

Blazin' Trails to Energy Solutions

Smart Meters and Smart Grid: Evolution to New Functionality

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Current Electric Utility Environment

- **Emphasis on climate change, energy conservation and efficiency**
- **Increasing demands to improve performance in the deregulated Texas electric market**
- **Reliability concerns / awareness**
- **Internal drive for continuous improvement of people, processes and technology**
- **Changing consumer expectations**

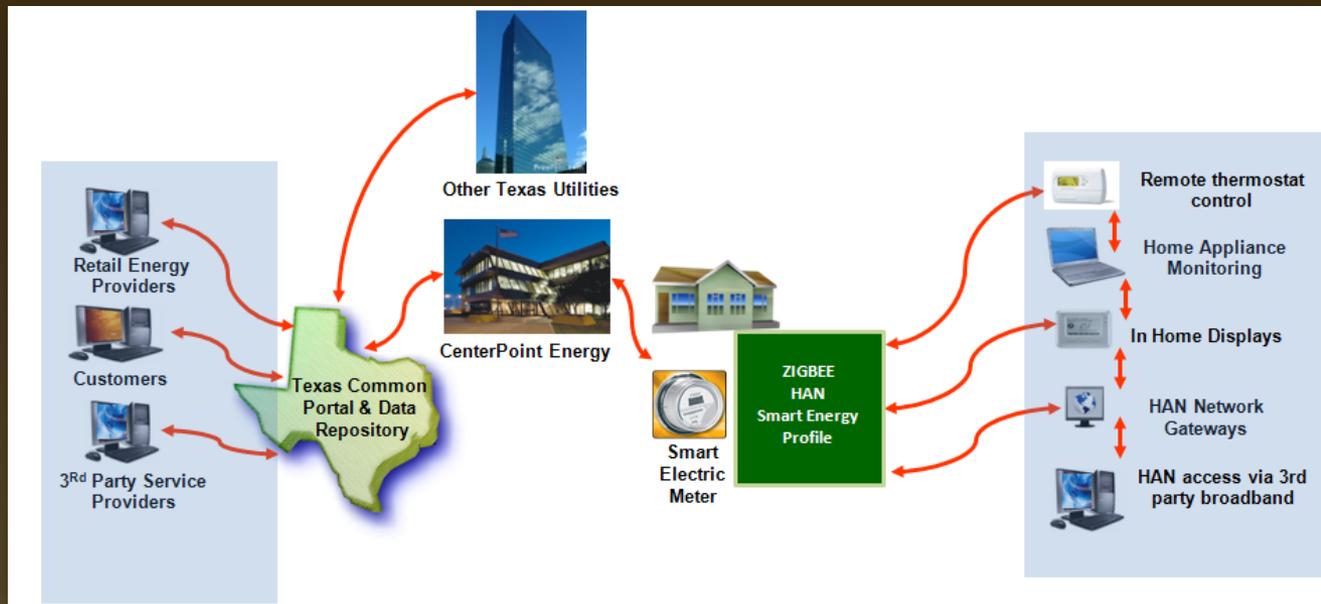
The overall utility environment is demanding higher performance in an ever-increasing cost environment.

Changing Consumer Expectations



“The greatest challenge facing electric distribution is responding to rapidly changing customer needs for electricity. Increased use of information technologies, computers, and consumer electronics has lowered the tolerance for outages, fluctuations in voltages and frequency levels, and other power quality disturbances.

Advanced Metering System and Smart Meter Texas Common Portal & Data Repository Functionality



