



Creating Infinite
Possibilities.

Converging Fixed and Wireless Services: Operational Considerations

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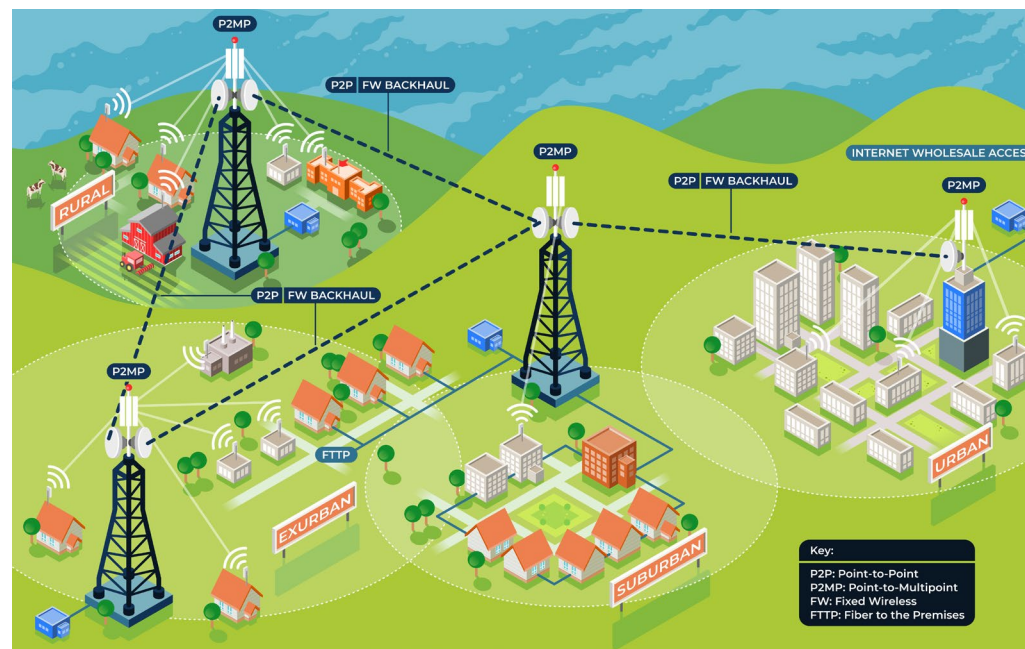
Technology to serve the unserved and underserved.

Definition: Fixed Wireless Access provides wireless connectivity through radio links between two fixed points, without laying fiber/cables to provide last mile connectivity.

Provides opportunity to serve:

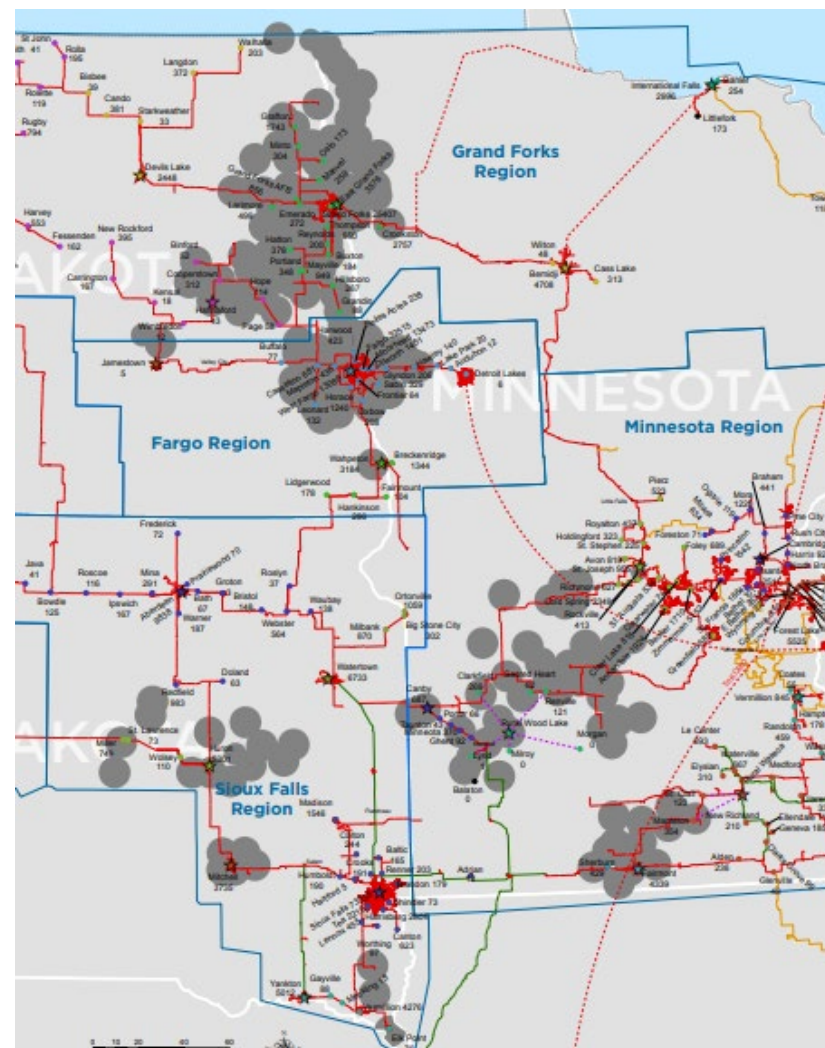
- Hard-to-reach subscribers
- Expanding communities
- Disaster recovery areas
- Temporary venues

