



# Tolland Broadband

An Overview of Last Mile Planning for Broadband Infrastructure and Service



# AGENDA

- Introduce the Broadband Committee
- Objectives and Timelines of the project
- Update on WiredWest
- Last Mile Readiness Work to date
- Questions, Comments
- Adjourn



# Tolland Broadband Committee

- Kevin Donovan – Committee Chair
- Danny Duval
- Myles Trachtenberg
- Mark Orenstein
- Hannah Gangaware



# Tolland Broadband Committee Objectives

- **Build a network**...alone or with other towns
- **Sustainable**..have excess funds to pay debt
- **Time Table**..55% subscribed & operating-12/2017
- **Reliable**-99.99%
- **Longevity**-to serve us for 30-40 years
- **Coverage**-as close to 100% as feasible
- **Affordable**-Built within MBI projected budget
- **Technology**-Vetting of Fiber to the Home and Fixed Wireless
- **Hold this meeting**



# Project History and Progress



- Wired West, Tolland & MBI - History
- Bond Authorization in Tolland
- Wiredwest has a hard stop in December by MBI
- February-Tolland decides to take parallel path to build a network
- Committee adds additional members in March
  - Sets goals and objectives
- Town Survey
- Town Readiness work



# Project History and Progress



- Wired West, Tolland & MBI - History
  - Joined Wiredwest 2012-Gloria Gery, Kevin Donovan delegates
  - 4 years of meetings
  - Spring 2015 WW campaign.
  - August 2015-Tolland Authorizes their share (\$1,800,000) of bond to build network
  - Summer-Fall 2015 Wirewest develops business plan
  - December 2015 Hard stop



# Wiredwest Hardstop December 2015

**The MBI believes that the current draft Wiredwest operating agreement is not compatible with the best interests of the Commonwealth , the towns, or their residents. The operating agreement coupled with the business plan would require substantial, in some ways fundamental, revision in order to succeed as a reliable framework for the startup and operation of a broadband service in the region.**

\* From letter Dated December 1, 2015 MBI to Municipal Broadband Leaders from Eric Nakajima, Executive Director of MBI.



# Wiredwest Hardstop December 2015

**...Our obligation to the towns, policymakers, and taxpayers investing state and local funds is to support sustainable and successful approaches which will expand broadband service for the region. Because of overall concerns with the project operations and sustainability, the MBI will not authorize expenditure of state funds for a project with core elements as proposed in this draft operating agreement and business plan. Therefore, the MBI recommends towns not sign the Wiredwest operating agreement as currently planned for January 9, 2016**

\* From letter Dated December 1, 2015 MBI to Municipal Broadband Leaders from Eric Nakajima, Executive Director of MBI.





# Wiredwest Hardstop December 2015

## Key Points

- Operating agreement review
  - Ownership entirely in Coop
  - No Broadband Assets return to MLPs on Withdrawl
  - Coop free to lease, sell, encumber or otherwise dispose
  - Not consistent with June MBI policy 2015 statement

\* From letter Dated December 1, 2015 MBI to Municipal Broadband Leaders from Eric Nakajima, Executive Director of MBI.



# Wiredwest Hardstop December 2015

## Key Points

- Business Plan review
  - Starting and running and independent- Risky given challenges with rural FTTH networks –Comcast, Verizon, Time Warner won't do it.
  - WW planned fully insourced model of administration, staffing and services-expensive and needed to consider outsourcing
  - Wiredwest plan to repay debt service to the towns will be difficult or impossible to achieve at reliable subscription rates. Towns should assume they will have to repay most if not all of the debt they borrow.

\* From letter Dated December 1, 2015 MBI to Municipal Broadband Leaders from Eric Nakajima, Executive Director of MBI. With addition by Kevin Donovan



# Wiredwest Hardstop December 2015

## December 2015

- Joined the Wiredwest Negotiating Committee
- Member of Executive Committee
- Met weekly for over two months trying to re-craft the Business plan and Governance plan, met with MBI several times in Westborough.



# Wiredwest Hardstop December 2015

After two and half months of negotiating, meetings with nothing to show.

- Determined that Wiredwest was a long way from coming to an agreement on how to proceed.



