

# Energy Storage

Michigan Energy Providers Conference

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# Energy Storage



Battery Storage



Hydro Pumped Storage



Flywheel Storage



Compressed Air Energy Storage

# U.S. Battery Storage Costs

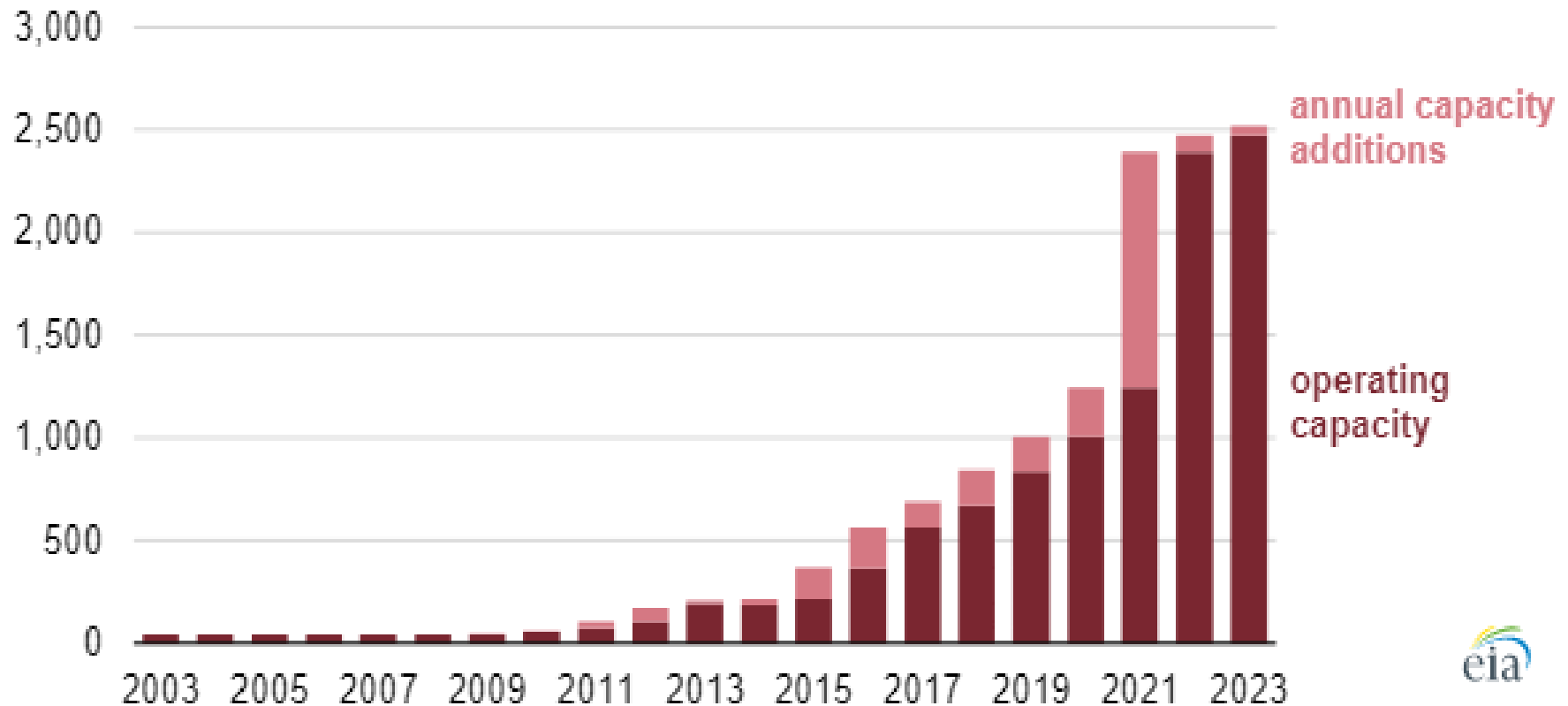
Battery pack price (real 2018 \$/kWh)



