

Advanced Technology with Smart Grid



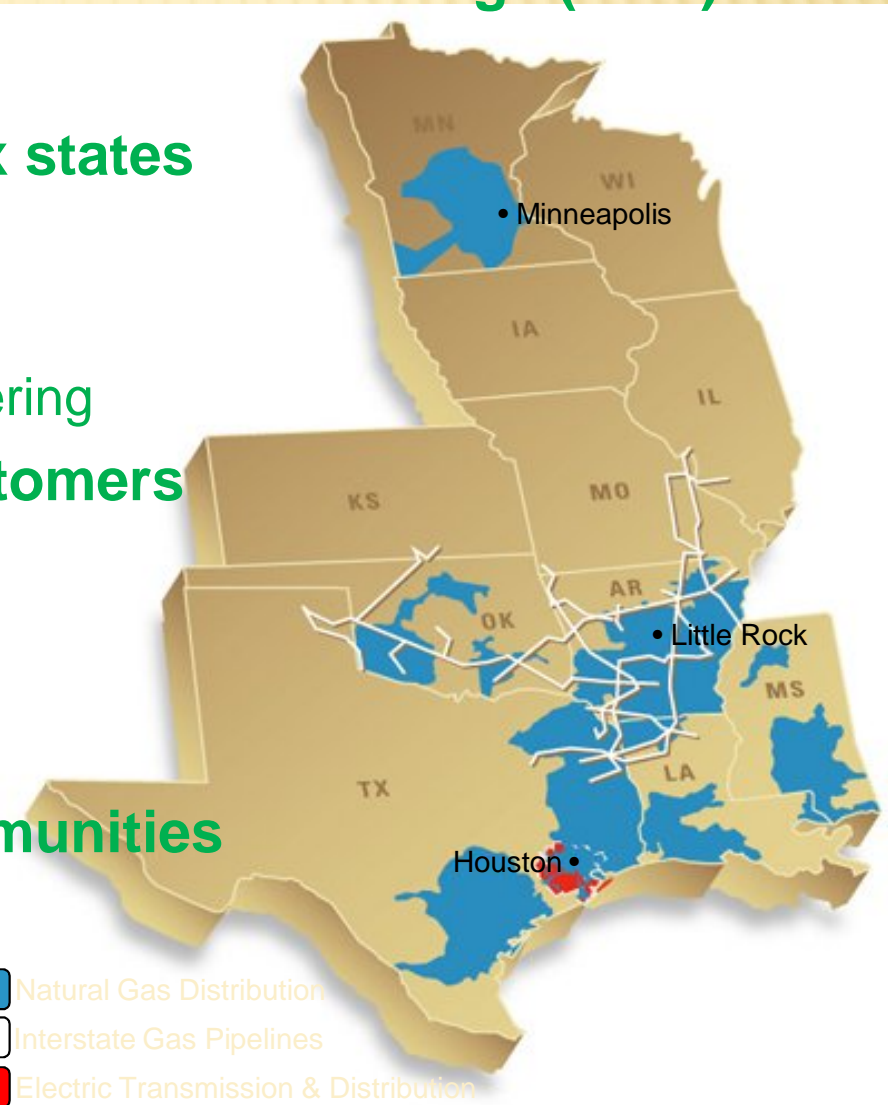
CenterPoint Energy
Robert B. Frazier
Director of Electric Technology



WHO IS CENTERPOINT ENERGY?



- **Public company traded on the New York Stock Exchange (CNP)**
- **Headquartered in Houston, TX**
- **Operating 6 business segments in six states**
 - Electric transmission and distribution
 - Natural gas distribution
 - Interstate pipelines and natural gas gathering
- **Serving 5.4 million electric & gas customers**
- **\$22 billion in assets**
- **\$8.5 billion in revenue**
- **8,827 employees**
- **Over 130 years of service to our communities**