# Wiredwest Hardstop December 2015

February 28, 2016

- KD resigns from the Wiredwest Negotiating Committee
- KD resigns from of Executive Committee
- Tolland remains a Wiredwest member.
- Tolland takes a parallel path to build a municipal network



# Why Tolland Should Build This??

## Why should Tolland build this?



# Why Tolland Should Build This??

- We agreed last year we wanted to build a broadband network
- Build critical communications infrastructure for long term
- Fully participate in an increasingly internet-based world
- The internet is considered a utility
- Make Tolland attractive to live, work, retire or raise a family
- Improve quality and lower costs of education
- Enable Aging-in-Place
- Bolster tax base
- Support businesses and jobs
- Home monitoring



# Last Mile Readiness Work to Date

- MBI and Tolland
- Phone Survey
- Readiness results
  - Estimates for Infrastructure, Capital expenses, operating and maintenance costs.





# Tolland Broadband Committee

## **Work done by the Broadband Committee and MBI**

- Met with vendors, Matrix design, Sertex, WG&E, Fixed Wireless consultant, Crocker Communications, MBI, Governors meeting, other contiguous towns.
- Completing Last Mile Readiness documents
- Phone survey-needed to determine network usage/behavior for consideration of bandwidth and performance tuning of the network.

## Last Mile Planning

Broadband Infrastructure and Service in:  
**TOLLAND, MA**

### Serviceable Premises

- Connected CAI Locations (3)
- Unserved Locations (537)

### Existing Broadband Infrastructure

- ★ MassBroadband 123 Interconnection Points
- 🟡 MassBroadband 123 Fiber-Optic Cable

### Base Map

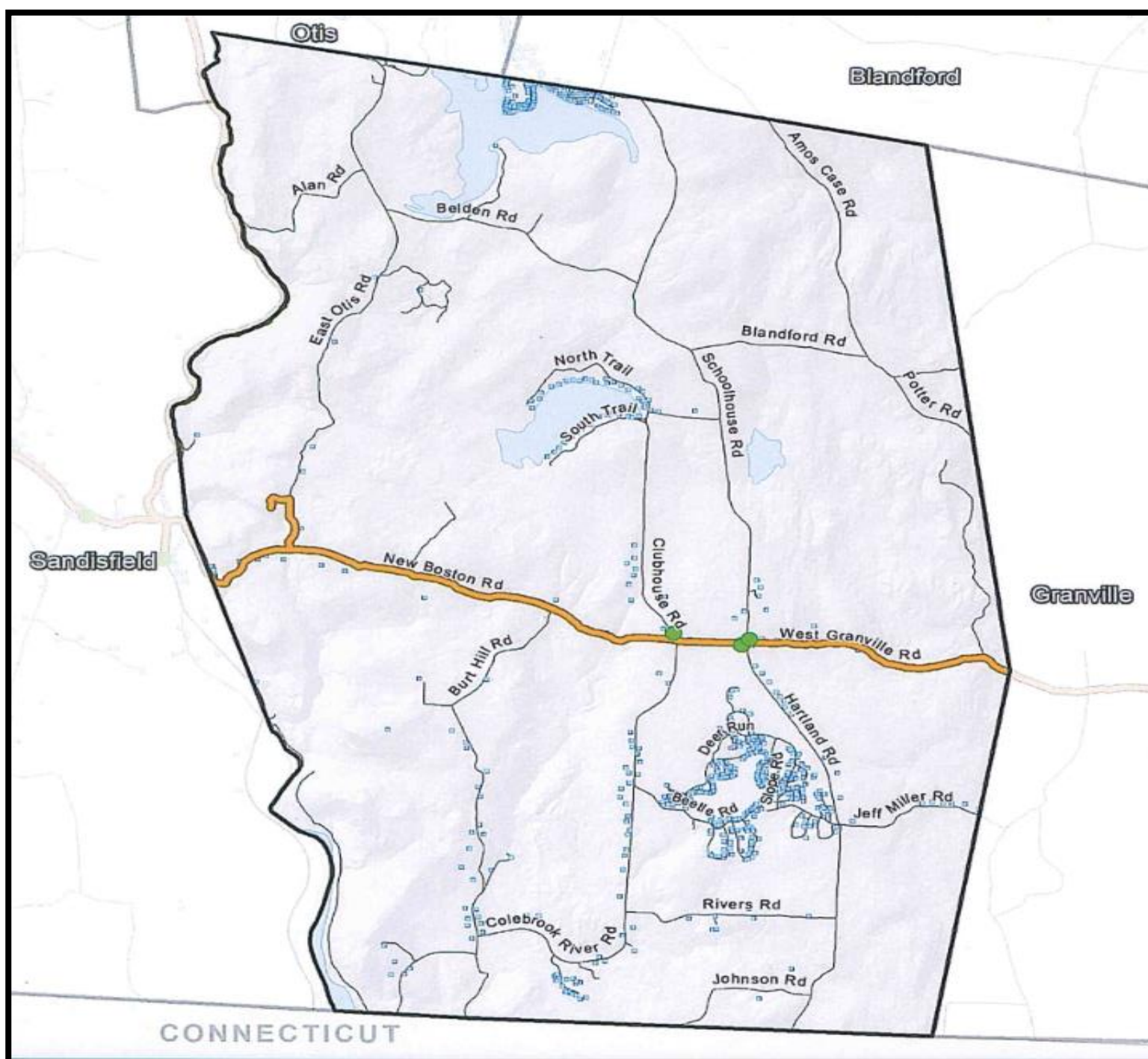
- Building Locations
- ⬢ Town Boundaries
- 🛣 Roads
- 💧 Water Bodies



