Chattanooga’s Fiber Network

A GPON-Gigabit Passive Optic Network

- Two fully redundant 10 gig rings (288)
  - 10 gig East and West /OLT (Optical Line Terminal)
  - 1.6 Tbps of capacity
- Central Office-GPON Electronics
- 11 Super Nodes & 6 Remote Nodes
  - 82 OLTs today
- 91 miles of Transport fiber
- 802 miles of Feeder fiber
- 3,365 miles of Distribution fiber
- 4,300+ miles of Drop fiber
EPB Smart Grid

Intelligent, Interactive, Self Healing

- ~1,200 Installed Intellirupters, 12 kV
- 214 Motor Operated Switches, 46kV
- All communication over EPB Fiber
- Utilizes peer to peer communication for distributed automation
- AMI at all 174,000 premise
- Voltage Line Regulators
EPB Outage Replays – July 2012

Fiber Enabled

Chattanooga TN

July 5
July 6
July 7
July 8
July 9

7 pm
8 pm
12 pm
12 pm
12 pm
12 pm

Outage
Automatic Restore
Active
Manual Restore

Locales:
- Sale Creek
- Soddy Daisy
- Signal Mtn.
- Middle Valley
- Harrison
- Haletown
- Collegedale
- East Ridge
- East Brainerd
- Flintstone
USDOT-Chattanooga’s Beyond Traffic Vision

The Vision  adaptive, efficient

- Safer Streets  •  Stronger Neighborhoods  •  Smarter Students, Stronger Families  •  High Performing Government  •  Growing Economy

1. URBAN AUTOMATION
2. CONNECTED VEHICLES
3. INTELLIGENT SENSOR-BASED TECHNOLOGY
4. URBAN ANALYTICS
5. USER-FOCUSED MOBILITY SERVICES AND CHOICES
6. URBAN DELIVERY AND LOGISTICS
7. STRATEGIC BUSINESS MODEL AND PARTNERING OPPORTUNITIES
8. SMART GRID, ROADWAY ELECTRIFICATION, ELECTRIC VEHICLES
9. CONNECTED, INVOLVED CITIZENS
10. ARCHITECTURE AND STANDARDS
11. LOW-COST, EFFICIENT, SECURE, AND RESILIENT INFORMATION AND COMMUNICATIONS TECHNOLOGY
12. SMART LAND USE

CITYWIDE

DOWNTOWN

ENTERPRISE SOUTH AND MAIN CORRIDORS
Opportunities-Community / Customer

Extend DER capabilities to Support other Community networks
- Traffic
- Water
- Waste

Last Mile Alternative Resilience - Pure DC
Value of EV

COMMUNITY BENEFIT:

- Less than ½ emissions of comparable gasoline cars
- EV’s become cleaner as more energy is produced with wind and solar
- Tax base support for communities

CUSTOMER BENEFIT:

- Saves ~36% over 5 years
- 3-4x better fuel economy
- Never have to “fill up”
- HOV lane access

UTILITY BENEFIT:

- Balances the grid
- Lowers grid costs for all ratepayers
Fleet:
• 3 Plug-in hybrid electric bucket trucks
• 3 Vans
• Total of 9 EV chargers: 6 O.C. & 3 public

Key Points:
• Charging begins consistently after 5PM
• Charging is coincident with potential system peak
EPB’s Intelligent, Sensor-Based Infrastructure Technologies

- Measured Parameters
  - Thermal IR
  - Visible camera
  - Chemical (CO, CO2, H2, CH4)
  - Cell phone detection
  - Temperature
  - Humidity
  - Barometric pressure
  - GPS
  - Solar irradiance
  - Drone detection
  - Magnetic field
  - Coronal Arc Detector
  - Accelerometer

Legend
- Both
- Stationary Only
- Mobile Only
EPB’s Intelligent, Sensor-Based Infrastructure

Purpose
Preparing for the Future

• Last mile communication infrastructure, 5G Small Cells

• Strategic Partnerships
  • USIGNITE, ORNL, UTK CURENT, EPRI, TVA, City of Chattanooga, TEC

• DER Integrations
  • Storage & Solar

• New Electric Loads – Vehicles, Intelligent Lighting

• Microgrid Demonstration

• IoT-Sensor deployments
  • Utility Based; Stationary & Mobile
  • Grid Enabled customer appliances

• CYBER