

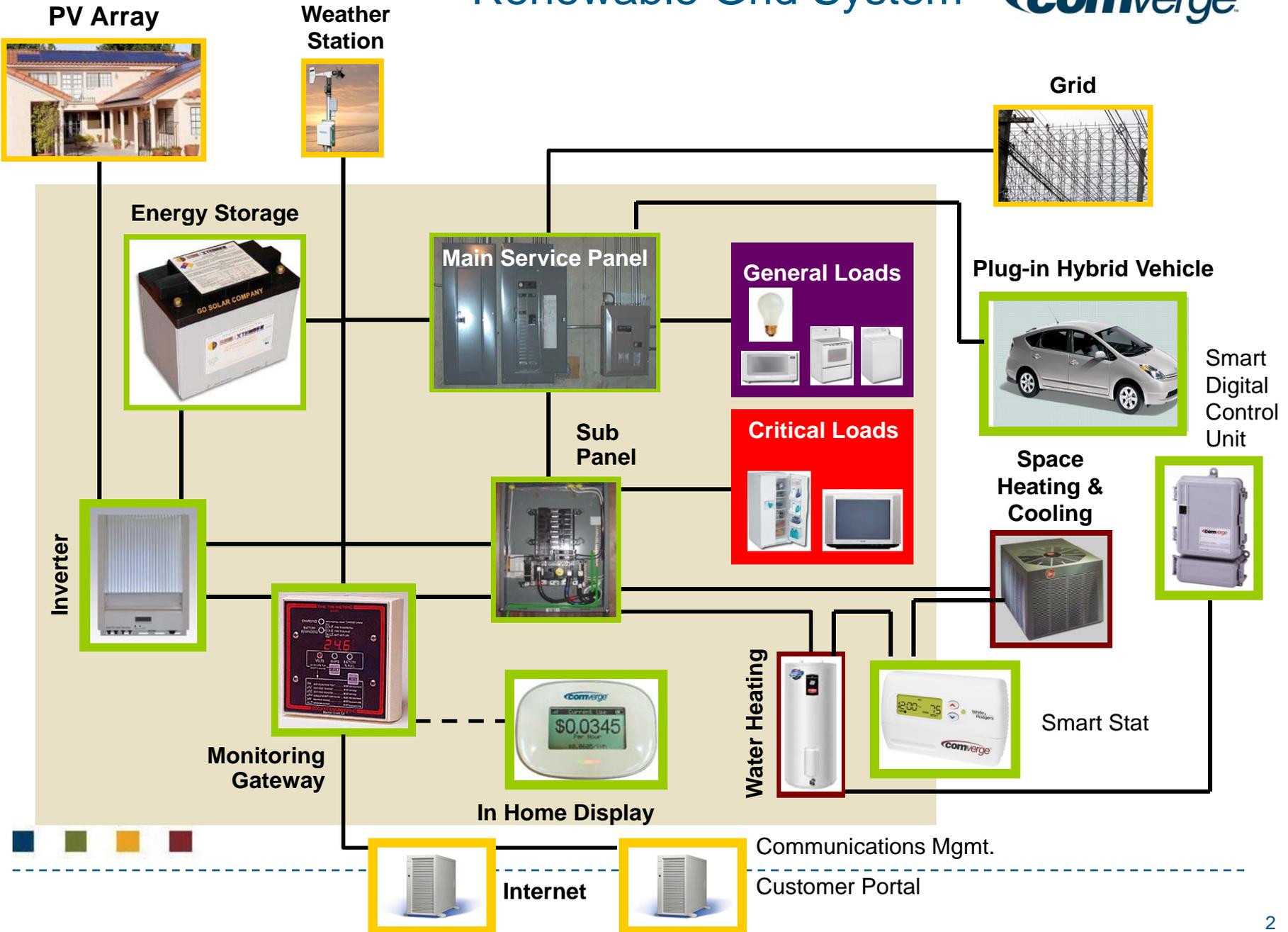


Comverge ICED Project

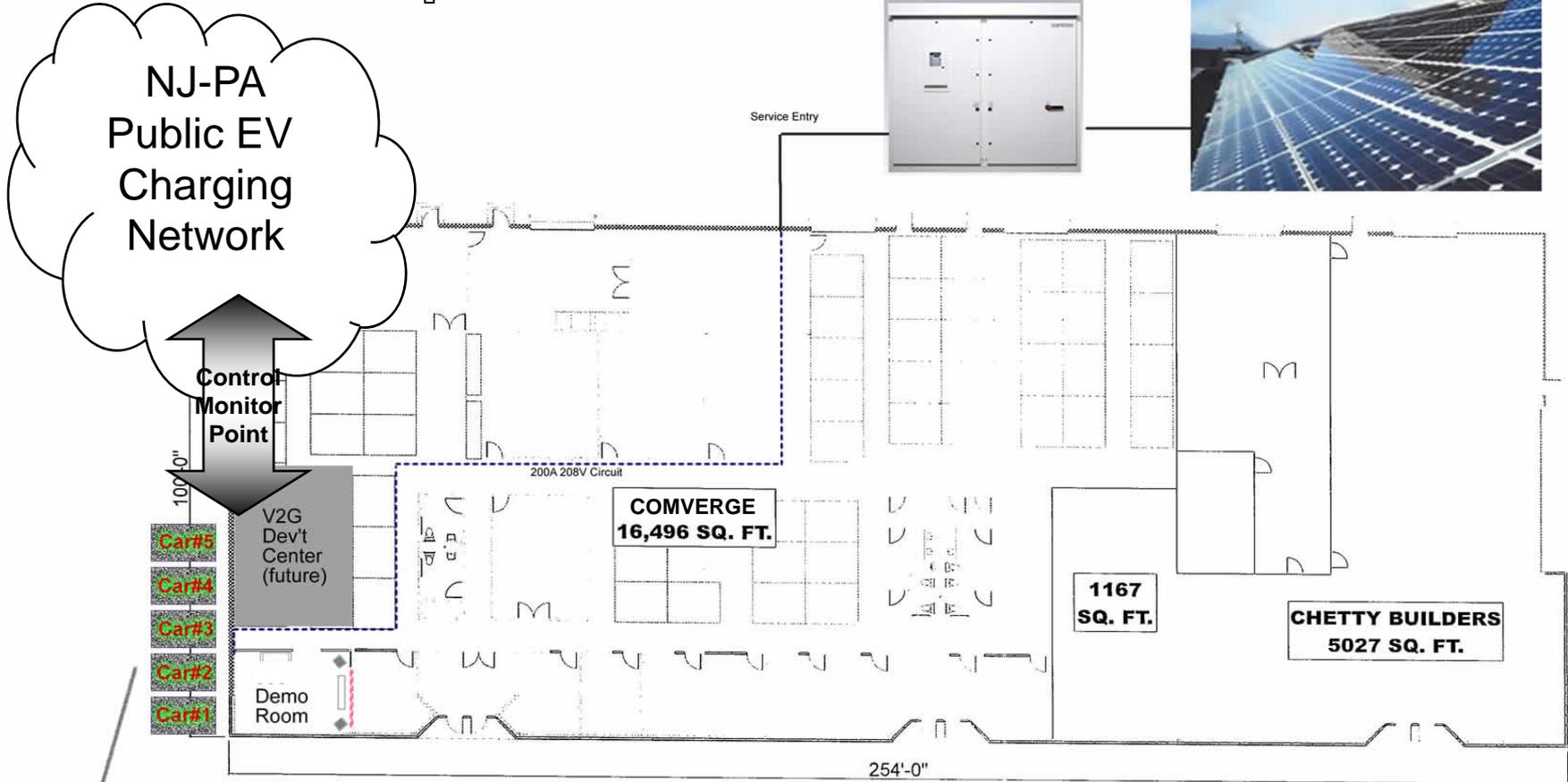
(Integrated **C**lean **E**nergy **D**emonstration)

June 16th, 2009

Renewable Grid System



ICED Concept



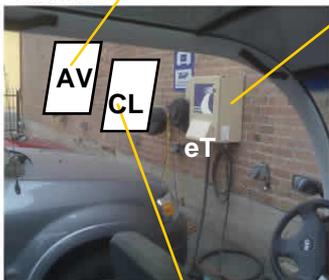
**511 SCHOOLHOUSE ROAD
KENNETT SQUARE, PA 19348**

1,250 sq ft inside area (5 kW avg)
800 sq ft. park/charge (20/100 kW avg/peak)
5,500 sq ft roof area (15/35 kW avg/peak)

