

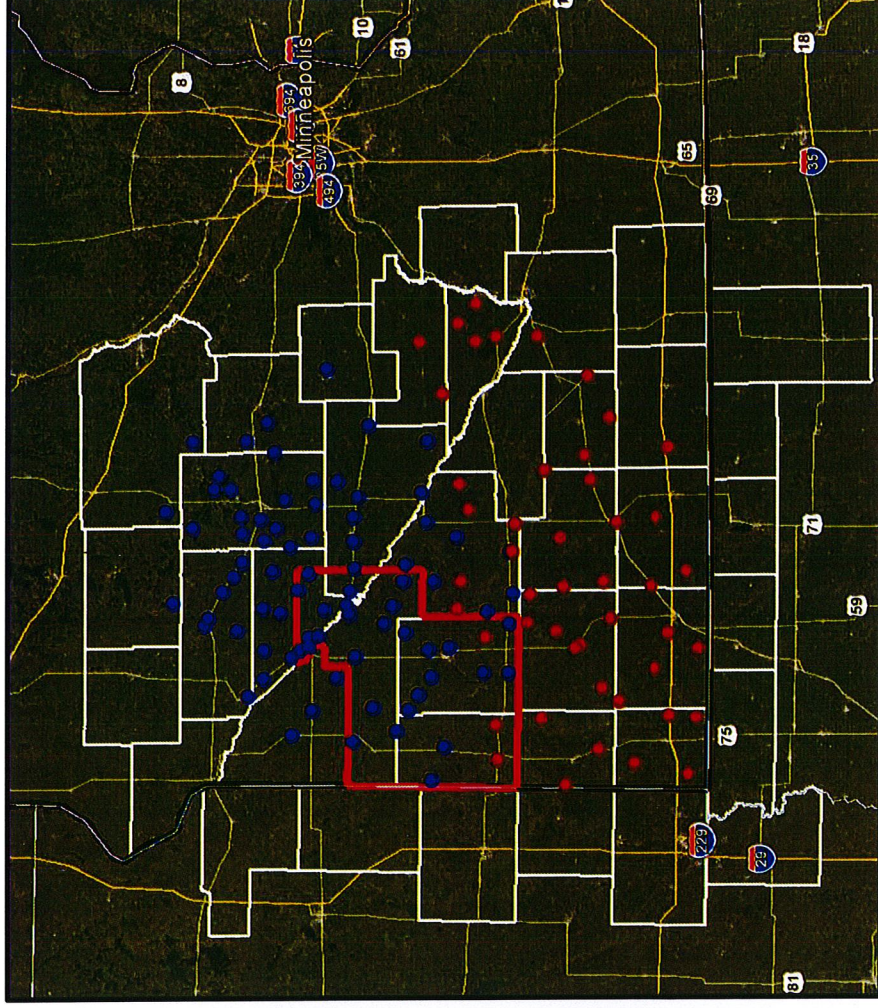
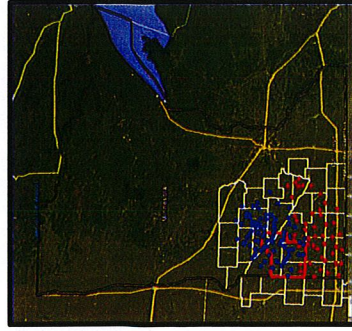
The Governor's Task Force on Broadband