Fixed wireless provides high-speed internet at lower capital costs and with a reduced build time

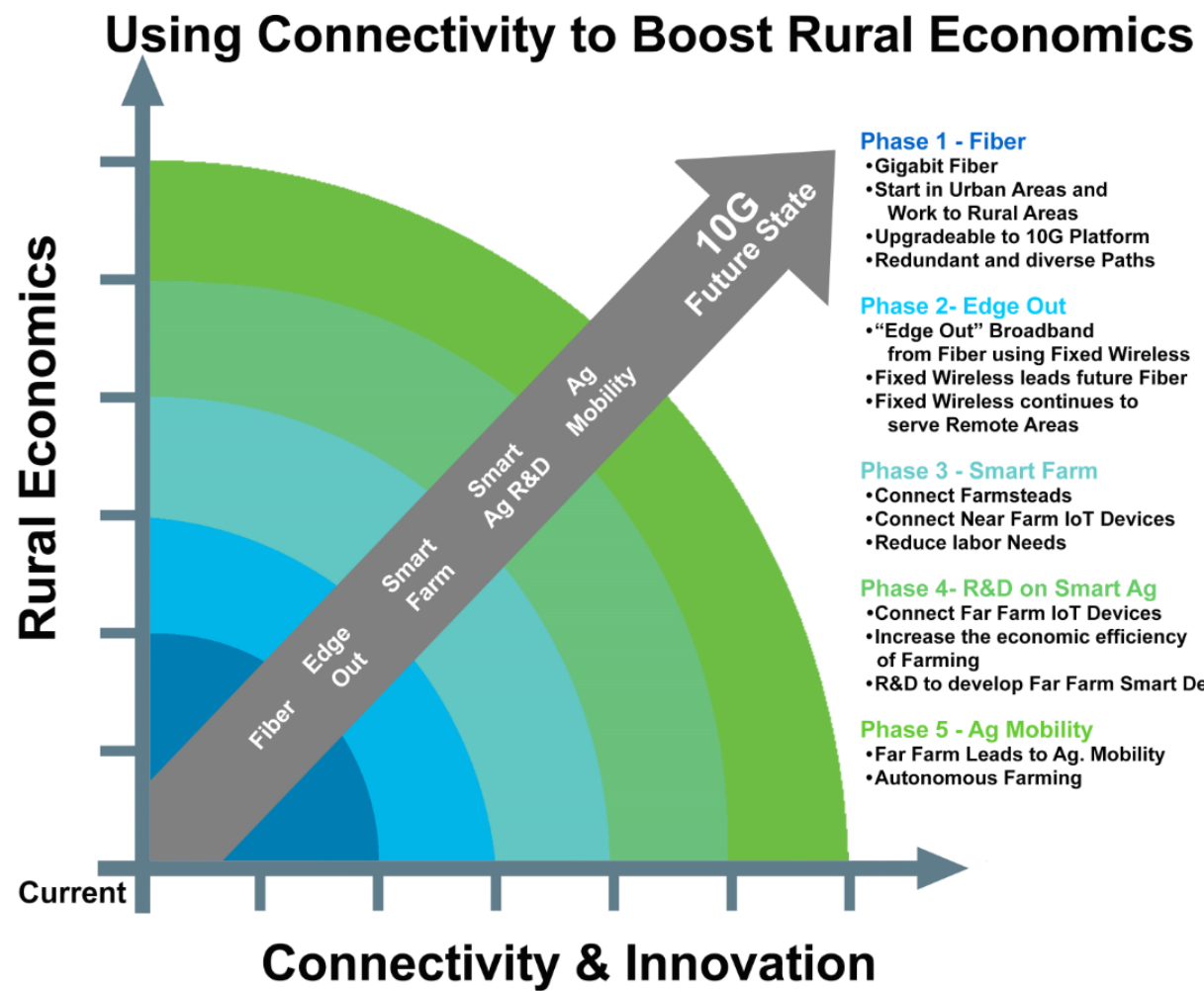


Fiber is the backbone

- Expand the fiber network while deploying fixed wireless
- New passings create an opportunity to leverage an "edge out" expansion strategy.



Fixed wireless enables rural economic development.





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Operational Considerations

Quality of service can be impacted by factors out of a provider's control.

