



Energy
Storage
Association

U.S. Energy Storage Market & Drivers

EIA Energy Storage Workshop

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Interim CEO

November 18, 2021

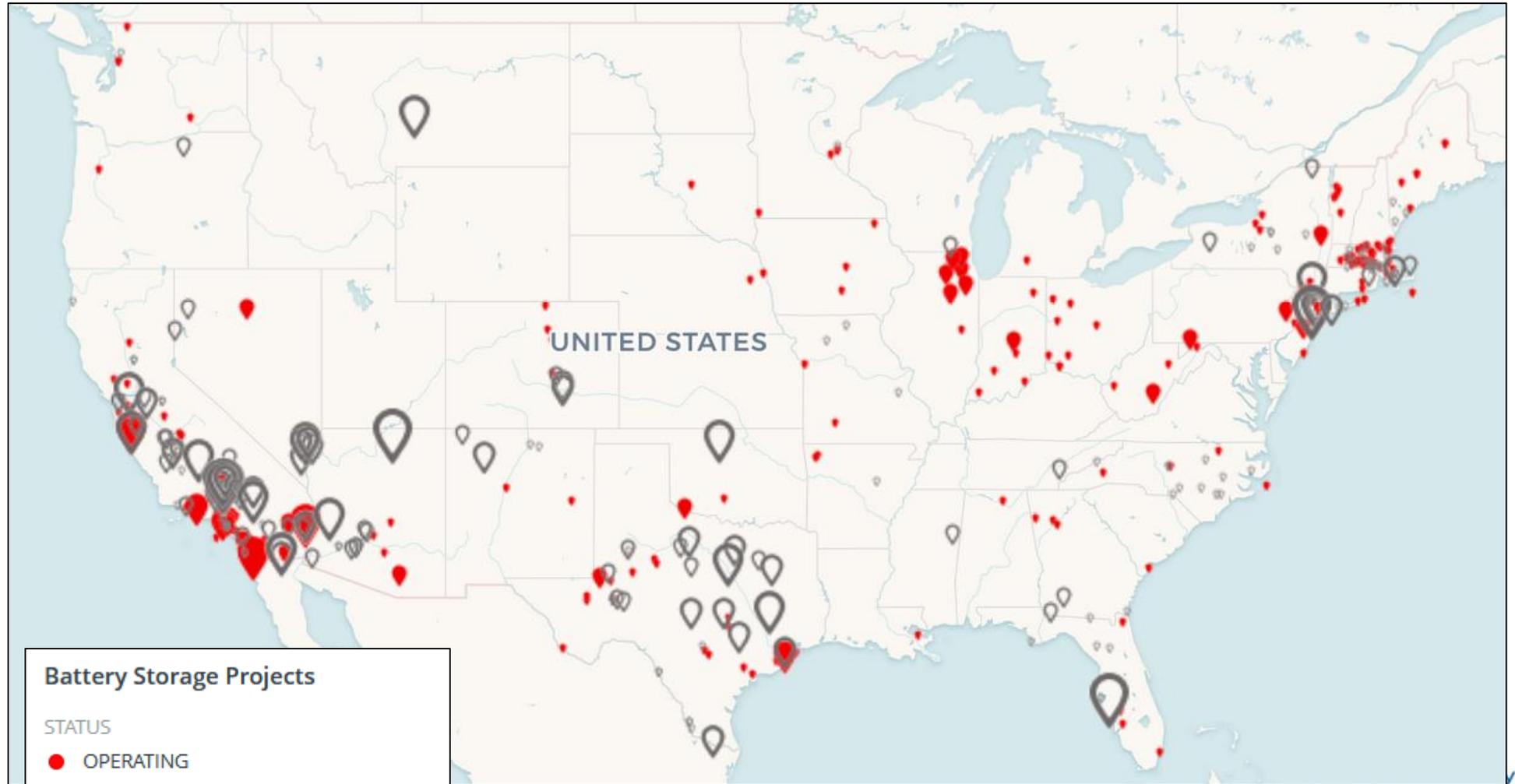
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Grid Battery Projects (MW-scale)

