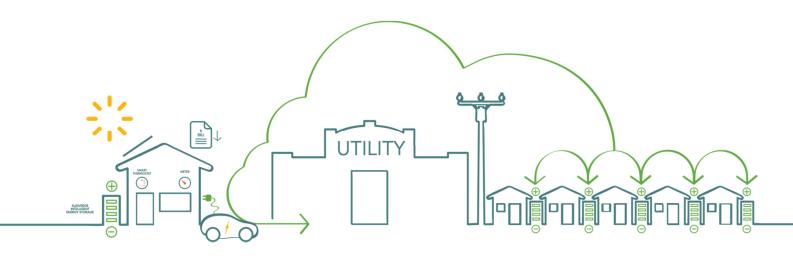




Modern Grid Technology & Leading Practices Workshop



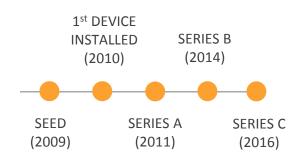
May 10, 2017

Company Background – Proven Track Record

FOUNDED

2009

HEADQUARTERED IN SAN FRANCISCO









CUSTOMERS

North America
(AZ, CA, HI, KY, NY,
NV & Canada)
New Zealand
Australia
South Korea
Germany

750

Systems Under Management Globally



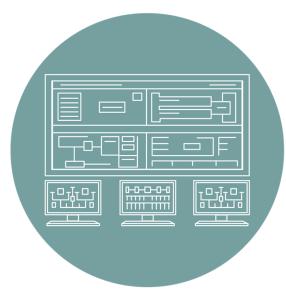
Consumer: the Agent of Change and Disruption



CONSUMERS

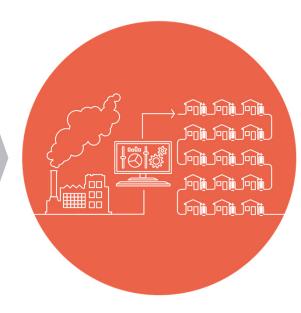
Driving change with increasing adoption of DERs and

bidirectional grid



AGGREGATORS

Seek new and recurring growth drivers

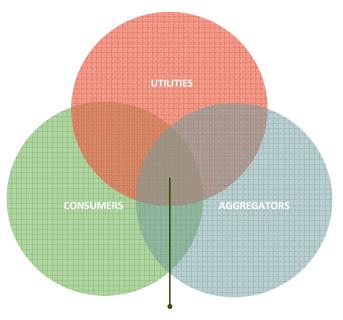


UTILITIES

Face demand and cost challenges

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Emerging Platform in Interdependent Energy Ecosystem



Facilitating PLATFORM Emergence



DER platform Benefits and Value

CONSUMERS		AGGREGATORS		
Residential	Commercial	DER	Demand Response	UTILITIES
Maximize PV investment		Aggregate PV and storage	Distributed storage as a DR resource	Peak Load, Load Reduction & Shifting
Bill Management		Provide VPP offerings to utilities	Better Customer comfort & Increase participation	Meet Renewable Goals
Backup Power		Create additional services revenue streams	Location-aware and targeted DR	Frequency Regulation Voltage Management
Demand Charge Reduction		Wholesale Markets participation	Maximize Utilization & Capacity	Distribution asset upgrade Deferral

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The Sunverge Platform

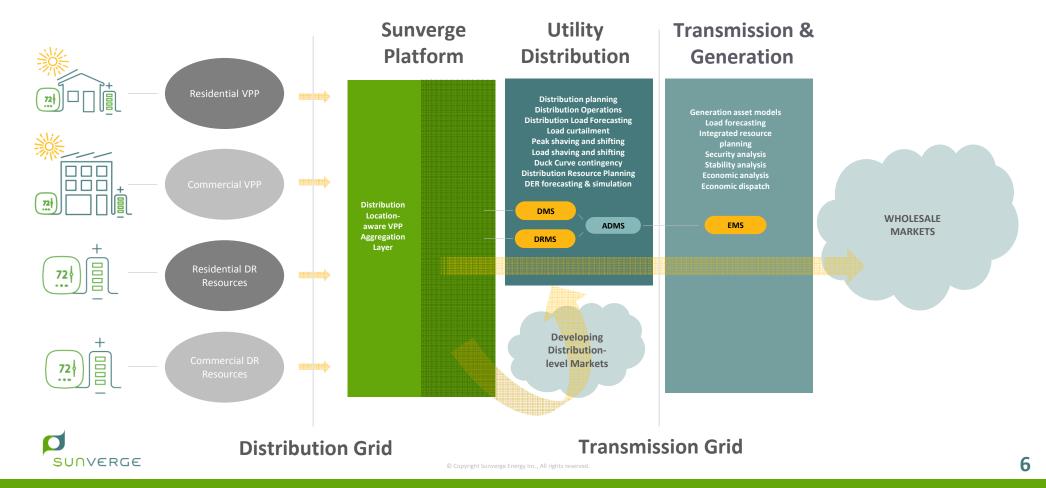
Intelligent platform facilitating and enabling energy transactions between Consumers, Utilities, and Aggregators

- End-to-end managing, controlling, aggregating and orchestrating portfolios of Distributed Energy Resources (DERs) and smart home devices
- Aggregating residential and commercial Distributed Energy Resource (DERs) into Virtual Power Plants (VPP) generation assets overlaid on Utility Distribution Grids
- Control and optimize use of VPP assets to better manage dynamic T&D network and supply events
- Manage and facilitate bidding of excess and emergency energy supply into wholesale Markets
- Facilitate an array of ancillary services and ecosystems for behind and in front of the meter
- Enabling Integration of Demand-Side Management and Grid Management
- Capacitate the emergence of Distribution level transactional Markets and tangential ancillary service markets