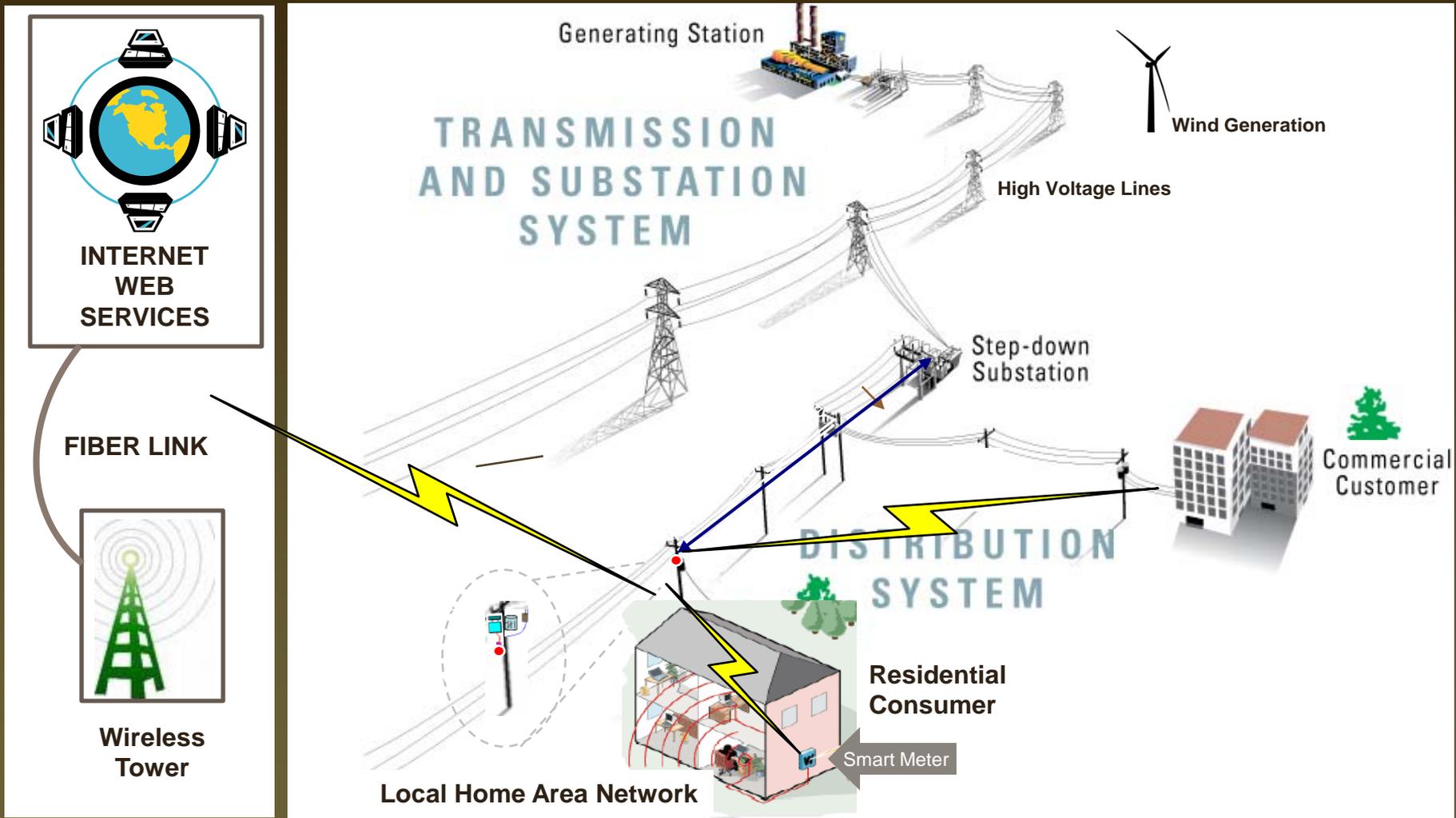
Functionality (non-inclusive) – AMS and Smart MeterTexas Common Data Repository and Portal*

- 15-Minute usage data*
- Remote connect / disconnect within one hour
- Real-time meter interrogation for power availability and register read
- Tamper notification
- Full security for multiple access
- Usage data at www.smartmetertexas.com*
- Meter reports outage and restoration
- Enables real-time communication between smart meters and HAN devices*
- Distributed Generation/Renewables metering

