GRIDSCAPE

PICG PSPS Workshop

Commercializing Renewable Microgrids in California

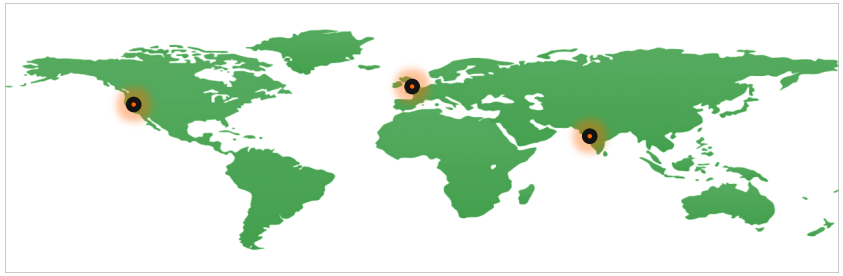
Modular, Scalable, Software-driven, Product-Centric Design

Vipul Gore, President & CEO

16 Nov 2020

Gridscape Solutions

- Largest Small to Midsize (120kWh-3MWh) Developer and Operator of Renewable Energy Microgrids in California
  - *Founded in 2013*
  - *Global Presence – US, UK, India*
  - *45 Engineers*
- Our Microgrid Solutions are
  - *Software Driven*
  - *Product Centric*
  - *Integrated with EV Charging, Demand Response, Grid Services and all types of DERs*
  - *Full Energy Management with Demand Charge Reduction, Demand Response, TOU Arbitrage and Grid Services*
  - *Interconnected Network of Microgrids*



Customers:

City of Fremont California · SMUD · IPAI · Fontana California · IWP · ABB · ENGIE · IKEA · AMPLY Fleet Charging Simplified · Chabot College

Media:

KQED · San Jose Mercury News · greentechmedia: · Clean Technica · NAVIGANT · Microgrid Knowledge · GreenBiz

CEC Grant Awards:

- *GFO-17-302: Five DAC Microgrids*
- *PON-14-301: Fremont Fire Station Microgrid: https://goo.gl/WPxgMP*
- *PON-13-606: Bayside EV Charging Stations: https://goo.gl/An5T3w*
- *GFO-16-303: Open V2B/V2G/V2M ZNE Grid Services*
- *GFO-16-309: Integrated Building-scale Solar+Storage project*

Gridscape EnergyScope™ Microgrid System

Modular, Scalable, Software-driven Microgrids

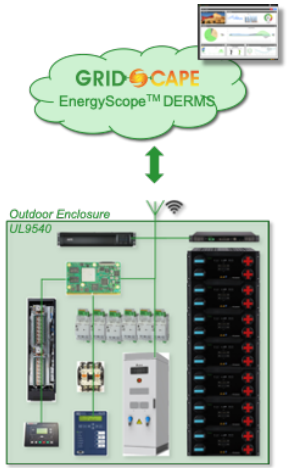
- First in the industry, Integrated outdoor-rated, expandable box that includes battery energy storage, inverter, controller, interconnection relay, critical load panel and other essential components
- Low installation & maintenance cost
- Cloud based Remote Control and Management
- On-Demand Comprehensive Reporting
- Remote management of Critical Load panels
- On Site and Off Grid Mode (Islanded)
- 24-hour grid resiliency for critical loads
- OpenADR2.0b Certified
- UL 9540, NFPA 855 certified

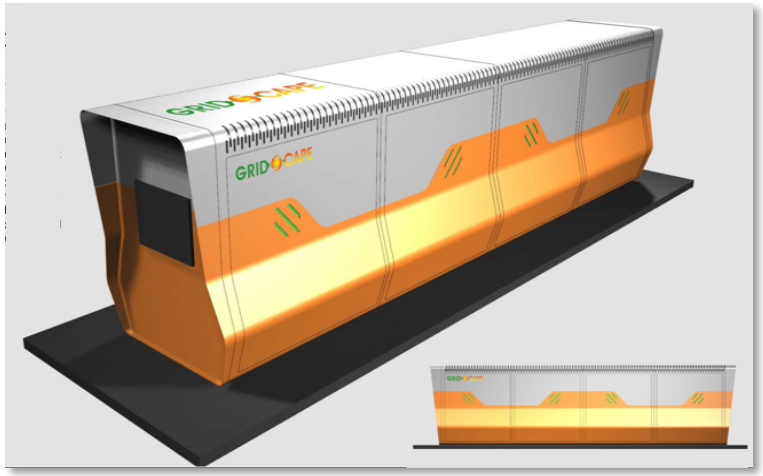
V1.0

Fremont Fire Station 11 (2016)

