ProspectSV & CSM Internet of Energy
CEC Successes & Opportunities Workshop
Sept 17, 2015

STATE OF CALIFORNIA
ENERGY COMMISSION

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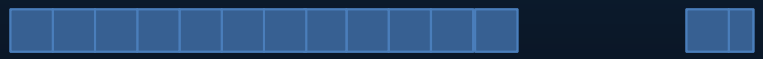
80% Less CO_2, 40% More People

12 → 1.5

Tons/Yr Tons/Yr



(HINT: OPPORTUNITY)

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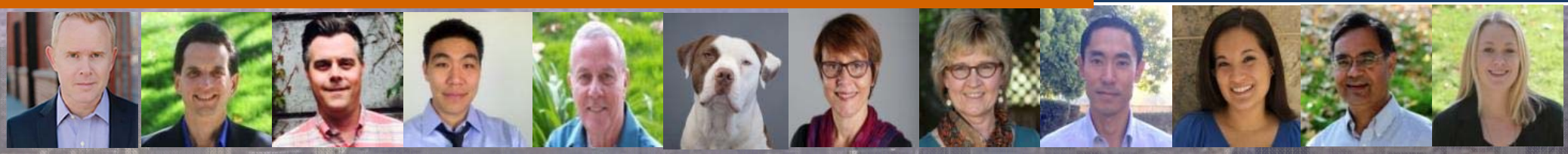
Prospect Silicon Valley



A 501c3 *commercializing clean technology* driven by a team of *innovators, investment, and social leadership*.

We are:

- Seeking technology solutions with impact
- Partnering with visionary doers
- Building scalable programs
- Focusing on the work to be done

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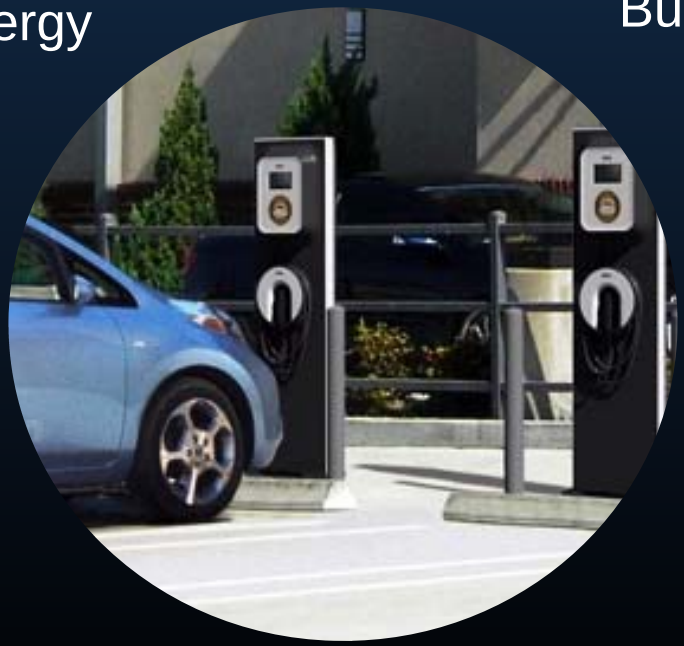
Energy

Buildings

Data Systems



Transportation

Smart Cities

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Supporting Innovators

- **Experienced Employees (Champions)**
- **6 to 18 mo Engagements**
- **No Equity Requirement**
- **Network Emphasis**
- **Significant Market Intelligence**

Market Development
Product refinement & positioning, Customer introductions, Promotional assistance

