

Affordable Last Mile Wireless Broadband for Middlefield MA

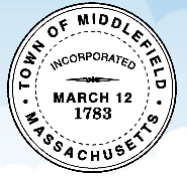
Middlefield Communications Committee & Interisle Consulting, January 11, 2016

Why do we need last mile broadband?



- The Middle Mile fiber network of the Massachusetts Broadband Institute (MBI) serves *only* the Town Hall.
- Only 74% of us live on roads served by Verizon DSL, service is poor, and no new customers allowed.
- Satellite customers experience data caps and high latency (delay) that prevents real time communications.
- Cellular networks reach only a fraction of households & data usage is costly.

Why wireless last mile?



Middlefield's \$580,000 share of state grant funds would fund 100% of wireless network:

- ✓ Initial pilot
- ✓ Rollout to entire town
- ✓ Near term enhancements

What services will be offered?



- **Affordable Internet**
- **Phone service***
- **200 Mbps** service in the business district**
- **No Cable TV.** Those who wish can keep their dish, or subscribe to Netflix, Sling, YouTube, etc.

* Type of service dependent on provider.

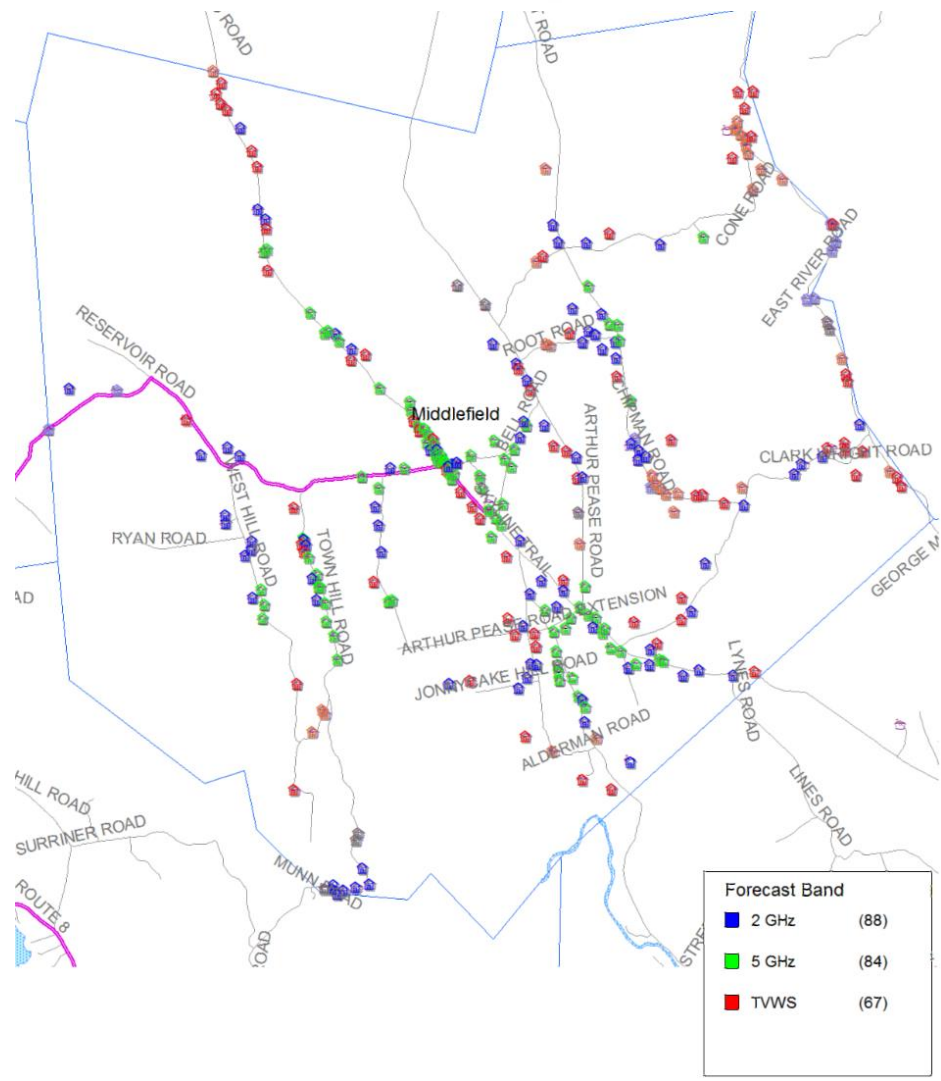
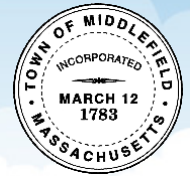
** And other locations with point-to-point tower access.

