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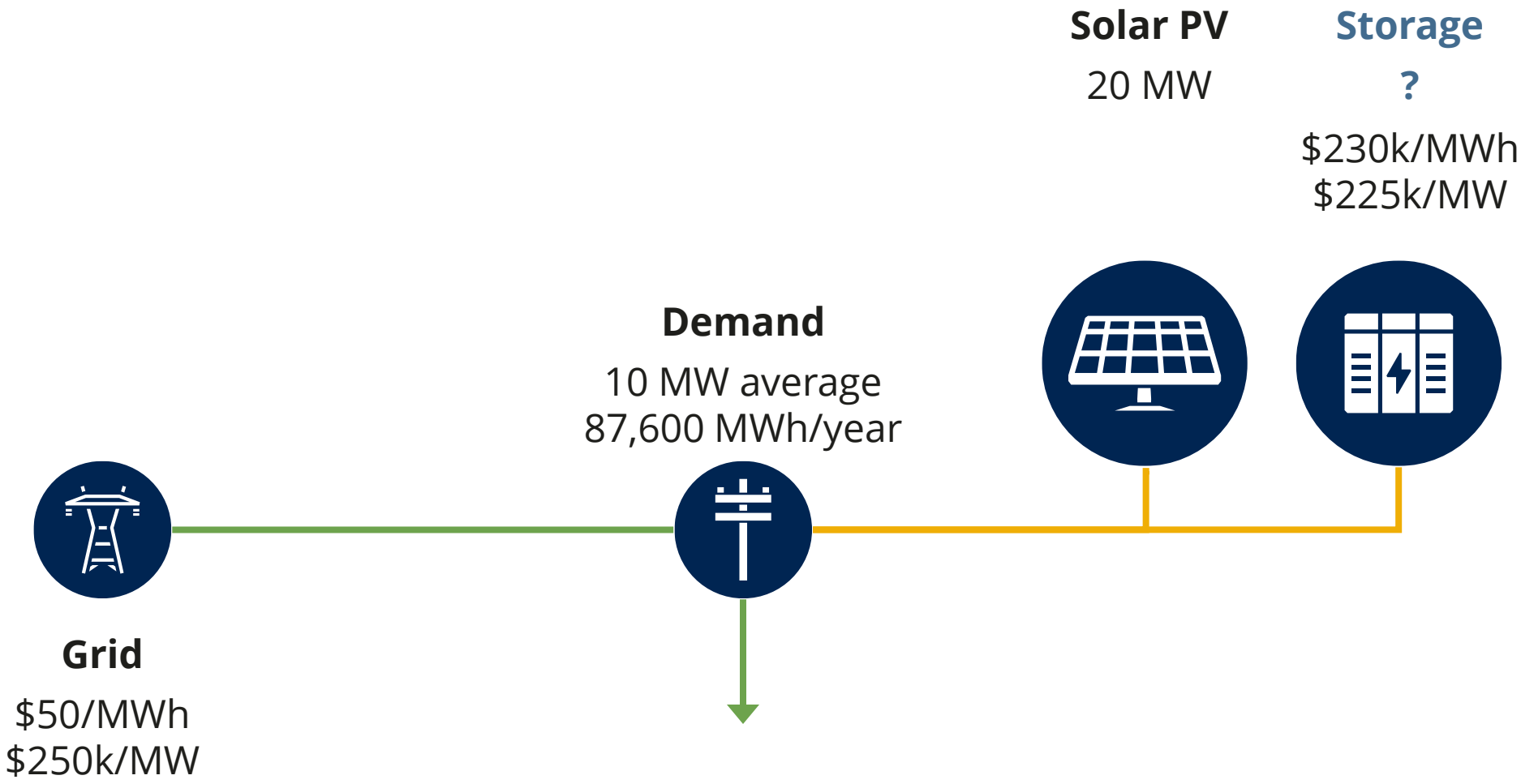
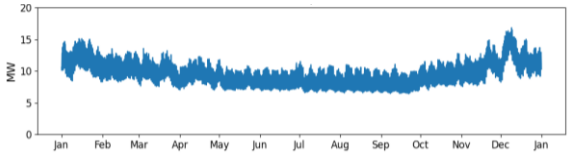
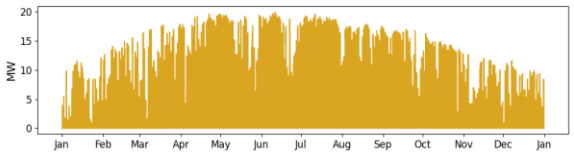
Plan the Energy Future

