Communication Technologies Inc.
Broadband Over Power Lines

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Communication Technologies Inc.

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Company Overview

• COMTek owns and operates the Manassas BPL network franchise
• Manassas is the first city-wide deployment of BPL in the United States
• COMTek also owns wireless ISP networks and terrestrial transport networks that use wireless, satellite, copper, and fiber optic media, serving 20+ countries

The City of Manassas

• 30 miles Southwest of Our Nation's Capital
• Population of 36,000
• 10 Square Mile City
• 15,000 Electric Meters
• 12,470 Volt Distribution
• 80% Underground
• 1,965 Transformers
• 2,200 Hand Boxes
• 7.5 Customers per Transformer

Manassas Deployment Areas

BPL Architecture in Manassas
BPL Equipment Installation

- 7,000+ homes and businesses now have access to BPL
- Expanded network to pass 5,000 additional homes and businesses in the past 60 days
- On schedule to pass all 15,000 homes and businesses by end of April
- 500 to 800 KB residential service for $28.95/month
- 500 KB to 2.5 MB commercial service ($39.95 to $119.95/month)
- Over 300 subscribers
- Achieving 10% market share quickly as we open new areas
- In the areas we serve, approximately 1 out of every 4 broadband subscribers is a COMTek BPL customer

Manassas BPL Network Current State

- Leverage Existing Electric Infrastructure
- Improve Quality of Life
- Economic Development
- Enhance Response to Power Outages
- Foundation for Utility Applications
- Fiber Extensions are Multi-purpose

Manassas Service Offerings

- Powerline Broadband Services
- 500 to 800 KB residential service for $28.95/month
- 500 KB to 2.5 MB commercial service ($39.95 to $119.95/month)
- Over 300 subscribers

City Benefits

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Subscriber Speeds Current State of BPL Industry

- 0.5 to 2.5 MB
- 4 to 6 MB
- 10+ MB

We Have Implemented WiFi Hot Spots
We Have Implemented VoIP

- Five successful BPL trials of VoIP
- Kazaa, Vonage, Primus, Level(3), Packet8
- Compressed vs. uncompressed platforms
- Commercial offering anticipated

We Have Implemented Remote Meter Reading

We Have Implemented Traffic Signal Automation

We Have Implemented Video Monitoring

We Have Implemented Infrastructure Surveillance

The Potential of BPL

- Capital goes into service delivery not obtaining rights
- Competitive Cost (G2 technology)
  - $75 to pass a building/house
  - $175 success based capital
  - $40 to $150 Customer Premise Equipment (CPE) to serve a building/house
- 10% market penetration within first few months (Manassas, Allentown, and Cincinnati)
- G3 technologies of 100MB+ in late 2005
- Convergence of voice, video, and data
- Rapid market acceptance
- Competitive with existing telecom technologies
- Rapid ubiquity in moderate to high density areas
- No disputes regarding ownership of wires
The positives:
- Exciting last mile solution
- Competitive “cost to pass” and “cost to serve” versus other technologies (DSL, Cable, WiFi, Fiber)
- Leverages strong customer service reputation of power providers
- Low cost to operate
- Enables numerous value added services
- Rapidly deployable
- Simple architecture
- High “sizzle factor” with customers
- Ability to provide ubiquitous service
- User installable after core network is deployed
- Virtually no truck rolls

The negatives:
- Not suitable for low density areas at current price points
- Strong (stable) vendors will emerge in 2005
- No technical standards
- Regulatory uncertainty at state level
- Each electric grid has unique signal transmission characteristics
  - Electric grids are “noisy” environments
- No mass market pricing / economies
- Business model doesn’t work in all cases

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Future Applications
Video Entertainment
- Full motion HDTV programming competing with cable and satellite television delivered via BPL access networks

Future Applications
Power Monitoring
- Monitor load currents or temperature of conductors in electrical lines
- Autonomous operation of electrical equipment
Future Applications

Cable Fault Location

- BPL may be used to locate underground cable faults and to predict future faults

Future Applications

School Attendance Tracking

- BPL is starting to be used by school systems in Germany and Israel to enable tracking of student attendance

Future Applications

Remote Medical Diagnostics

- Jacksonville Electric Authority and the Nemours Clinic are trialing BPL enablement of remote patient and medical monitoring

Future Applications

Vehicle Location Systems

- Vehicle location systems will be enabled by wireless stations distributed throughout the BPL network