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California Energy Commission's Enabling Technologies and Communications Workshop

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Presented by: Austen D'Lima
Emerging Technologies
San Diego Gas & Electric

Enabling Technologies in Programs

- Smart Thermostat (- Carrier)
- Summer Saver (A/C cycling - Comverge)
- kWickview online energy tool
- Permanent Load Shifting
 - Thermal mass “fly wheeling” of freezer space
 - Gas absorption and gas engine-driven A/C systems

Hotel room energy control

- Using sensors (ultrasonic and infrared) to sense when the room is occupied
- Shuts off A/C to room when unoccupied
- Can turn off lighting connected to the sensors
- Sensors are activated when customer opens the room door

Home Area Network Projects

- Testing and assessment of residential appliance controls
- Communication and manipulation through the electric meter
- Integrated and non-appliance integrated controllers
- Communications signals using a combination of standards based PLC and wireless protocols

Load Management Technologies

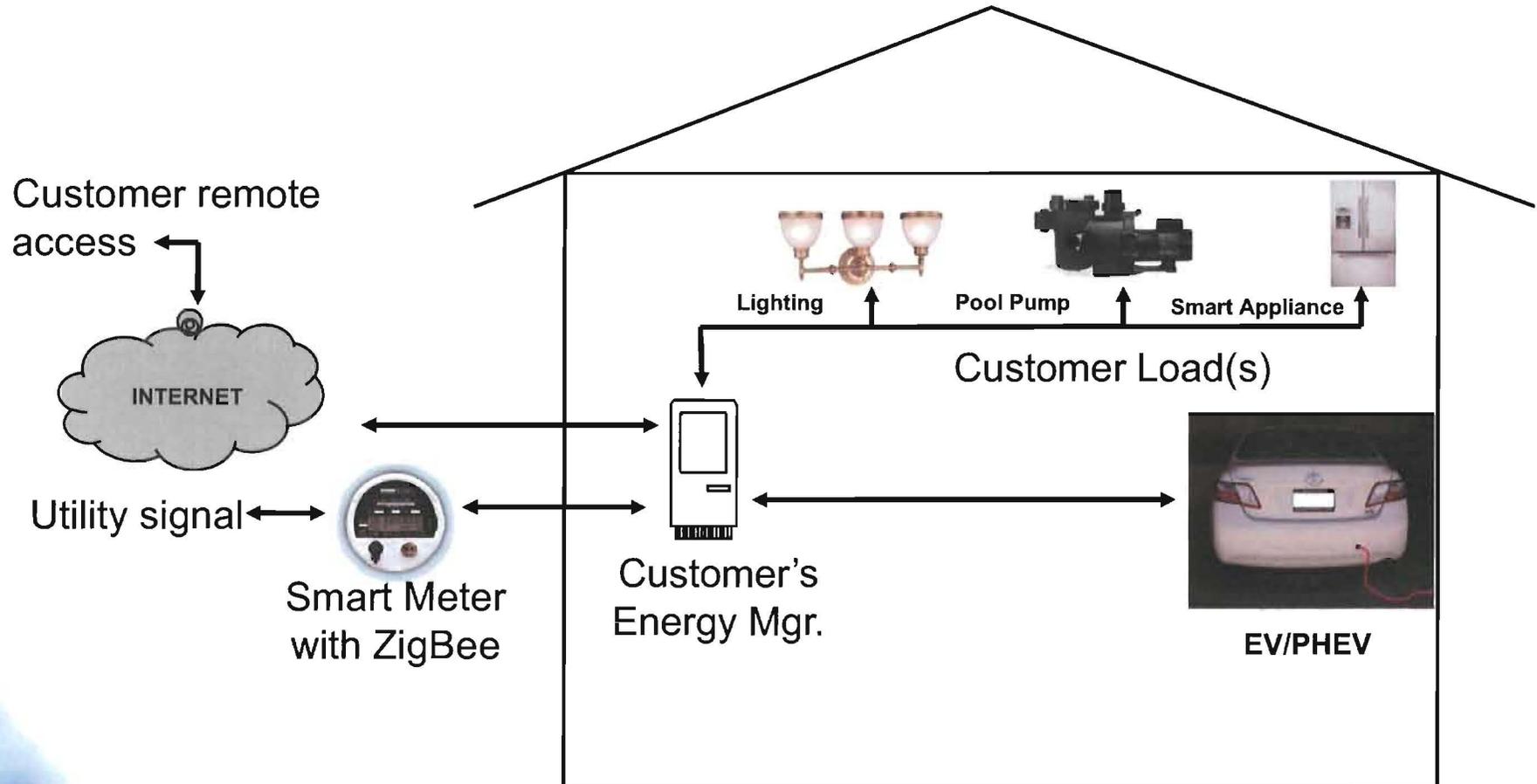
- Programmable communicating thermostats
- Simple controllers, sensors and energy management device
- Smart controllers and smart appliances
- Energy storage and EV/PHEV