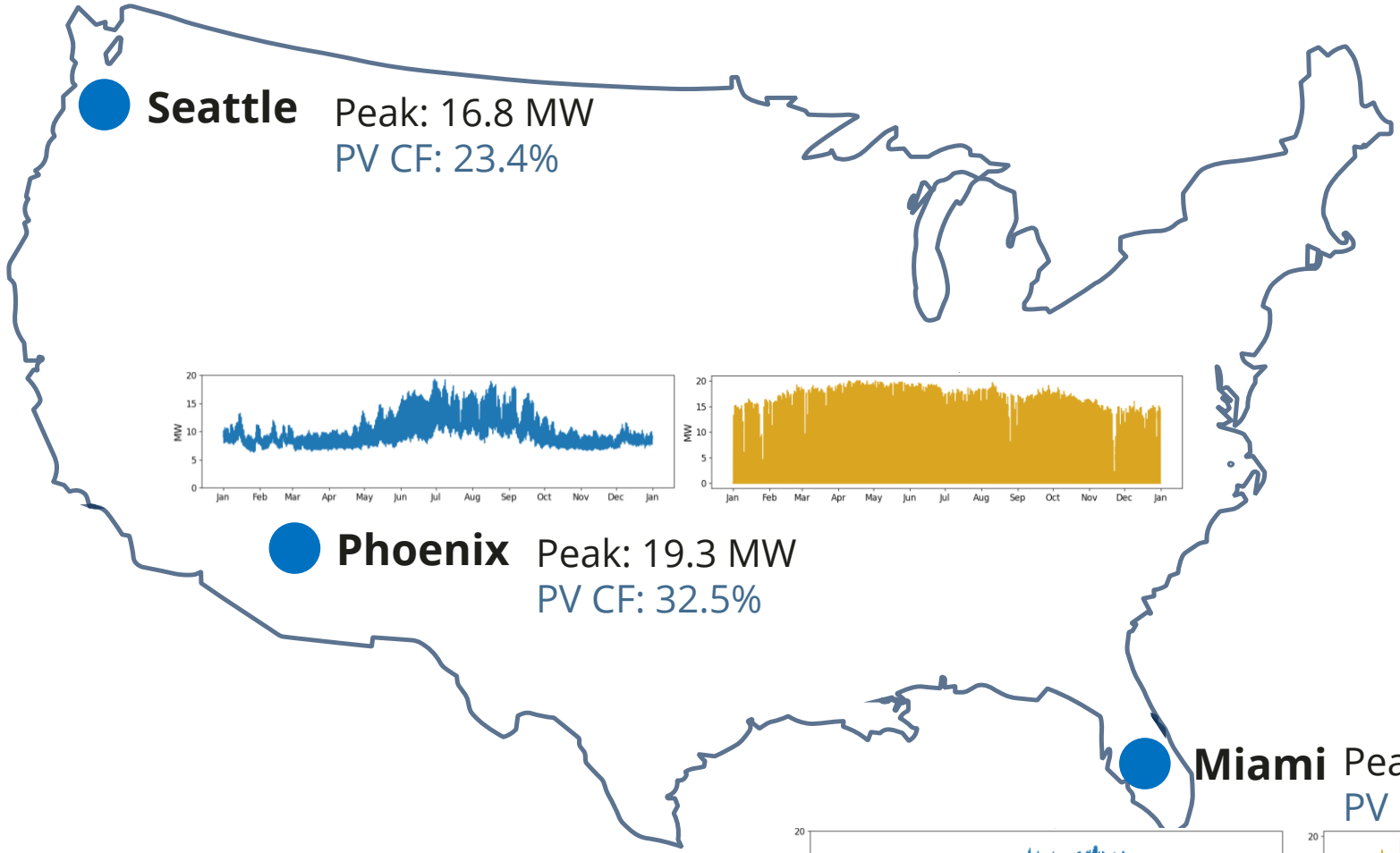
Decoupling the value of energy storage

March 27, 2024





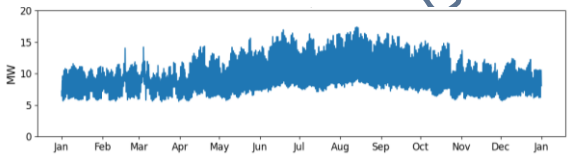


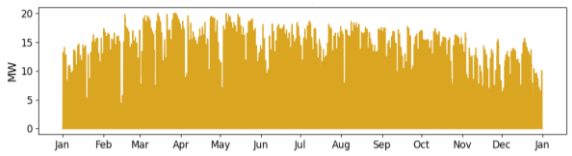


Seattle Peak: 16.8 MW
PV CF: 23.4%

Phoenix Peak: 19.3 MW
PV CF: 32.5%

Miami Peak: 17.4 MW
PV CF: 26.7%

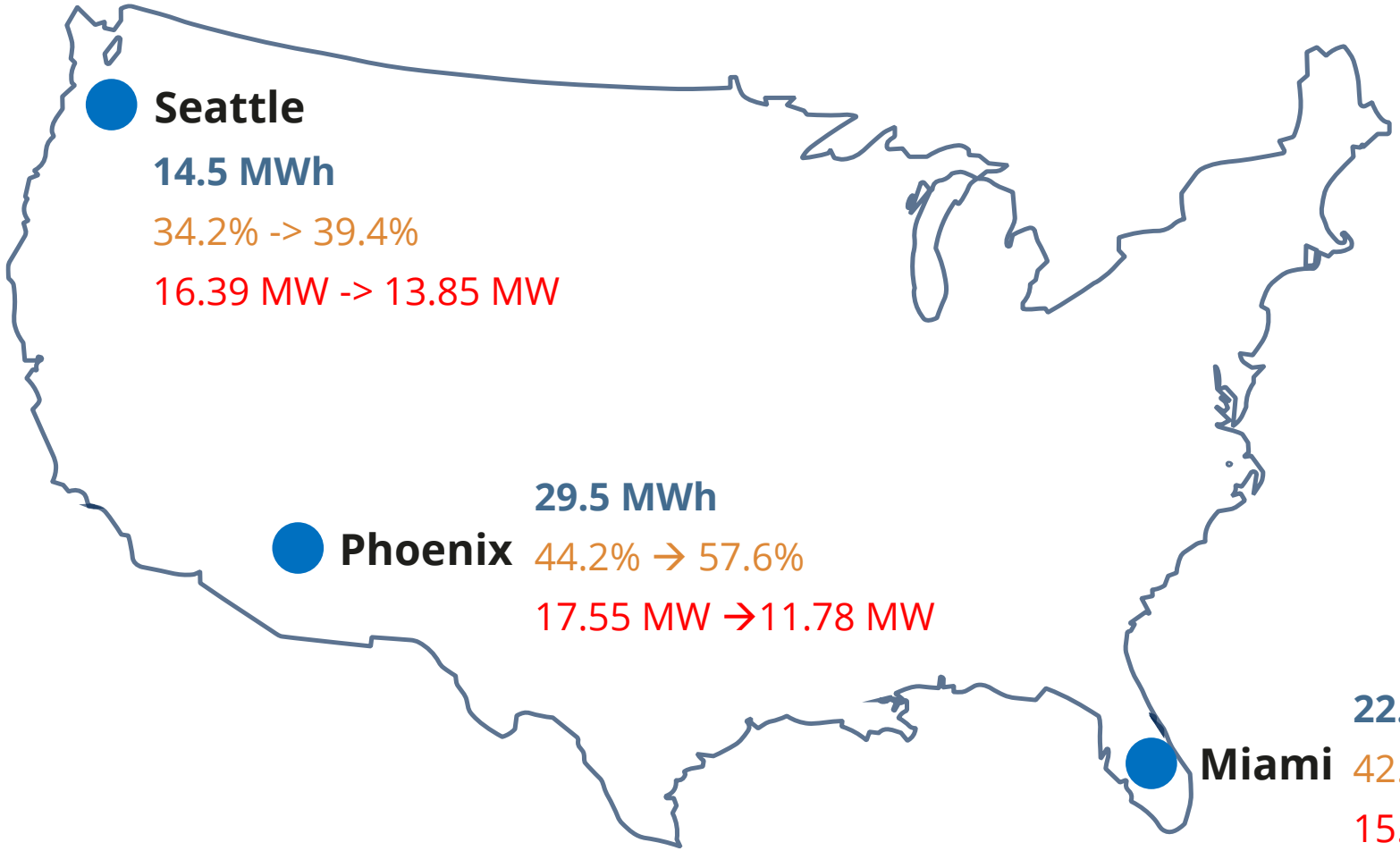




