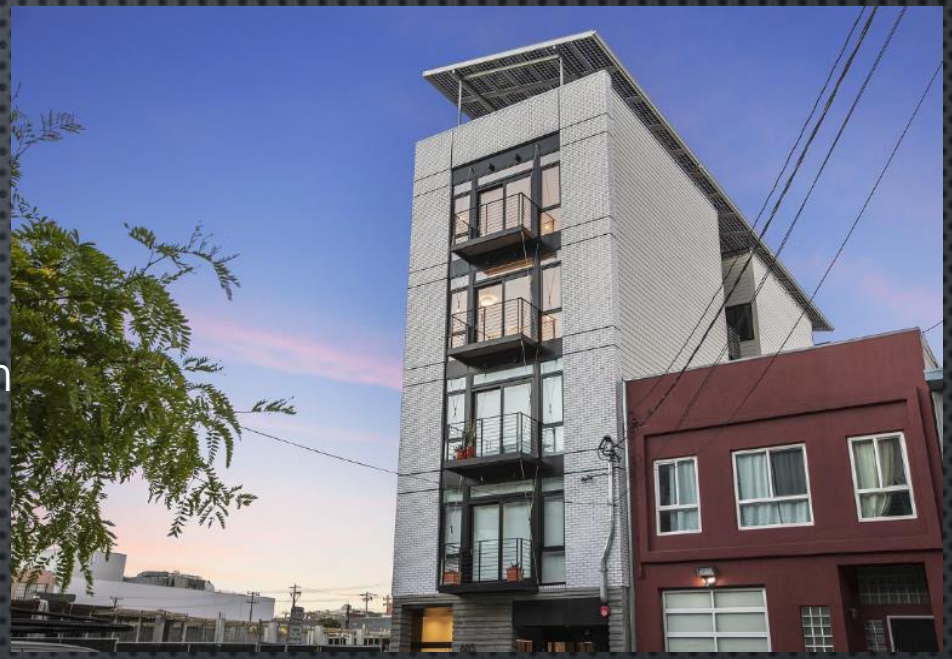
SOL LUX ALPHA

Carbon Neutral Living + Transportation
systems development

SOL LUX ALPHA – First PH Certified multi-unit Nanogrid to US Market

- 4 unit, 6 story, N+E using only PV within the building envelope
- All electric – Fossil Fuel Free
- Passive House PHIUS + US DOE Zero Energy Ready Home program (Energy Star, Indoor Air Plus, EPA "WaterSense")
- **WINNER of the US DOE Housing Innovation Award for Multi-Family**



ZERO ENERGY READY HOME
U.S. DEPARTMENT OF ENERGY
HOUSING INNOVATION AWARD
WINNER 2018

PHIUS+

The Passive House Institute US (Phius), maintains and certifies the highest standards for site energy efficiency in the world today.

Energy Star

The US Energy Star program guides builders and homeowners to the highest efficiency home appliance and other home energy products available in the USA today.

US EPA WaterSense

The US EPA WaterSense program helps save water and protects the environment by promoting WaterSense labeled products for homes, yards, and businesses, while taking various other simple steps to save water each day.

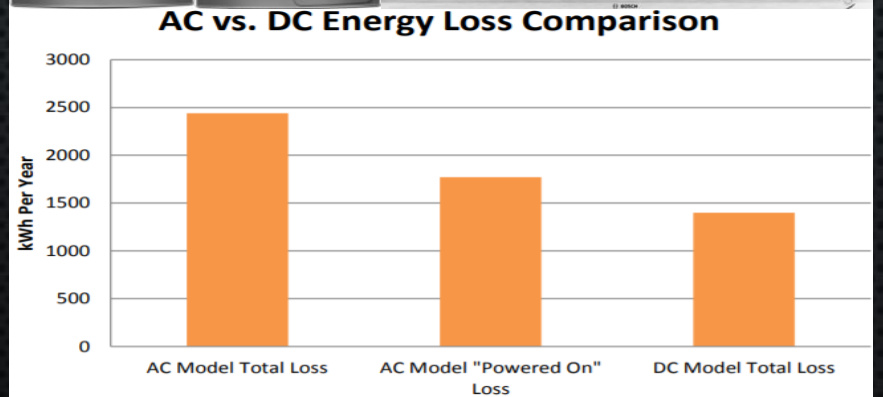
Department of Energy

The United States Department of Energy has developed a partner program dedicated to the building of, the science behind and the energy generation for Zero Net Energy and Net Positive Energy homes in the US. Sol Lux Alpha was built to exceed even the DOE program's highest standards, which is measured and recognized a year after occupancy.

