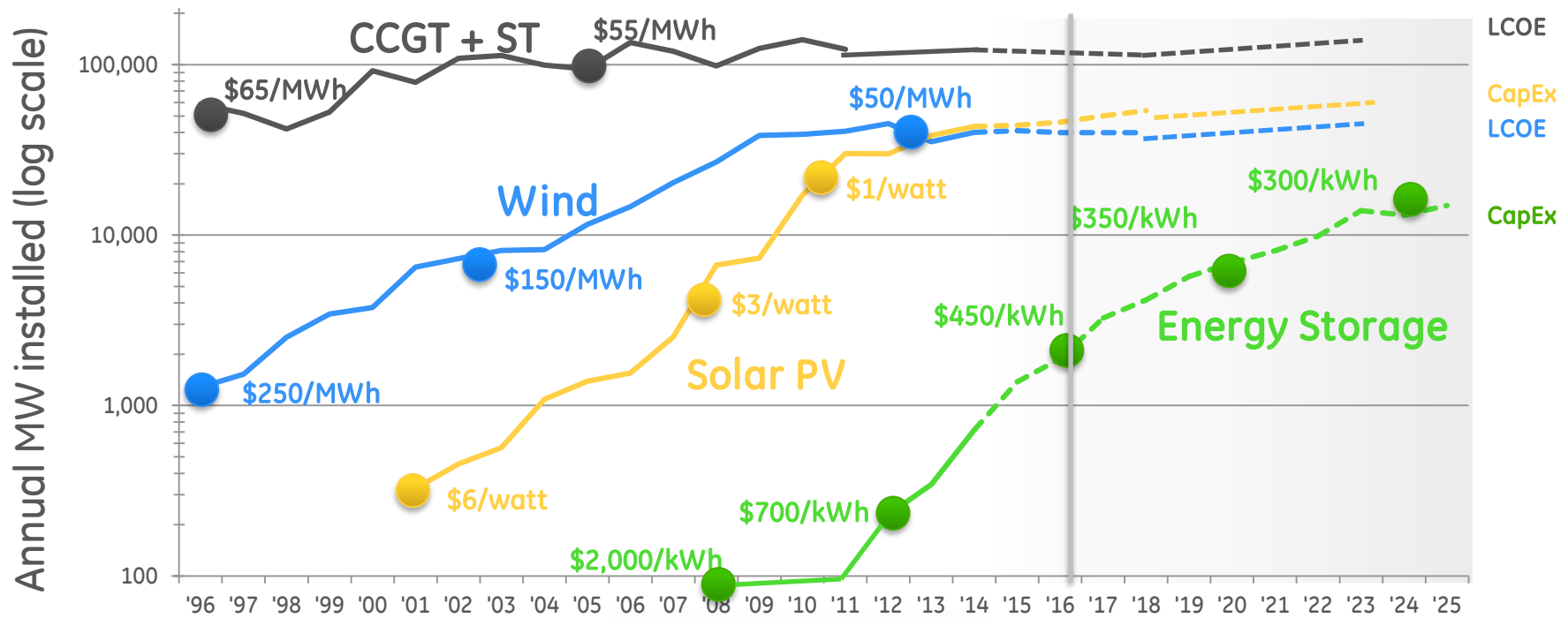
Energy Storage



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Imagination at work

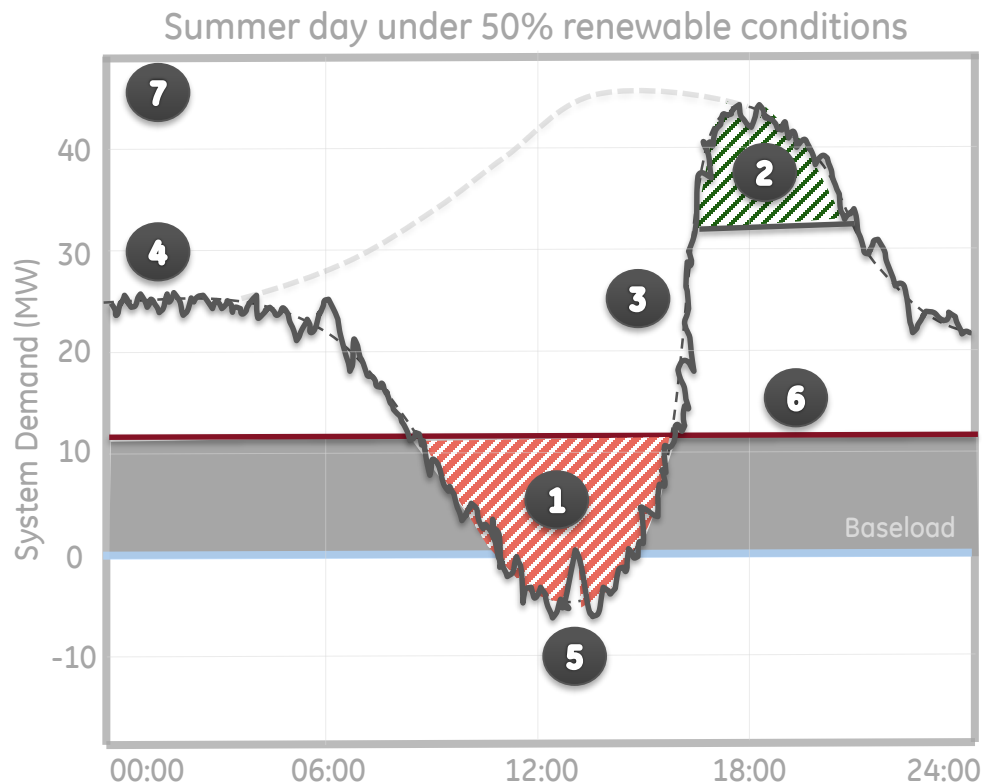
Energy Storage growth has precedent in wind & solar



Sources: EIA, IEA, NREL, GWEC, EPIA, BNEF, Lux, Navigant, HIS CERA, GE Analysis
Solar : PV panel cost

From 2010 to 2020 marks *a 40X improvement* in overall ES viability

Energy Storage is a unique asset that provides unprecedented flexibility in grid optimization.

