Chattanooga’s Fiber Network

Fiber-To-The-Home

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
Challenges

Yesterday

• Passive participant
• One Way Flows
• Power demands up ~ 6%

Today

• Consumption trending down
• Acceleration of Clean Energy Resources
  • Dual Directional Flow
• Enthusiasm for Energy Reduction
• Lack of enthusiasm on centralized power model
• New Entrants into the Power business
• Demand for Delivery Resilience
Acceleration of Clean Energy

- COP21
- RE100-Renewable Energy Collective
- State Legislation
Consumption Discouraged - Pledges Made

NETZERO

Net zero home planned in North Chattanooga as example of energy sustainable housing
Mass entrance of Power Providers

- Google unleashes DeepMind on energy-hungry data center, cutting cooling bill by 40%
Traditional Grid - Obsolete

MGM Resorts to leave Nevada Power, pay $86.9M exit fee

Make the Switch to Better Energy™
Opportunities - Utility

Dynamic Protection Systems

- Technologies that Enable Alternative Energy and New Energy Efficient Loads
- Equipment that allows for power where and when you want it
- Communication Rich Electronics
  - Fiber
  - 5G
Extend DER capabilities to Support other Community networks

- Traffic
- Water
- Waste

Last Mile Alternative Resilience - Pure DC
• Self Aware/Considerate Appliance
  • Devices that maximize interrelationship between device and power consumption
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