

Affordable Last Mile Wireless Broadband for Middlefield MA

Communications Committee Presentation to Governor Baker, May 10, 2016

A template for multiple towns



“If it works in Middlefield, it will work anywhere”:

- ✓ True, on the ground results
- ✓ Proven engineering & cost data
- ✓ Actual user experiences – the ultimate test
- ✓ A reusable template for issuing RFPs, managing contractors, using DCR towers, etc.
- ✓ Start of regional governance incl. collective contracting and cross-border economies

No added taxes + lower fees



Middlefield's \$580K state grant share will fund 100% of project (\$488K):

- ✓ Initial pilot
- ✓ Rollout to entire town in 2016
- ✓ Town-wide 25/3 Mbps coverage in 2017*

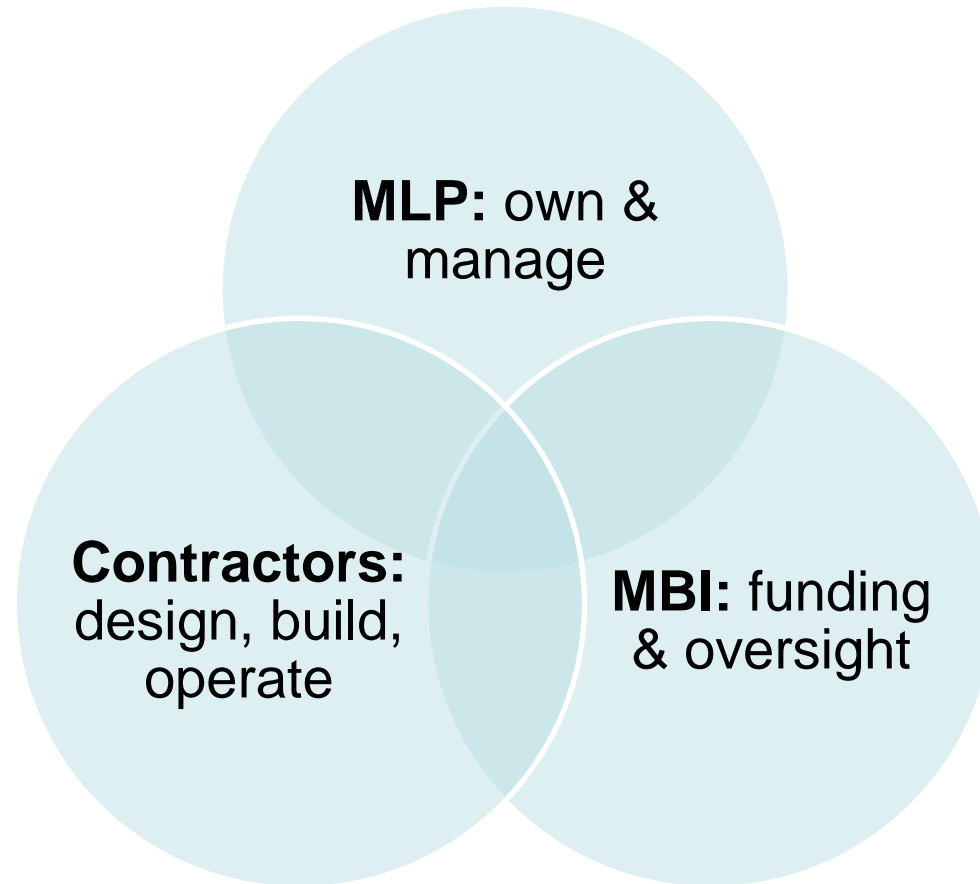
* Objective employing the latest wireless technology.

Public – private partnership



- Municipal Light Plant (MLP) to own & run.
- Contractors construct, maintain & operate:
 - Design & Engineering
 - Tower & Pole construction
 - Network Operator/Service Provider
 - Phone Service Provider
 - Internet Backbone Service Provider.

Project responsibilities



What services will be offered?



- *Affordable* **Internet**
- *Voice priority* **phone service**
- **No Cable TV**. Those who wish can watch on Netflix, Amazon, Hulu, Sling, YouTube, etc.
- 200 Mbps service in the business district*

* Locations with point-to-point tower access.

How will signals be carried?