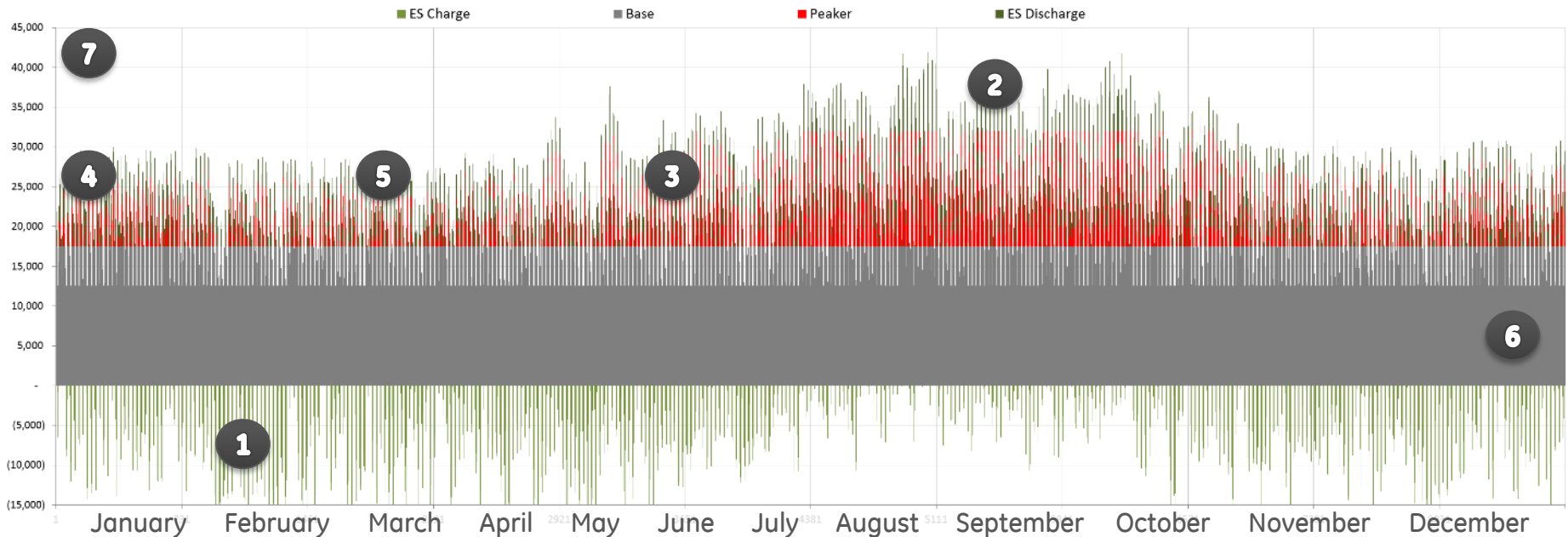


- 1** **Curtailed Renewables**
Baseload causes excess solar to be curtailed
- 2** **Peak Load**
Short duration peaks after sunset
- 3** **Fast Ramping**
Respond to sunset dynamics
- 4** **Frequency Regulation**
Real-time frequency control
- 5** **Spinning Reserve**
Dynamic response to events (clouds)
- 6** **Maximize Baseload**
Enables high capacity factor baseload
- 7** **Reduce Emissions**
From peak capacity and ancillary services

ES provides **instantaneous local capacity, & continuous ancillary services** with *no fuel consumption or emissions*.



ES provides instantaneous local capacity, & continuous ancillary services with *no fuel consumption or emissions*.



1 Curtailed Renewables
Additional clean energy into system

2 Peak Load
Reduction in conventional “peakers”

3 Fast Ramping
Enables dynamic capacity

4 Frequency Regulation
Provides 100% of FR with *no emissions* or constraints

5 Spinning Reserve
Provides 100% of SR with *no emissions* or constraints

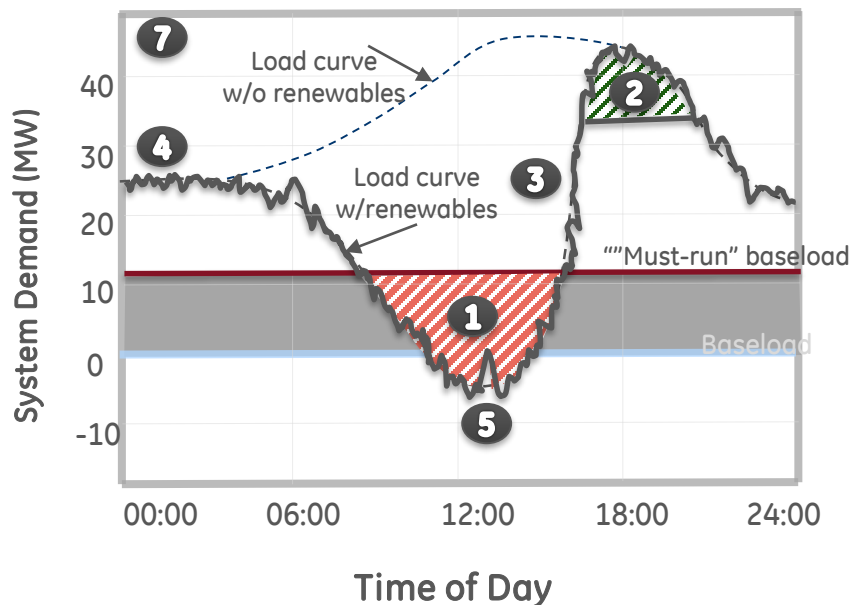
6 Maximize Baseload
Enables high capacity factor of baseload generation