Optimal 4-hour storage

PV penetration

Peak grid demand



Seattle

14.5 MWh

34.2% -> 39.4%

16.39 MW -> 13.85 MW

Phoenix

29.5 MWh

44.2% → 57.6%

17.55 MW →11.78 MW

Miami

22.8 MWh

42.1% → 49.2%

15.95 MW → 10.89 MW

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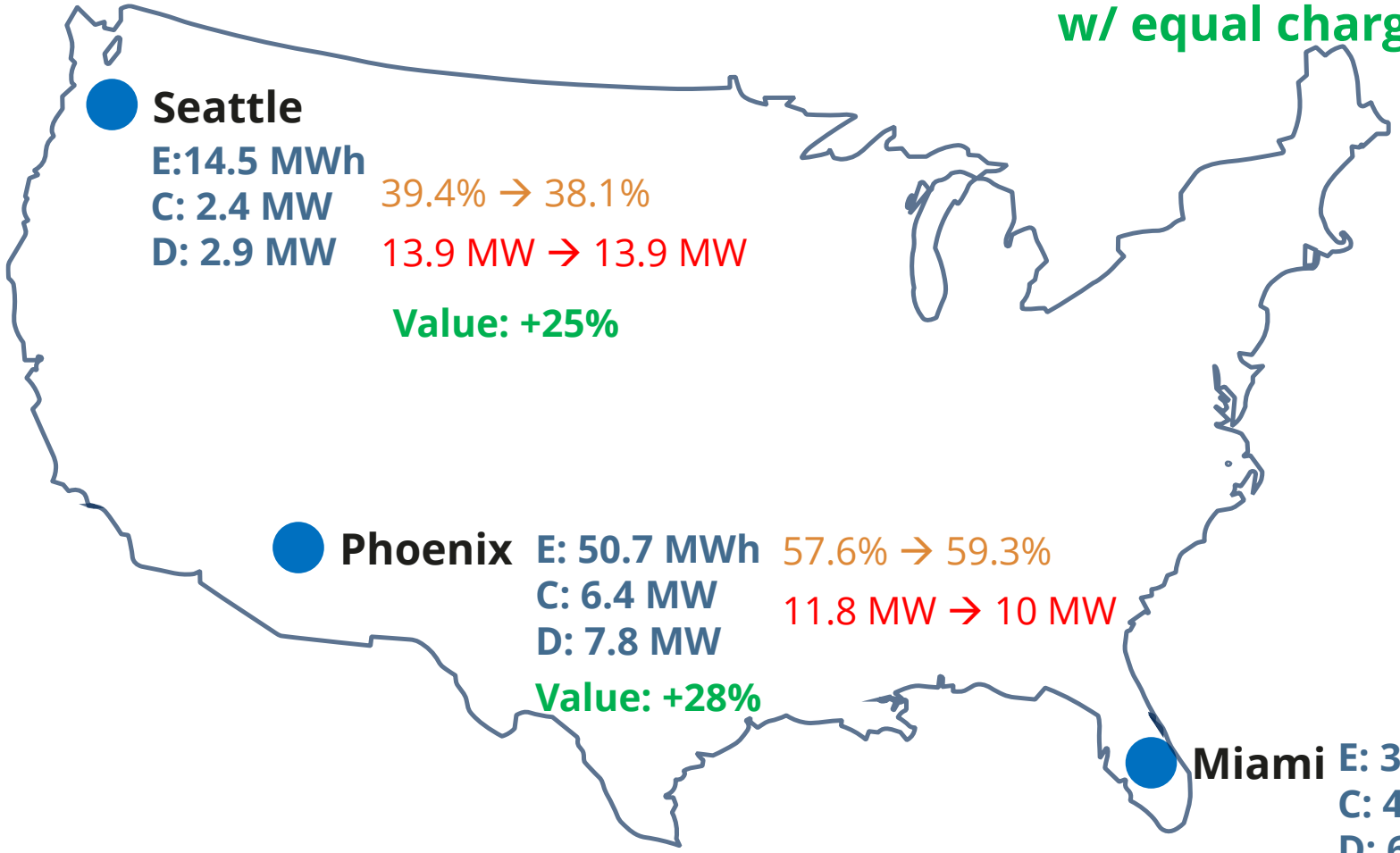
PV penetration