- US DOE ZNERH recognizes Passive House as "high bar" for efficiency

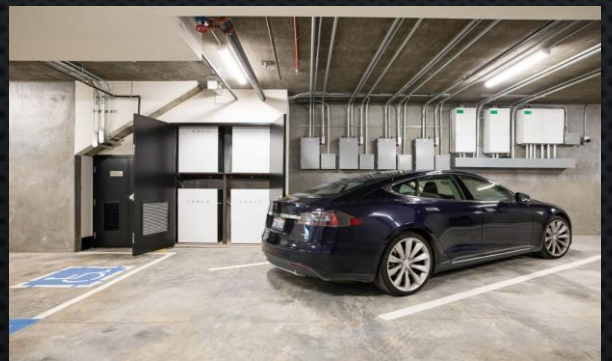
PH Baseline + "industry best" efficiency systems

- Air source heat pumps for HVAC, DHW, Clothes drying
- 100% L.E.D. lighting
- Automatic occupancy and vacancy sensors
- AEK - Induction cooktops and Bosch "Benchmark" Appliances
- Next Gen projects Moving to DC Appliances and systems

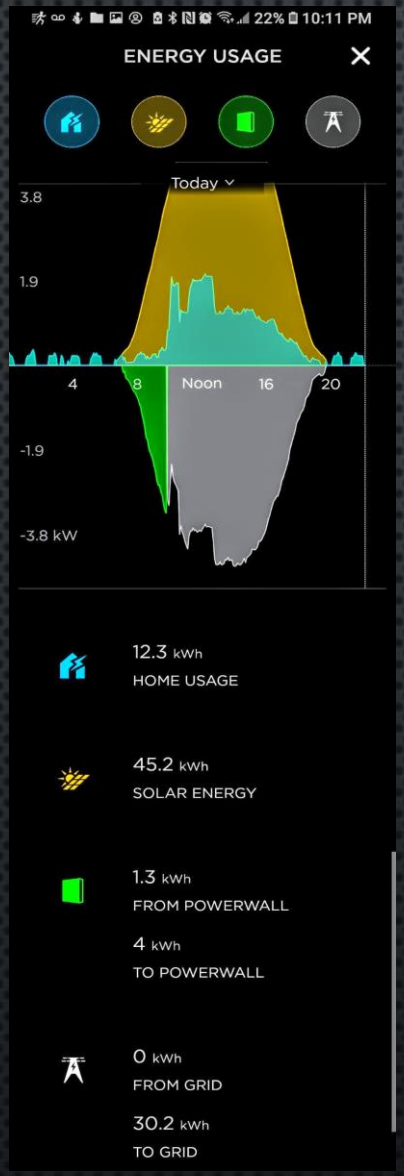


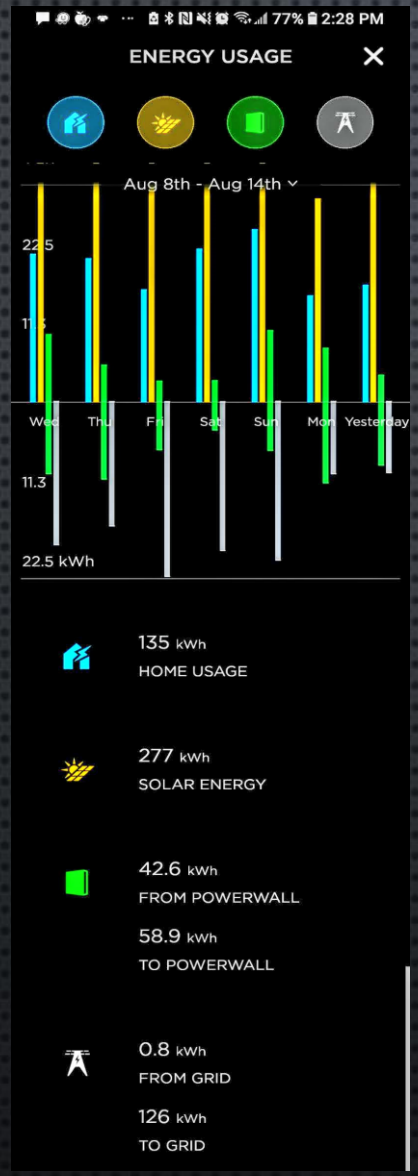
NANOGRID systems

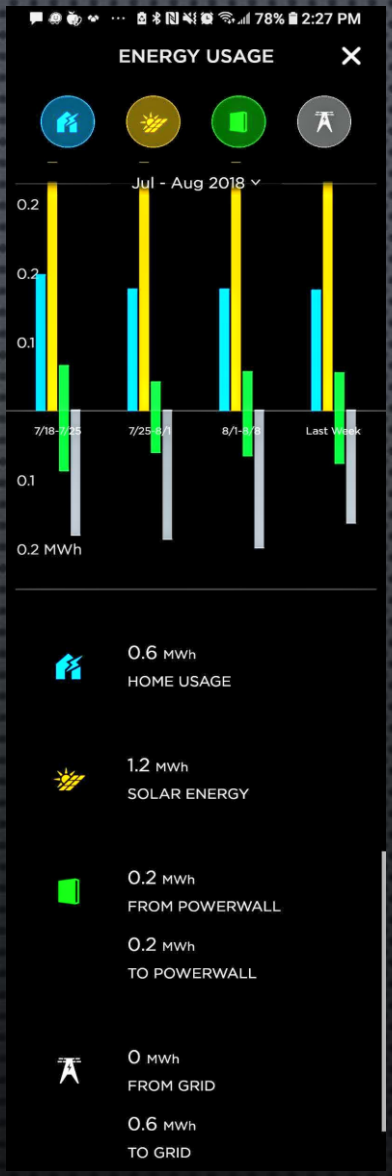
- **Sunpreme** GxB 380w Bifacial panels (up 20 25% boost) = 475w
- **Tesla Energy** Powerwall x3 (triple redundancy, 2-3 days energy)
- **Blue Planet Energy** “Blue Ion” for 3 phase loads (elevator & commons)
- **V2B ARCHITECTURE** enabled

