

Community Scale Renewable Integration



FRACTALGRID

Demonstration Project

Area 52 – Camp Pendleton

CLEAN SPARK

Community Overview

- 800 residential inhabitants
- 10 commercial administrative offices
- 300 stall parking garage
- 2 cell towers
- 1 million gallon water tank
- 4 EV charging stations



Project Overview

Generator

CPV – 225kW

Carport PV – 300kW

PV – 5kW

Distribution

120v to 12kV

Islandable at all levels

Storage

240kWh kinetic energy storage

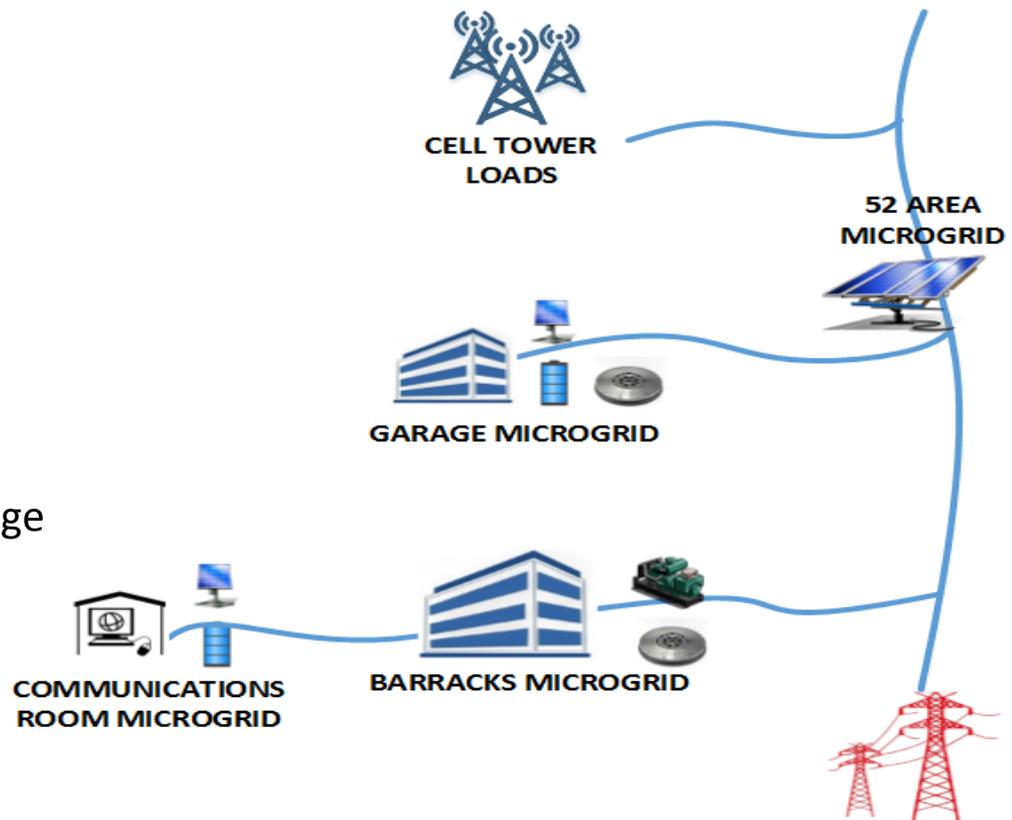
60kW of distributed storage (GEL, lead acid, Li)

Legacy Assets

200kW Diesel GenSet

18,000 lf of geothermal

4 EV charging stations



Project Partners



Partner/Host



General-Contractor

CLEAN SPARK

Designer/Integrator/Installer/O
perator



AES Partner



Electrical
Engineering/Market Data

Project Goals

Onset

- **Carbon Footprint Reduction – significant reduction of 1,800 lbs of CO2 per day**
- **Consumption reduction – reduced community consumption up to 30%**
- **Peak Load Management – completely eliminated peak loads and provided smooth power consumption from ‘utility’**