Peak grid demand

What would be the optimal energy, charge, and discharge capacities?

Storage value compared to 4-hour storage w/ equal charge and discharge capacities

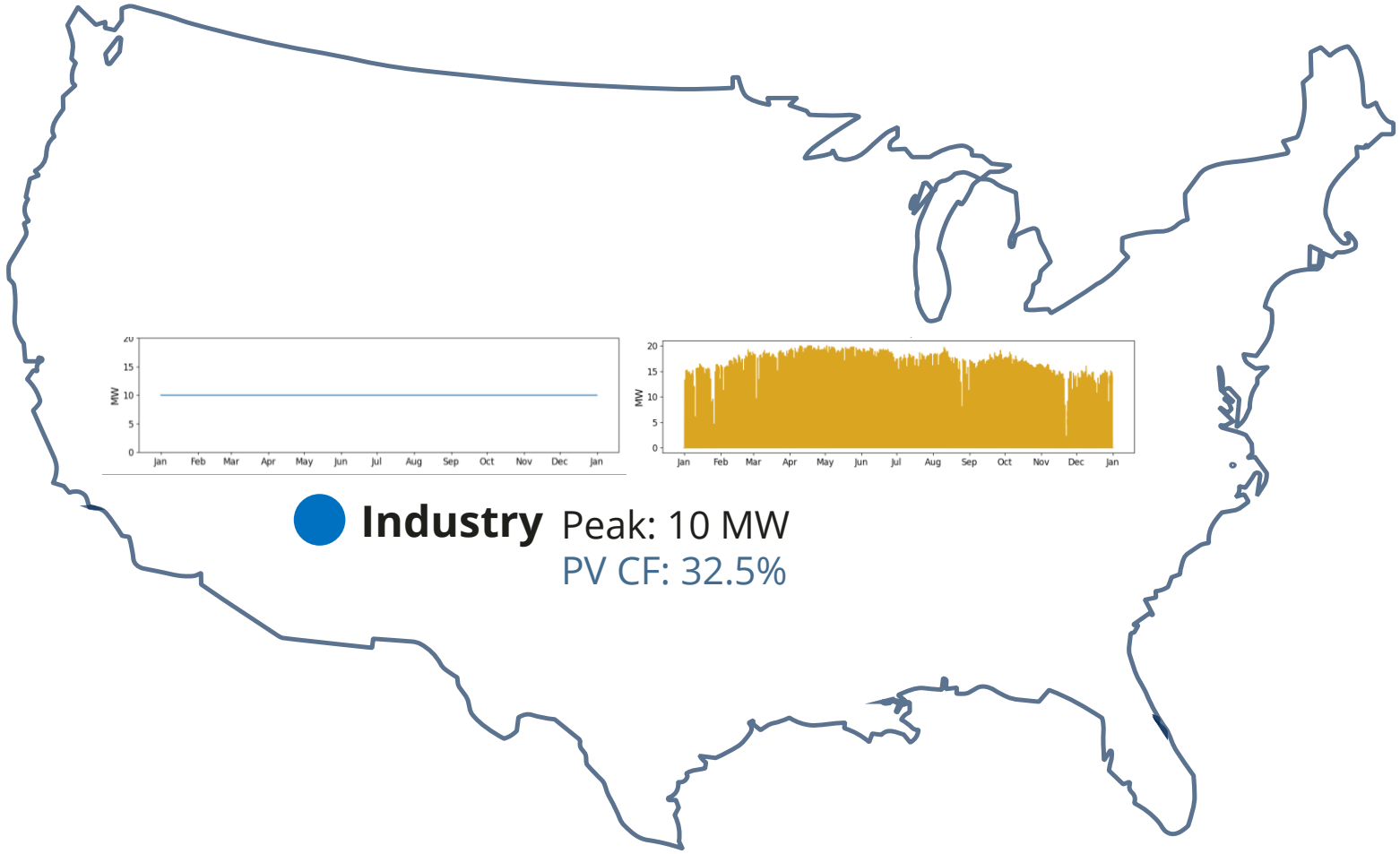


Seattle
E:14.5 MWh
C: 2.4 MW
D: 2.9 MW
39.4% → 38.1%
13.9 MW → 13.9 MW
Value: +25%

Phoenix
E: 50.7 MWh
C: 6.4 MW
D: 7.8 MW
57.6% → 59.3%
11.8 MW → 10 MW
Value: +28%