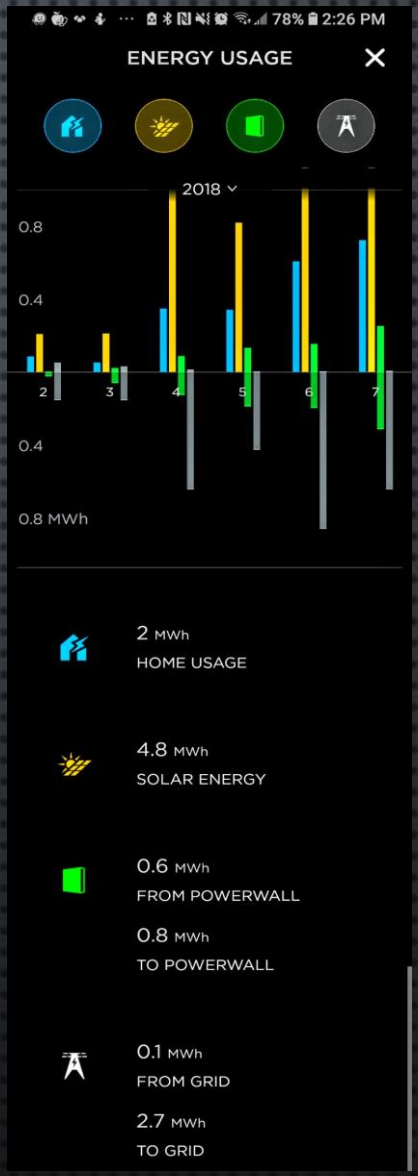


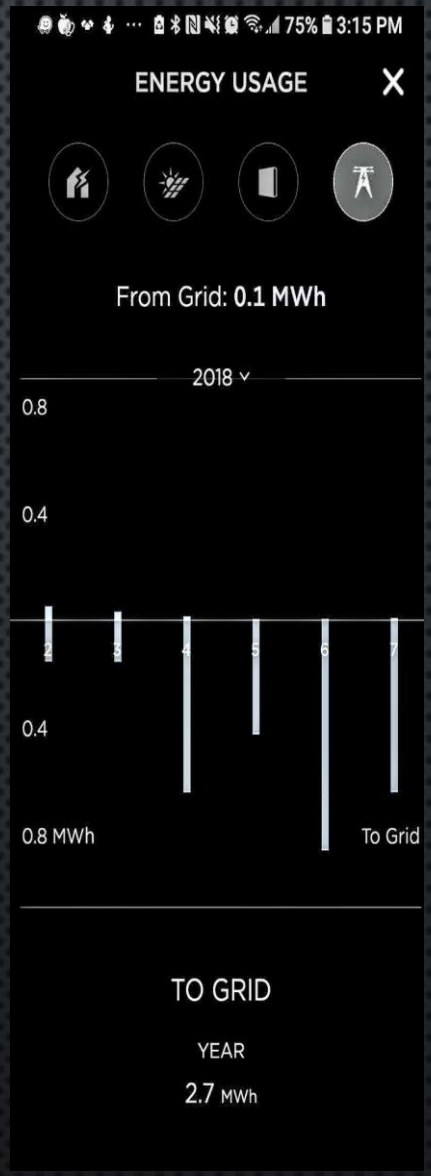
SOL LUX ALPHA OCCUPIED RESULTS – UNIT #2







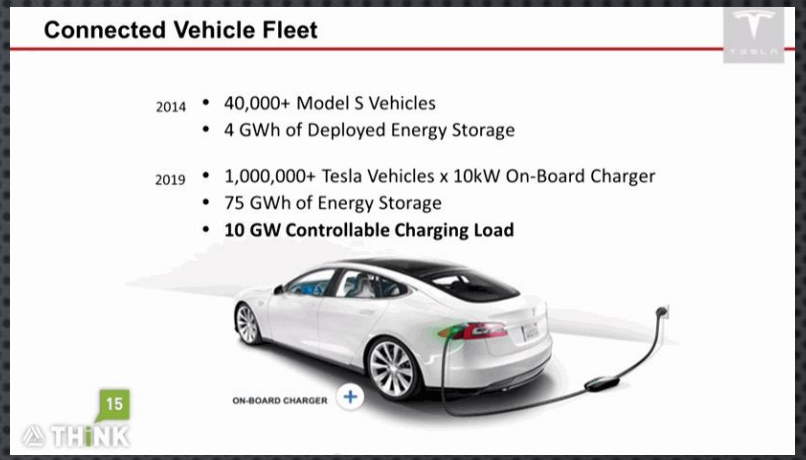