August 16, 2017

Tim Johnson, Operations Manager

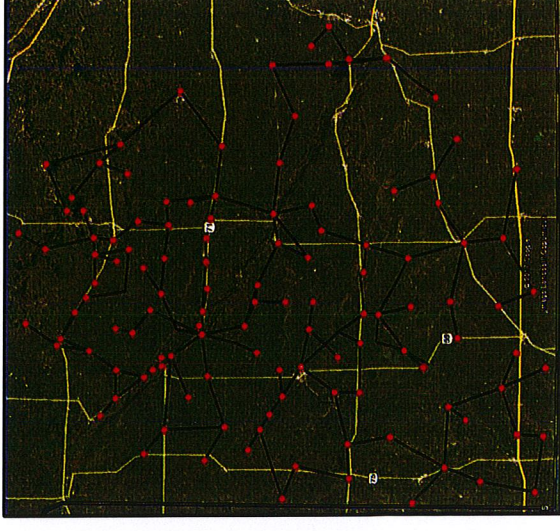
MVTV Wireless

- Incorporated in 1960 as a Low-Power TV Retransmitter
- Non-Profit / Member Owned
- ~ 6500 Fixed Wireless Members in 26 Minnesota Counties (33 w/SD & IA)
- Coverage ~ 25,000 sq. miles



MVTV Wireless Deployed Technologies

- Point-to-MultiPoint (last mile customer premise)
 - Licensed Basic Trade Area – 2.5GHz (WiMAX)
 - Lite-Licensed 3.65GHz (WiMAX)
 - Legacy 2.4GHz and 5GHz (WiFi)
- Back Haul (transport)
 - Legacy - 5GHz – up to 200Mbps
 - Licensed Microwave - 11GHz – up to 800Mbps
 - Fiber (1 - 10Gbps)



MVTV Wireless Internet Services

- **Wireless Internet**
- **Digital TV**
- **Network Extension**
- **Point-to-Point**
- **Virtual Networks**

- **Residential Internet Services**

- *Up to 1.5M* – \$49.95/month
- *Up to 2.5M* – \$59.95/month
- *Up to 5.0M* – \$69.95/month
- *Up to 10.0M* – \$74.95/month
- *Up to 25.0M* – \$99.95/month ****available in select areas only**

Residential Install \$114.95 (Includes membership, installation & activation)

- **Commercial Internet Services – Prioritized Service**

- *Up to 2.5M* – \$62.95/month
- *Up to 5.0M* – \$87.95/month
- *Up to 10.0M* – \$112.95/month
- Customized Commercial Packages 25M+

Commercial Install \$164.95 (Includes membership, installation & activation)

Fixed Wireless Future

- Underserved Rural Areas
 - 87% of MVTV's members reside in Townships
- Economics of Delivery
 - Cost Per Last Mile Delivery < **\$70**
 - Cost Per Mile of Infrastructure < **\$1500** (including Plant)
- Wireless Enhancements
 - FCC Band Plans
 - 802.11-2016 (*n, p, u, y, ac, ad, af, (ax, ay 2019)*)
 - 3GPP (*LTE, LTE Advanced & LTE Advanced Pro*)
 - **5G...**
- Greater Spectrum Efficiencies and BIGGER Bandwidth

The IoT and Fixed Wireless

- Fixed wireless is simply a “medium” for connectivity
- Both LAN and WAN
- 802.3 (Ethernet)
- Is your network ready for IPv6?
 - Standard direct assignment for large organizations and ISPs is a /32
 - Suggested customer allocation is /64

/64 = 18,446,744,073,709,551,616 IPs

(18 quintillion, give or take some 400 quadrillion IPs)

/32 = 4,294,967,296 /64 subnets

(A single IPv6 /32 subnet is the equivalent of the entire IPv4 pool)

The Value of Wireline

- A requirement for aggregation
- Provider access to “the Internet”
- Access is an incidental cost...commodity
- Its “value” may be cost prohibitive

Fixed Wireless and Cybersecurity

- No more/no less prone to attacks than any other “network”.
- Network “breaches” generally occur on a “network” device...
 - Routers, switches, servers, and end user devices with a public IP
 - Radios can be “routers”; dual role would make them a “network” device
- A cyber attack on the “wireless” portion of the “network” would be the long way around...
- Fixed wireless is not “open WiFi”; or at least, it shouldn’t be!

Thank you!



Get Started Today **320-564-4807**

Connecting Rural Minnesota

MVTA
WIRELESS