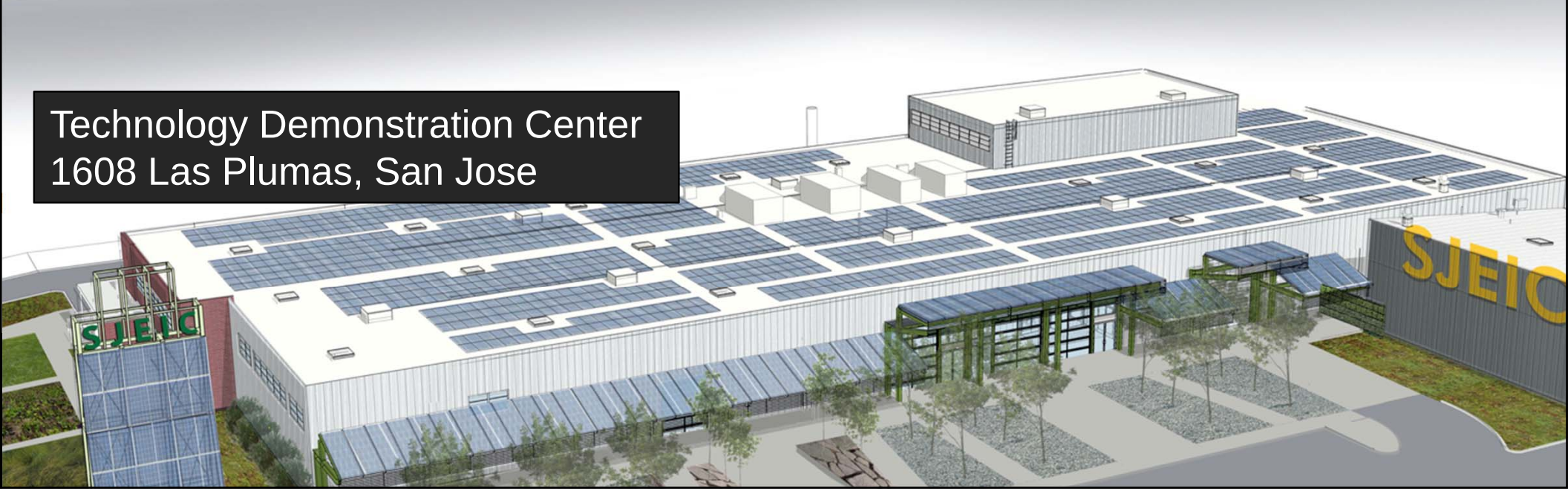
Strategic Partnerships
Corporate development, Public sector partners, Supply partnerships

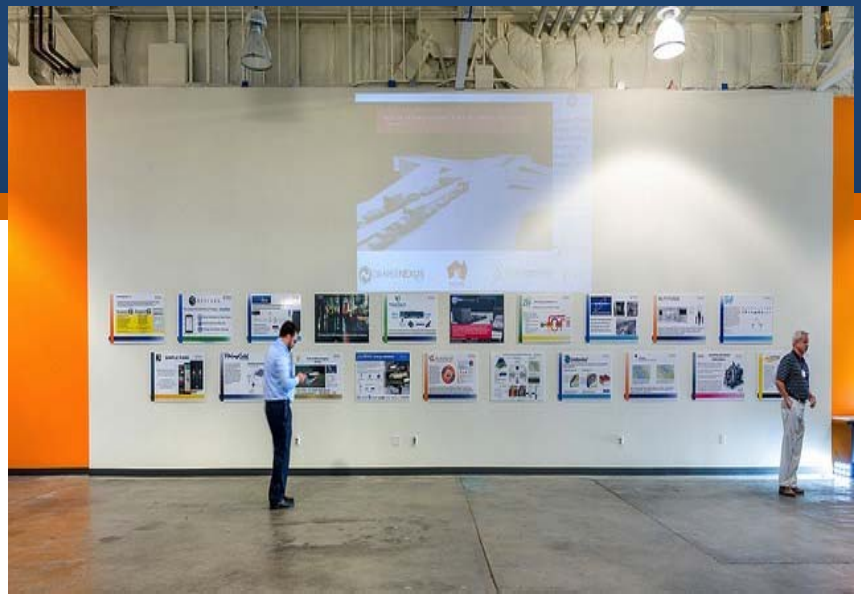
Demonstration Platforms
Demonstration projects, Grant funded programs, Customer development