Programmable Communicating Thermostat

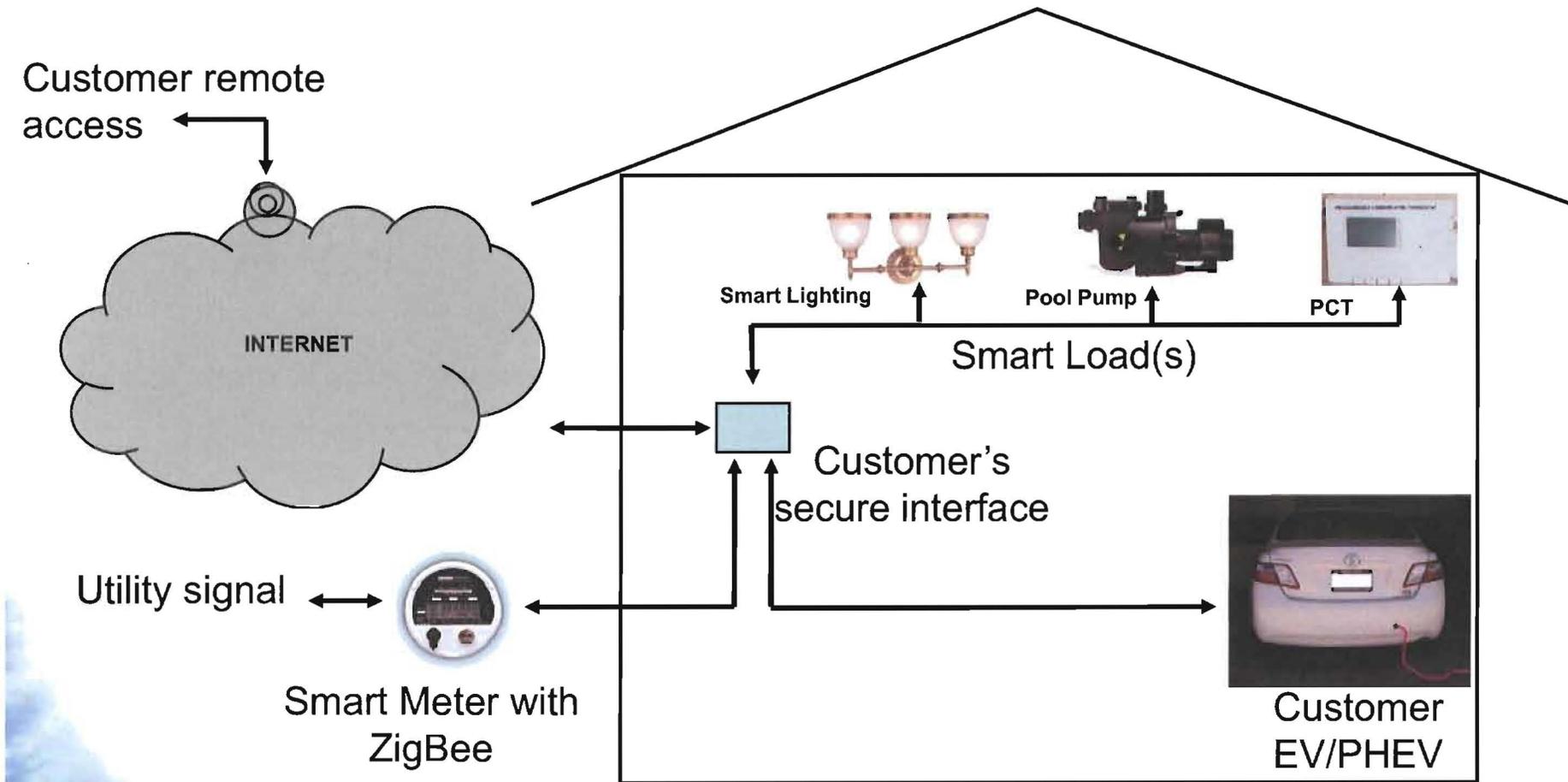
- The PCT receives and responds to automatic price and emergency signals
- It is controllable inside the home by the customer and may have remote customer access and control capability
- Uses 2-way standards based communication protocol, compatible with the utility's planned infrastructure (IEEE 802.15.4 – ZigBee)