EIA 860m Series – August 2021



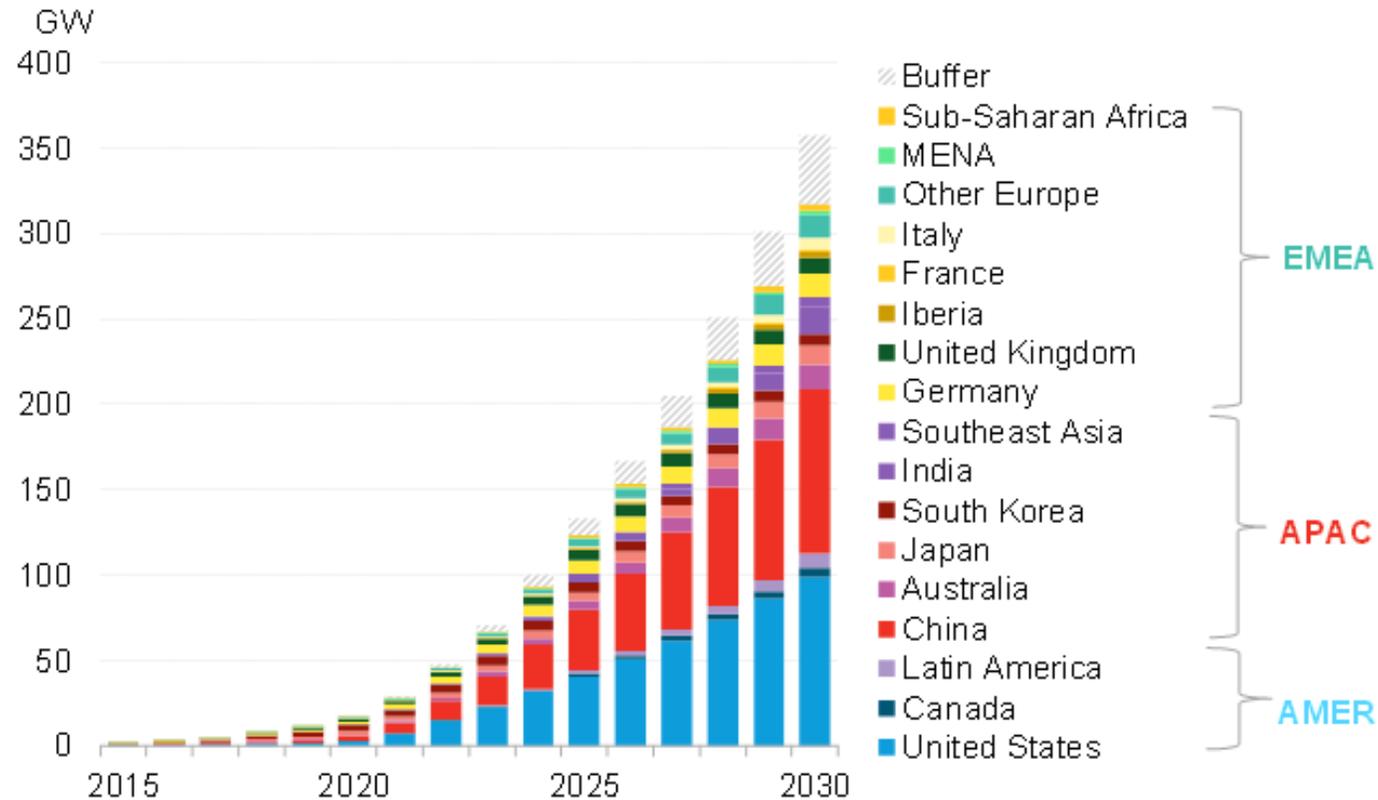
Battery Storage Projects

STATUS

- OPERATING
- PLANNED

A global terawatt-hour of battery storage added by 2030

Figure 1: Global cumulative energy storage installations, 2015-30

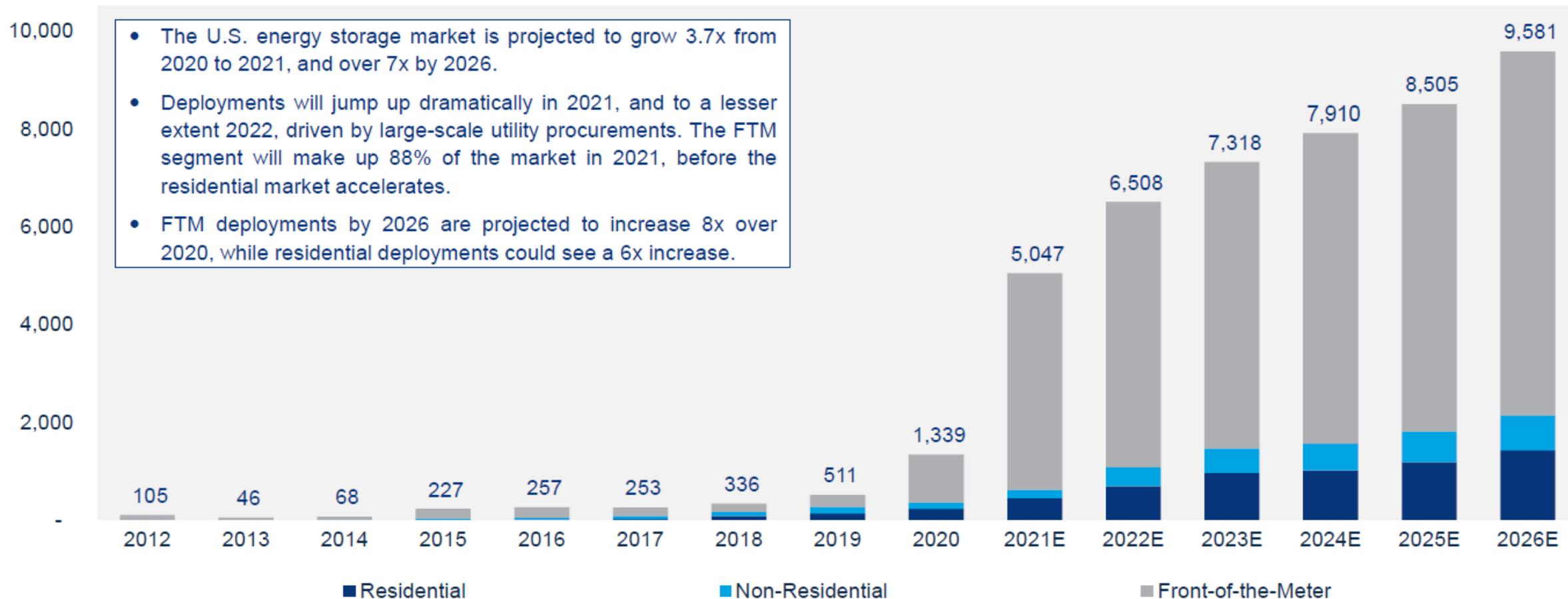


Source: BloombergNEF. Note: MENA = Middle East & North Africa. Buffer represents markets