Miami
E: 34.8 MWh
C: 4.1 MW
D: 6.9 MW
49.2% → 48.7%
10.9 MW → 9.6 MW
Value: +19%

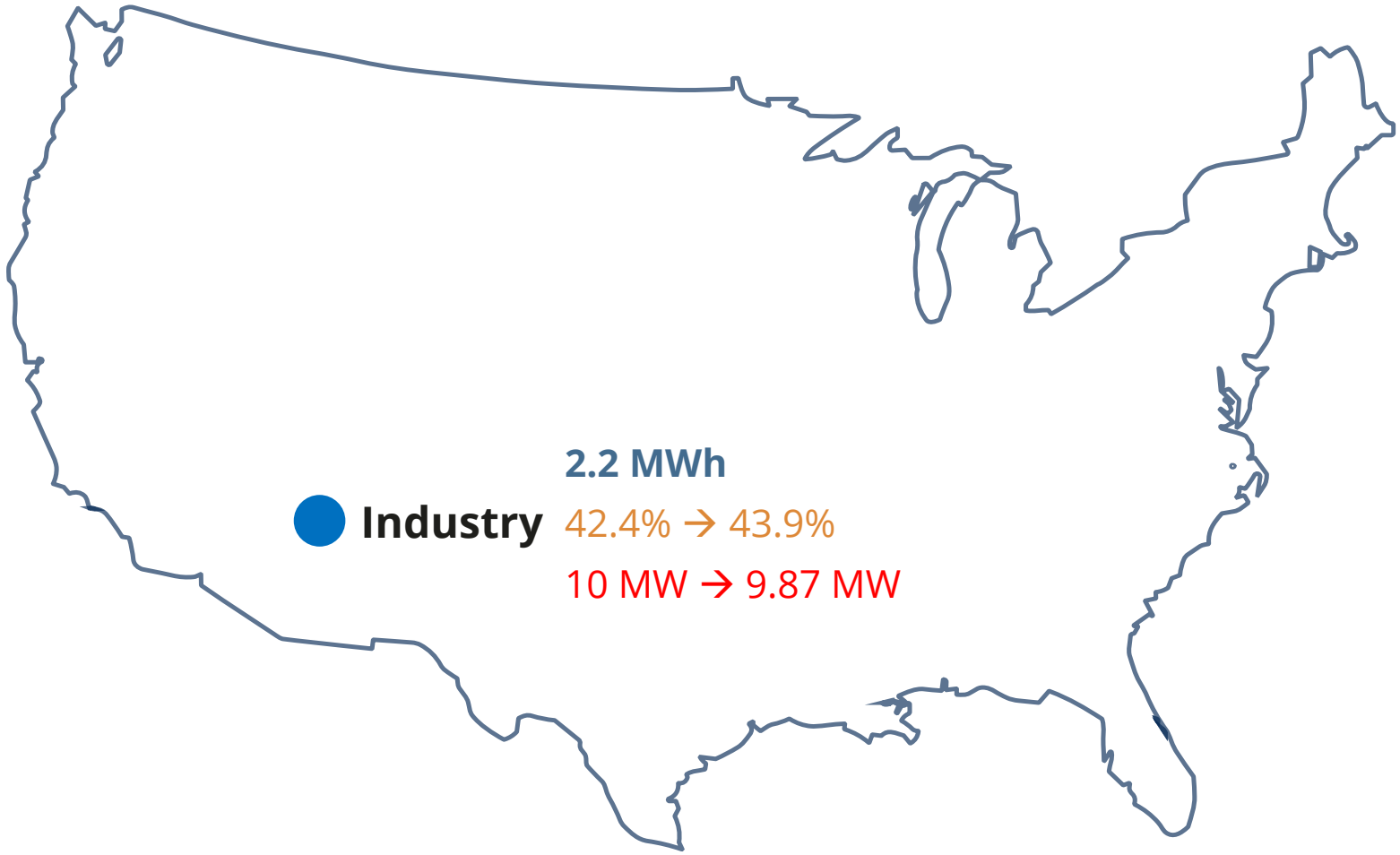
What if we are an industry with constant demand?