Map Date: 05 February 2016

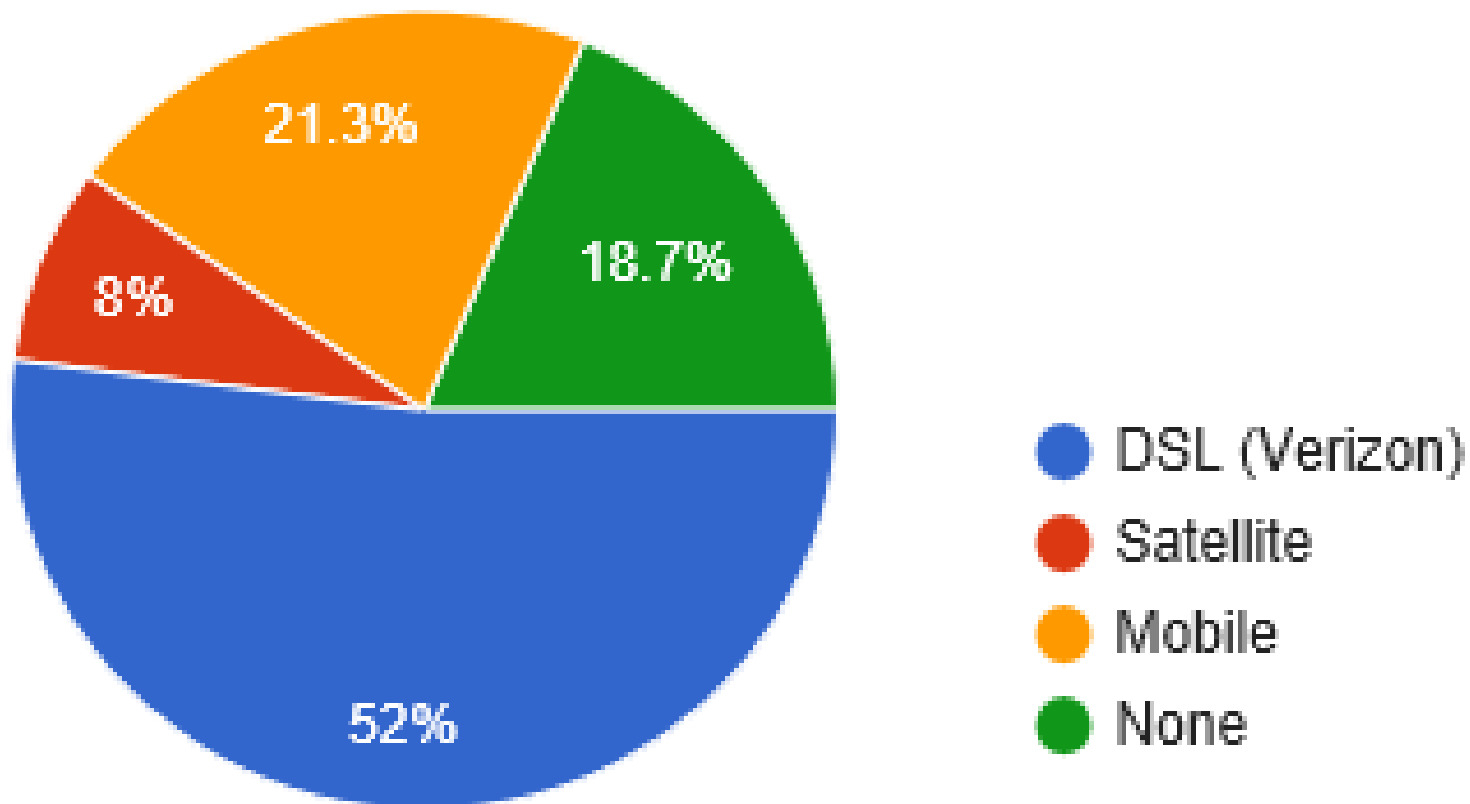


MBI Last Mile Town Profiles, Feb. 2016