and use-cases that we are unable to forecast due to lack of visibility.

Annual U.S energy storage deployments by segment (MW)

Projected 2021 FTM deployments are expected to realize 3.7x growth over 2020 levels

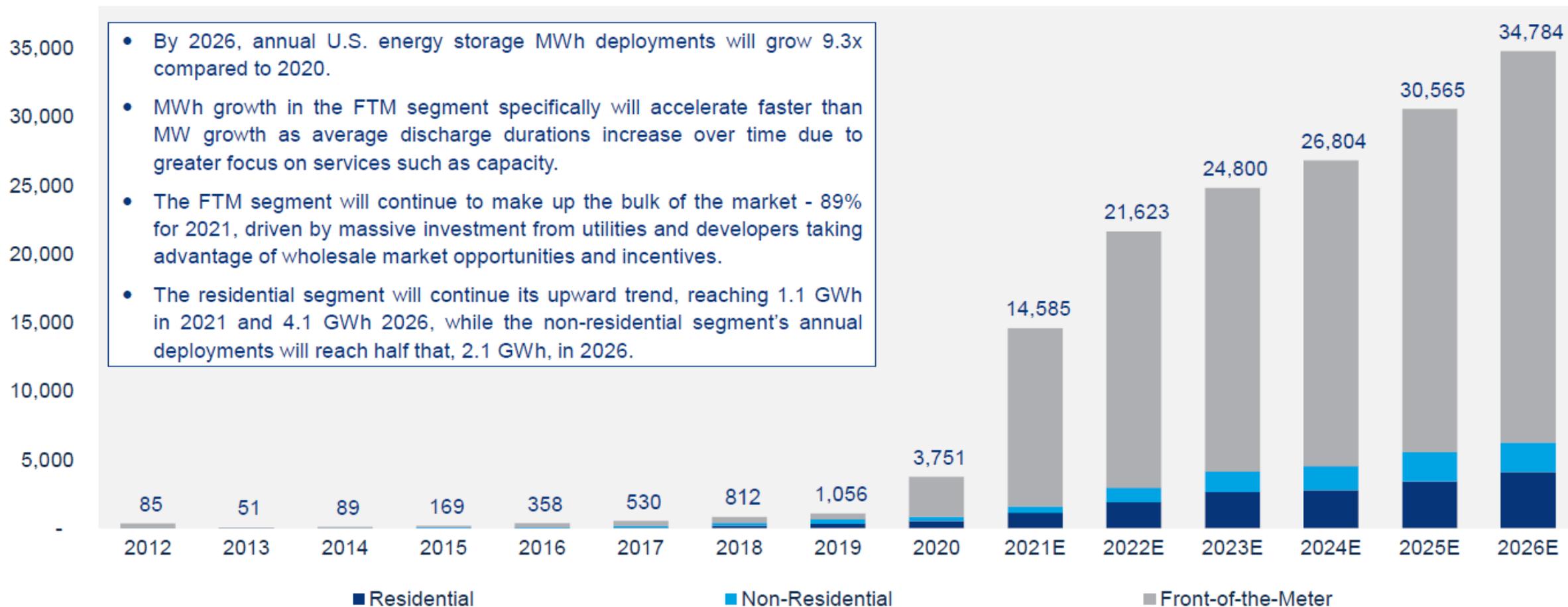
U.S. energy storage annual deployment forecast by segment, 2012-2026E (MW)



Annual U.S. energy storage deployments by segment (MWh)