Optimal 4-hour storage

PV penetration

Peak grid demand

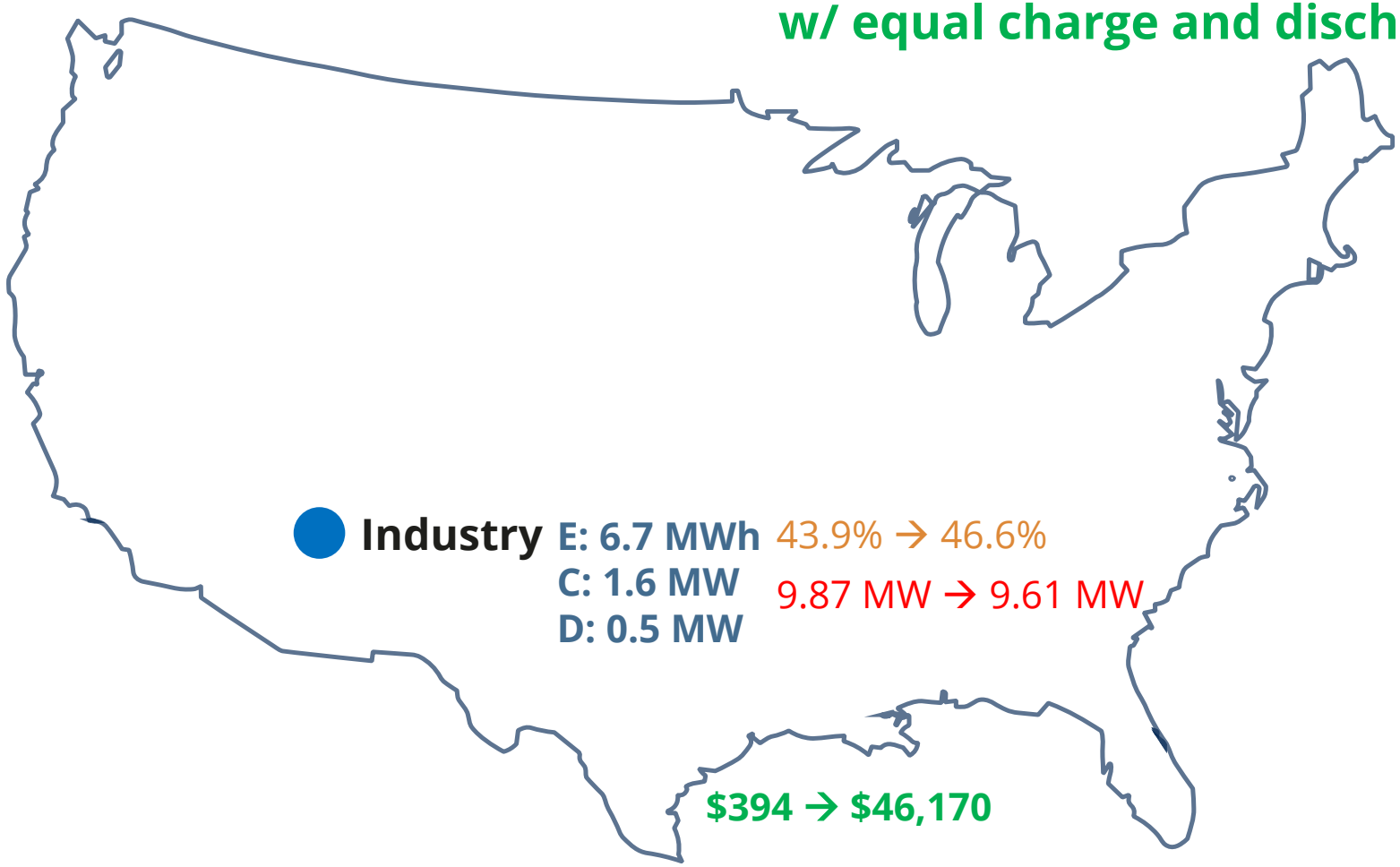


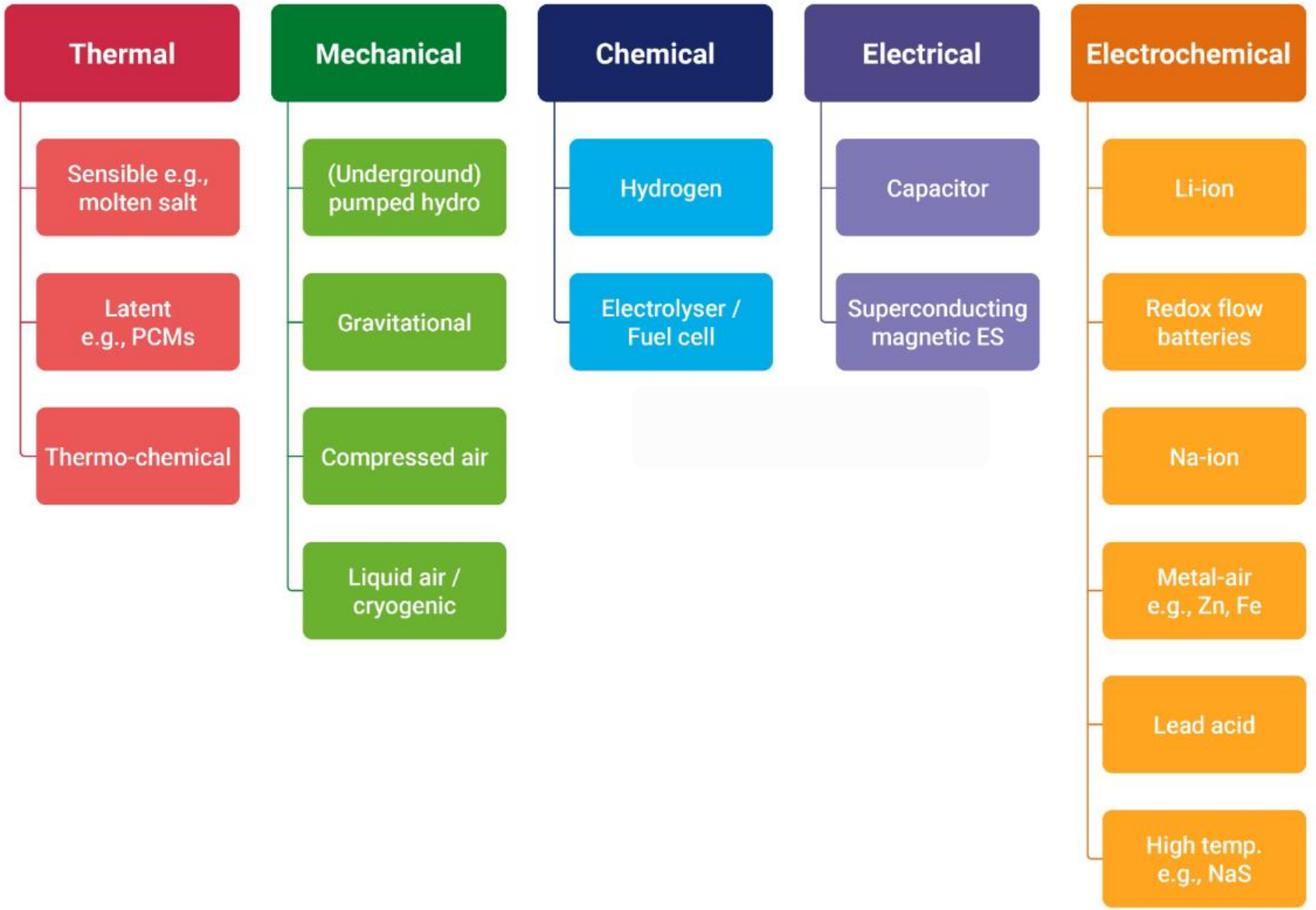