7 Reduce Emissions
From peak capacity and ancillary services



Why Battery ES?... *flexible compared to traditional assets*

High renewables cause daily profile issues
...no longer just about energy



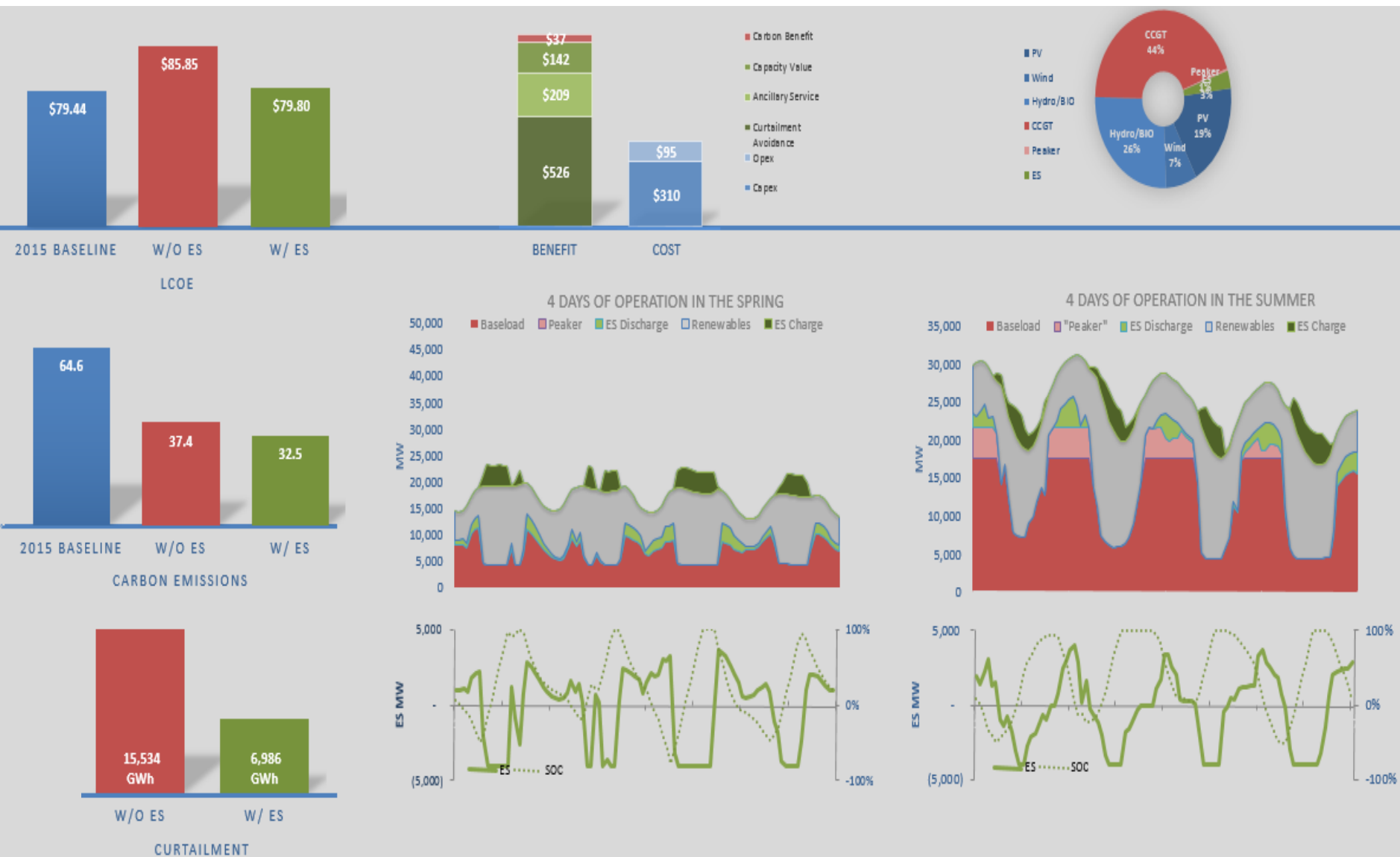
	Storage	CC	Gas Peaker	Transmission	DR
1 Curtailed Renewables	●	○	○	◐	◐
2 Peak Load	●	◐	●	●	◐
3 Fast Ramp	●	◐	◐	◐	◐
4 Frequency Regulation	●	●	◐	◐	○
5 Spinning Reserves	●	●	◐	◐	◐
7 Reduce Emissions	●	◐	○	◐	◐
Challenge	Cost	Emissions	Emissions	"NIMBY"	Less-dependable

- + locational grid benefits
- + no air quality constraints
- + no local fuel requirements
- + defer wires investment
- + modular & movable
- + quick to deploy (6mo to COD)

