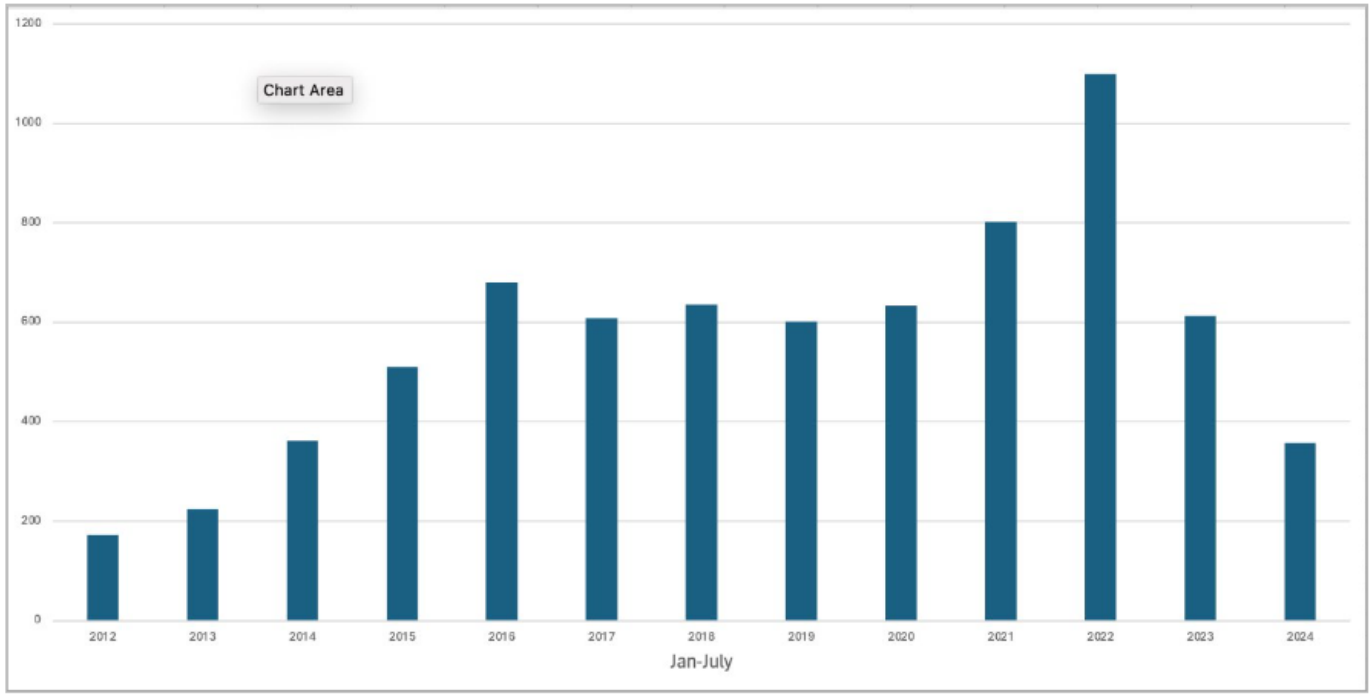
Annual Jan-July Solar Installations



The market has regressed to the pace of 2014

Note: This does not include NEM-2 grandfathered systems installed after the NBT transition because the question is about the pace of new customer investments