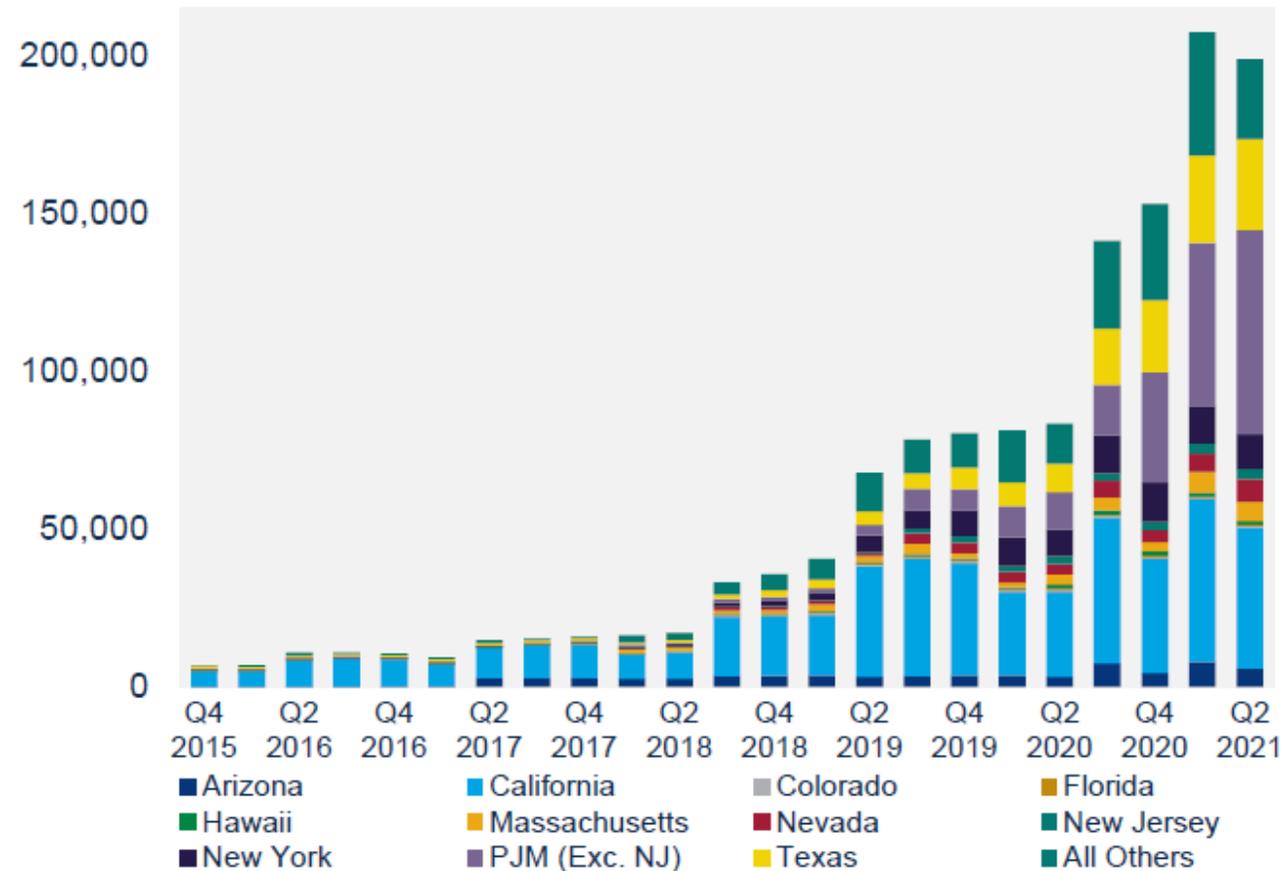
By 2026, the U.S. is projected to realize 31 GWh of growth over 2020

U.S. energy storage annual deployment forecast by segment, 2012-2026E (MWh)



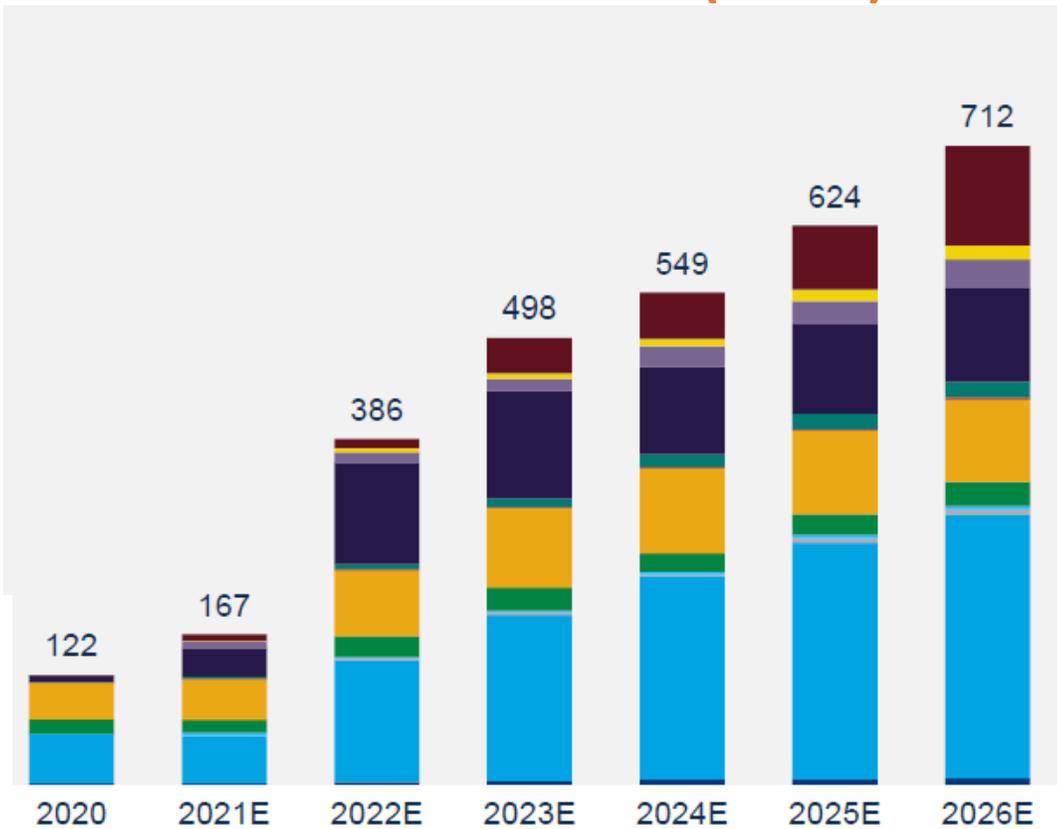
Significant increase in project pipeline