Source: BloombergNEF

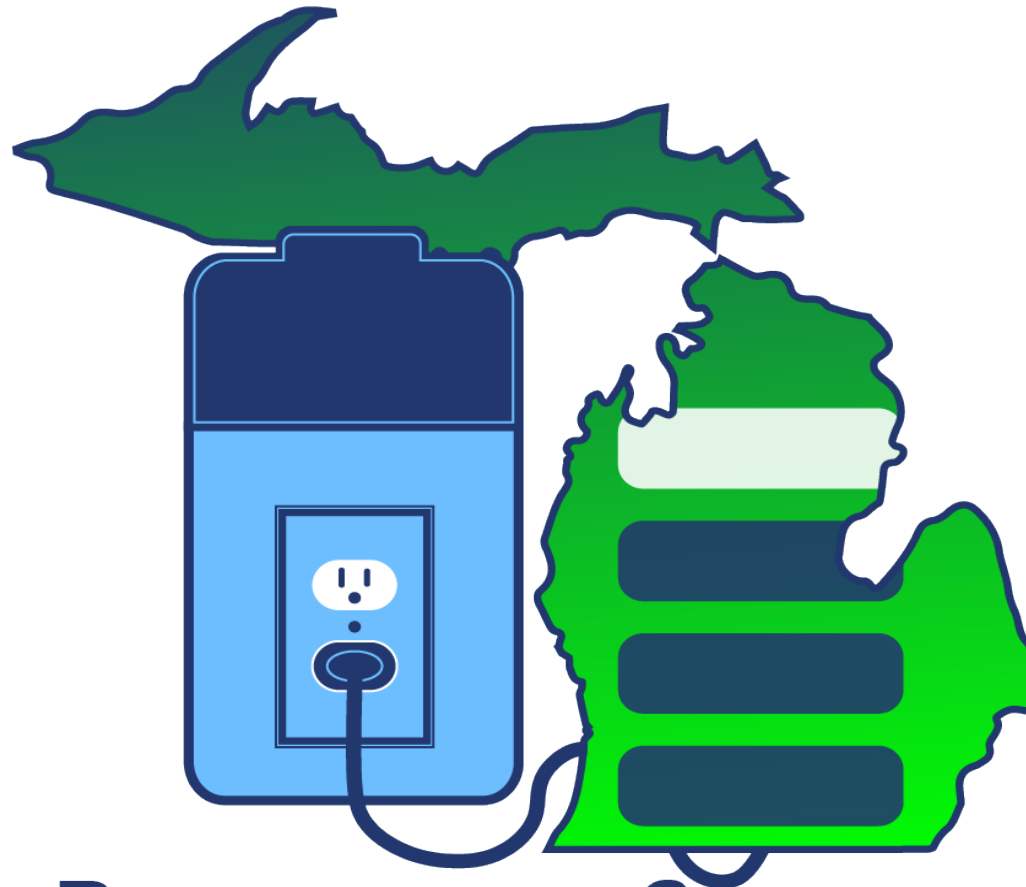
# U.S. Battery Storage Capacity

U.S. utility-scale battery storage power capacity (March 2019)  
megawatts (MW)