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.
- TV white space (**TVWS**) for most obstructed paths. Least bandwidth.

Forecast coverage by band



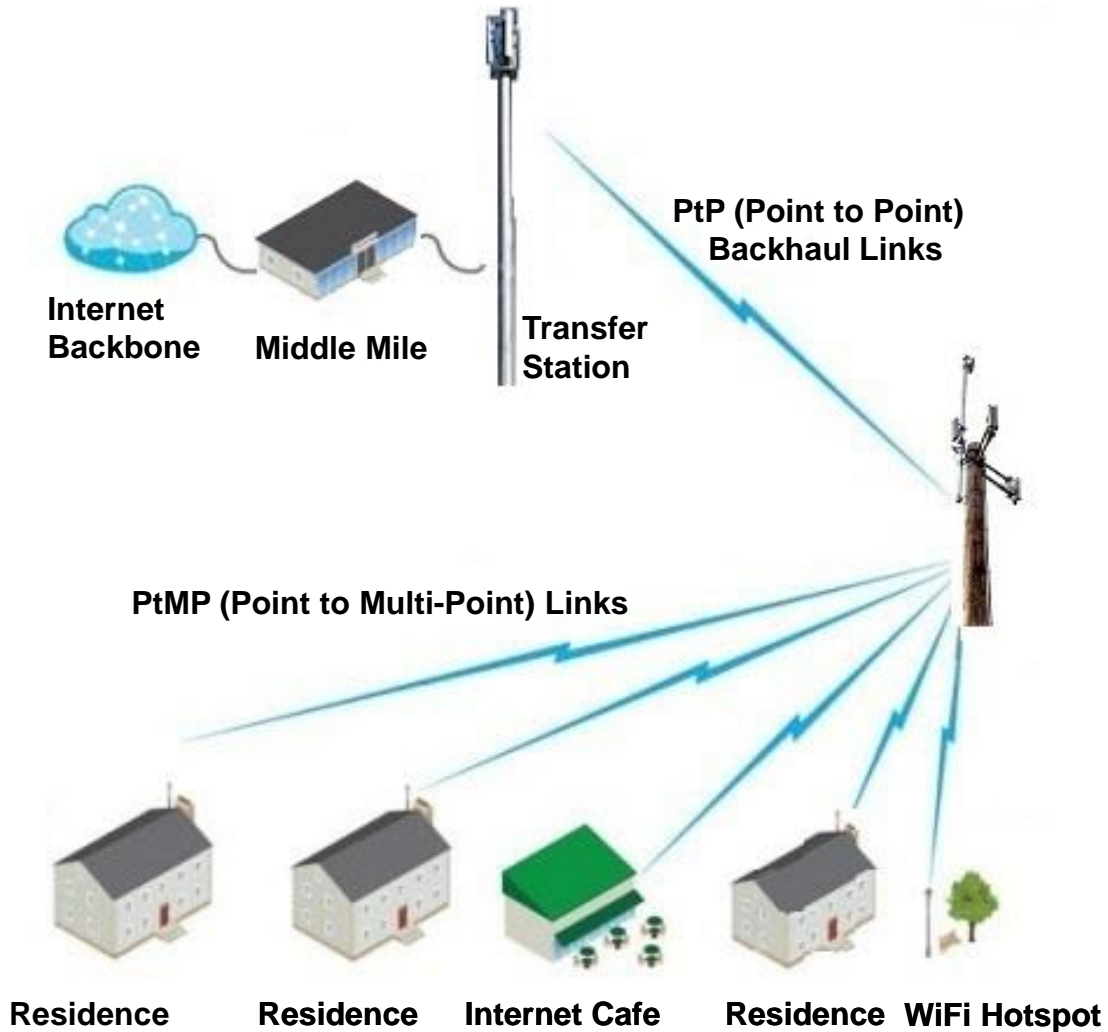
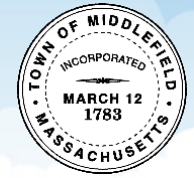
Basic infrastructure



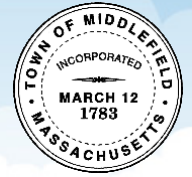
- Estimated **15-16 poles**:
 - 100' monopole at transfer station
 - 3 90' monopoles
 - 2 65' wood utility poles
 - 9-10 smaller wood poles
- Each pole will have 2-8 antennas



Network Overview



Customer Premises Equipment (CPE)

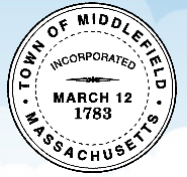


5 or 2.4 GHz antenna



TVWS antenna

Estimated Construction Costs



- Total project cost including pilot, **\$514k.**
- (Pilot cost, **\$90k.**)
- Potential future upgrades, \$46k.