U.S. front-of-the-meter energy storage pipeline by market, Q4 2015-Q2 2021 (MW)

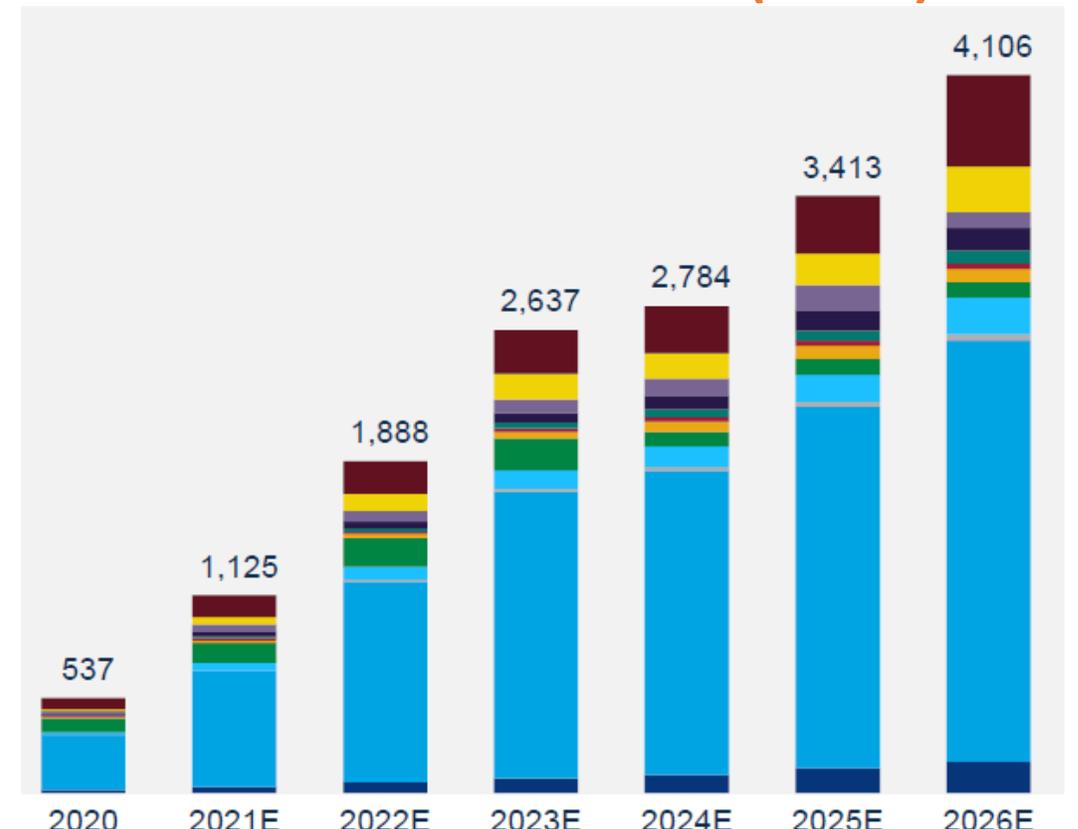


Behind-the-meter storage growth anticipated

C&I market outlook (MWh)



Residential market outlook (MWh)