- **5 GHz** to easy to reach locations including line-of-sight backhaul. Greatest bandwidth (data carrying capacity).
- **2.4 GHz** for more obstructed paths. Medium bandwidth.
- 3rd gen TV white space (**TVWS**) for obstructed paths. Best coverage but least bandwidth.

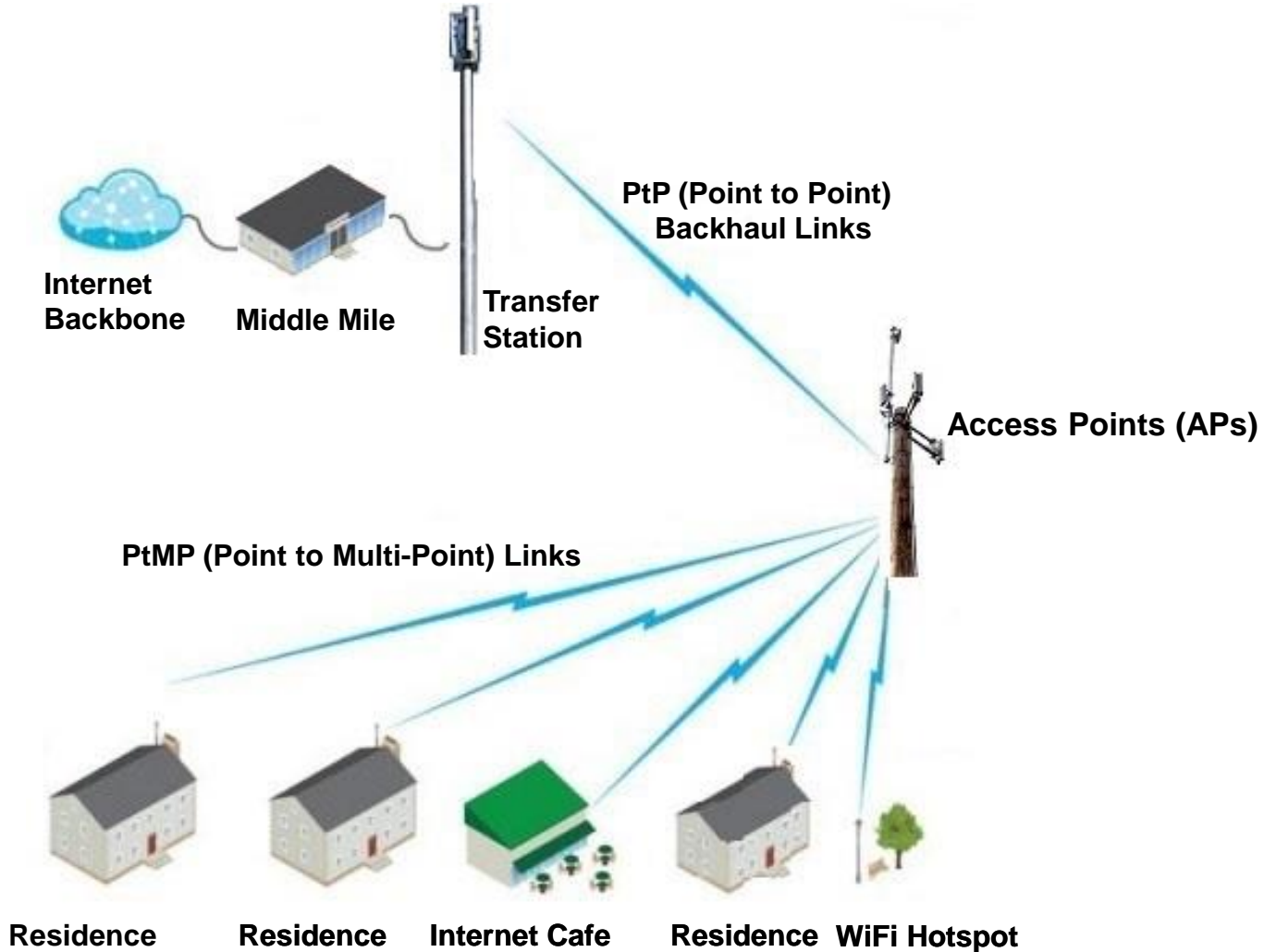
Basic infrastructure



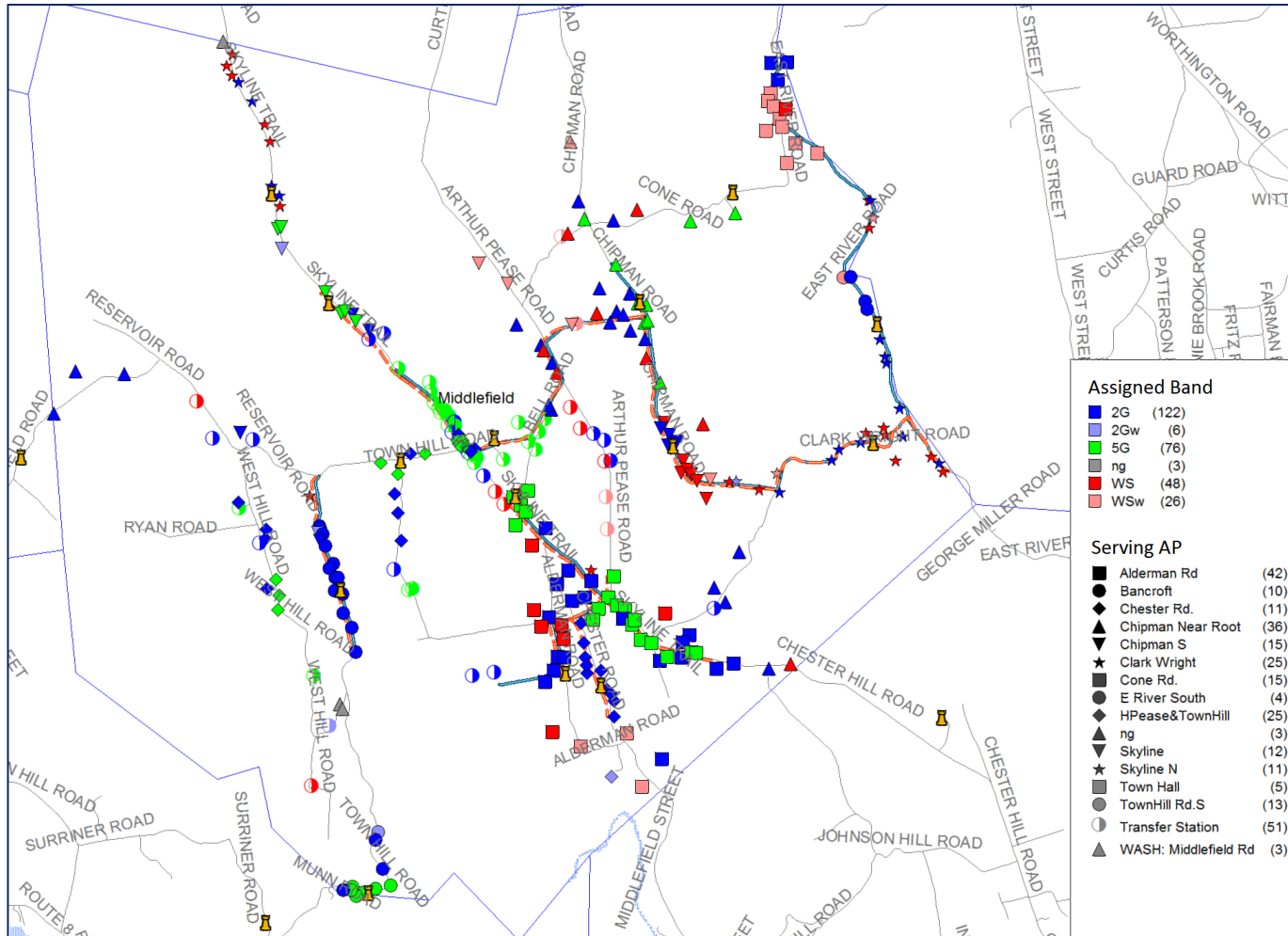
- Estimated **15 poles**:*
 - 100'-120' transfer station monopole
 - 1 - 90' monopole
 - 5 - 65' wood utility poles
 - 8 - 42' to 51' wood poles
 - Each pole has 2-8 antennas (APs)
 - **Chester Fire Tower** for \$40K savings & second middle mile connection.**
- * Above ground heights.
- ** Pending MBI renewal of expired DCR contract.



Network overview



Coverage forecast by band & AP



Monthly broadband fees



Average customer price, \$75*

- 25 Mbps \$80
- 10 Mbps \$60
- Phone \$25

*Estimates based on 60% broadband take rate.