# Michigan Energy Storage Symposium

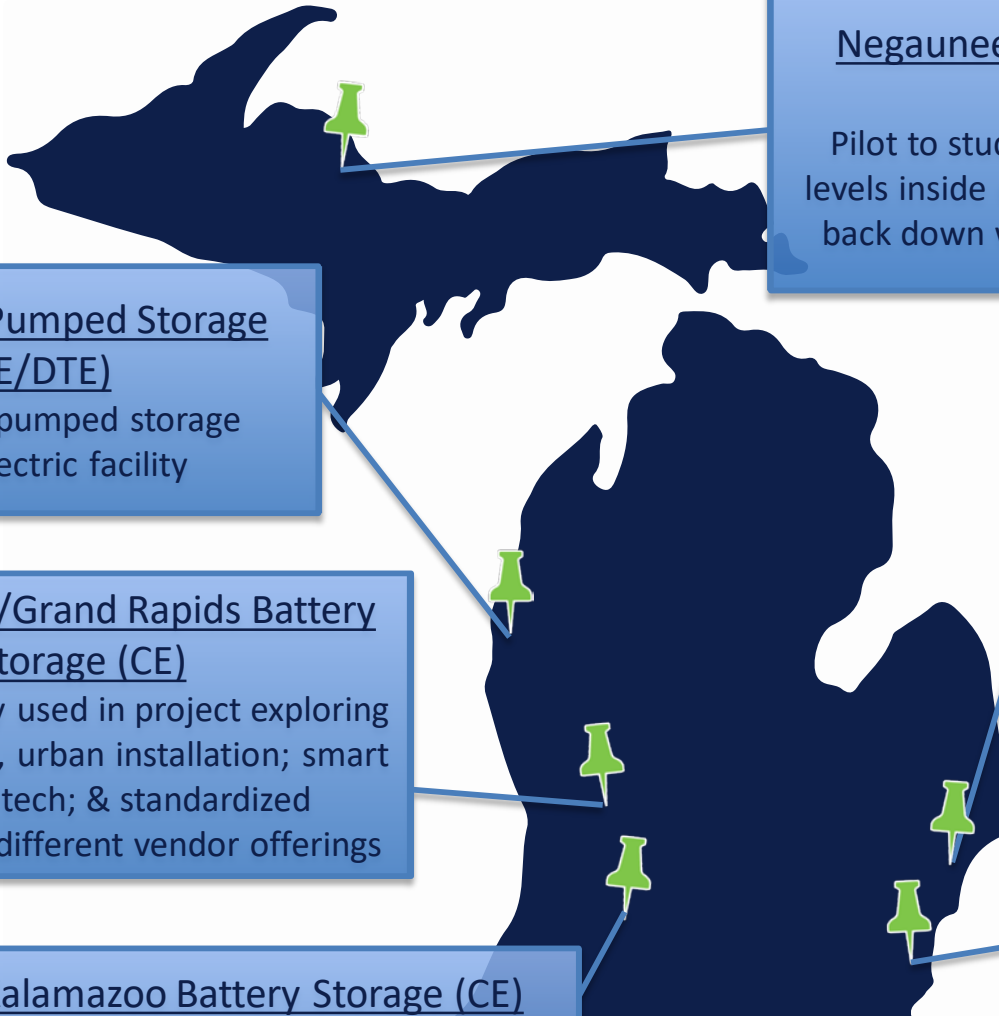
March 25, 2019



## PLUGGING INTO STORAGE

[www.Michigan.gov/energy](http://www.Michigan.gov/energy)

# Storage Projects in Michigan



## Negaunee Mine Shaft Pumped Storage (City of Negaunee)

Pilot to study ability to pump water to higher levels inside reclaimed mine shafts, then release back down when energy is needed on the grid

## Ludington Pumped Storage (CE/DTE)

1,875 MW pumped storage hydroelectric facility

## Circuit West/Grand Rapids Battery Storage (CE)

500 KW battery used in project exploring small-footprint, urban installation; smart switching tech; & standardized integration of different vendor offerings

## Parkview/Kalamazoo Battery Storage (CE)

1 MW lithium ion battery used to gain technical & operational knowledge about battery design, installation, operation, & maintenance

## O'Shea/Detroit Battery Storage + Solar (DTE)

Installation of 1 MW battery unit at O'Shea Park solar site to verify impact of battery storage on power quality metrics

## Monroe Battery Storage Pilots (DTE)

Twenty 50 KW battery systems installed at neighborhood sites and a 500 KW battery in conjunction with a solar site at Monroe Community College

# Ongoing MPSC Activities

- Integrated Resource Plans
- 5-year Distribution Plans
- Renewable Energy Plans
- Rate Cases
- Statewide Energy Assessment
- Interconnection/Distributed Generation Rules
- Electric Vehicles
- Demand Response
- Customer Data Access
- Third Party Community Renewable Energy

# Thank You!

[www.Michigan.gov/mpsc](http://www.Michigan.gov/mpsc)