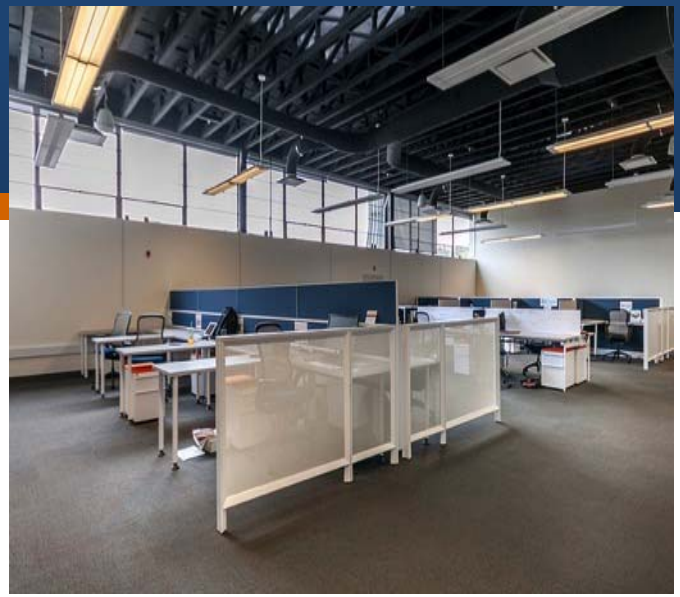
Funding & Scaling
Investor pitch feedback, referrals, Global Network opportunities

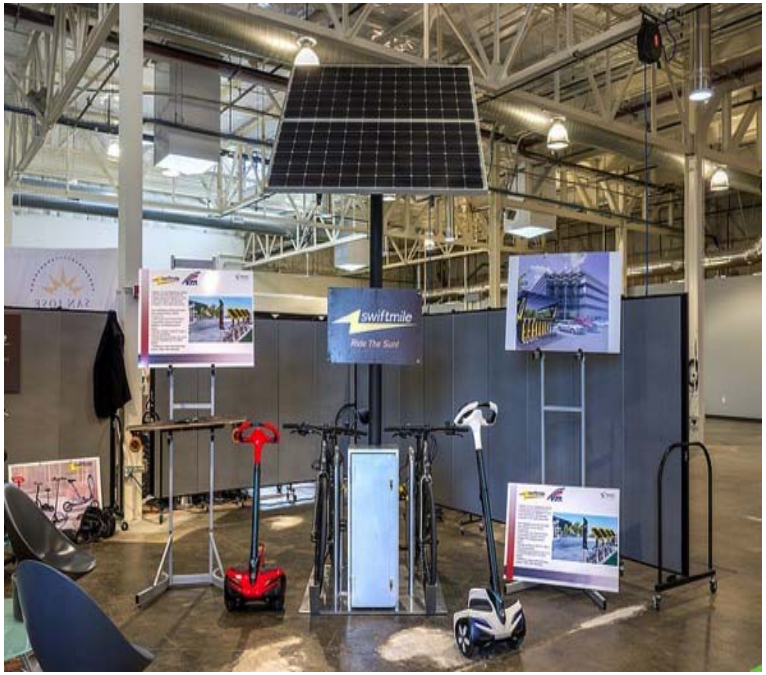
Resources & Team
Industrial/office space, Labs & equipment, Advisors & service providers

Technology Demonstration Center
1608 Las Plumas, San Jose









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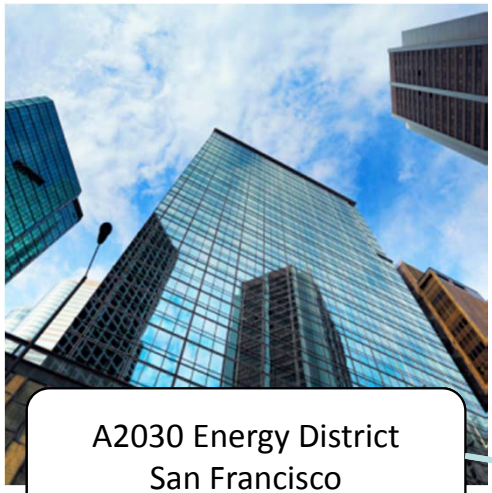
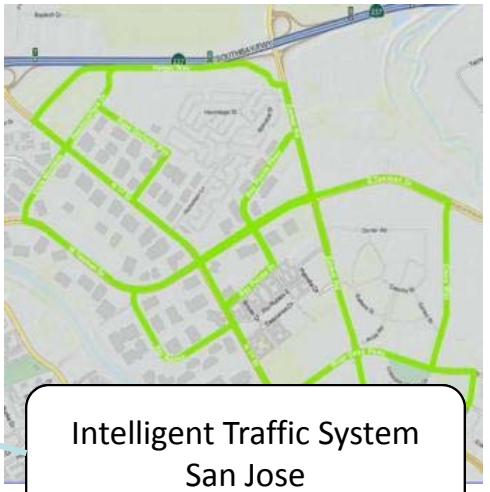
High-Impact Platforms in the Bay Area



