UCSD Microgrid

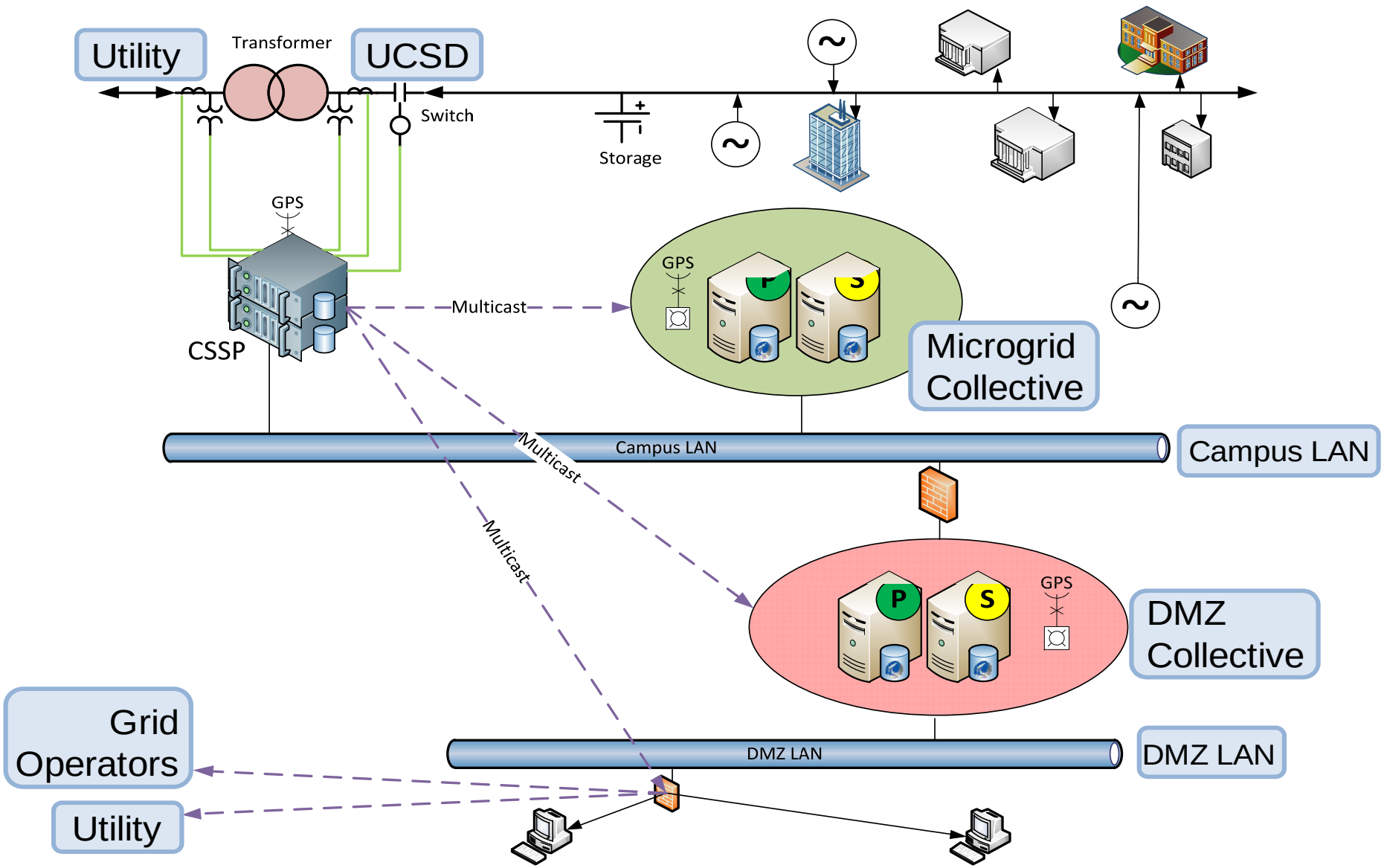
Current Infrastructure

- Generation:
  - 42 MW peak load
  - 30 MW NG CCHP plant generates 80% of annual demand at 61% efficiency
  - 1.2 MW of PV
  - 40,000 ton hr thermal energy storage
- Distribution:
  - Owns 69 kV substation
  - 96× 12kV underground feeder circuits 4 × 12kV distribution substations
  - Meters 50,000 energy data points

Planned Expansions

- Committed to:
  - Power Analytics / Viridity Scheduler/Optimizer
  - 2.8 MW fuel cell using methane gas
  - 1.8 MW / 11.2 MWh electric energy storage
  - 1.9 MW expansion of PV with CREBs financing
  - 2.0 MW / 8 MWh of PV integrated storage with CA SGIP incentives
  - $250M/yr building expansion and $72M, 3 Yr EE program