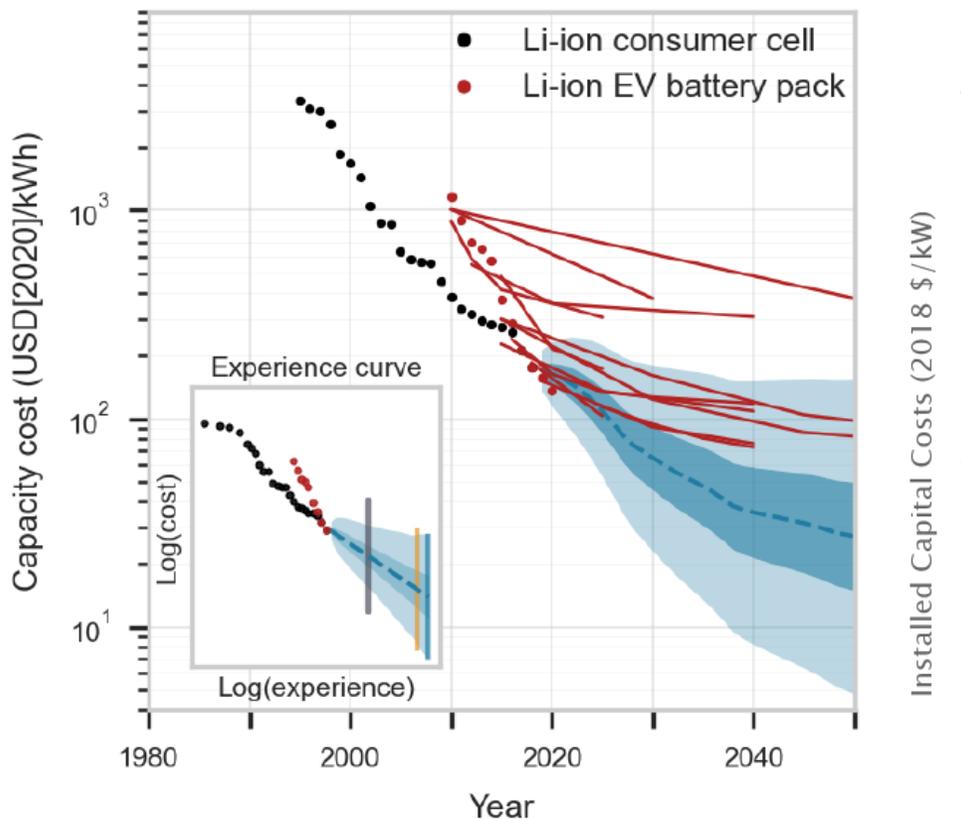


■ Arizona ■ California ■ Colorado ■ Florida ■ Hawaii ■ Massachusetts ■ Nevada ■ New Jersey ■ New York ■ PJM (Ex. NJ) ■ Texas ■ All Others