V2.0

Fremont FS 6 & 7 (2018)

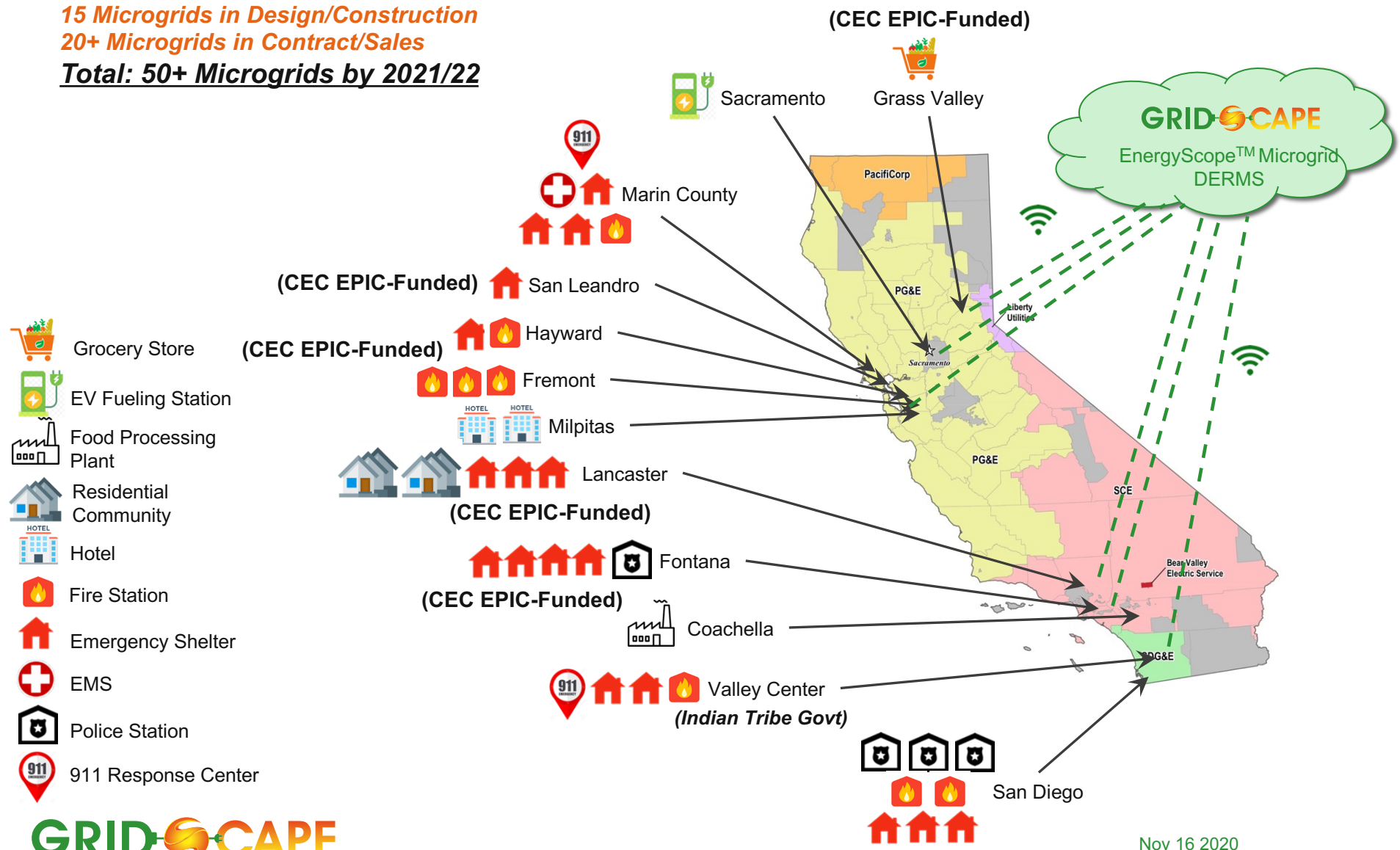




V3.0

Gridscape Critical Facility Microgrid Network

10 Microgrids in Operation
15 Microgrids in Design/Construction
20+ Microgrids in Contract/Sales
Total: 50+ Microgrids by 2021/22