Considerations:

- Geography and landscape
- Weather
- Other fixed wireless providers

Mitigation Strategy:

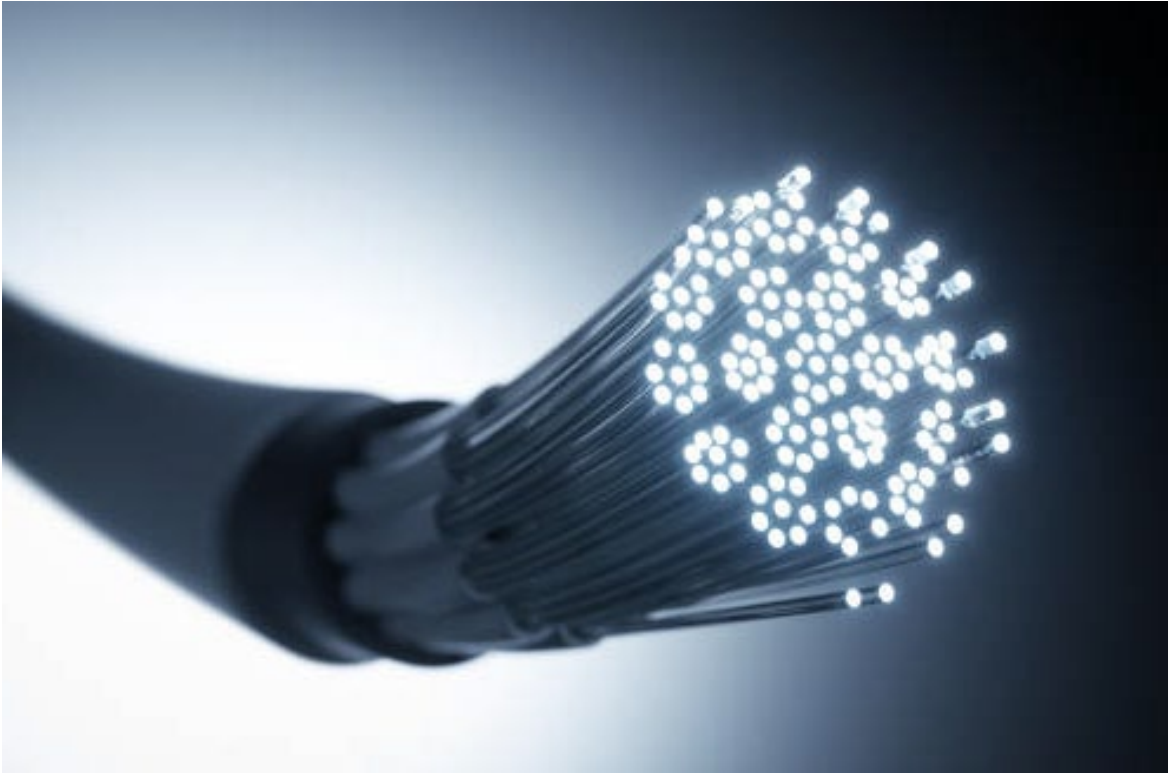
- Planning, communication, the right partners/tools and quality of work are key to success



Supporting Rural \neq Supporting Urban

- Distance to home/business/tower
- Different customer expectations
- Downtime increases
- Troubleshooting tools for remote support teams are key, before a truck roll
- Increased inventory on service vehicles





Can your current staff support this?

- Technicians: New skills and training if starting from the ground up.
- Engineering: Technology, vendors and equipment.
- Product Management: Product offerings may vary.
- Sales and Marketing: How do you reach these customers?

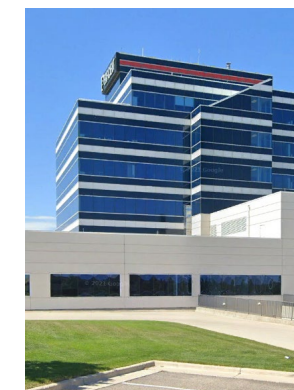
Leasing Space in America.

Towers

- Leased colocation space
- Typically provides greater height to provide better line of site and QoS

Other Vertical Assets

- Grain legs, water towers or office buildings
- Less costly than traditional tower lease
- Common in/around rural communities



Building/Buying vs. Leasing.

- Factors to consider
 - Federal regulations
 - Land acquisition
 - Ground quality
- The benefits
 - Payback with ending asset
 - Potential to generate revenue
 - Depreciation
 - Avoidance of costly lease



Using a combination of spectrum.

Licensed

- Not readily available outside auction
- Purchase required
- Limited availability
- Requires SAS coordination and costs
- Reduces interference from other providers

Unlicensed

- Readily available for anyone to use
- No purchase required
- Increased chance of interference from other providers, coordination between providers is necessary

With great partnerships
& a solid strategy,
converging wireless
and wireline
technologies is a win.





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Questions?

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