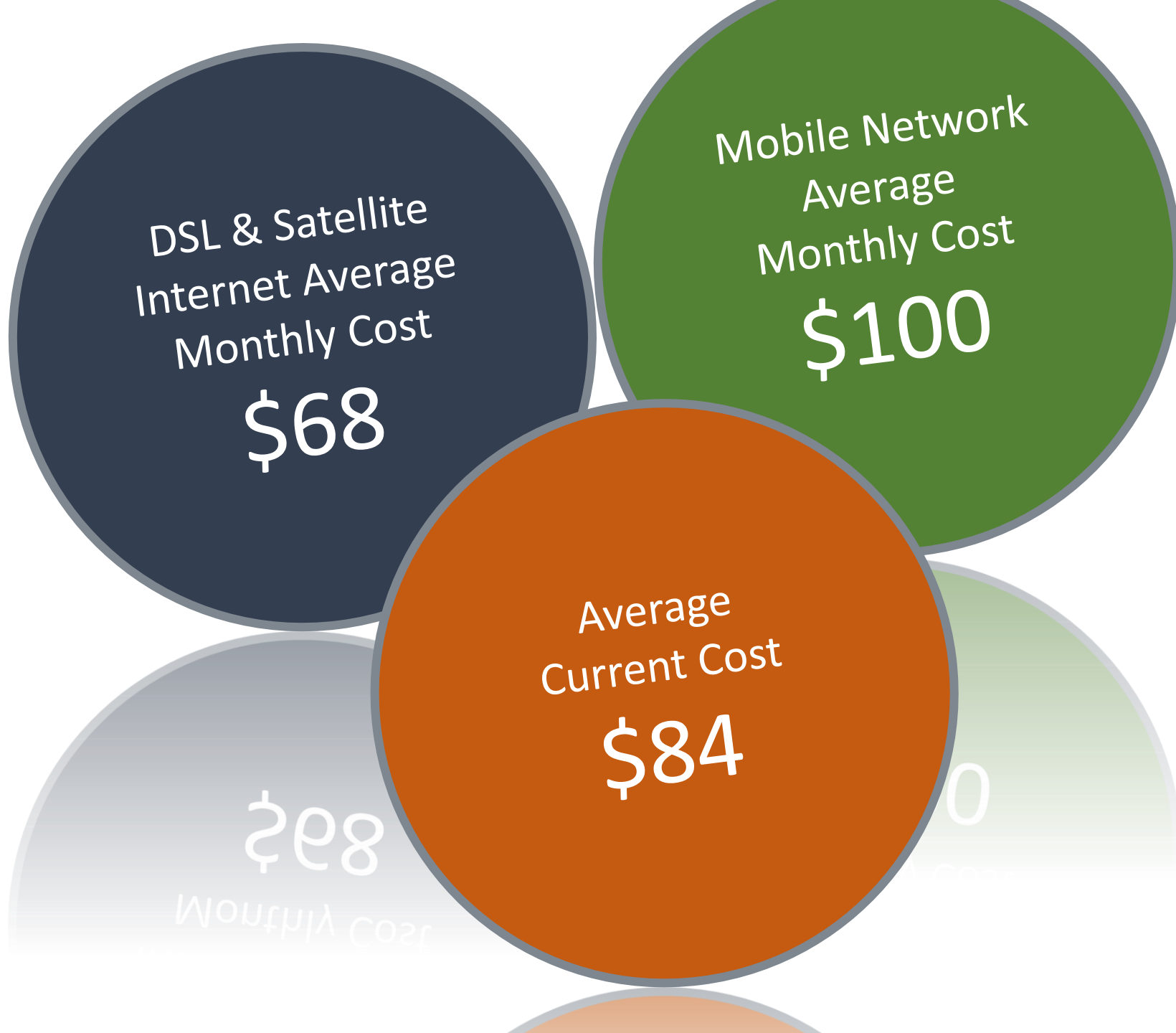


# Do you currently subscribe to internet service?