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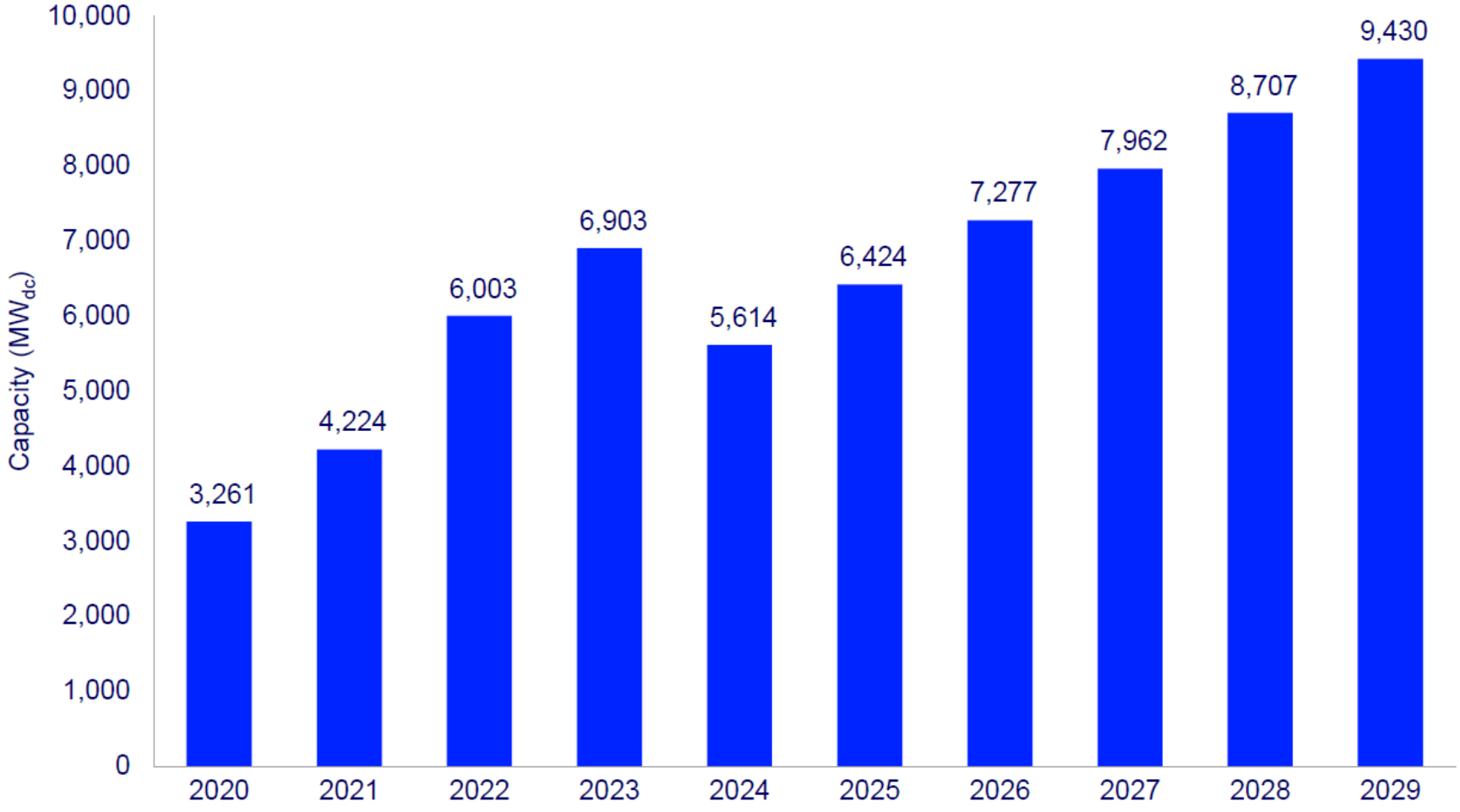
Residential solar installations and forecast, 2020-2029



Source: Wood Mackenzie

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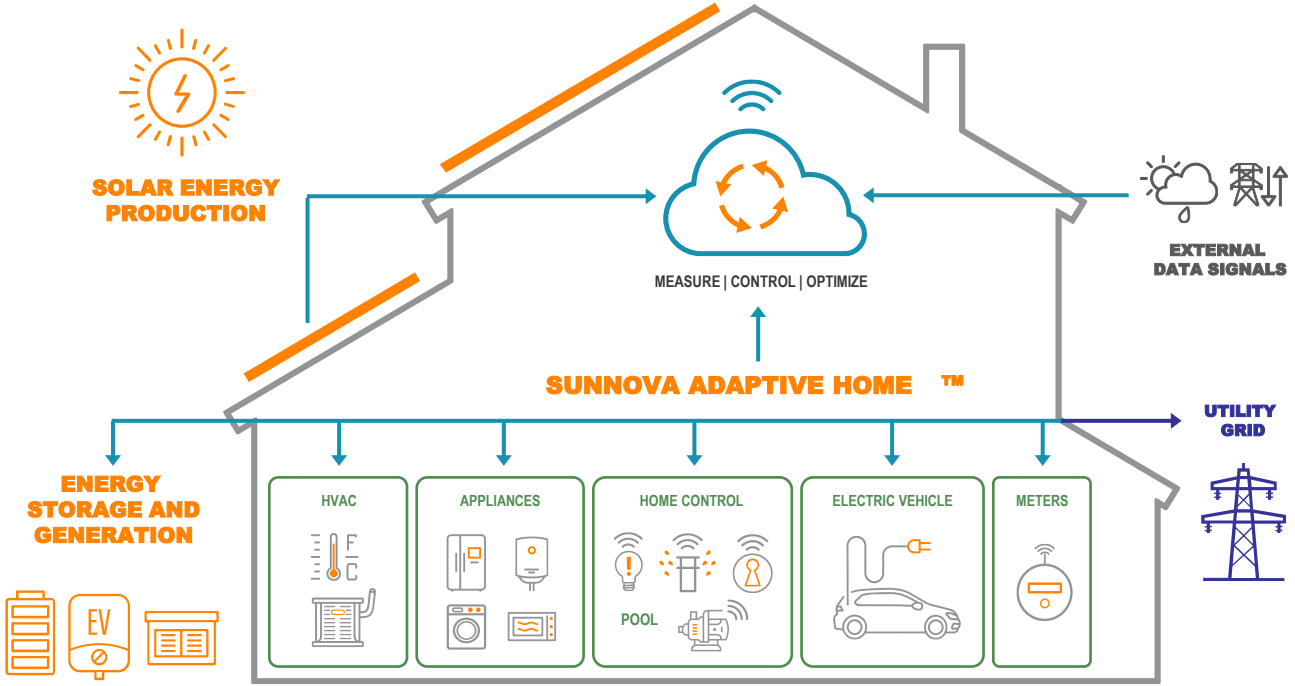
The Sunnova Adaptive Home™ creates solutions that integrate the use of solar, battery storage, EV charging, additional energy generation, control and management technologies to make clean energy even more affordable, reliable, and resilient.

