Smart Energy Profile 2.0
(SEP 2.0)

December 12, 2012
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What is Smart Energy Profile 2.0

• What is SEP 2.0?
  – Networking and application integration platform for messages between customer devices and energy services providers
  – Is small inexpensive embedded downloadable software that resides on consumer devices and appliances
  – Scalable and addressable
    • IPv6 protocol centric and is physical layer Independent
  – Secure Communications and Encrypted
  – Customer devices have zero configuration

• What does it do?
  – Peak load shaving
    • By deferring the consumer high energy loads. E.g. Air Con, Pool Pumps
  – Modify consumer behavior
    • Provide real time energy usage with in home displays
    • Real time or time of use pricing
  – Manage Residential Loads/Generation – Electric Vehicles/Renewables
    • By Intelligently managing the load and generation, to prevent local distribution issues
The Home

• The Home Area Network (HAN) allows home owners and their devices to participate in Utility programs
  – Lower Bills
  – Earn rewards
  – Go green

• Smart Energy Profile 2.0 (SEP 2.0) is the protocol that enables the Smart Grid Home Area Network (HAN)
  – Started under ZigBee Alliance
    • Now partners with WiFi and HomePlug Alliance and others
    • CSEP formed for common Interoperability and certification
  – SEP 2.0 works in conjunction with multiple communication technologies (physical layers)
SE2.0 Physical Layers

- **IEEE 802.15.4** (or ZigBee)
  - Low power WPAN
  - Up to 100-250 kbit/s, Mesh

- **IEEE 802.11**
  - WiFi physical layer - WLAN
  - Will become popular for consumer driven applications
  - Participated in a public live demonstration

- **PLC**
  - G3
  - SAE/ISO Electric Vehicle Charging
    - HP-GP

- **Other**
  - DECT
  - Bluetooth
  - Ethernet
The Home Area Network - Connectivity

Home Area Network (HAN)

- Water, Gas Meter
- Thermostats
- Appliances
- Energy Storage
- Energy Management System (EMS)
- Sub-Meter (EUMD)
- Portable Display
- Smart Meter
- SE1 to SE2 Application Layer Gateway (if required)
- Internet
- DSL/Cable/Fiber Modem
- PC
- ESI/Gateway
- Backhaul: Radio, PLC etc.
- Loads E.g. Pool Pumps
- Solar, Wind
- Electric Vehicles
- Electric Vehicles (EVS/E)
- Pool Pumps
- Solar, Wind
- Electric Vehicles

Home Area Network (HAN)

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