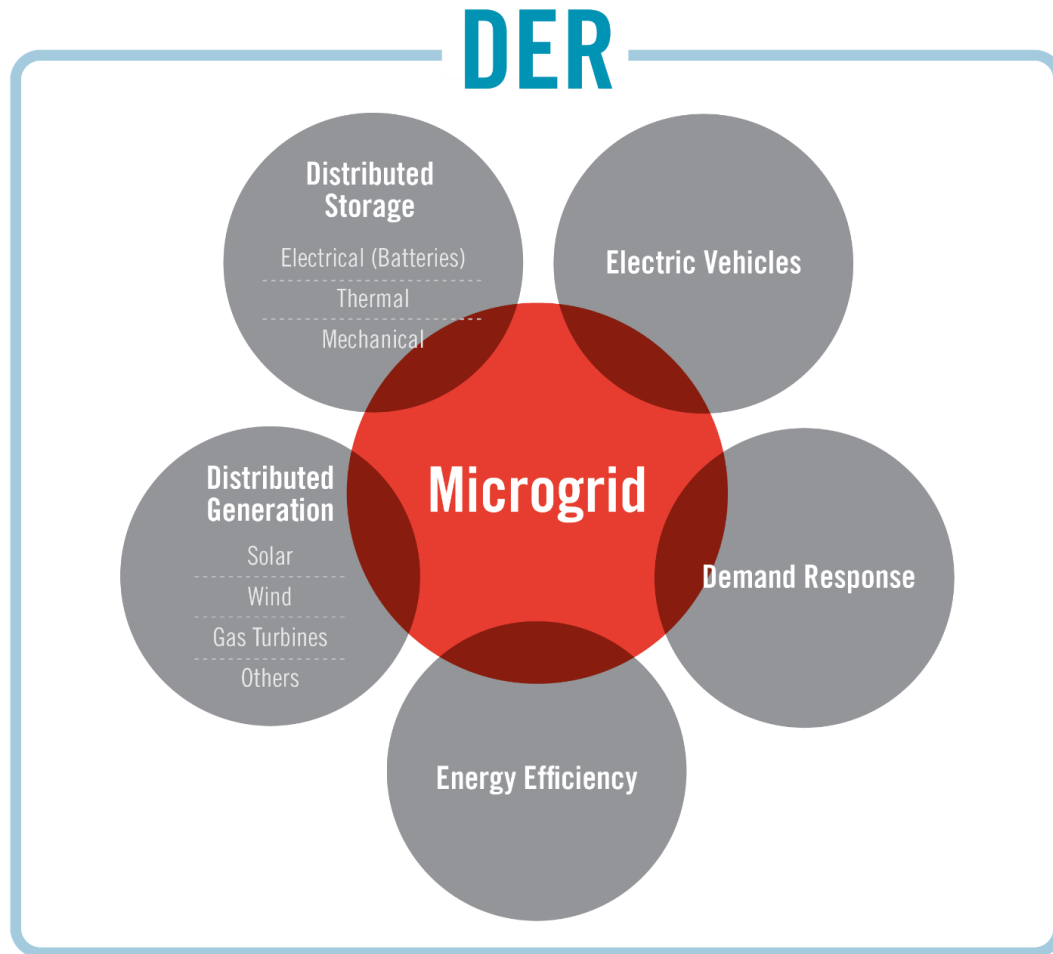


# How DERs Are Changing the Grid



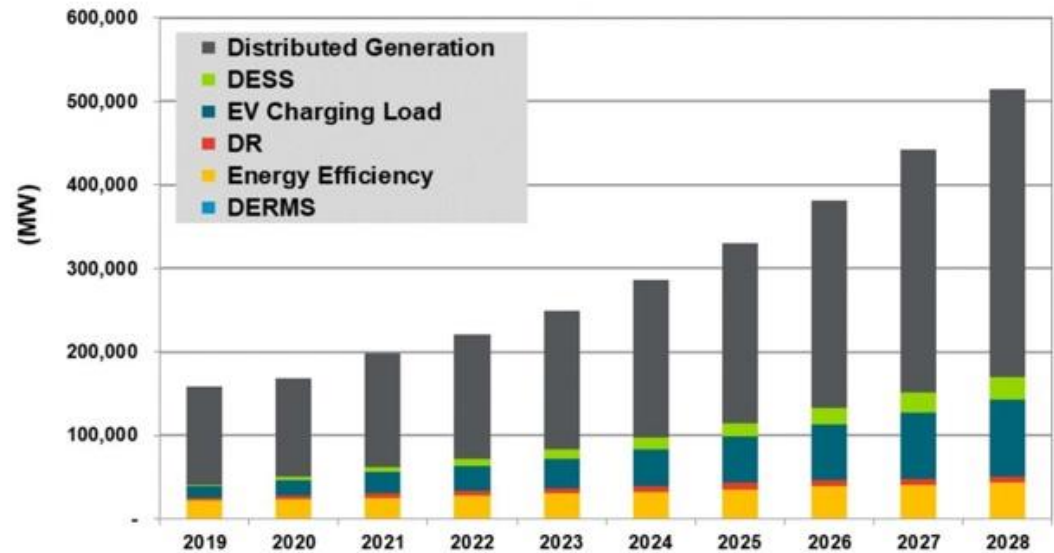
Presented by: Jason Marena

# What is DER?