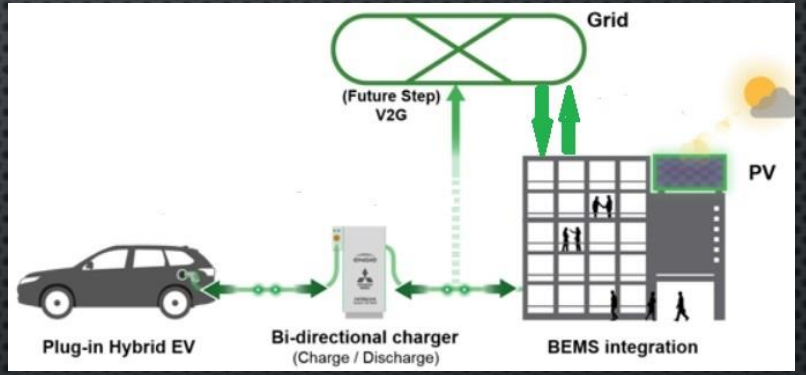


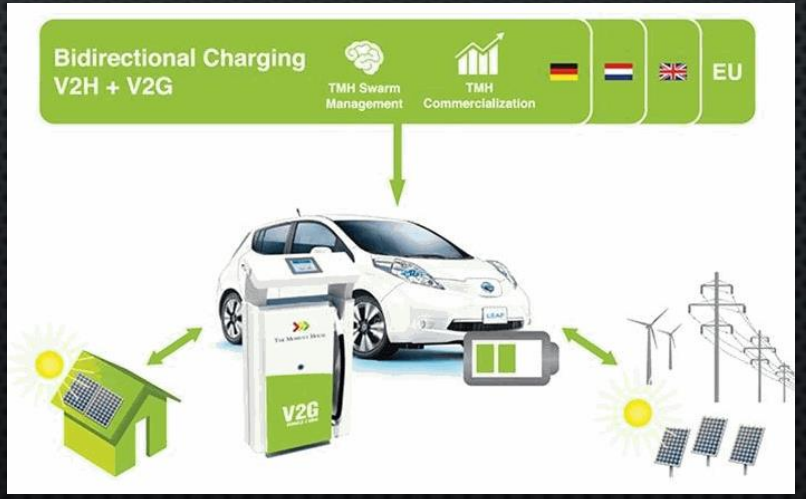
Daily-13 kwh /30 exp. Weekly-135 use / 126 exp. Monthly-600 use/600 exp. Yearly-2 Mw use/2.7Mw exp. Ann Grid-2.6 Mw export