Energy Manager Device



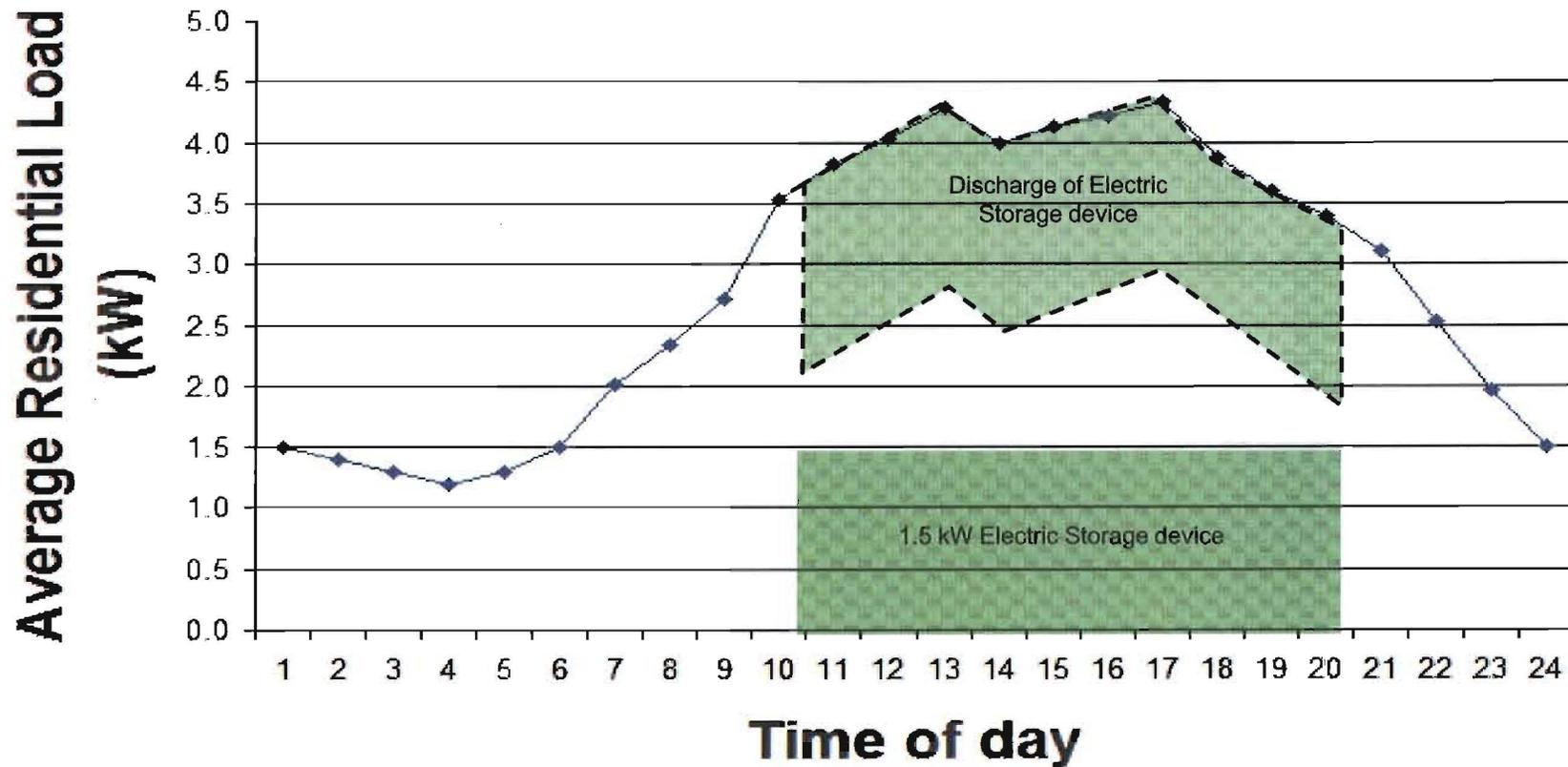
Smart Devices



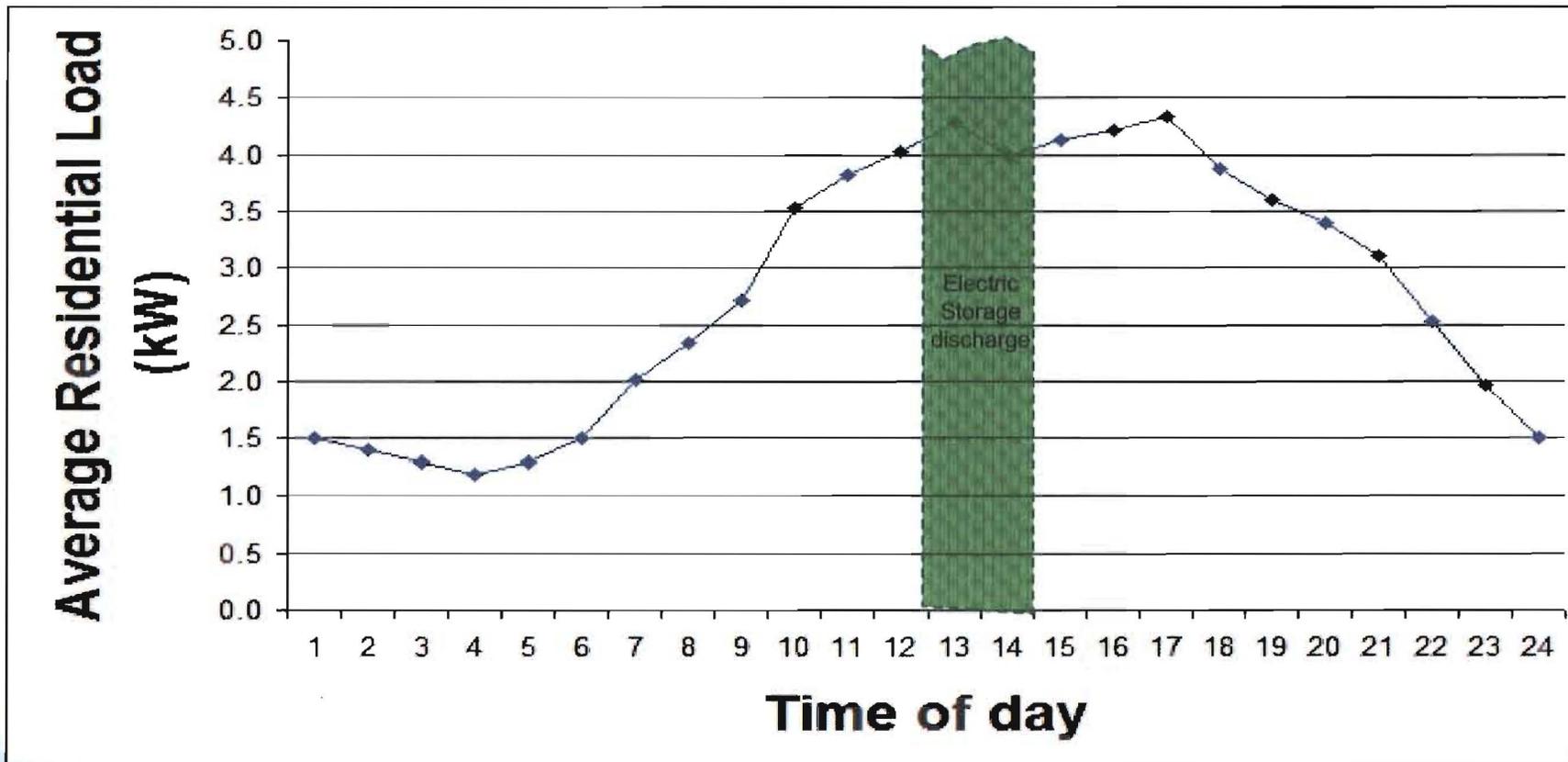
Energy Storage



Typical daily electric discharge



Discharge for DR event



Conclusions

- Smart energy technologies need stimulation
- Technology diversity must be encouraged
- The PCT must use standards based communications protocol compatible with the utility's AMI
- Utility pilot programs such as the Residential Appliance Controls and Automation Technology program enable the utility to design effective load management programs
- Codes and Standards will encourage vendor interest