Estimated Price of Service



- Average customer price, \$75.*
 - 25 Mbps \$90
 - 10 Mbps \$60

* Break even MLP cost, based on 173 subscribers. Does not include potential phone service revenues.

Broadband Pilot



Proof of concept, summer 2016:

- Monopoles at transfer station & Alderman Road
- Connect to MassBroadband 123 via Firehouse
- Free service for 60 days:
 - 10+ 5 GHz customers
 - 10+ 2.4 GHz customers
 - 10+ TVWS customers
 - WiFi hotspot in town center
- Gather user experience data
- Review & decide on rollout to entire town

Outstanding MBI Issues



Issues to be resolved with the MBI:

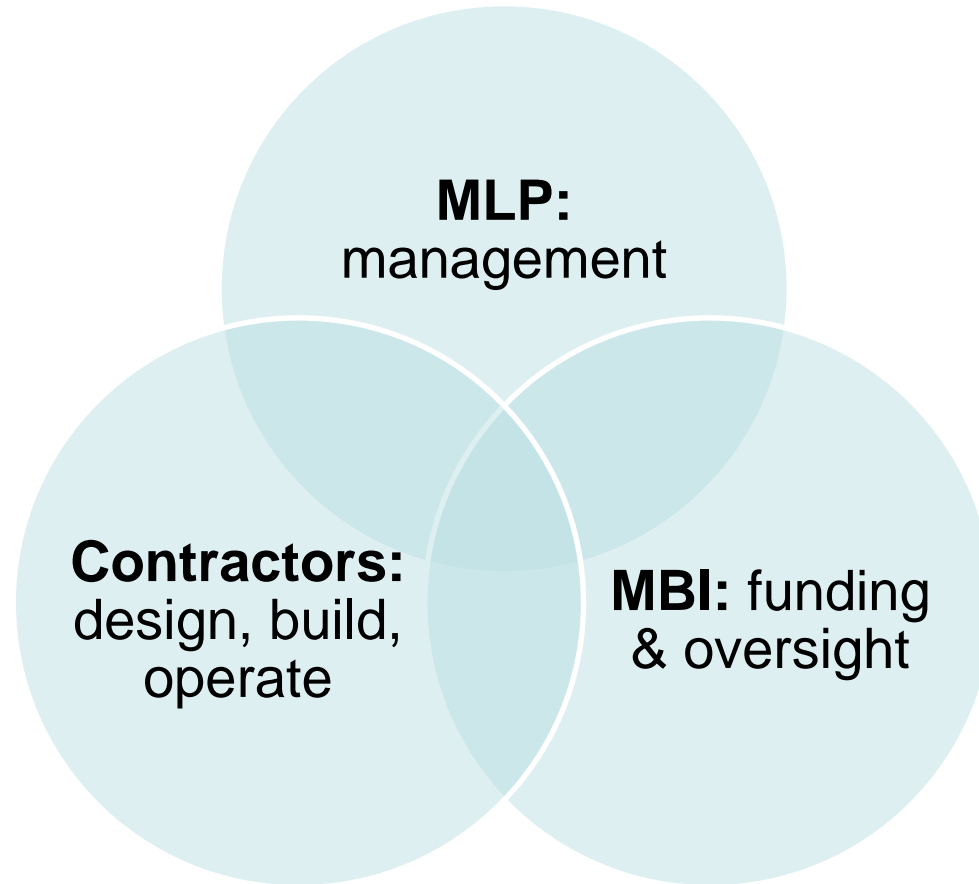
- Will Middlefield receive its full \$580k share of broadband funding for wireless?
- OK for the network to meet or exceed the FCC's "Connect America" standard of 10 Mbps?

Next Steps:



- Submit proposal for approval by the MBI.
- STM vote to update wireless communications bylaw & proceed with project.
- Contract network engineer, builder, operator.
- Pilot to 30+ customers.
- Pilot review & decision on rollout.