A2030 Energy District
San Francisco

Advanced Solar/Storage
San Mateo

Vehicle-Grid Integration
Alameda County



Intelligent Traffic System
San Jose

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Impact in Northern California

- 50+ Bay Area Cities
- Workshops, Guidebooks, Direct Assistance
- 85,000 LED Streetlights
- 330 EV Charging Ports
- Largest Battery EV Fleets in US
- Renewables Microgrid

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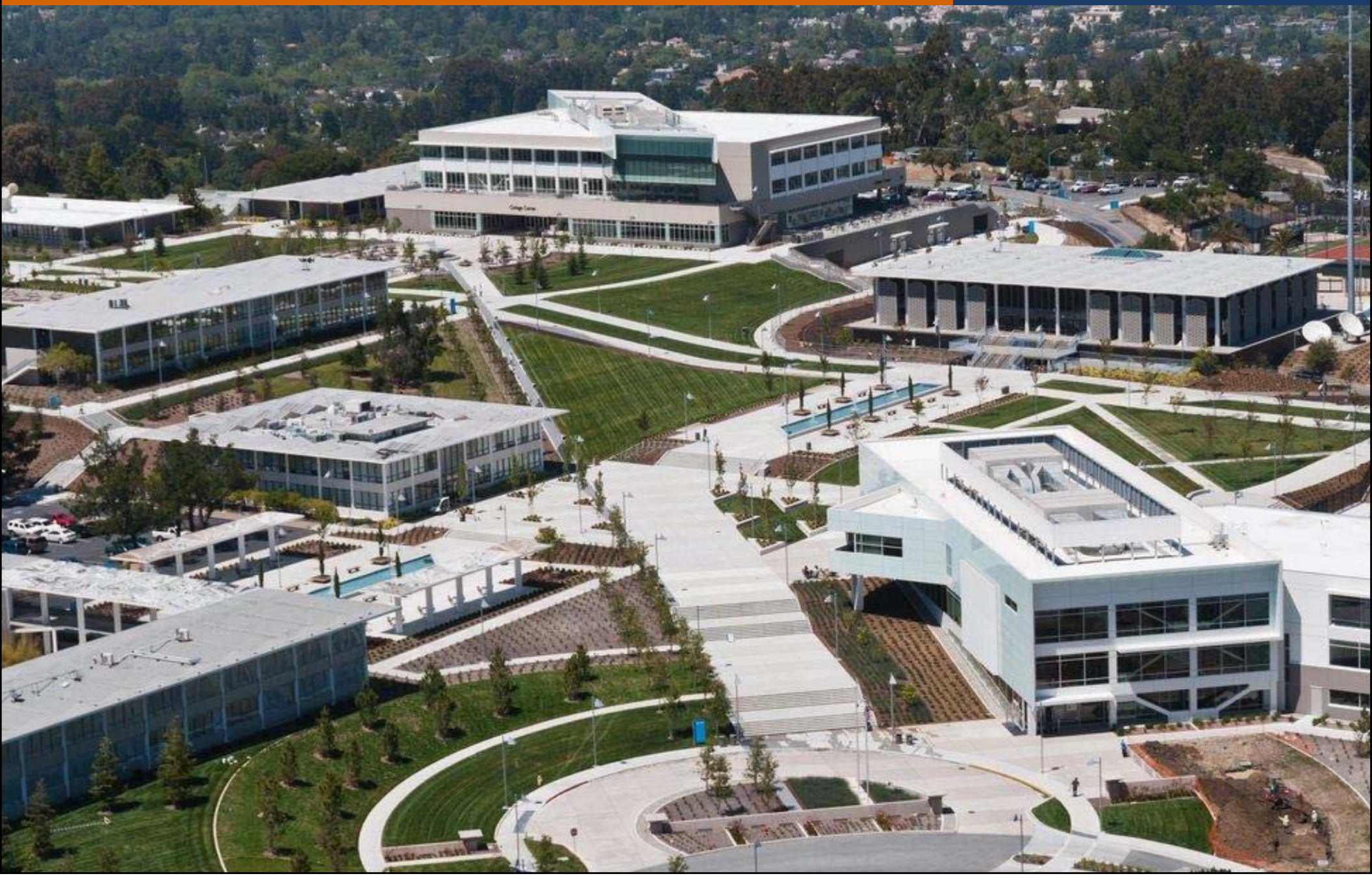
CSM Internet of Energy Project Overview

Internet of Energy: Definition

Demonstration of the **next generation** of **solar PV + storage** + power electronics and the "Internet of Energy", multi-asset networked, addressable and **dispatchable community grid control services**.