The Sunverge Platform



Integrate to Core Utility Operations

Consumer Services

- TOU Bill Management
- PV Self Consumption
- Backup Power
- Demand Charge Reduction

Network Services

- Peak Load Shaving
- Demand Response
- Voltage Support
- End of Day Ramping
- PV Firming/Shifting

Market Services

- Frequency Regulation
- Operating Reserves
- Energy & Capacity

Sunverge Platform Integration Layer



Utility Core Operation Enterprise Software

Customer Care

- Billing CRM
- CIS Consumer Portal Mobile Applications
- Demand Response
- Renewables Programs HEMS

Demand Side

- EV Charging
- Energy Efficiency
- AMI / MDM

Distribution

- Distribution Resource Planning
- Distribution Ops
- DER Forecasting DER Simulation
- DMS / ADMS Distribution SCADA

Transmission

- Short-term Load Forecasting
- Power Flow Analysis
- Switching Order
- Contingency Analysis
- EMS / SCADA ISO / RTO Market Ops

Generation

- Generation Models
- Security Analysis
- Stability Analysis Economic Analysis
- Economic Dispatch
- Wholesale Market **Capacity & Contracts**

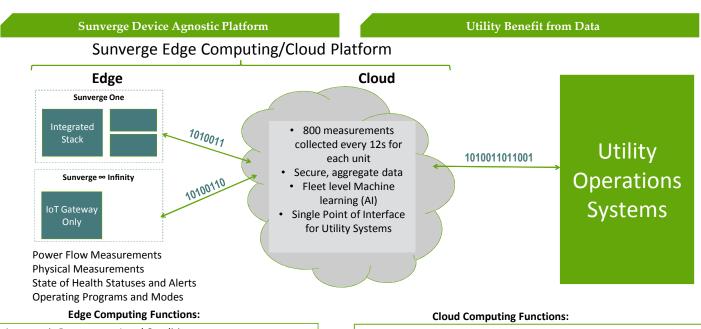
Resource Planning

- Integrated Resource Planning
- Load Forecasting Asset Management
- Risk Management Wholesale Market
- Contracts

Sunverge becomes embedded into the operating platforms of utilities and grid operators by providing a wide array of value-added services

SUNVERGE

Sunverge's Ability to Collect and Process Edge-of-Grid Data is Unparalleled



- Autonomic Response to Local Conditions
- Rapid Response to Safety Situations
- Optimization of Power Flow for Energy Arbitrage
- Local direct Communication to Load Control Devices
- Local Autonomous Grid Services

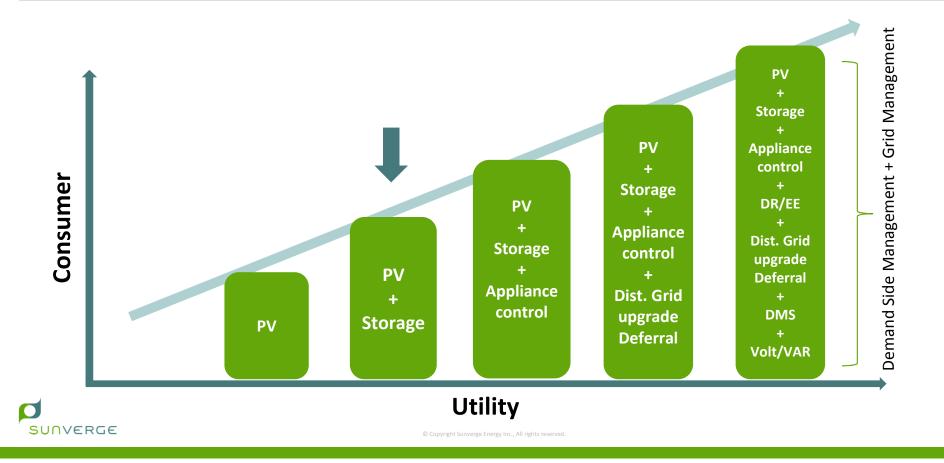
- Near Real-time DER Situational Awareness (Aggregate and Unit)
- Orchestration, Dispatch and Operation of Distributed Resources
- Planning and Analytics, including trends and load profiles
- Performance Reporting (Aggregate and Unit)

Sunverge solution allows for local DERMS optimization through artificial intelligence at the edge of the cloud with aggregation and orchestration in the cloud, providing a more scalable, adaptable and resilient cloud/edge computing solution



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Value Scale



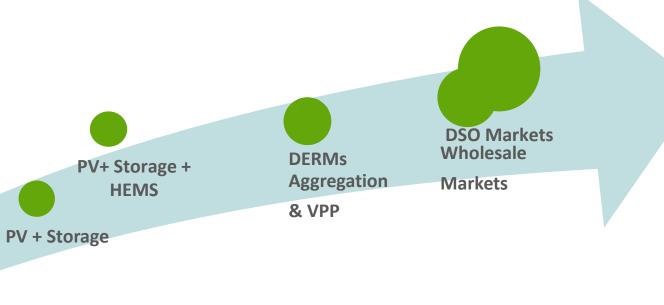
Distributed Storage: The Missing Link for the Smart Grid & Transactional Energy Markets

Distributed storage delivers greater reliability, customer Satisfaction and less grid stress and congestion than centralized or substation-level storage.

PV

Distributed

Storage





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