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Gridscape Microgrid Deployments

Photo Credit: CEC

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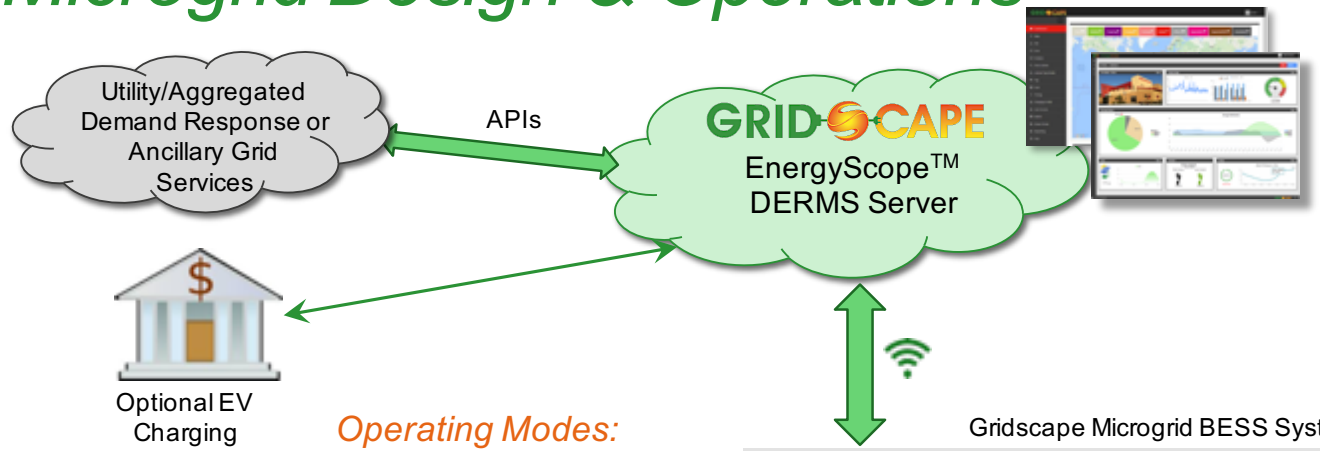
Microgrid Design & Operations