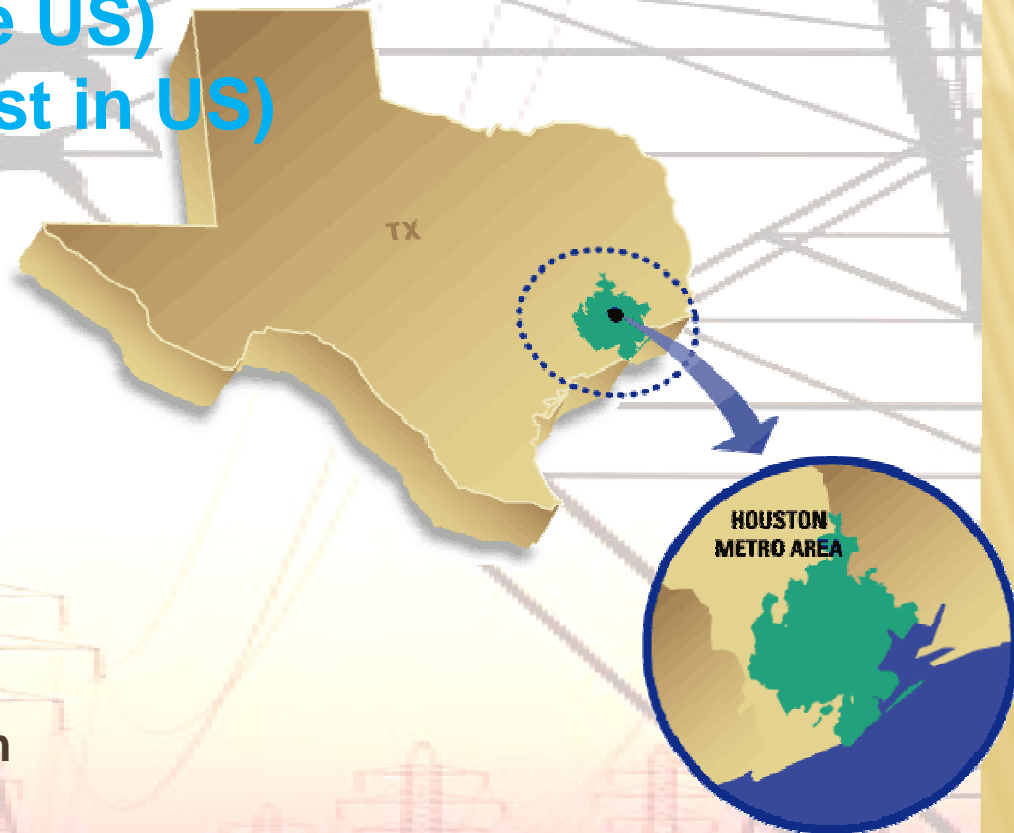
“To be recognized as America’s Leading Energy Delivery Company... and more”

WHO IS CENTERPOINT ENERGY – ELECTRIC?



Houston Electric Division (CEHE) Houston (4th largest city in the US) Houston Metro Area (6th largest in US)

- 5,000 square mile service area
- Approximately 2.2 million electric meters
- Houston Electric
 - Delivers 77 Gigawatt hours yearly for about 115 certified Retail Electric Providers
 - Transmission and Distribution System
 - ◆ 3,742 miles of transmission lines
 - ◆ 48,733 miles of distribution lines



Electric Challenge:

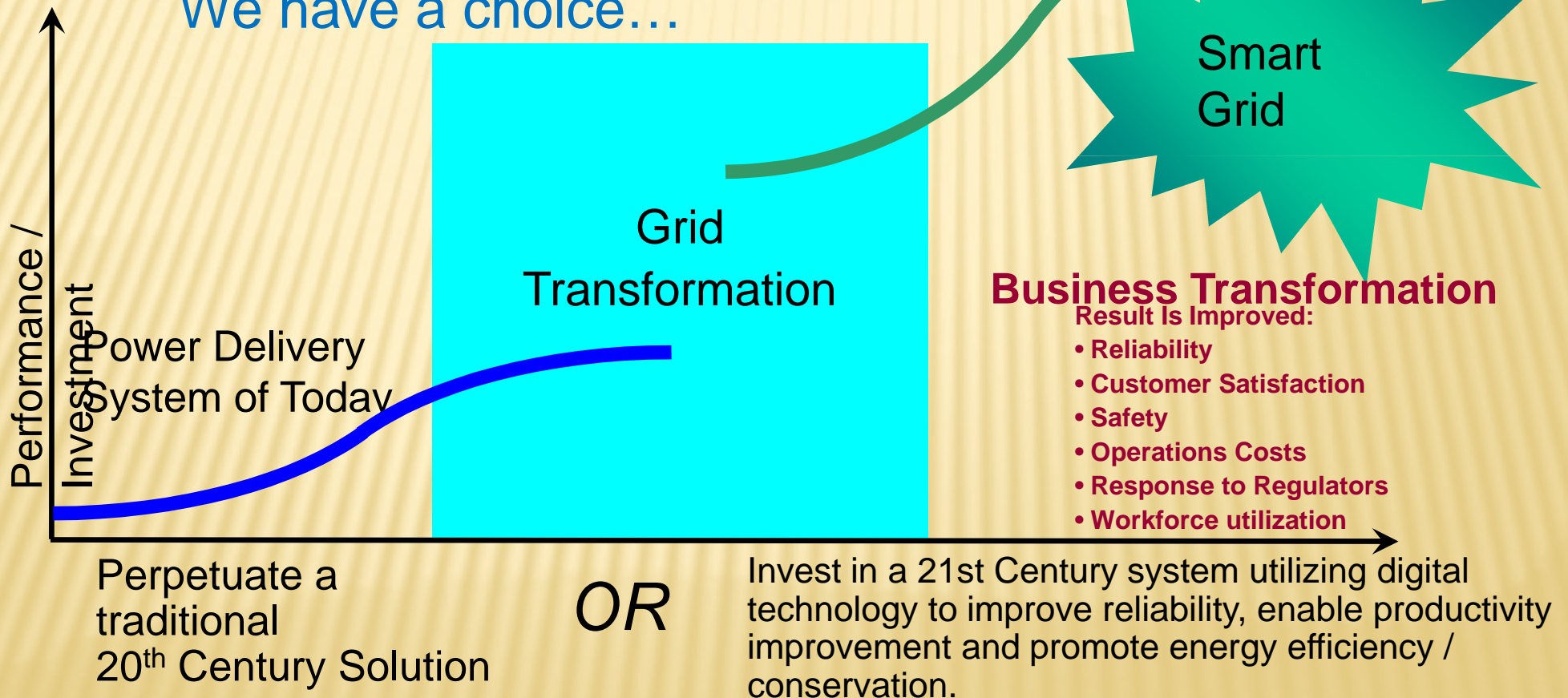
Effectively monitor and control millions of meters, line devices and miles of delivery wire which, if laid end to end, almost circle the earth twice around the equator

UTILITY TRANSFORMATION OPPORTUNITY

Utilities are at a crossroads.....

According to the DOE Grid 2030 report, in the next 20 years, the U.S. will spend \$450B on electric infrastructure, just to meet load growth

We have a choice...



CNP'S VISION FOR THE SMART GRID

1. Advance Metering Systems (AMS)

- AMS will provide
 1. Detailed information on usage,
 2. Significantly faster and less intrusive service for reads,
 3. Faster remote turn on/off,
 4. Meter checks for functionality working, removal, tilt
 5. Two-way communication between customers and market participants (i.e., REP, QSE, Aggregators, Authorized 3rd Parties, and TDSPs)
 6. Back office systems to analyze, retry for missing, estimate accurately, prepare for the market
 7. Everyman's portal to access the data

Cost: 2.2 Million Advanced Meter System (AMS) meters to be installed during 2010 - 2012 at a cost of \$580 million