Facility: College of San Mateo



Benefits To Deliver

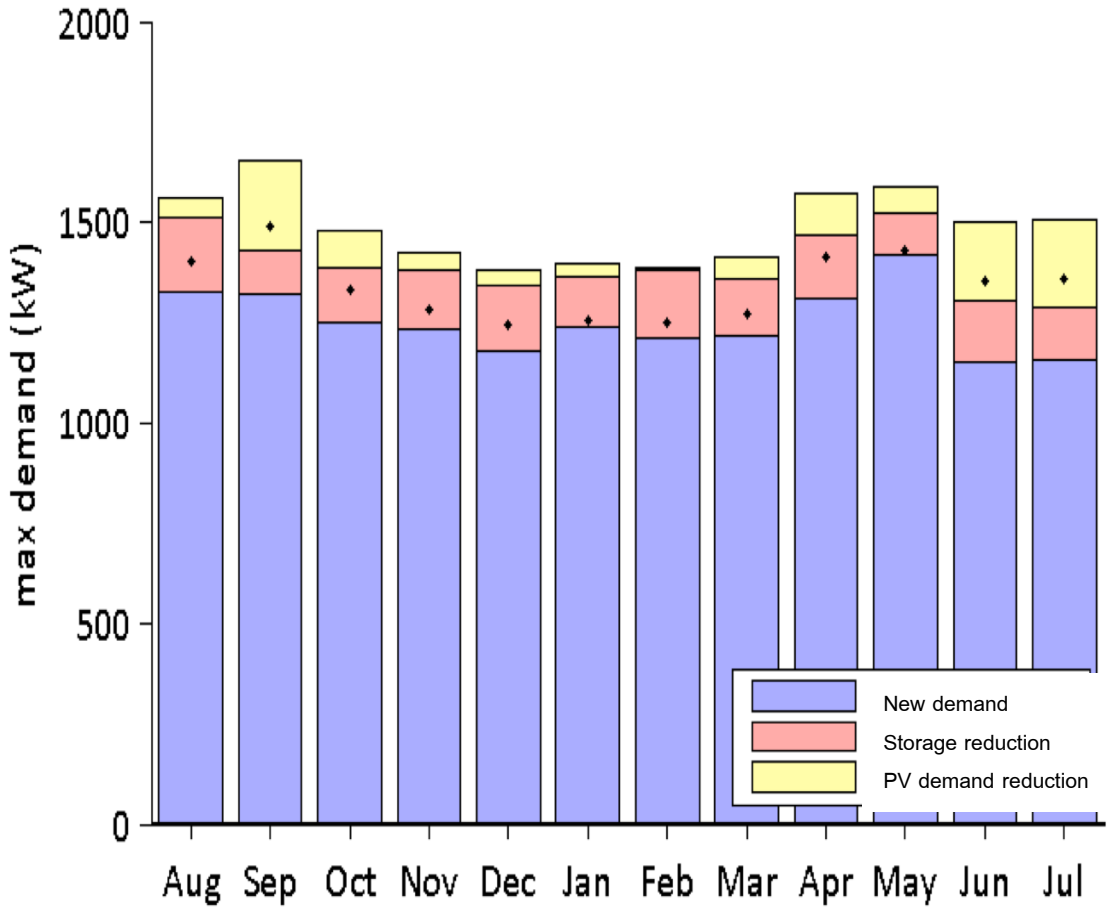
- Lower energy costs & GHGs
- Support increased renewables
- Increased grid stability
- Improved energy management
- Workforce & best-practices

Objectives (SOW)

1. **Develop and characterize the increased generation efficiency advanced solar-storage system**…
2. **Deploy and characterize an IoEn** with multiple asset coordination to deliver peak shaving and peak shifting...
3. **Operate the IoEn to meet the project's goals** and reduce max demand by at least 10% in each of 12 continuous months at the CSM campus.
4. **Enhance workforce training** on multi-asset, multi-application energy systems by leveraging the CSM IoEn with online resources, materials and presentations covering technical and economic information integrated…
5. **Educate senior stakeholders** on the project objectives, design, outcomes, challenges, gaps and policy considerations of community scale generation, load management and grid stabilization.
6. **Inform and support the planned execution of CSM energy efficiency upgrades** to maximize the efficacy of those upgrades.