Sunnova Adaptive Home™



The Sunnova Adaptive Home™ is not only able to produce and store energy, it also "adapts" by optimizing energy sources and consumption predictively and in real time, making intelligent adjustments based on current energy needs, solar production, stored energy levels, grid health, time of day, energy price signals, and other inputs.

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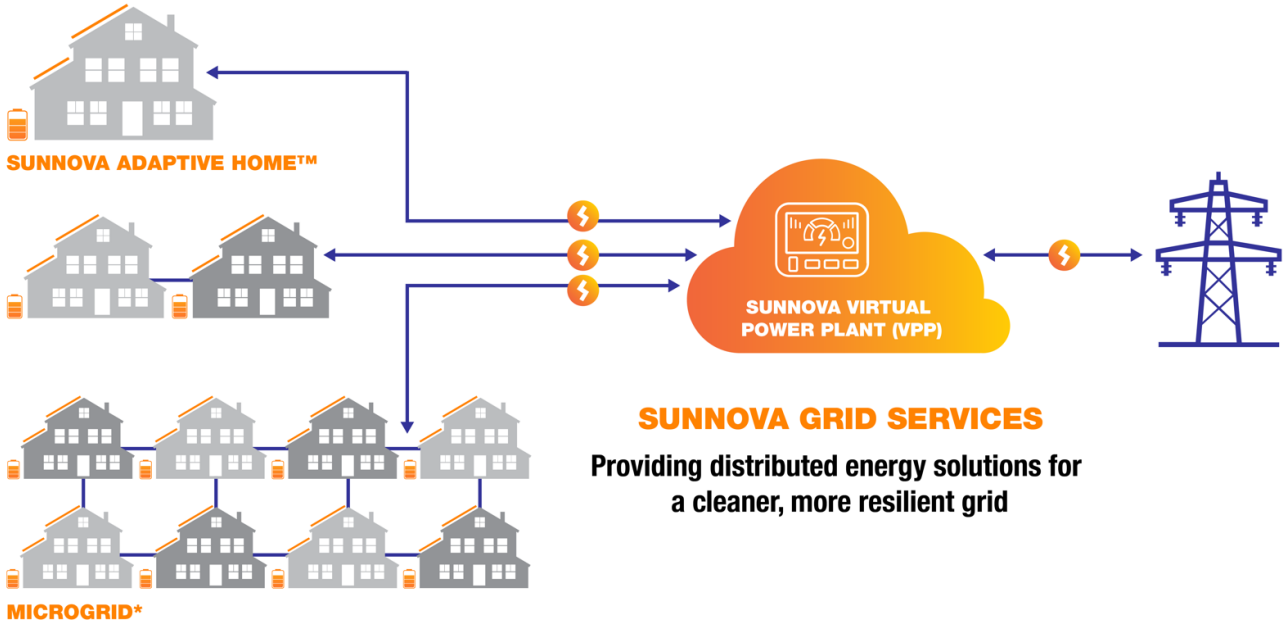
The Sunnova Network

Sunnova is strengthening grid resiliency by offering aggregated distributed energy resources to support the need of the local utility by utilizing our virtual power plant solutions.