STATUS AND STATISTICS - JULY 2012

Deployment

- Meters - **2,278,153**
- Cell Relays - **5,391**
- Take Out Points - **140**

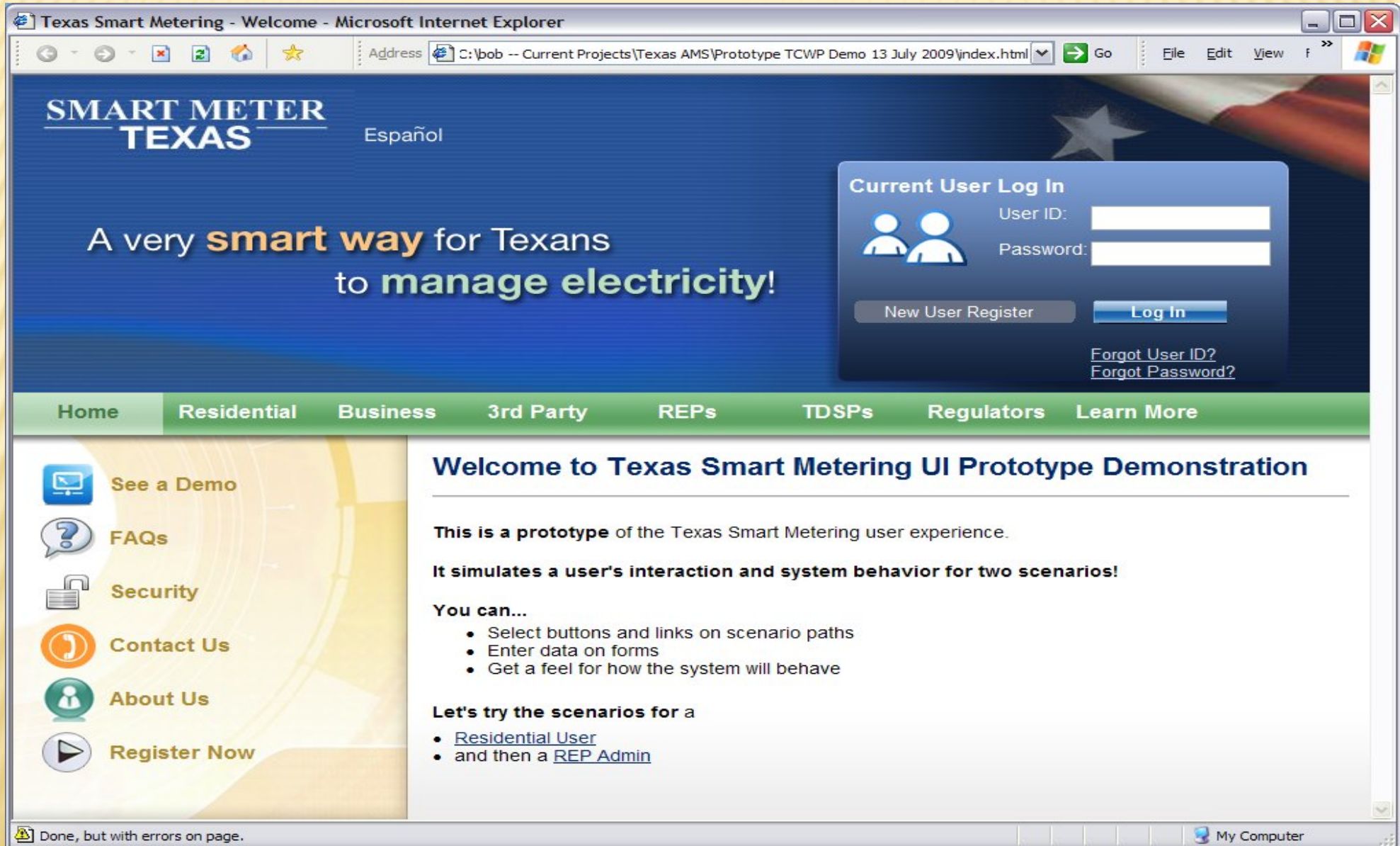
Read Rate YTD

Interval Reads - 3 times per day
First try success
98.43% and improving

Interval Reads
Retry for 5 days
99.9%

Service Orders

- Cumulative Service Orders since project started
3,364,070 (97%)
- Service Orders in 2012
1,935,833 (98.1%)
- Reconnect (Firewall to meter)
22 mins
- Turn ON or OFF (MDM to meter)
~12-16 mins
- Disconnect for Non-Pay
~ 23 mins



Texas Smart Metering - Welcome - Microsoft Internet Explorer

Address C:\bob -- Current Projects\Texas AMS\Prototype TCWP Demo 13 July 2009\index.html

SMART METER TEXAS

Español

A very **smart way** for Texans to **manage electricity!**

Current User Log In

User ID:

Password:

[New User Register](#) [Log In](#)

[Forgot User ID?](#)
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[Home](#) [Residential](#) [Business](#) [3rd Party](#) [REPs](#) [TDSPs](#) [Regulators](#) [Learn More](#)

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Welcome to Texas Smart Metering UI Prototype Demonstration

This is a **prototype** of the Texas Smart Metering user experience.

It simulates a user's interaction and system behavior for two scenarios!

You can...