# DER Market Continues to Grow

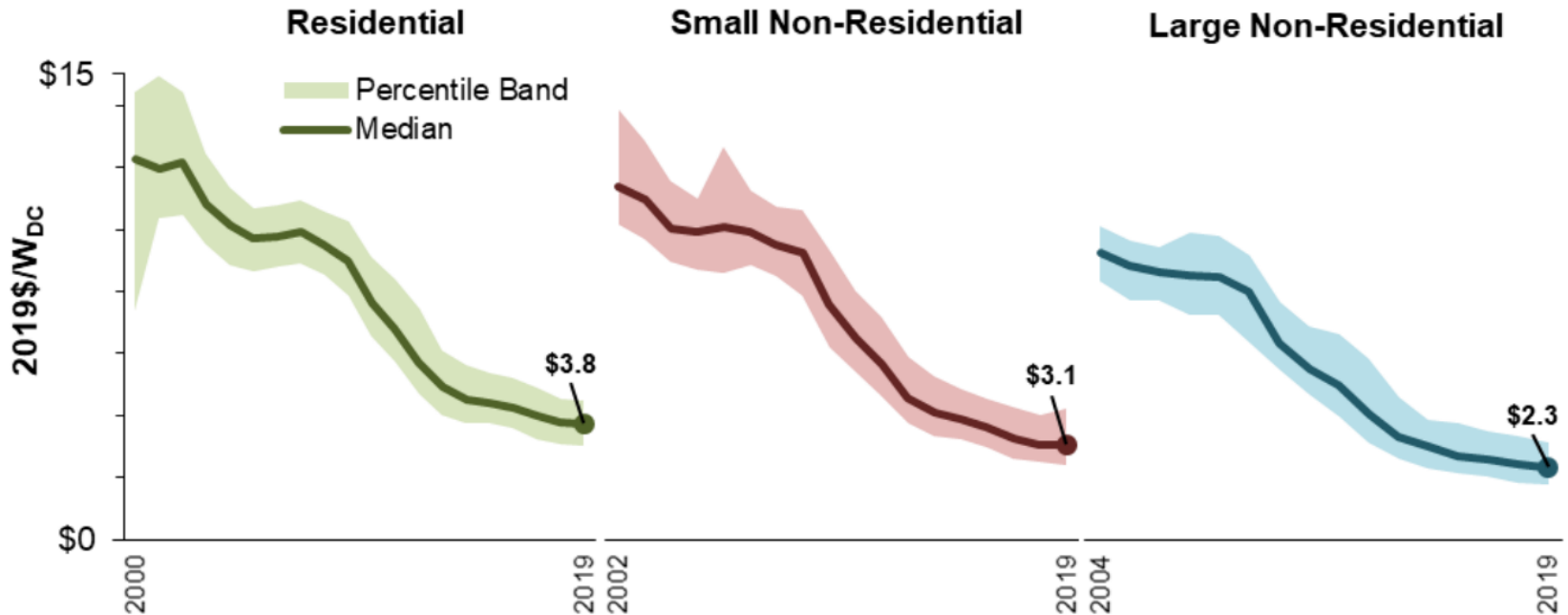
- Prices
- Technology
- Regulatory
- Bonus
  - Reliability
  - Electrification



(Source: Navigant Research)

