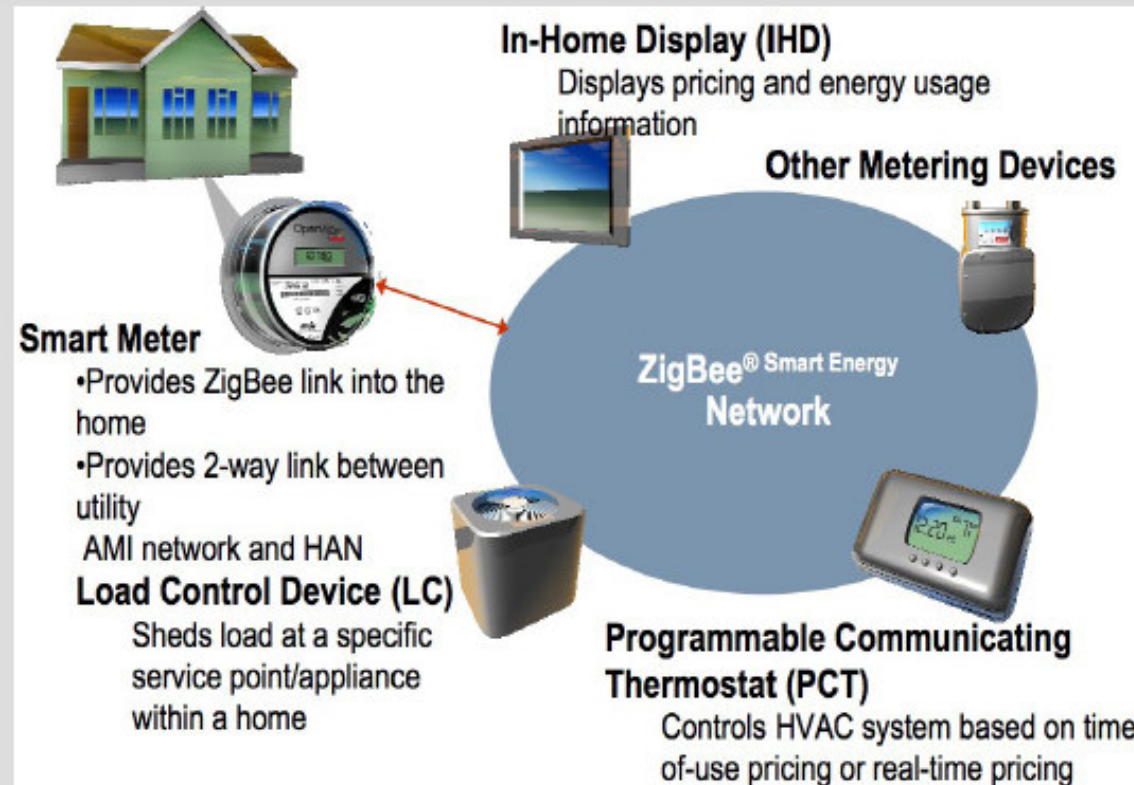


Basic System centered on Demand Response/ Load Control

## SMART ENERGY 1.0: ZigBee Technology

It's a start; implementation is still fragmented across the US





# SMART Energy: HAN (Home Area Network) Criteria and Functional Characteristics

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CONTROL – Applications that respond to control commands

- Direct – Turns load ON or OFF
- Cycling – Turns load ON or OFF at configurable time intervals.
- Limiting – Turns load ON or OFF based on configurable thresholds.

MEASUREMENT & MONITORING – Applications that provide internal data & status

Device State – The current or historical state of the device (e.g., lights/fans/compressor/motor/heater are ON or OFF)



# SMART Energy: HAN (Home Area Network) Criteria and Functional Characteristics continue

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ENVIRONMENTAL STATE – Current local conditions (e.g., temperature, humidity, time, airflow, ambient light level, motion)

HUMAN MACHINE INTERFACE (HMI) –Applications that provide local user input and/or output. These applications are based constrained and based on the data type.

- User Input – Provides consumers with a means to input data into an Application (e.g., Touch Screen, Keypad).
- User Output – Provides an Application with a means to output data to the consumer (e.g., In-Home Display, text message).



# SMART Energy: HAN (Home Area Network) Criteria and Functional Characteristics continue

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## MANAGEMENT AND DIAGNOSTICS

- Alarming and Logging – Event driven consumer and utility notifications.
- Testing – System and device testing.
- Device Reset – Resets the device to the installation state.

## USER INFORMATION

- Covers utility initiated messages and electric usage updates via an In Home Display (IHD).
- Does not cover other internal HAN display functions