* Where permitted by local regulations

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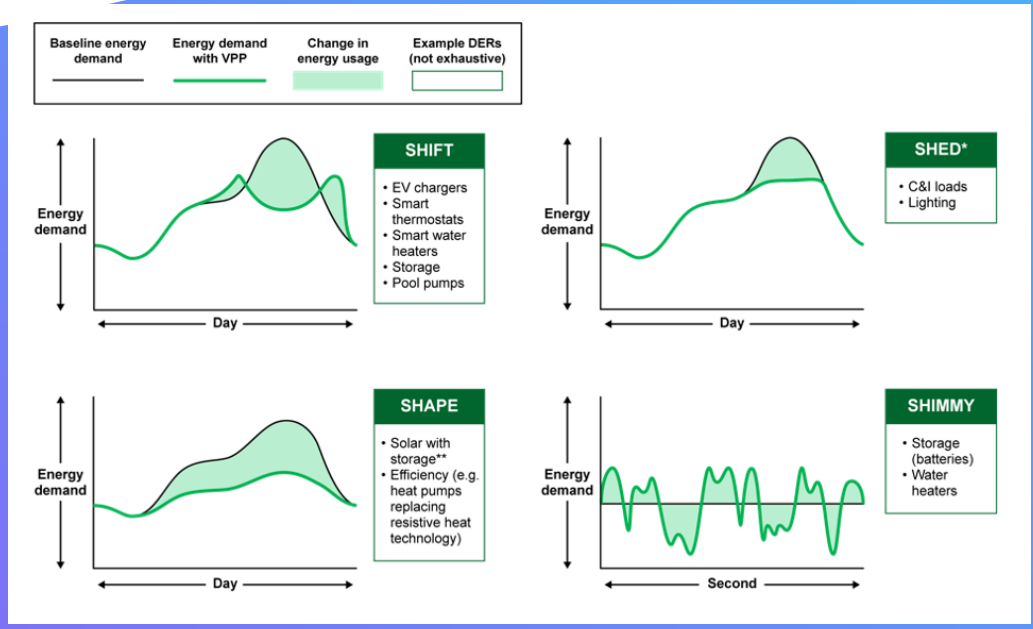
Grid Reliability and Resiliency

Enhanced Grid Stability	• Load balancing • Emergency response
Improved Demand Response	• Peak shaving • Load shifting
Lower Energy Costs	• Time-of-use pricing • Incentive programs
Increased Reliability	• Backup power • Reduced outages



*DOE Pathways to Commercial Liftoff: Virtual Power Plants

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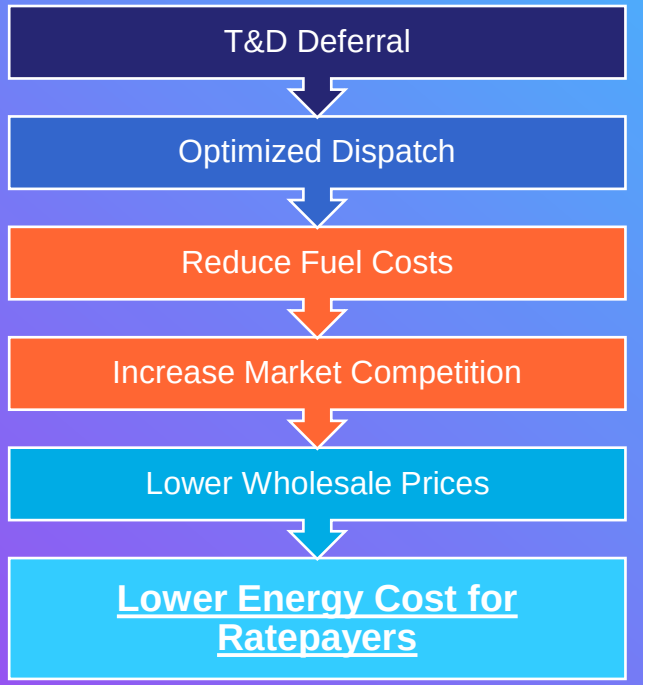
Lower Costs to Ratepayers



T&D Deferral

- **Avoiding Expensive Upgrades**: VPPs help defer or avoid expensive infrastructure projects by optimizing the use of existing DERs and reducing peak demand.
- **Cost Savings**: These savings are passed on to ratepayers, resulting in lower overall energy costs.

Efficient Energy Use

- **Optimized Dispatch**: VPPs use advanced algorithms to optimize the dispatch of energy from DERs, ensuring efficient generation and consumption of electricity.
- **Reduced Energy Waste**: VPPs minimize energy waste and reduce the need for costly peaking power plants by matching supply with demand more accurately.