Driver: Battery storage installed cost declines

c

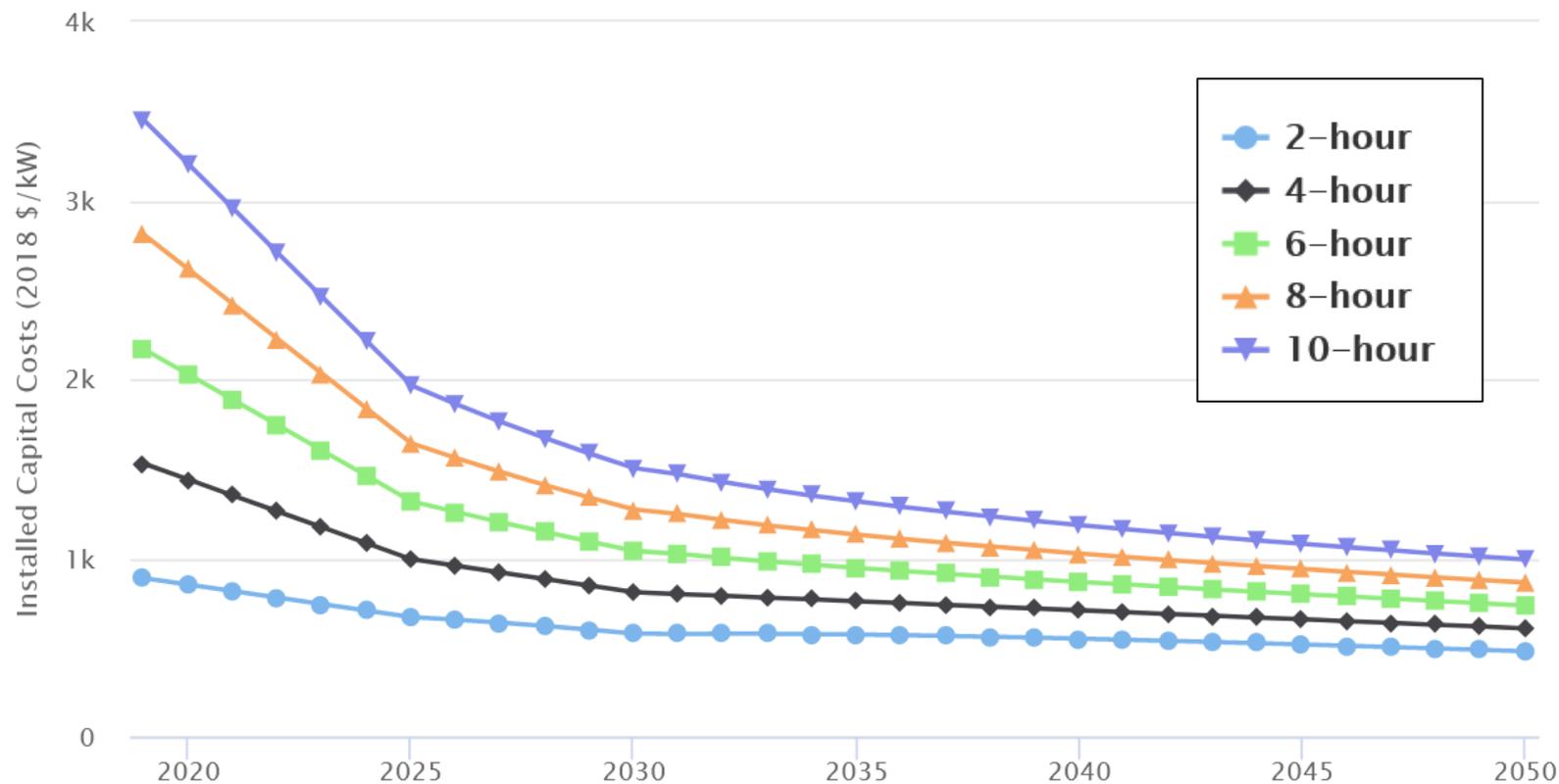
Batteries



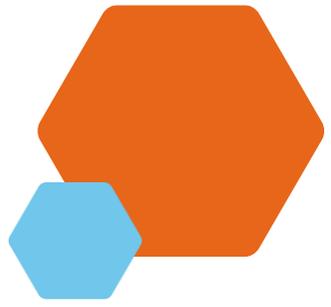
- Observed global average technology costs
- Probabilistic Wright's law forecast under Fast Transition scenario (median, 50% C.I. and 95% C.I.)
- High progress IAM or IEA cost projections
- Probabilistic AR(1) forecast (median, 50% C.I. and 95% C.I.)

SOURCE: INET Oxford Working Paper No. 2021-01

60-MW Utility-Scale BESS Cost Projections for SFS



SOURCE: NREL 2021



High-level drivers of deployment

- **Technology**
 - Continued installed cost declines, learning-by-doing
 - RD&D investments in emerging technologies
- **Market**
 - Increasing renewables deployments
 - Increasing DER deployments
 - Utility procurement / long-term contracts
 - Electrification of transportation
 - Significant private capital provision
- **Policy**
 - Decarbonization policies
 - RTO/ISO market design reforms
 - State regulatory & planning updates
 - Federal incentives



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Questions? Feedback?

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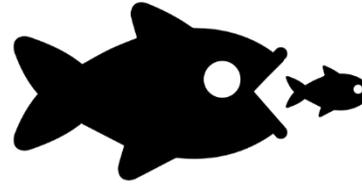
Policy Drivers of Energy Storage



VALUE and
compensate
storage flexibility

Policies

- Deployment targets
- Incentive programs
- Tariff/rate design
- Wholesale market products
- Cost-benefit studies



Enable storage to **COMPETE**
in all grid planning and
procurements

Policies

- Long-term resource planning
- Distribution planning
- Transmission planning
- Renewables/clean energy standards
- Wholesale market rules
- Resource adequacy rules



Enable storage
ACCESS to grid
and markets

Policies

- Interconnection processes
- Multiple-use frameworks
- Ownership rules
- Codes & standards