- Select buttons and links on scenario paths
- Enter data on forms
- Get a feel for how the system will behave

Let's try the scenarios for a

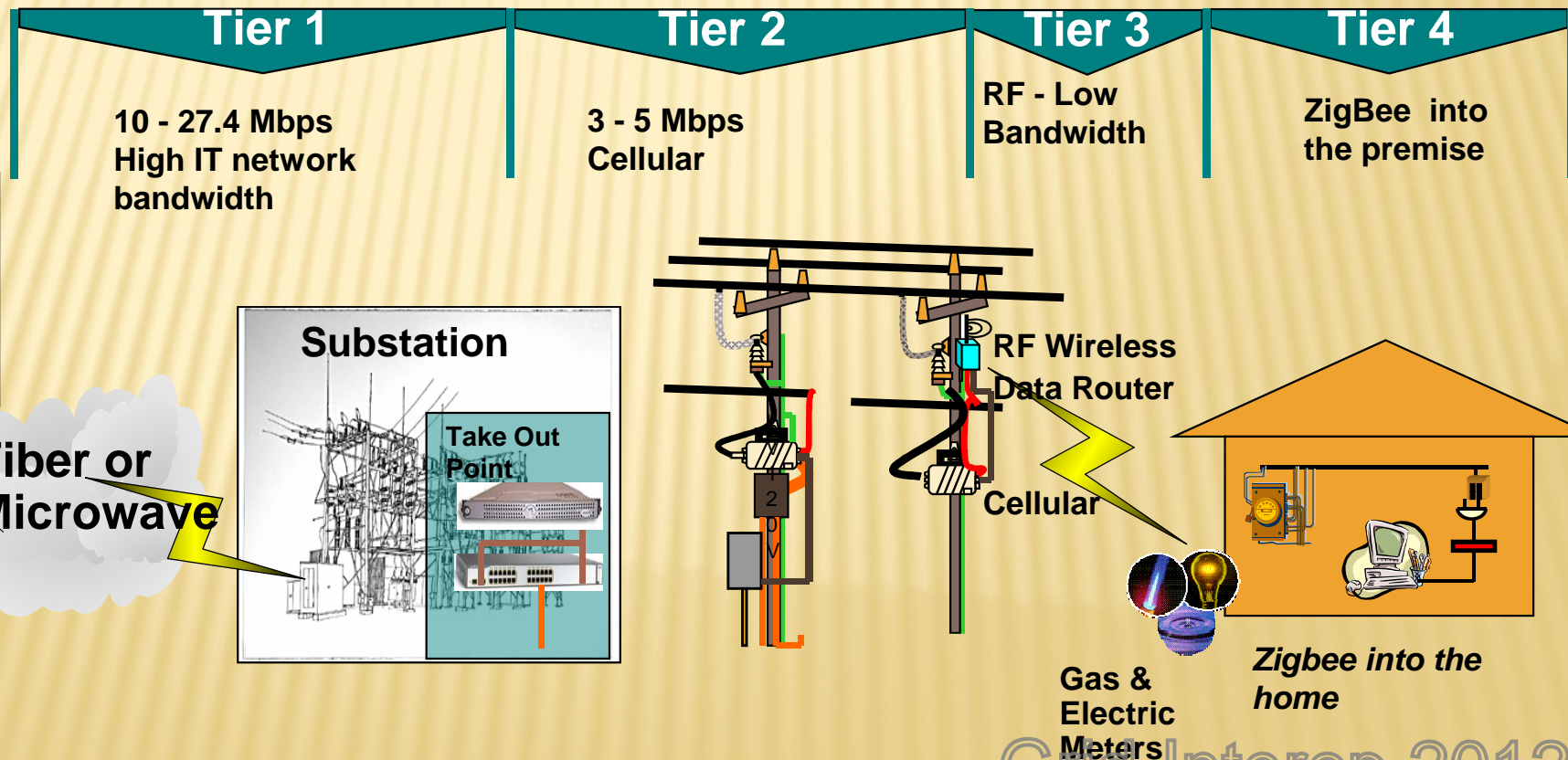
- [Residential User](#)
- and then a [REP Admin](#)

Done, but with errors on page. My Computer

EFFECTIVE COMMUNICATION NETWORK

The CenterPoint Energy backhaul communications network can be segregated into four distinct segments or tiers....