Demand Response Programs

- **Incentives for Load Shifting**: VPPs often join demand response programs where consumers are incentivized to reduce or shift their energy usage during peak periods, lowering energy costs for participants.
- **Lower Wholesale Prices**: VPPs help lower wholesale electricity prices by reducing peak demand, benefiting all ratepayers.

Enhanced Renewable Integration

- **Utilizing Low-Cost Renewables**: VPPs integrate renewable energy sources like solar and wind, reducing operational costs and potentially lowering overall electricity costs.
- **Reduced Fuel Costs**: Switching to more renewables reduces the need for expensive fossil fuel-based generation, which lowers energy costs.

Increased Market Competition

- **Decentralized Energy Markets**: VPPs promote a competitive energy market by enabling small-scale DERs to participate, which can drive down prices and lead to better rates for consumers.
- **Aggregated Buying Power**: VPPs can negotiate better energy rates by pooling resources, benefiting consumers.

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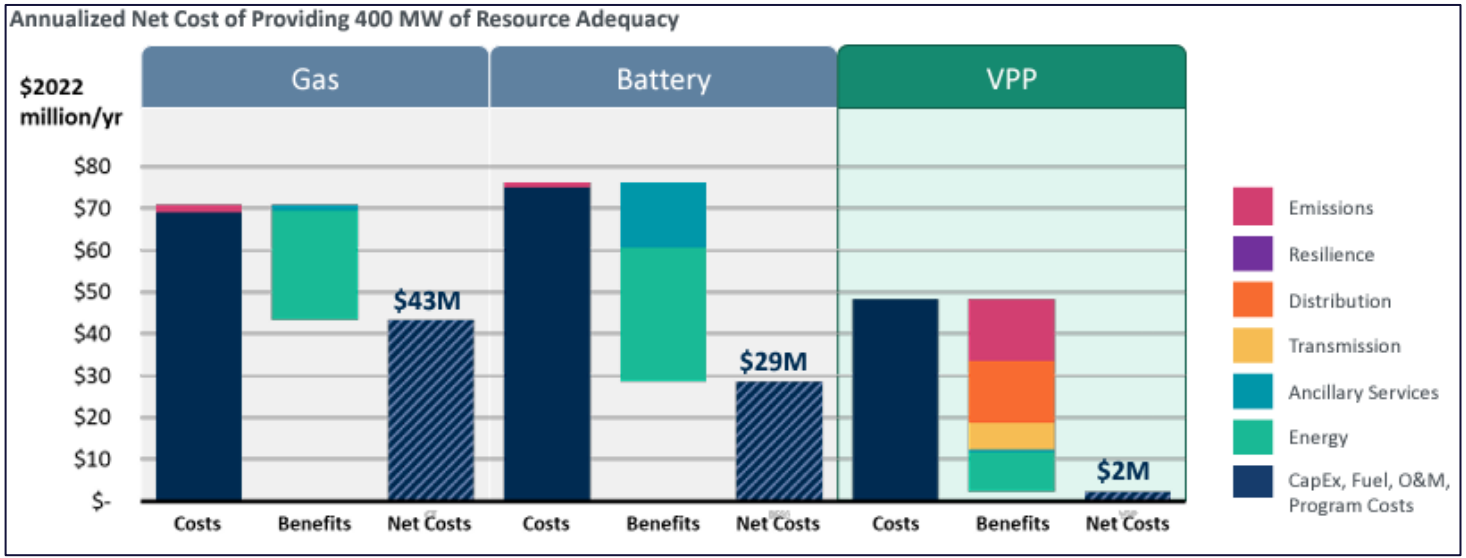
Economic Efficiency



The Brattle Group: Real Reliability, The Value of Virtual Power. 2023

"A 60 GW VPP deployment could meet future resource adequacy needs at a net cost that is **$15 billion to $35 billion lower** than the cost of the alternative options over the ensuing decade."

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VPP Policy Best Practices

1. Participants (new and existing BESS) enroll through a **third-party aggregator**
2. Streamline enrollment to eliminate barriers to participation
3. Settlement **should use battery/inverter data** instead of utility meter data and baselines.
4. Participants receive a **one-time upfront payment** and an **ongoing performance payment**
5. Compensation should be based on per-event performance, without penalties, aka **Pay-for-Performance**.
   - Compensation = energy multiplied by a $/kWh for the event or
   - Compensation = average power multiplied by a $/kW for the event
6. Dispatch frequency should be limited to a **maximum of 5 events per week during summer** and **2 events per week during winter**.
7. **Telemetry requirements should be 15 minutes** for greater participation across battery OEMs.
8. Utilize **standardized communication protocols** to ensure **interoperability** and **seamless data exchange** among different DERs and the VPP's central control system.

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