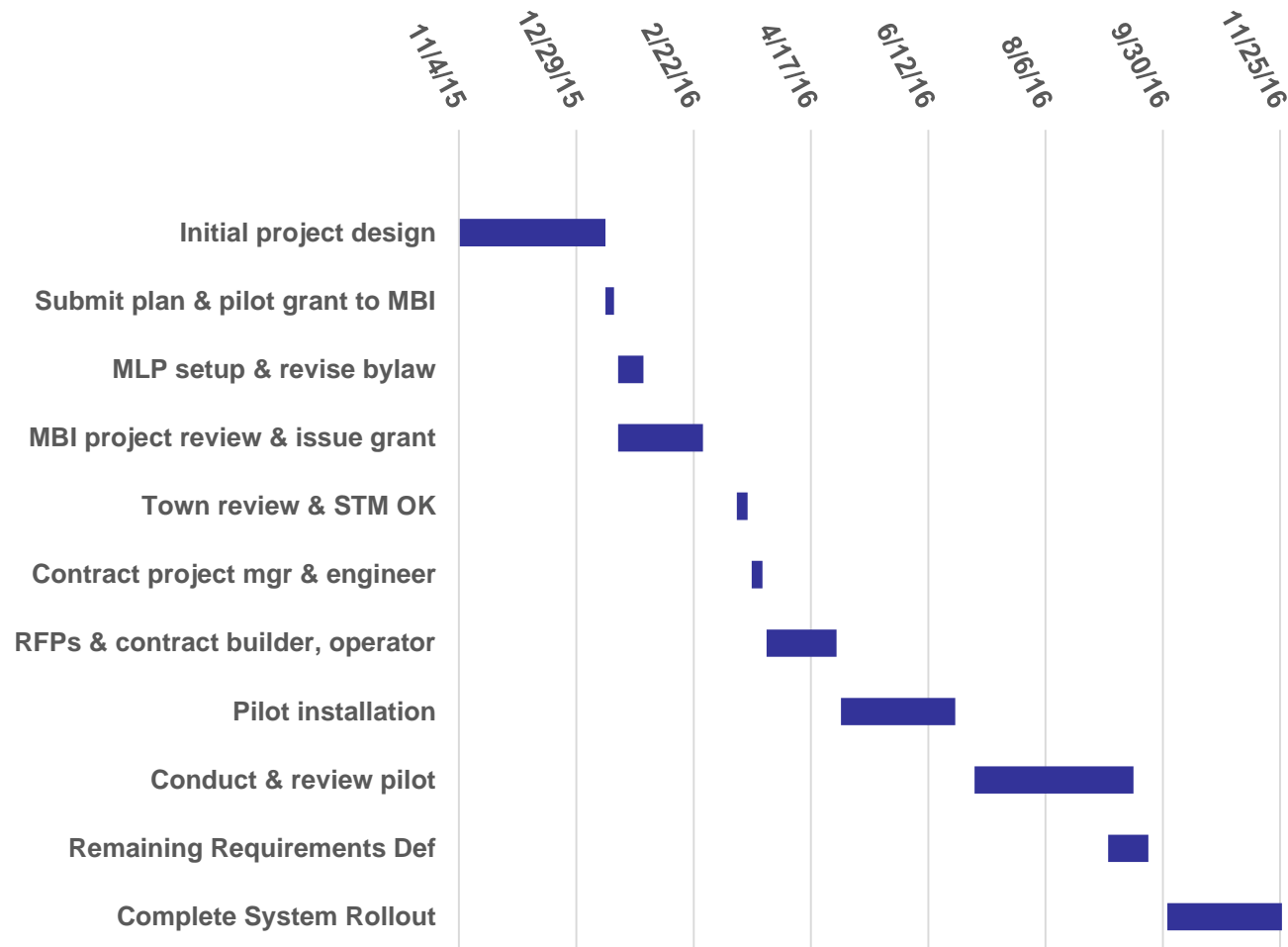
Project Responsibilities



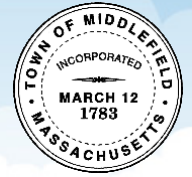
Pilot & rollout schedule



Wireless Last Mile Project Schedule



Summary of Benefits



- Serve the entire town by the end of 2016
- Fully funded by state grants
- Future enhancements as technologies evolve

Questions?