10% Peak Reduction Target

FIGURE 9: Max monthly demand (90% of baseline is marked by a black dot)



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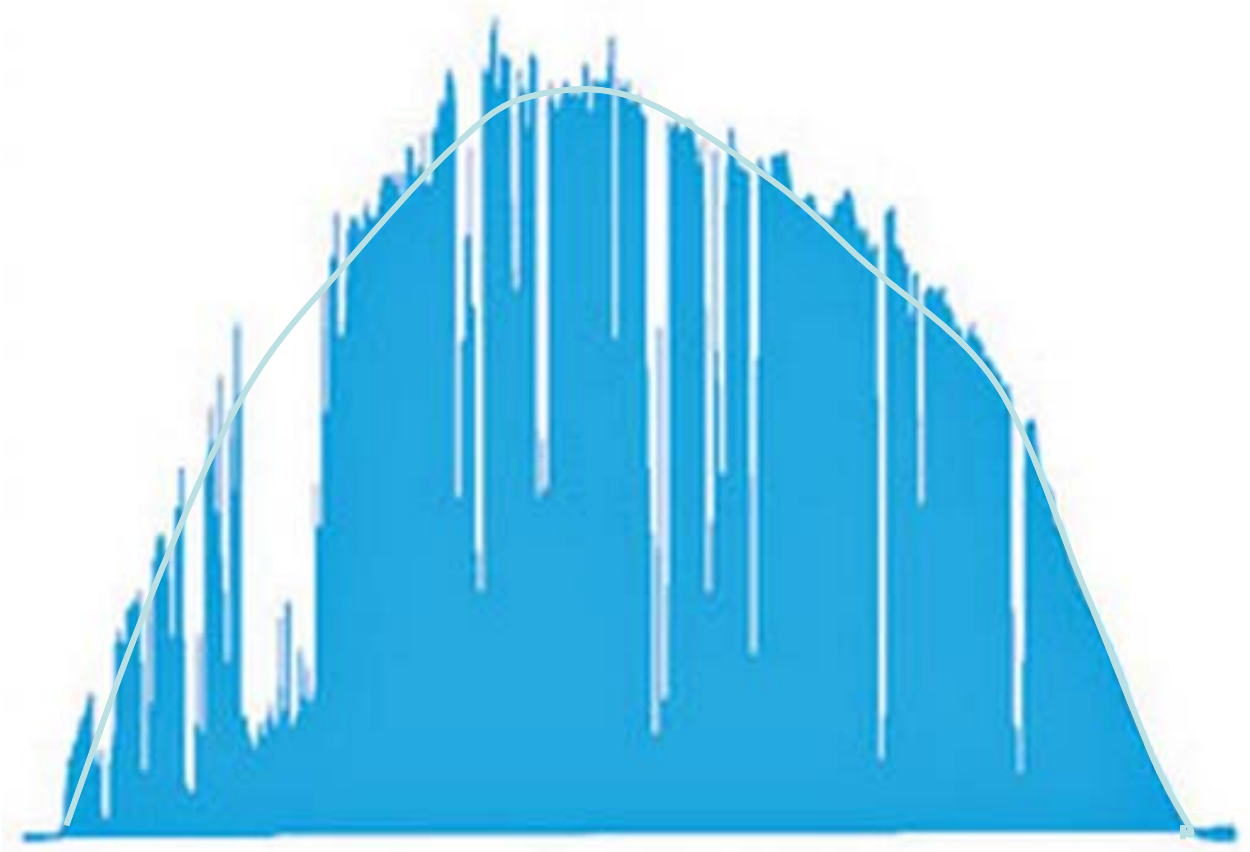
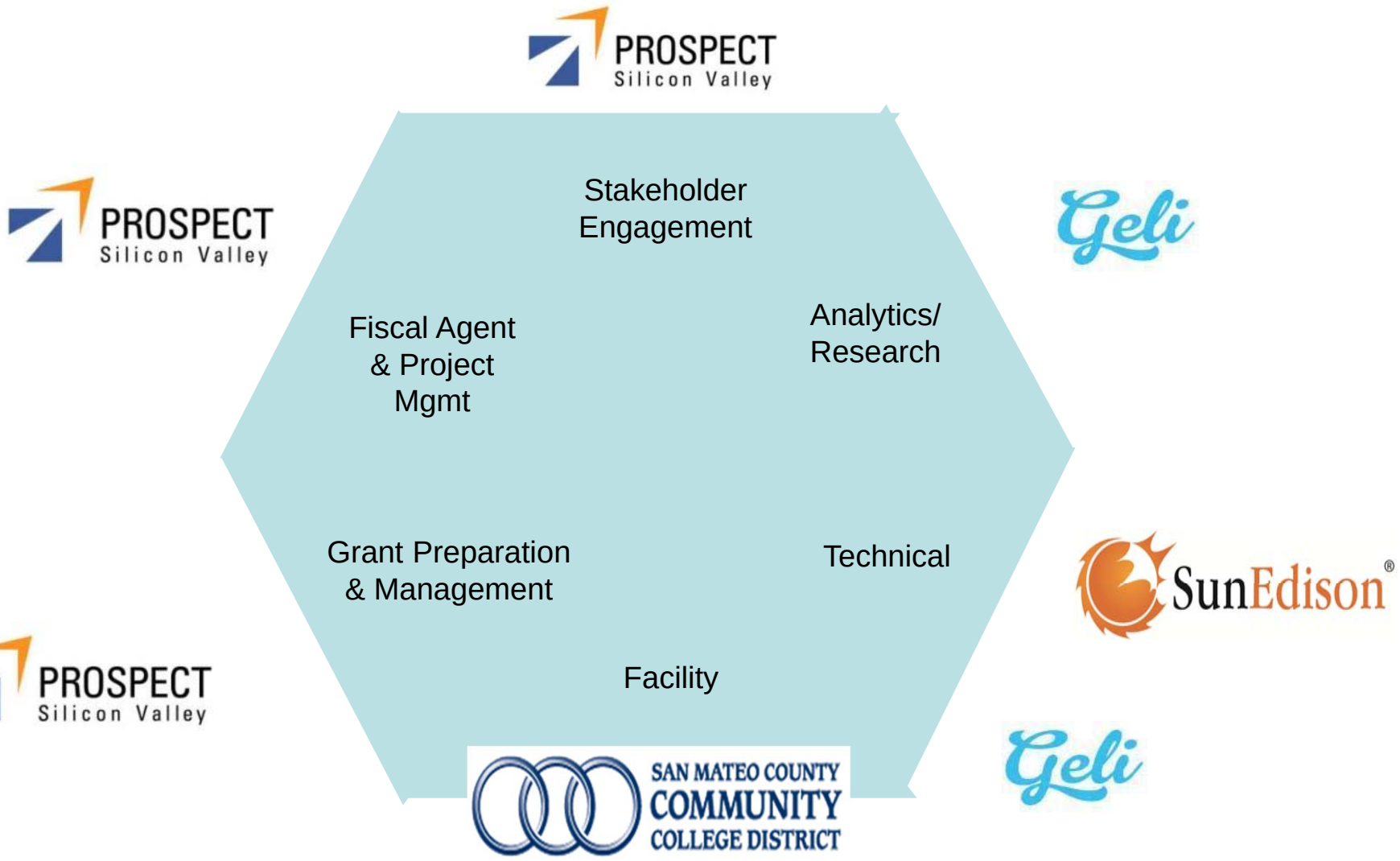
Advanced Solar-Storage