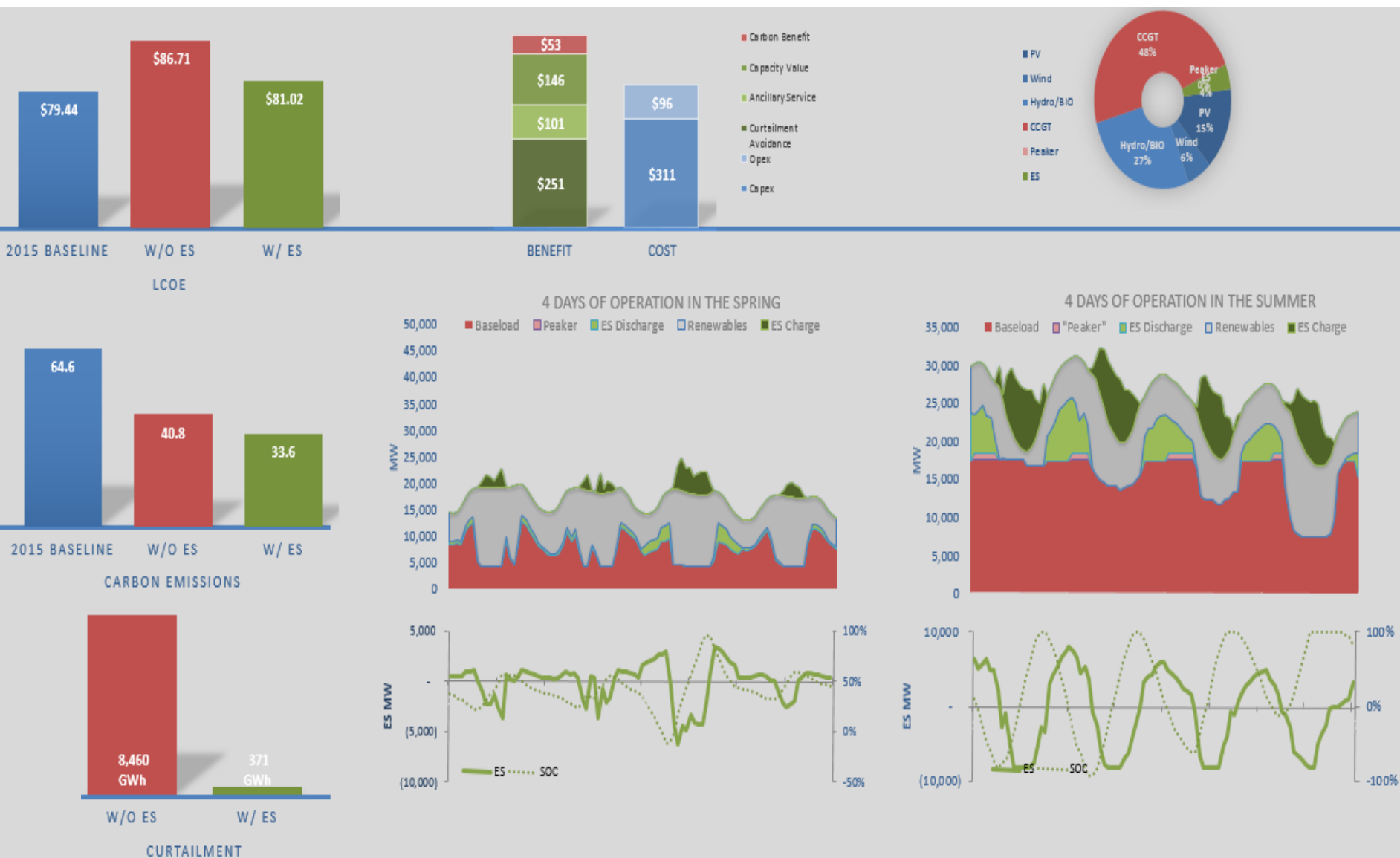
Energy Storage flexibility allows optimization of all system assets



Scenario: NYISO at 50% Renewables w/4GW ES



NYISO at 50% Renewables w/8GW ES



The utility of the future . . .
Is a battery.