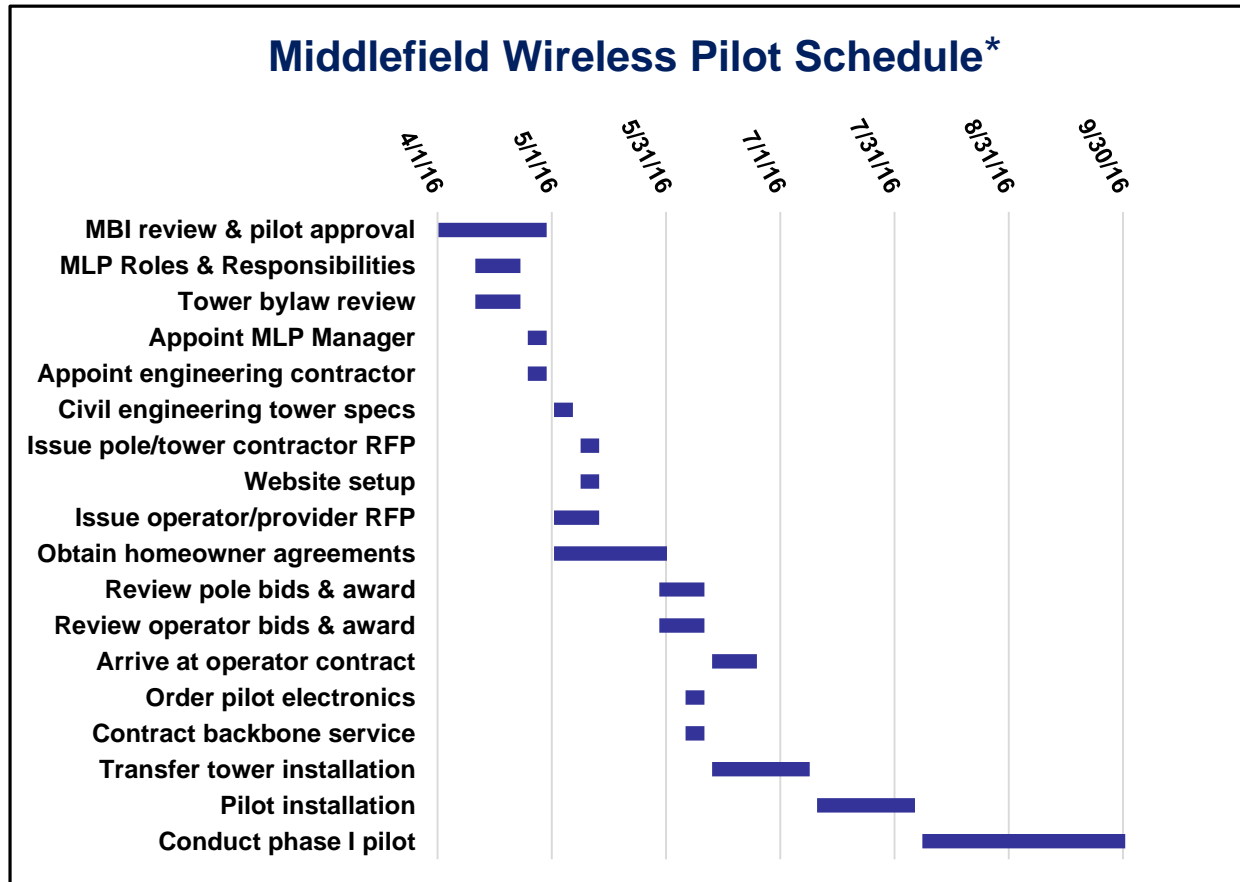
2016 wireless broadband pilot



Over hills & through woods to 30+ locations:

- Test multiple 5 GHz, 2.4 GHz & TVWS radios
- 2-3 bands at selected locations to compare performance on identical paths
- Varied foliage, nearby & distant
- Short to 2+ mile paths, direct & non-line-of-sight
- Extensive summer vs. winter tests
- Fine tune town-wide propagation models

2016 pilot schedule



*Not shown: Phase II comparisons after the leaves come down.

Summary of benefits



- A template for multiple towns
- Fully funded by state grants
- Town-wide 25/3 Mbps
- A public-private partnership

Questions?