- Tier 1 - Major backhaul: Data Center to the substations (Take Out Points)
- Tier 2 - Minor backhaul: Substations to the cellular router (Utility Grade Cellular)
- Tier 3 - Radio Wireless Meter Data Router communicates with the meter
- Tier 4 - Meter to ZigBee wireless connections to home energy management devices

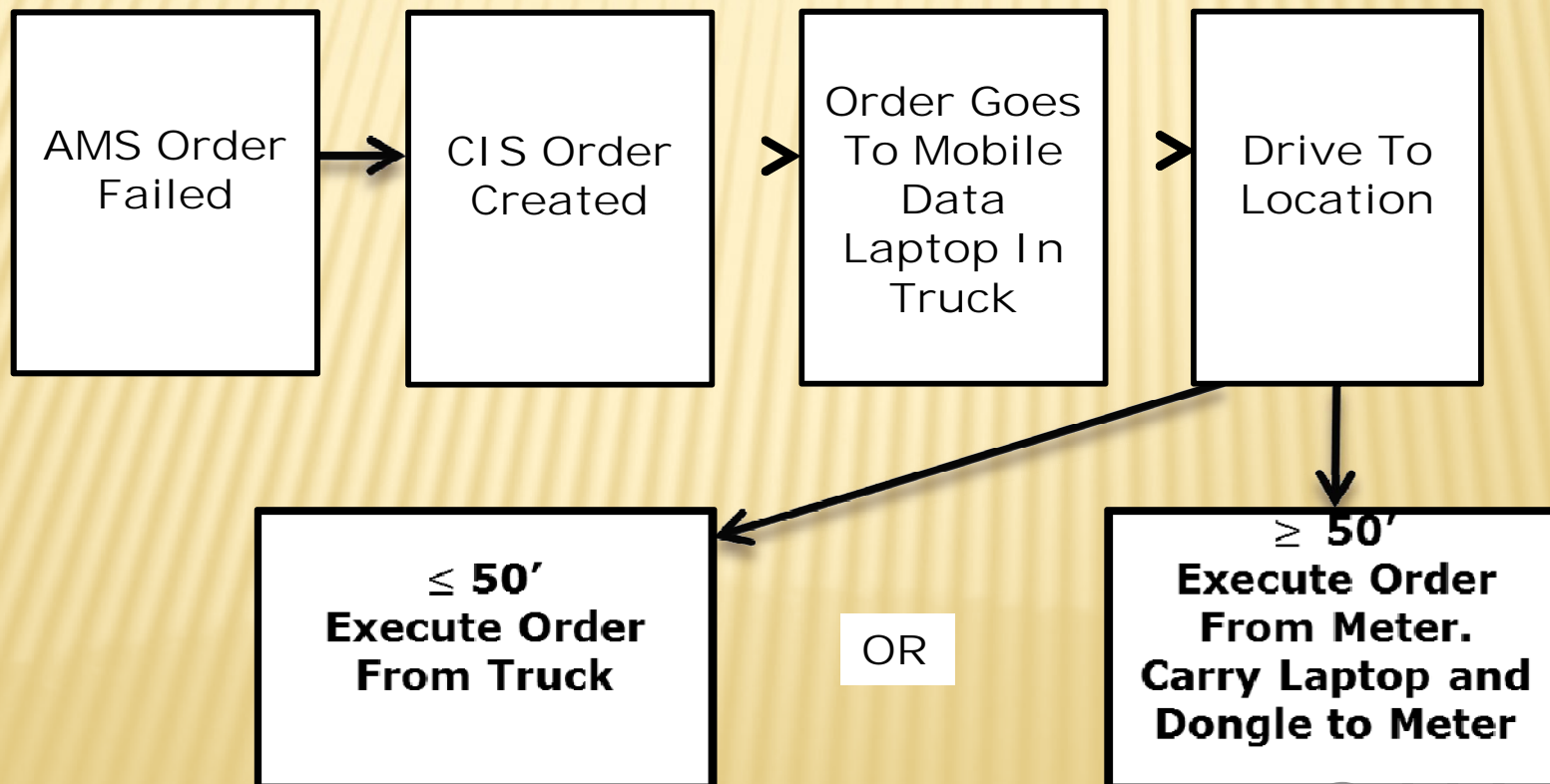


THE DONGLE



The Dongle allows CNP field workers to get secure local wireless access to the AMS meter.

This access to the meter requires a CNP laptop with special software, a password, and a dongle to execute the field order. A record is maintained.





SEE ELECTRICITY IN A WHOLE
NEW LIGHT

Thank you
for allowing me to share
CenterPoint's Smart Grid story

QUESTIONS?

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