Bringing the strengths of GE to Energy Storage

2,000GW+ GE power generation



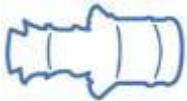
Wind



Solar



Water



Gas
Turbines



Nuclear



Combined
Cycle



Gas
Engines



Power Gen
Services



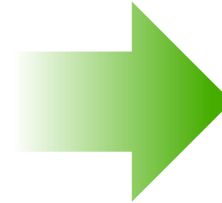
Aero



GE Energy
Financial Services



GE Global Research
Center

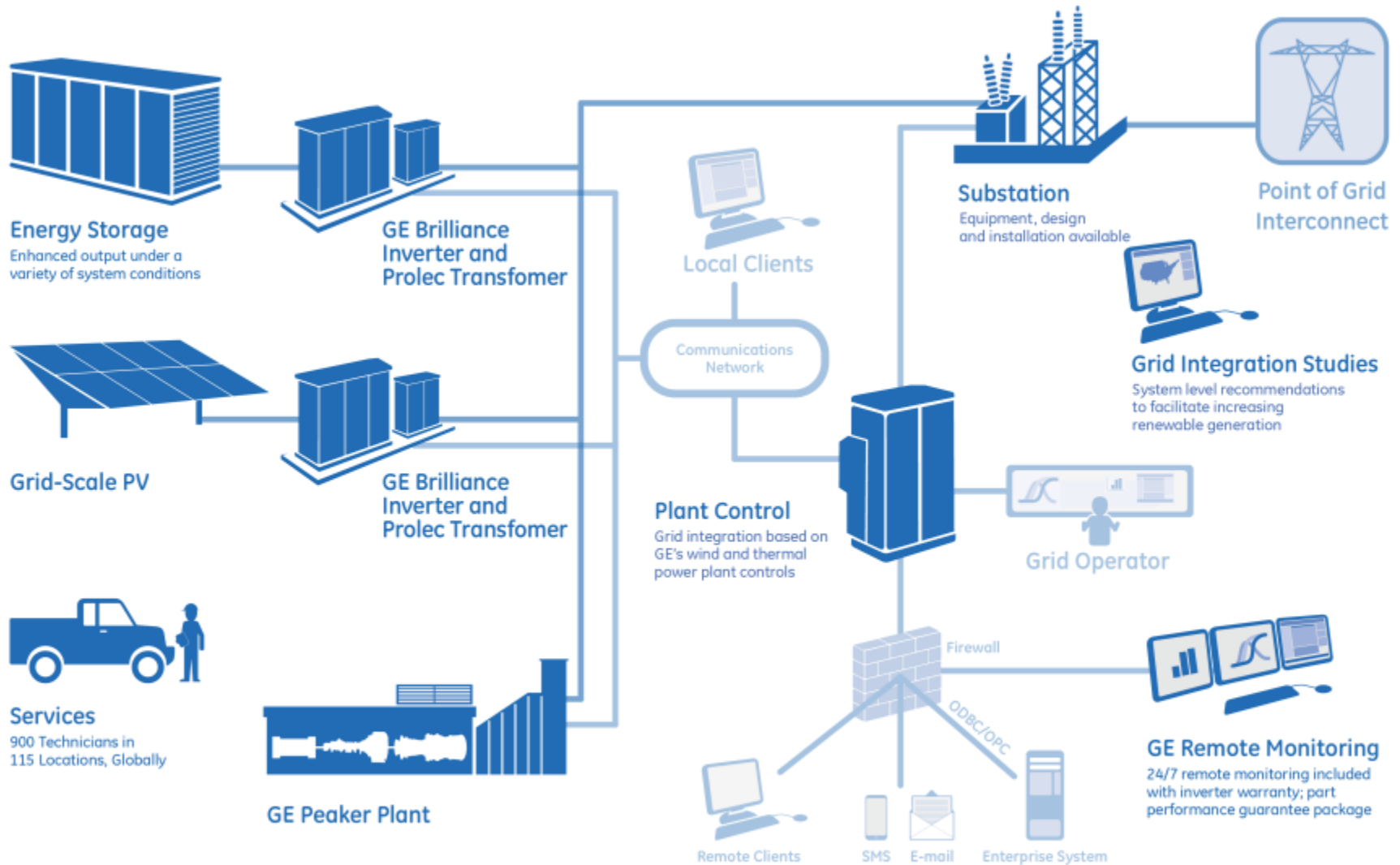


GE Energy Storage

- ✓ GE Store
- ✓ Broad, diversified portfolio
- ✓ Long-term, valued brand
- ✓ Stable & reliable partner

100+ years powering the world ... optimizing our future with energy storage

GE's Advantage... integrated solutions



MW Class ES Platform

Custom solutions from standard, proven building blocks

Controls

GE's Mark VIe Control System has more than 16 million hours of combined operation