- Increase net yield
- Smooth output



Partners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Geli
Stakeholder Engagement
Fiscal Agent & Project Mgmt
Analytics/ Research
Grant Preparation & Management
Technical
SunEdison
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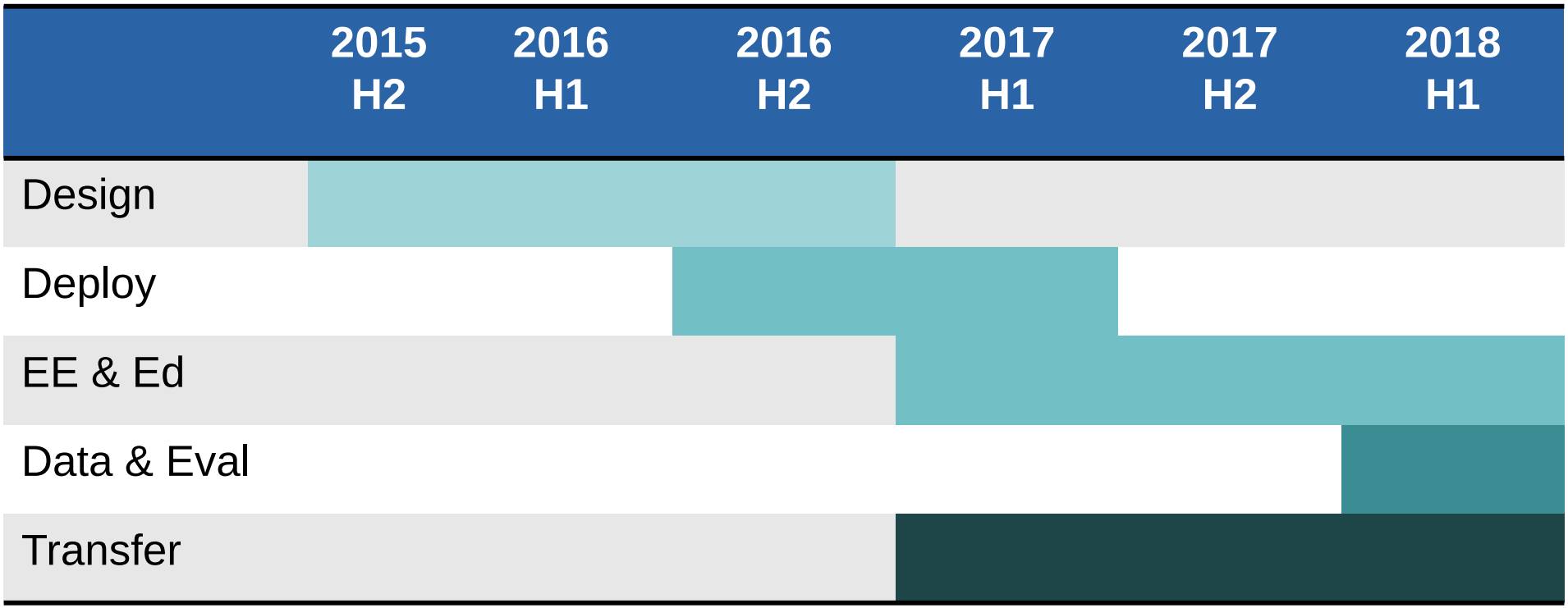
Facility
Geli
SAN MATEO COUNTY COMMUNITY COLLEGE DISTRICT

RATEPAYER BENEFITS

- ***Greater reliability*:** The proposed solar-storage system is inherently reliable, ideally located for solar transient smoothing, and capable of being rapidly dispatched to compensate for grid instability.
- ***Lower community cost*:** Levelized cost of operation will be reduced with lower capital costs, financing, minimized operating costs, and by charging with clipped solar production. Operating costs are reduced through remote monitoring, single packaging, and redundancy.
- ***Lower utility cost*:** Reduced demand variability and peaks results in lower utility costs due to avoided infrastructure (ex: distribution transformers), reduced need for fast ramp and peak generation, and grid level storage.
- **CSM peak load decreased 1.19MW to 1.45MW** (12%). CSM campus consumes 7,900 MWH/yr and IoEn will produce ave. 800 MWh/yr. The demand savings: ~$80,000 in economic benefit and another $80,000 in energy savings from locally produced solar energy per year, for a total of about **$160,000/year**.

Overall Project Timeline



Bridging Barriers

Opening Pathways

Silicon Valley Innovations

Northern California Communities

Global Economies

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PARTNER TO CLEAN TECH INNOVATORS

Thank You

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