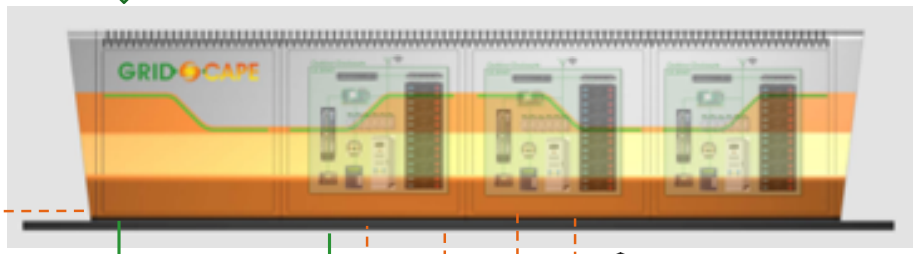


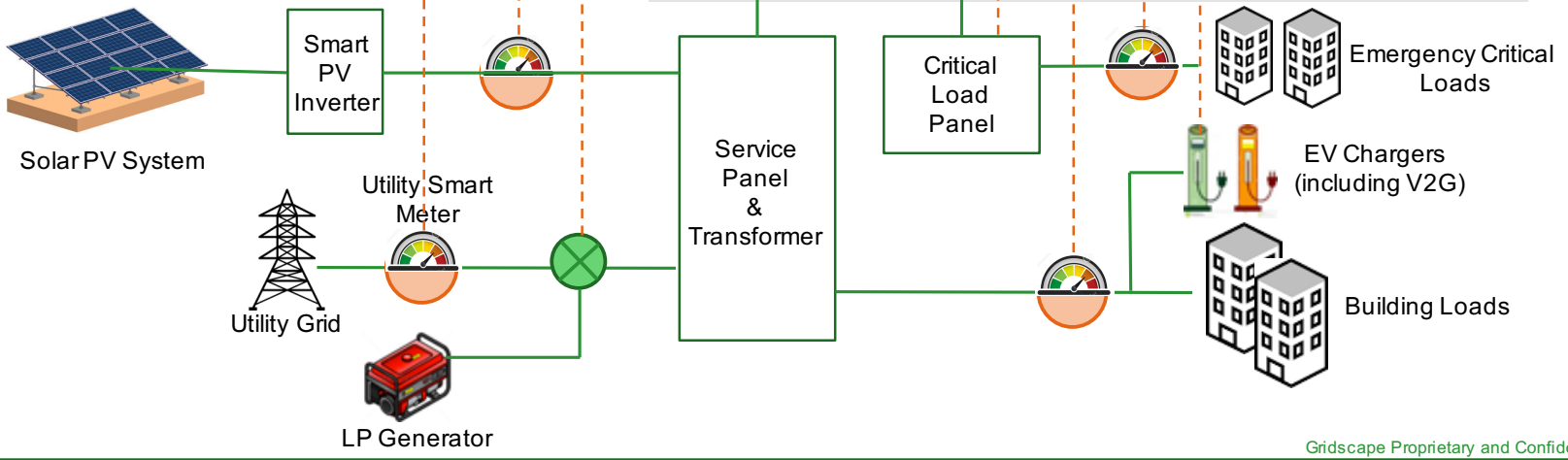
EnergyScope™ Dashboards

- *On-grid / Off-grid mode mgmt*
- *Load Management & Analysis*
- *Renewable Self Consumption*
- *Demand Charge Mgmt*
- *Demand Response*
- *EV Charger Management*
- *Public EV Driver Payment Mgmt*
- *Battery Life Performance*
- *Extensive Reporting*

Operating Modes:

1. *Grid-tied (on-grid)*
2. *Off-grid*





Challenges & Opportunities

Challenge	Description	Opportunities
Financing *(essential for commercialization)*	Small Critical Facility Microgrids are very difficult to finance fully with private funding	1. Continue Incentive Programs (SGIP, ITC) through 2030 2. Establish a Value of Resilience (Microgrid Tariff, Displacement Cost of Fossil Fuel used in Generators) 3. Create new ancillary grid service revenue adder for cluster of small microgrids, in a quantifiable and standardized way 4. Continue Grant Programs : EPIC, DOE, FPIP 5. Prioritize subsidies for smaller projects. Large Microgrid Projects are financeable and do not need subsidies
Regulatory *(project timeline)*	It takes long time to design, construct and deploy • Permit Process (AHJ) • Interconnection Time • Procurement Costs	1. Standardize Designs and Building Code to speed up permitting. Create online portal/checklists similar to residential PV/battery projects 2. Prioritize and standardize Interconnection Process 3. Promote vertical integration of technologies, i.e. Modular, Scalable technology ”plug-n-play” blocks based on standards
Awareness & Decision Making	Critical Facility Operators (Decision Makers) need a lot of education to understand importance of microgrids	1. Develop market outreach and awareness building programs 2. Allow and promote data-driven approach – what sites benefit the most in terms of energy savings, resilience and grid stability? 3. Develop building code to mandate renewable microgrids for new/renovation projects for public facilities 4. Increase public awareness, education to general public 5. Standardize community microgrids
Cost to Deploy	Material costs (Batteries, PV, Interconnection Devices) need to stabilize/decrease for financial viability & bankability • Market Uncertainty • Customs/Tariffs	1. Promote product-centric approach. Custom microgrids are very expensive to build and deploy

Thank You

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