Battery Enclosure

Standard pre-fab enclosure + additional safety features

Transformer

>3.5 million GE Prolec transformers installed



Inverter

>25,000 GE Renewables Inverters installed across Wind, Solar, and ES

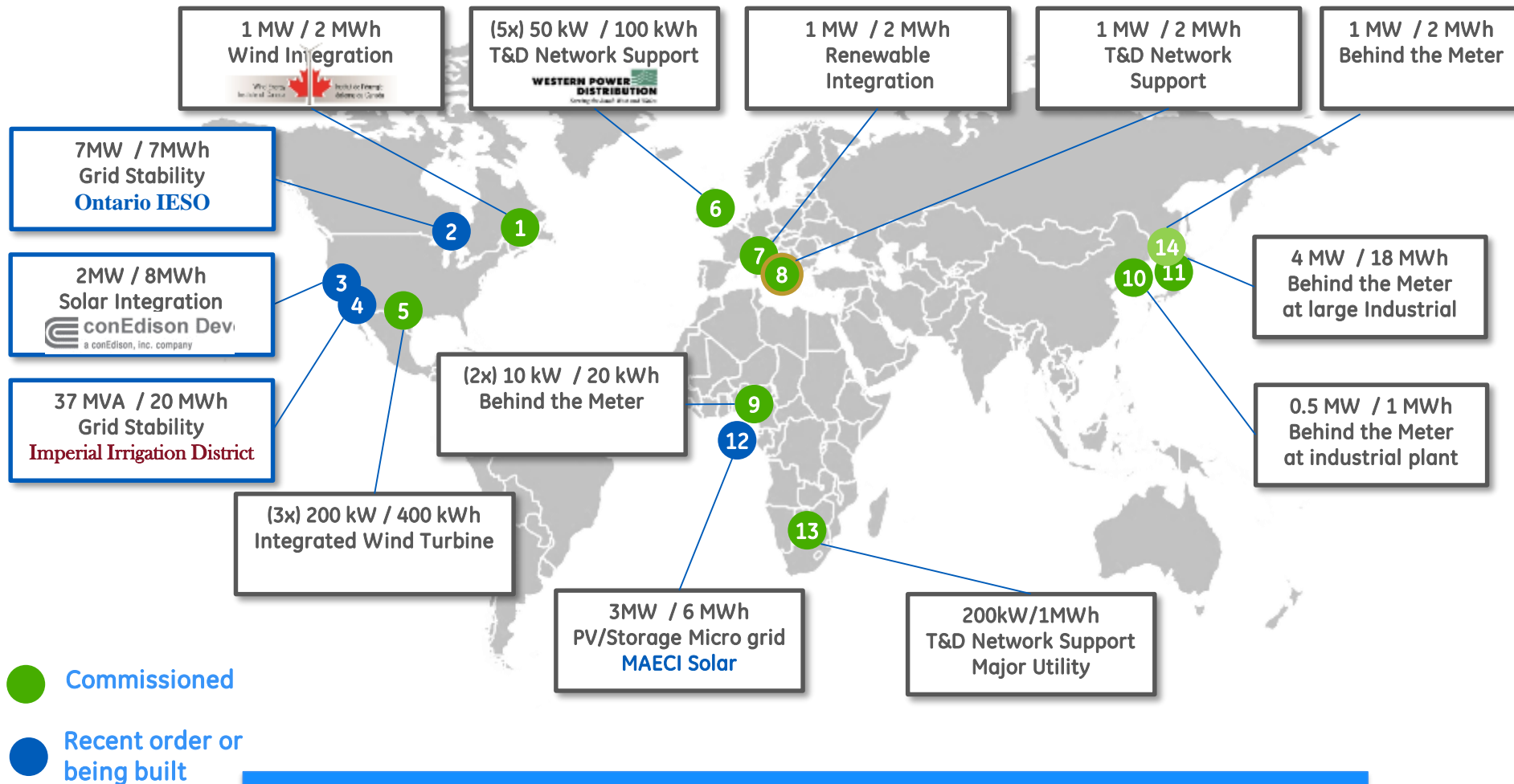


DC Block

Proven Li-Ion chemistry
Tier 1 Suppliers with full GE
Supplier Qualification



GE Energy Storage Grid Projects



~ 60 MW / ~65 MWh of Grid projects Installed or in Process