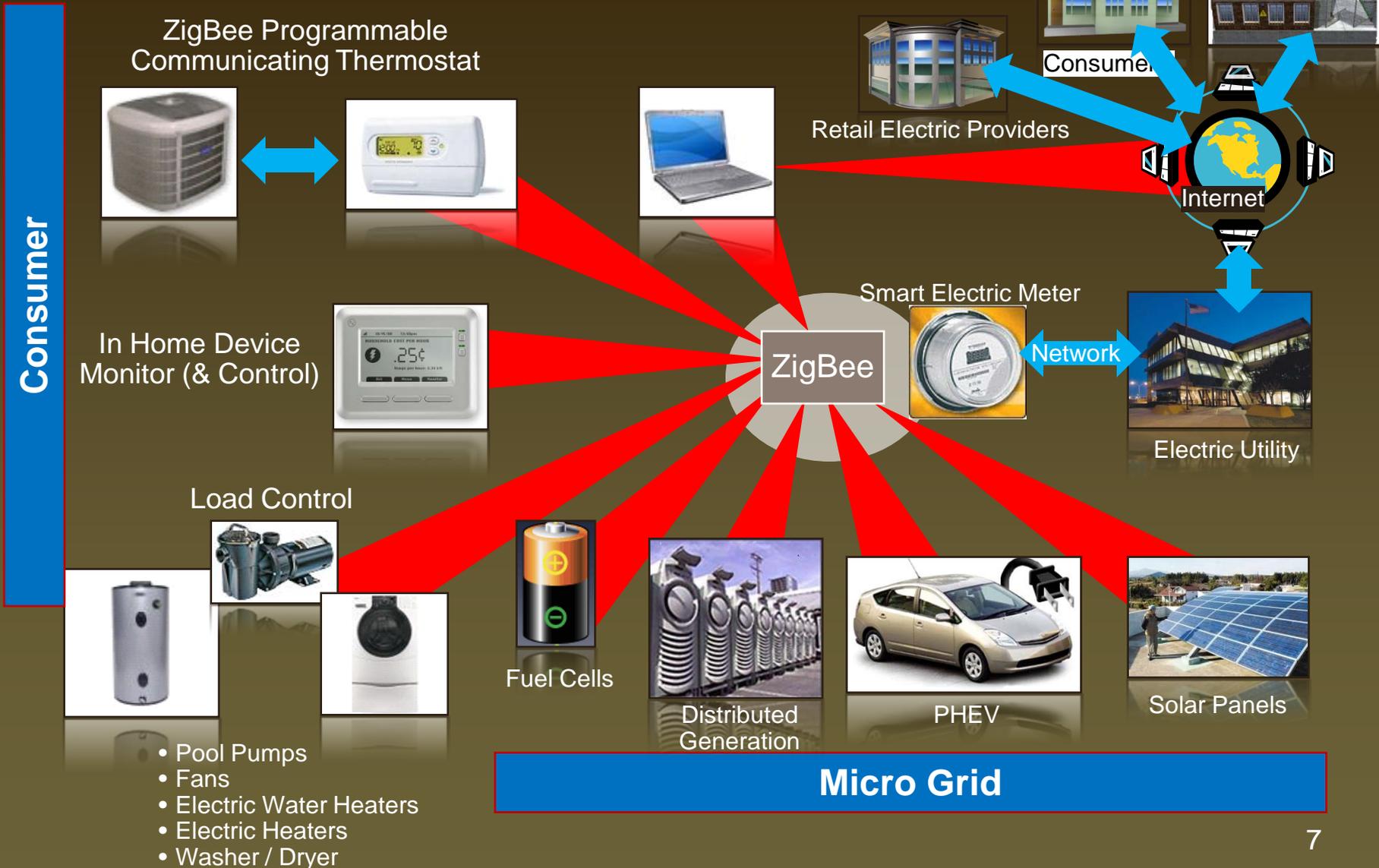
After 2010, HAN support for:

- pre-payment services
- PHEV monitoring
- Improved pricing support for TOU, CPP and dynamic pricing
- Improved HAN device control support
- HAN messaging over AMS network
- Customer HAN device access permission/authorization
- HAN device performance evaluation

Smart Meter Communications Network



Interactive Electric Grid Concept For the Consumer



Smart Meter and Smart Grid Benefits

<p>Electric Utility</p>	<ul style="list-style-type: none"> • Enables more effective loading of utility assets (lines, transformers...) • Enables increased monitoring and diagnostics to enhance the life of utility assets • Improved line fault detection and diagnostics • Remote connect / disconnect within one hour • Meter reports outages and tampering notices
<p>Retailers</p>	<ul style="list-style-type: none"> • Expands retailers' ability to offer new service offerings • Enables time-of-use rates and critical peak pricing • Establishes platform to offer future home appliance monitoring and control
<p>Consumers</p>	<ul style="list-style-type: none"> • Power quality and reliability improvements • Friendly access to detailed consumption information to make informed choices and enable faster transactions (15-minute usage data via Web) • Enables and promotes energy conservation • Real-time meter interrogation for power availability and register reads • Enables HAN devices
<p>Environment</p>	<ul style="list-style-type: none"> • Enables demand-side management • Facilitates integration of solar and wind generation into grid • Promotes energy efficiency through immediate energy consumption awareness
<p>The Smart Grid Transforms the Way We Buy, Deliver and Use Electricity</p>	



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