UCSD Microgrid



Solar forecasts to help optimize power systems

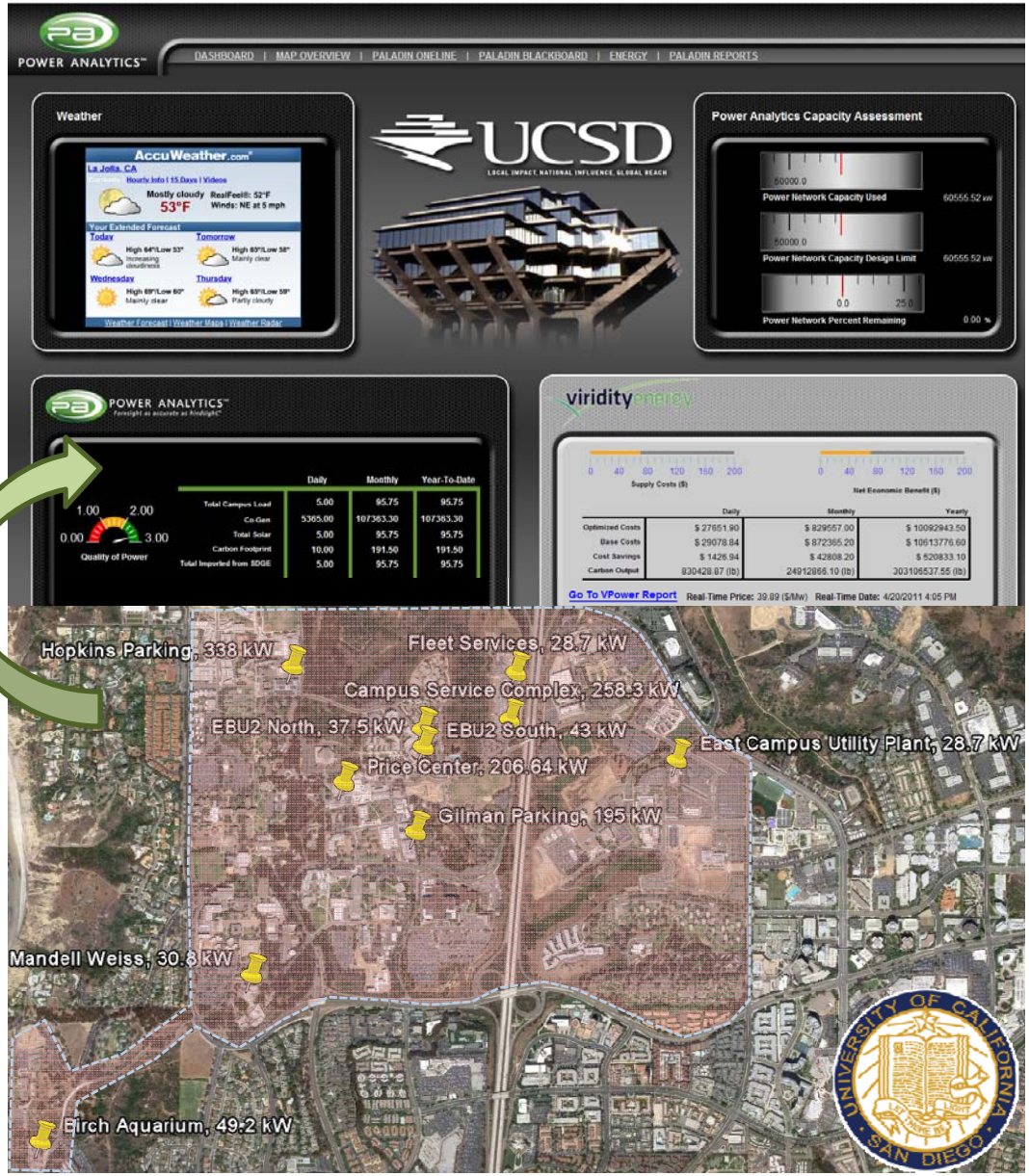
USCD uses numerical weather prediction (NWP) GHI forecasts to predict power output

π server NWP Forecasts

- Daily GHI and power forecasts for each campus PV array

Sky Imagery Forecasts

- Adding a sky imagery forecasts to be implemented at 10 minute forecast horizon

Increased efficiency at UCSD

- Forecasts are input into **UCSD smartgrid** power optimizer