Energy Storage Use Cases

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Key Drivers from PSC Order and Roadmap

• Tariff/Retail Actions
• Bridge Incentive
  • Incentive for BTM Storage
  • Solar + Storage incentive ($350/kWh up to 4 hours)
  • Bulk storage incentive in coordination with Utility procurement program
• Longer duration Demand Response program
• Utility procurement program
• NWA+
Anticipated Installations

• A wide range of use cases are likely to emerge

• We expect use case to continue to evolve

• Interconnections studied with full physical capability or submitted operational constraints, but not locked to use case.
Standalone Energy Storage: Behind-The-Meter C&I

• Primary focus on Peak Load Reduction
• Non-Exporting
  • Demand charge reduction
    • Usually standby rate and/or Rider Q
  • Demand Response participation with no export
  • System size typically 10% to 25% of customer peak load
• Exporting
  • Demand charge reduction
    • Standby rate (including Rider Q) or Time of Use Rates
  • DR participation
    • These projects usually will export for DR (when allowed)
  • VDER (ancillary value stream, will depend on the customers load profile)
  • System size typically 50% of customer peak load
Solar + Storage:
Behind-the-meter C&I

• Builds on values discussed for stand-alone storage
• Non-exporting
  • Maximize self consumption is locations where VDER compensation is low.
• Exporting
  • Demand charge reduction
  • Demand Response
  • VDER
    • DRV value enhancement
    • Capacity value enhancement (Alt 2: 2-7pm summer)
CHP + Storage: Behind-the-meter C&I

• NYSERDA CHP incentives focusing on CHP with advanced control and/or energy storage
• Compensation
  • Optimization of performance and sizing of CHP system
  • Demand Charge Reduction
    • Standby rate and/or Rider Q (eligibility depends on utility)
  • Demand Response participation (export for DR when allowed)
  • VDER (or other export)
    • Rider Q Option C (Con Ed)
    • Will have higher levels of export than most other combinations
Examples of more complex use cases

Behind-the-meter C&I

Behind-the-meter Solar+Storage for demand charge management, demand response, ancillary services, and resiliency

Asset type(s): Storage + Solar

Revenue streams:
- Utility bill savings by maximizing onsite consumption of solar generation
- Demand charge management
- Demand response
- Ancillary services (e.g. frequency regulation and/or spinning reserves at NYISO)
- Resiliency - support building critical loads during distribution grid outage

Export profile:
- Variable - depends on DR event occurrences and NYISO's 6-second frequency regulation signal
Examples of more complex use cases

Behind-the-meter C&I

Behind-the-meter CHP+Solar+Storage for load shifting, demand charge management, demand response, ancillary services

Asset type(s): Storage + Solar + CHP

Revenue streams:
- Utility bill savings by maximizing onsite consumption of solar generation
- Load shifting to match CHP's thermal output (useful in electrically-limited buildings)
- Demand charge management
- Demand response
- Ancillary services (e.g. frequency regulation and/or spinning reserves at NYISO)
- Resiliency - support building critical loads during distribution grid outage

Export profile:
- Variable - depends on DR event occurrences and NYISO's 6-second frequency regulation signal
Examples of more complex use cases

**Behind-the-meter C&I**

Behind-the-meter Fuel Cell+Solar+Storage for demand response, ancillary services and resiliency

Asset type(s): Storage + Solar + Fuel Cell

Revenue streams:

- Utility bill savings by maximizing onsite DG consumption
- Demand charge management
- Demand response
- Wholesale energy market participation (Day-ahead and/or Real-time energy markets at NYISO)
- Ancillary services (e.g. frequency regulation and/or spinning reserves at NYISO)
- Resiliency - support building critical loads during distribution grid outage

Export profile:

- Variable - depends on LBMP, DR event occurrences and NYISO's 6-second frequency regulation signal
Residential Use Cases

- Solar + Storage
  - Residential Time of Use Rates (Future)
  - Demand Response participation (may export for DR when allowed) either on their own or via an aggregator
    - PSEG-LI has a proposed incentive program for the deployment of combined solar+storage residential systems for participation in their dynamic load management (DLM) tariff
- Standalone Storage
  - Backup Power
  - Demand Response participation
    - Via an aggregator
Standalone Energy Storage: Front-of-the-Meter

- Utility Interconnected
  - Compensation
    - Utility programs (NWA)
    - Demand Response
      - Both Utility and ISO DR
  - Import energy through TOU/Standby Rate
  - Opportunity for future dual participation with ISO markets
- Wholesale Interconnected
  - Wholesale market participation - energy, capacity, regulation and reserves.
Solar + Storage: Front-of-the-Meter

- Both AC and DC coupled projects
- Community Distributed Generation
  - VDER
    - DRV value enhancement
    - Capacity value enhancement (Alt 2: 2-7pm summer)
- Wholesale Interconnected (Proposed)
Non-Wires Alternatives

• May feature any of the use cases above
  • Compensation from the Utility for NWA service
  • Compensated through another mechanism when not operational on behalf of the utility
• BTM NWA solutions generally have more straightforward non-NWA service revenue streams
• FTM NWA solutions include dedicated resources and resources participating in ISO market but callable by utility with more than 24 hour notice
• Usually the battery solution will export as part of its NWA role
ISO Aggregation and Dual Participation

• ISO DER Roadmap process
  • Market rules planned to be finalized this winter
  • 2021 implementation
    • Dual participation may take longer – PSC order working group to accelerate
• Most likely aggregation use case will be focused on load reduction (ISO Demand response program particularly SCR) or capacity
• Still are significant decisions to be made on Dual Participation – area of interest particularly for large projects and NWA projects
• Need to harmonize interconnect process
Storage to maximize interconnection

• Storage can be used to modify the properties of exported energy from DG assets
  • Mitigate voltage fluctuation/flicker issues
  • Avoid project size reduction

• Increase Solar energy for a given interconnection size
Maximizing Solar with Interconnect constraint

Example Graphic from Fluence Solar Power NY 2018 presentation
Thank You

Visit www.ny-best.org or contact us at info@ny-best.org for additional information