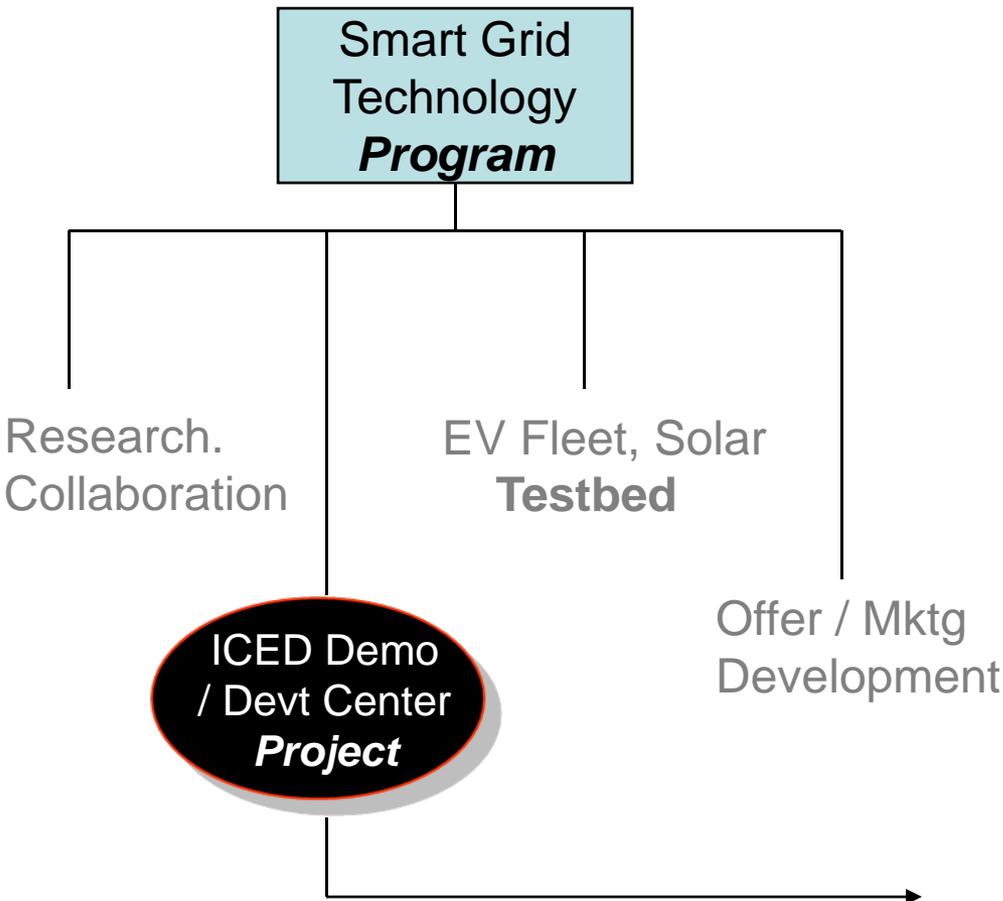
KS-ICED Program Goals (Integrated Clean Energy Demo)

- Deliver powerful cleantech experience
- Collect critical PV/V2G operational data
- Demonstrate innovative market leadership
- Enable new business models and opportunities

VIEW A Aerovironment eTec



Coulomb Tech



- Research rapid developments in the Smart Grid PHEV related areas (V2G, AMI, Dist Gen, Storage, etc.)
- Prototype a demonstration platform for communicating the potential service offers to clients and regulators
- Maintain close involvement with key consortia, advocacy groups, and standards bodies
- Initiate several pilot programs with utilities or state governments



ICED Use Cases



Case#1 Basic DR Smart Charging

Actor/Participants
Car Owner

Goal Demonstrate basic vehicle charge status remote monitor and energy transfer to battery against TOU rate.

User Experience

Select charging mode required in user interface screen
Simulate changing time of day and/or electricity prices
Vehicle is charged in accordance with established setpoints
Data visualization metrics presented on the demo screen

Case#2 Integrated Load Balancing

Actor/Participants
Car Owner
Third Party Aggregator
Utility

Goal Show ability of several vehicles to coordinate load presented to local and grid-generated supply.

User Experience

Graphical presentation of all building supply and demand
Introduction of Solar supply disruption with constant demand
Vehicles provide power differential to maintain constant grid draw
Maximum grid draw levels established to trigger battery power
Other load balance demonstrations....

Case#3 Vehicle to Home

Actor/Participants
Car Owner
Utility

Goal Demonstrate capability for vehicle to partially or fully offset grid power need for home appliance operation

User Experience

Select appropriate trigger in user interface screen
Simulate power failure from the grid
Vehicle is automatically commanded to switch power out
Appliances are returned to preset operational state*

Case#4 Aggregated Storage Services

Actor/Participants
Car Owner
Third Party Aggregator
RTO/Utility

Goal Show capability for vehicles to remotely support near real time energy transfer with the grid from AGC signal

User Experience

Car(s) are connected to the PJM signal for Regulation Services
Simulated fluctuation from the PJM grid is introduced (4 sec interval)
Vehicle charge rate is proportionally controlled with V2G signal
Data visualization metrics presented on the demo screen.

* Home can be set to operate in critical conservation mode

What are the Benefits of the ICED “Project”?

- Tighter linking with PJM through extension of their "Demand Response" executive demonstration center.
- Solid development platform with an instance of Apollo that can be integrated and evolved for renewables and storage management
- Stronger sales collateral for presenting the Comverge value proposition (and expansion capability)
- Demonstration of Comverge's Corporate Sustainability Model (ie Walk the Talk)
- Catalyst opportunity to attract external funding and investment from government and partner development vendors. Platform to support additional stimulus grant requests.



Collaboration

- Comverge is open to participation from those interested in prototyping or testing innovative smart grid solutions.