Policy driver: ~12.5 GW in Storage Targets

Oregon:
Min of 10
MWh and
max 1% of
peak load

California:
1,325 MW x 2020

Nevada:
1,000 MW x 2030

New York:
1,500 MW x 2025;
3,000 MW x 2030

Maine:
300 MW x 2025;
400 MW x 2030

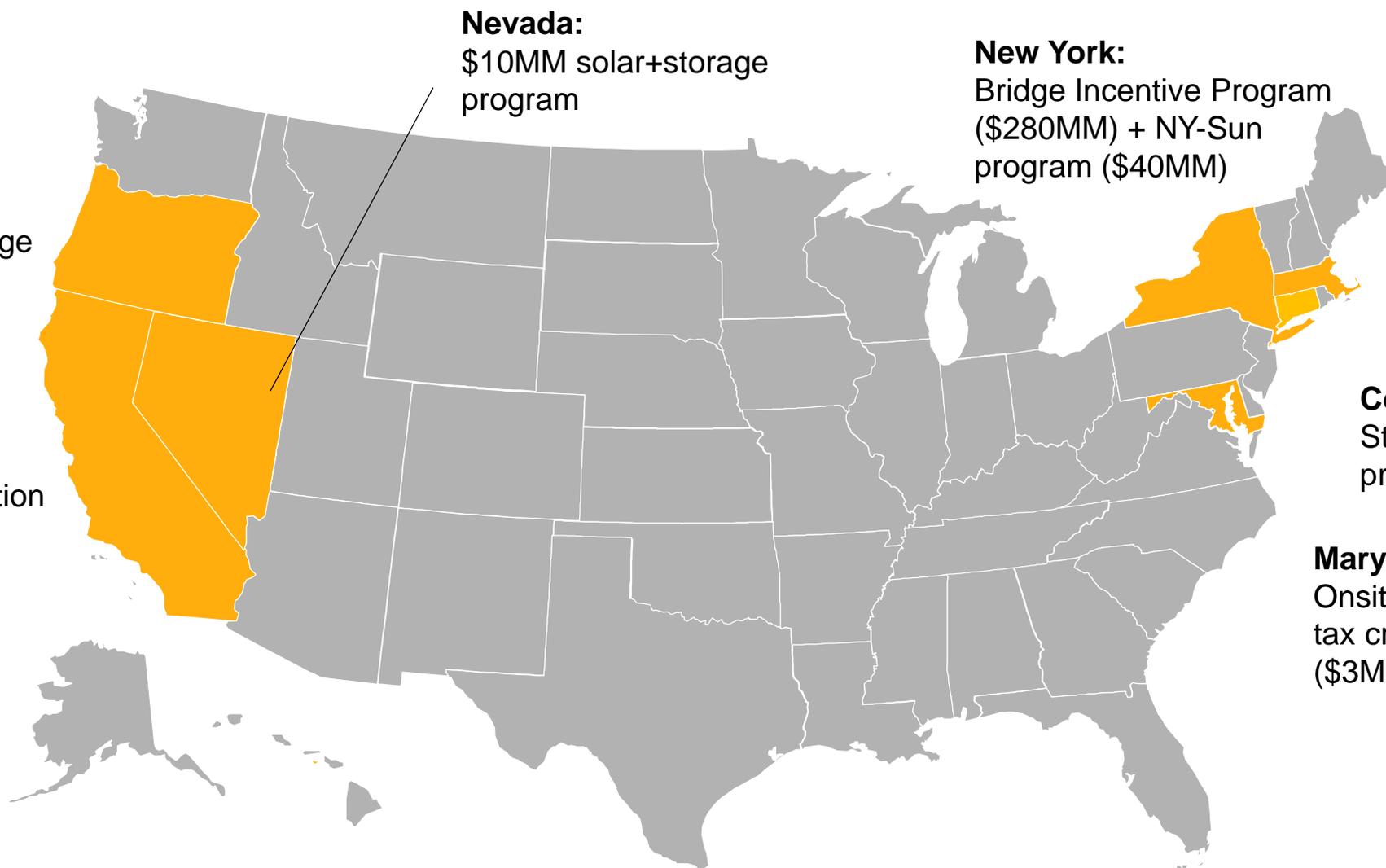
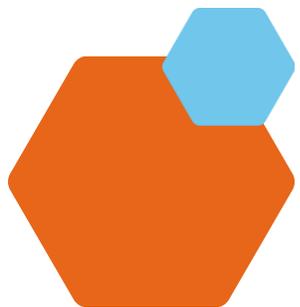
Massachusetts:
200 MWh x 2020;
1,000 MWh x 2025

Connecticut:
1,00 MW x 2030

New Jersey:
600 MW x 2021;
2,000 MW x 2030

Virginia:
3,100 MW x 2035

Policy driver: Over \$1B in Storage Incentives



Oregon:
\$2MM
solar+storage
program

California:
Self-Generation
Incentive
Program
(\$800MM)

Nevada:
\$10MM solar+storage
program

New York:
Bridge Incentive Program
(\$280MM) + NY-Sun
program (\$40MM)

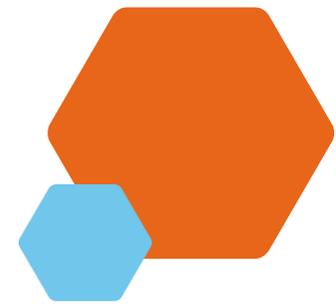
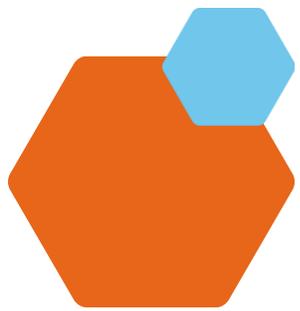
Current Federal:
Storage paired with
solar eligible for
investment tax credit

Massachusetts:
Clean Peak Standard;
SMART incentive program
for solar+storage

Connecticut:
Storage grid services
program

Maryland:
Onsite storage
tax credit
(\$3MM)

Policy driver: regulations on storage in planning



Washington:
Policy Statement and draft regs call for sub-hourly modeling and mechanism to value flexibility
Docket U-161024

Colorado:
PUC updated all planning rules to consider storage procurement
Docket 18R-0623E, Decision C18-1124

Minnesota:
Legislation requires IRPs to include storage modeling best practices
HF 2

Michigan: PSC issued guidelines considering storage in 2019 IRPs
Cases U-15896, 18461, 18418



32 states have planning requirements
Over **22,000 MW** selected to date

Arizona:
Regulators rejected utility IRPs, called for evaluation of storage, gas moratorium
Case E-00000V-15-0094, Decision 76632

New Mexico:
Revised IRP rules require consideration of energy storage
Case 17-00022-UT

NARUC & NASEO
Resolution (2018, EL-4/ERE-1) calls for modeling “the full spectrum of services that energy storage and flexible resources are capable of providing.”

 **State with target + IRP requirement**