PV penetration

Peak grid demand

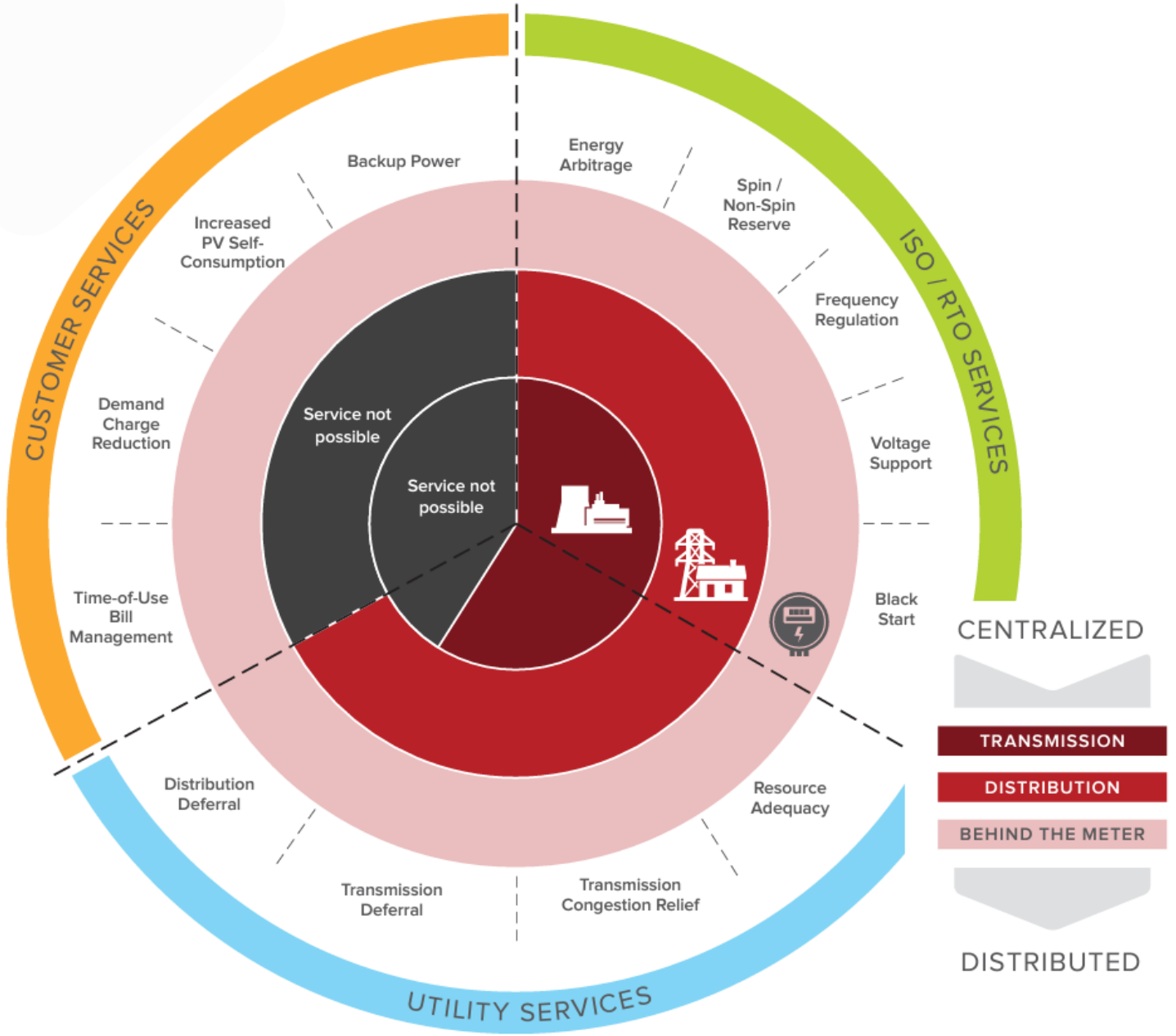
What would be the optimal energy, charge, and discharge capacities?