# Renewables Prices Continue to Drop

## National Installed Price Trends

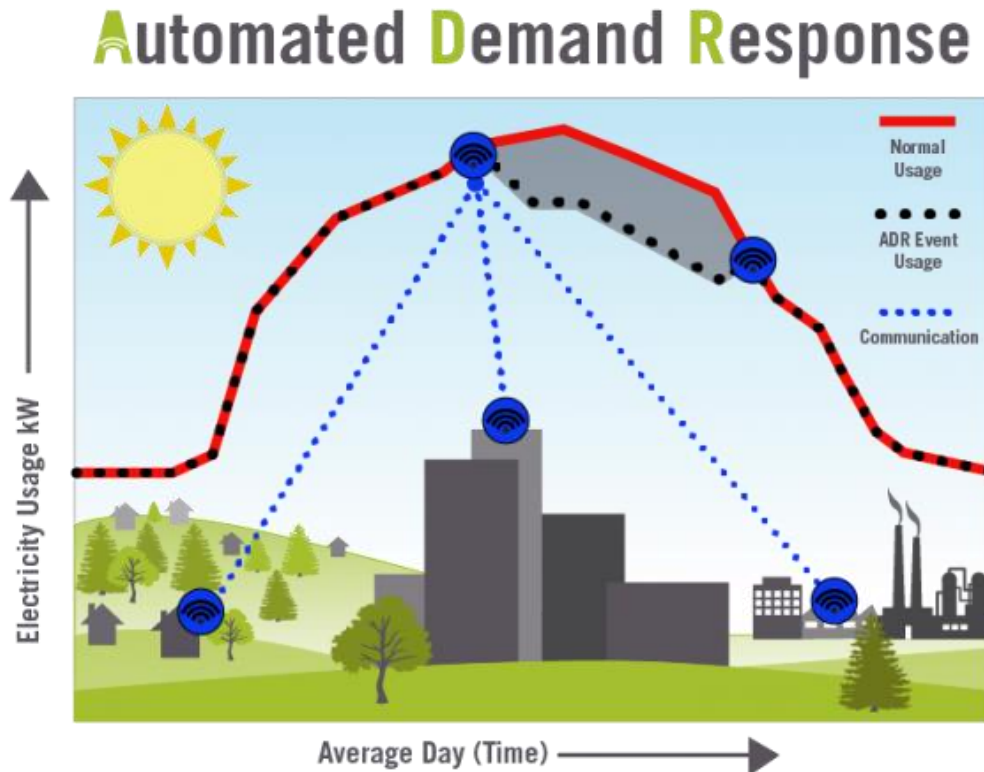


From December 2020 Report from Lawrence Berkeley National Laboratory  
[https://emp.lbl.gov/sites/default/files/distributed\\_solar\\_2020\\_data\\_update.pdf](https://emp.lbl.gov/sites/default/files/distributed_solar_2020_data_update.pdf)

# Market Drivers - EVs



# Market Drivers – Demand Response



From April 2019 Article in Energy Central

<https://energycentral.com/c/em/demand-response-contracts-being-signed>

# Regulatory Changes

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- Order 2222
- Order 2222-a
- Stimulus Bill
- New Spending Bills

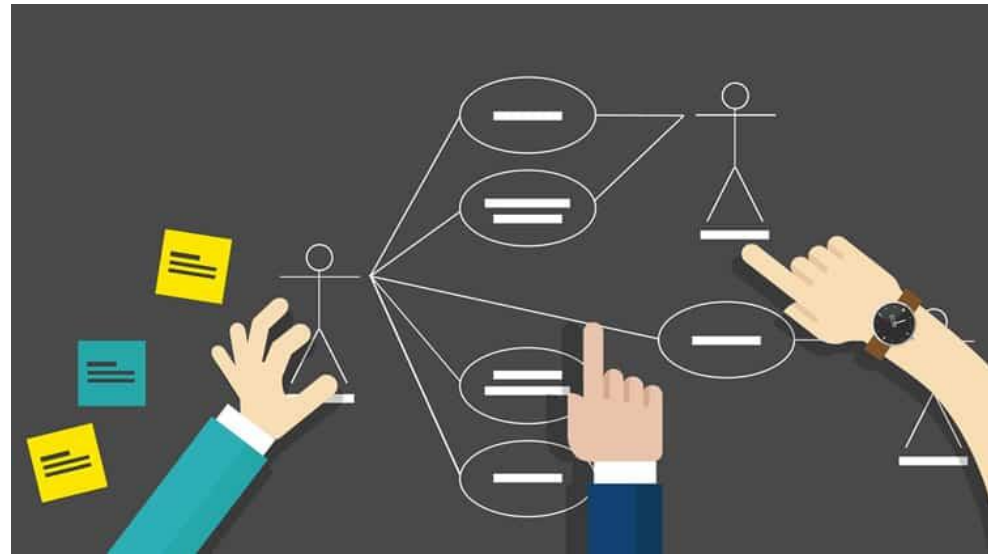


# Open Discussion Topics



# DER Use Cases

- Voltage Support
- Relieve Capacity Constraints
- Resiliency as a Service
- Others?



# Transactive Grids

## Four 2050 scenarios



# Valuing DER and Flexibility?

- Connectivity
- Visibility
- Responsiveness
- Integration



# DER and Planning Process

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- Not just load growth and new infrastructure
- Consider policy changes
- Transparency
- Revenue from distribution investments

# Sustainability vs Resiliency

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