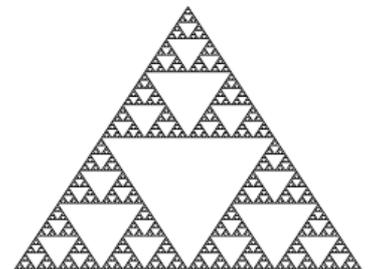
Mid-stream

- **25 year system life, minimum with only PV degradation**
- ***100% Renewable Energy Penetration**



FRACTALGRID

- A fractal is a self similar recursive pattern that allows for a microgrid-inside-microgrid solution
- In order for community scale, rapid transformation architectural approaches such as these must be employed
- First of its kind, breaks down all barriers to 100% renewable penetration



Technological Innovations



- **Seamless integration of all edge devices, generation, and storage technologies**
- **Interoperability with local grid conditions**
- **Demand response enabled**
- **Real-time situational awareness and control**
- **Cyber secure, lightweight distributed control architecture**

Technological Innovations



Environmental Friendly

Manufactured from recycled materials

100% recyclable

No hazardous materials

High Capacity

100 kWh per unit

50,000 minimum full charge/discharge cycles

No storage degradation over time

Low Cost

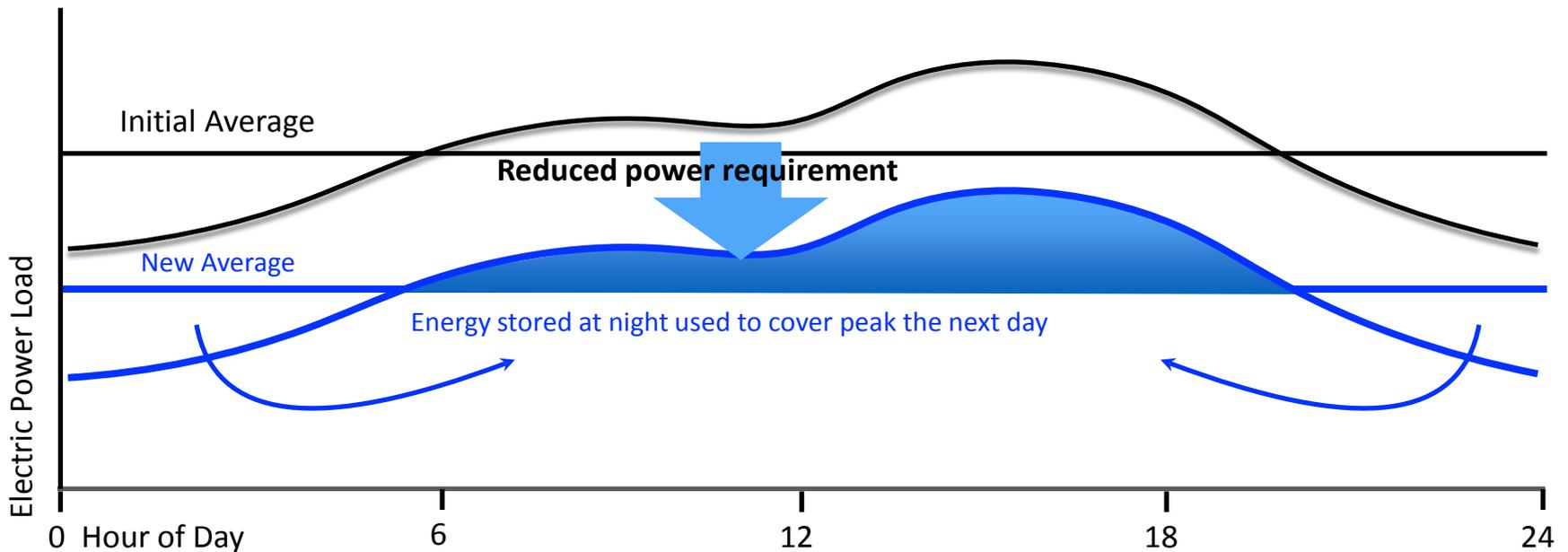
Rapid Deployment

Low maintenance

Virtual O&M

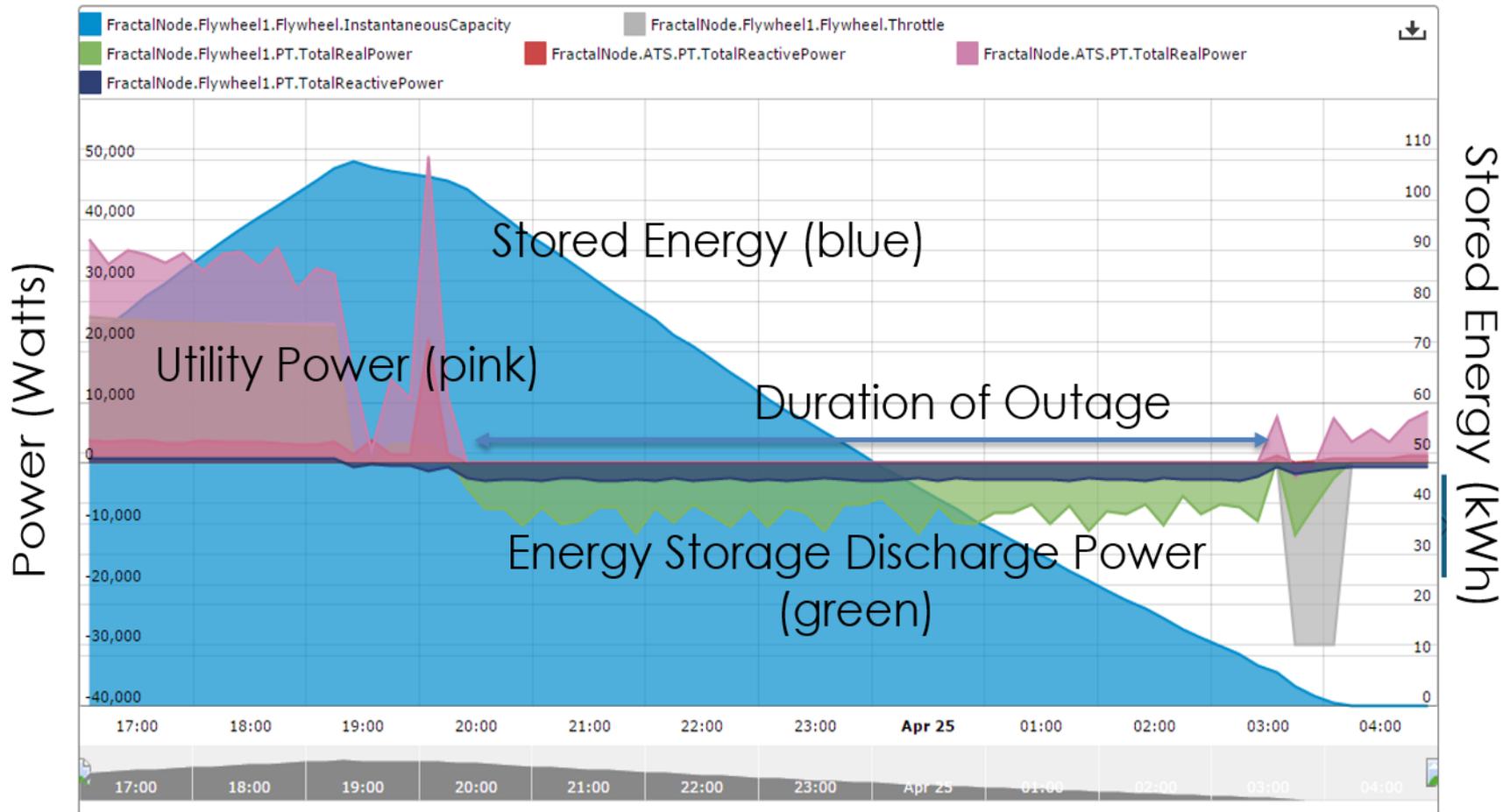
Community Benefits

- **Cost savings - \$1.8M savings over the system life**
- **Significantly reduced carbon footprint**



Community Benefits

Energy Security



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Thank You

CLEANS PARK

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