Storage value compared to 4-hour storage w/ equal charge and discharge capacities



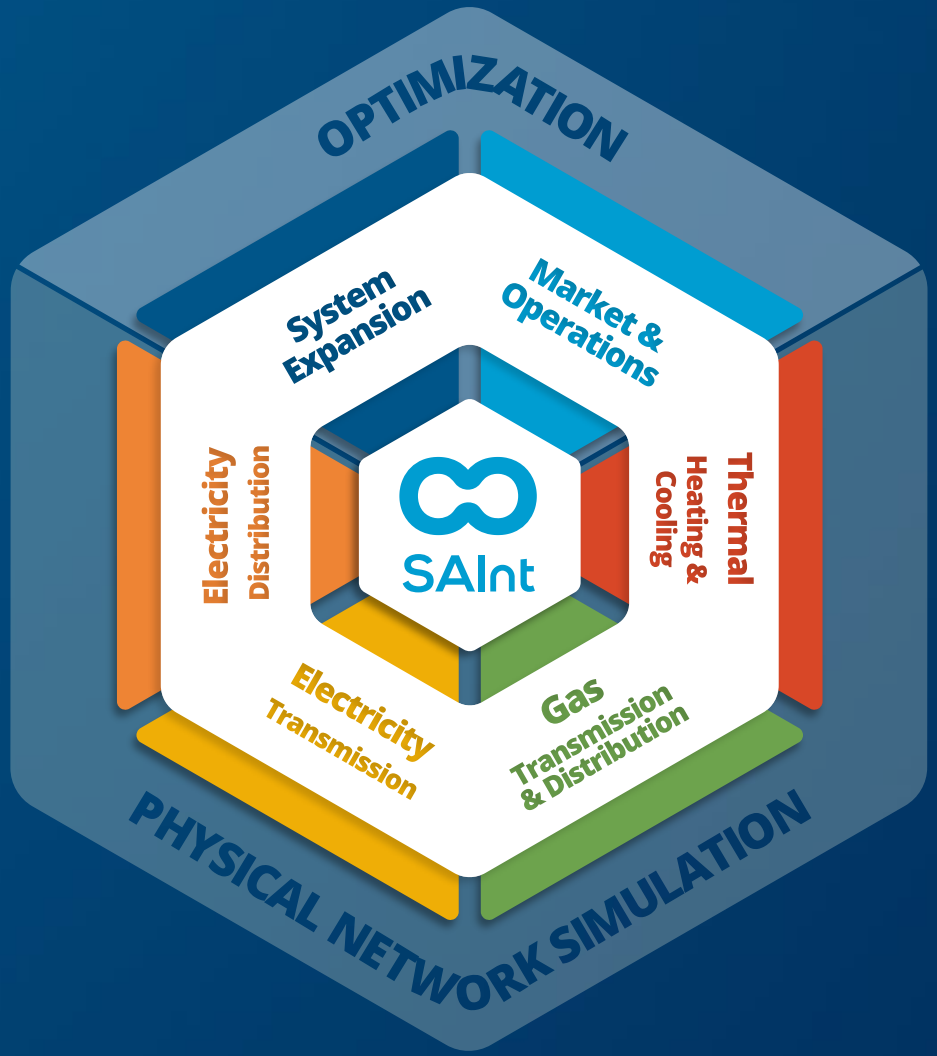


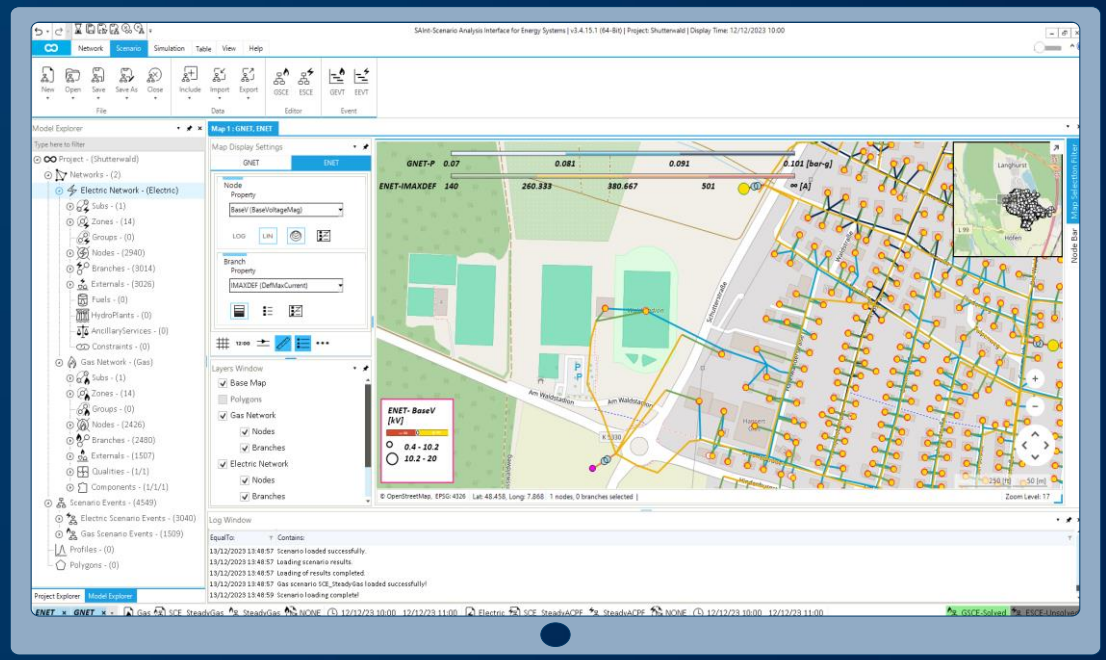
Source: IDTechEx Research



Source: [RMI]

Integration of Traditionally-Siloed Planning Processes





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