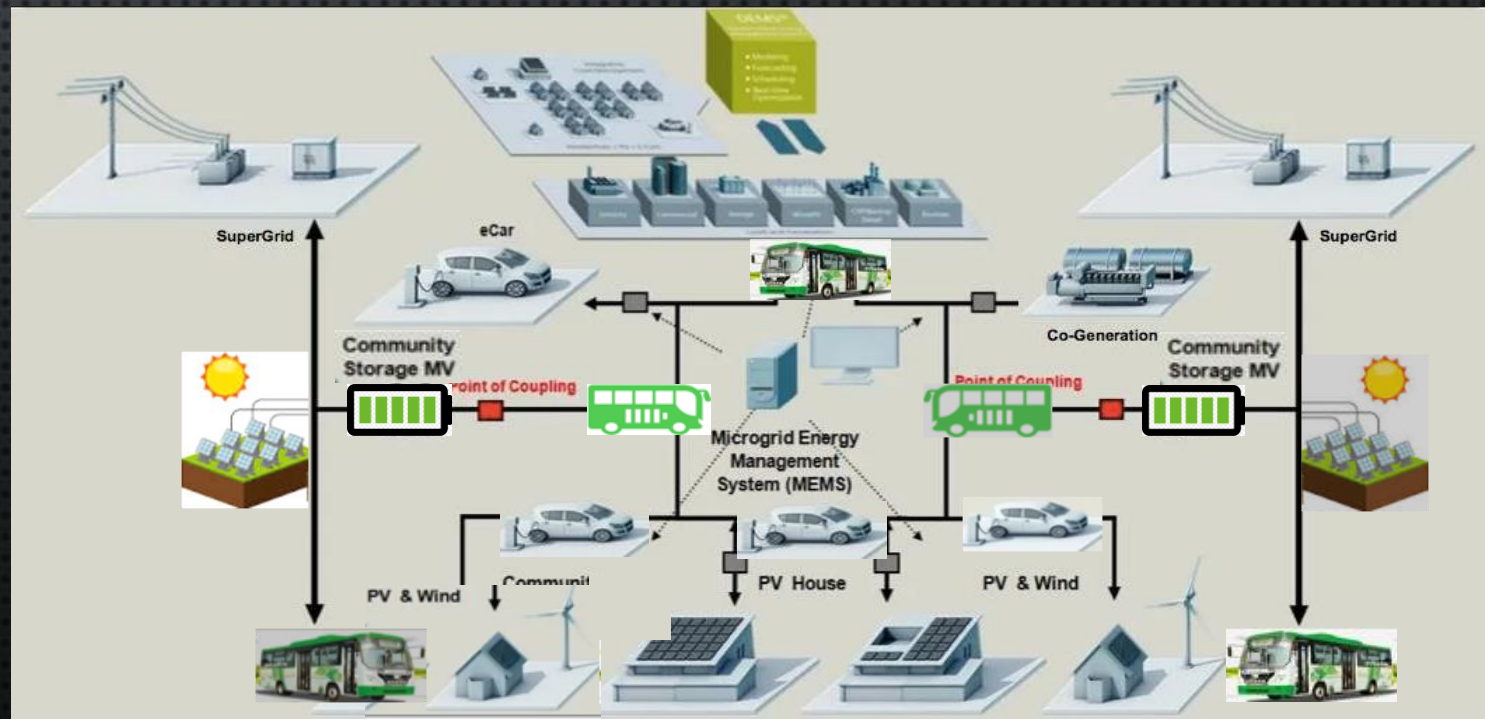
V2B
(Vehicle to Building)

- EXTENDS "**NANOGRID**" TO "**MICROGRID**"
- **Reduces** need for site based ESS
- "**Mobile Energy Assets**" for community resilience
- "**Mobile Grid**" reduces WIRE infrastructure







"Grid-Optimal" prosumer Nanogrids + bi-directional AEV's = Aggregated R.E. Community Microgrid Systems

- Nanogrids export to grid or charge EV's at peak TOU – (VPP's for residential & industrial energy)
- Nanogrids can net meter for off-peak EV Charging – (load shifting)
- Ancillary (micro)grid services enabled and peaker plant excess energy generation dissapears
- Nanogrids Reduce need for community scale Solar + Wind +Storage
- Greater resilience by virtue of distributed systems, and fewer single points of failure
- **Wireless Mobile Microgrids of bi-directional EV's + site based ESS**
- **Add Community Scale R.E. + Storage @ Nodes of Connection provide ancillary Grid and Microgrid services**