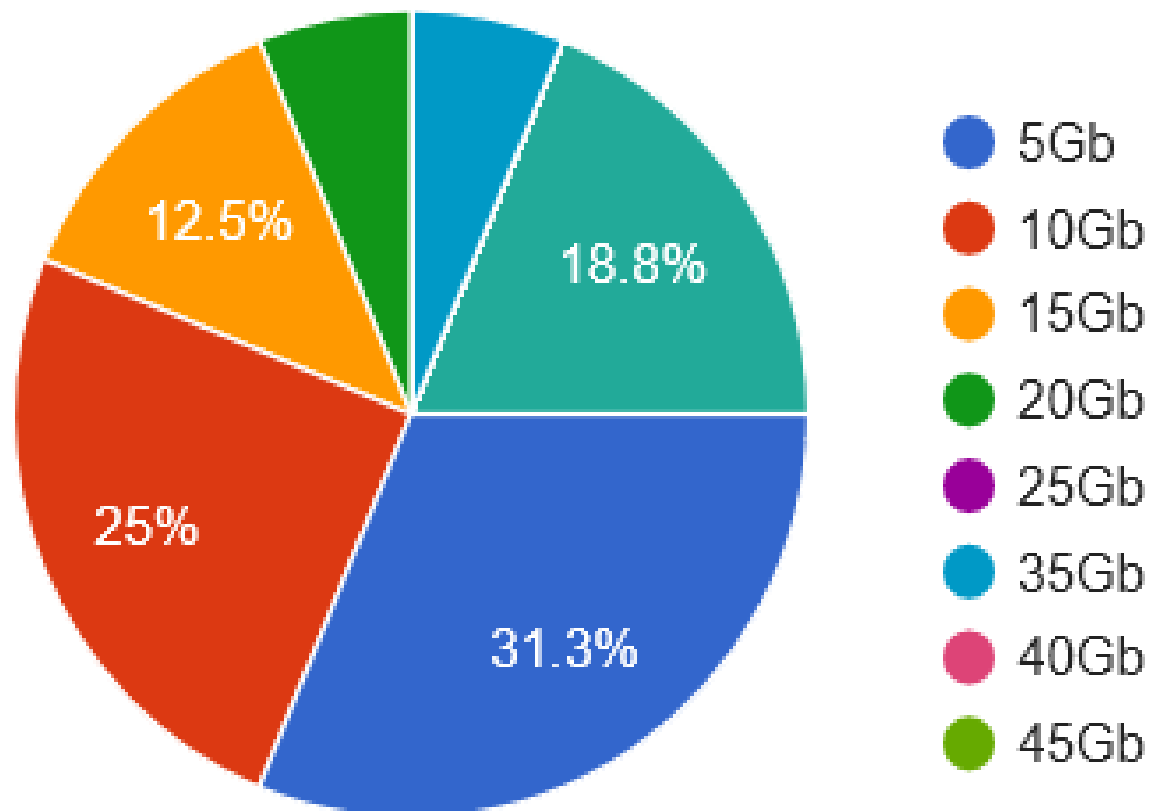


# Current Average Costs





# What monthly data plan have you subscribed to?



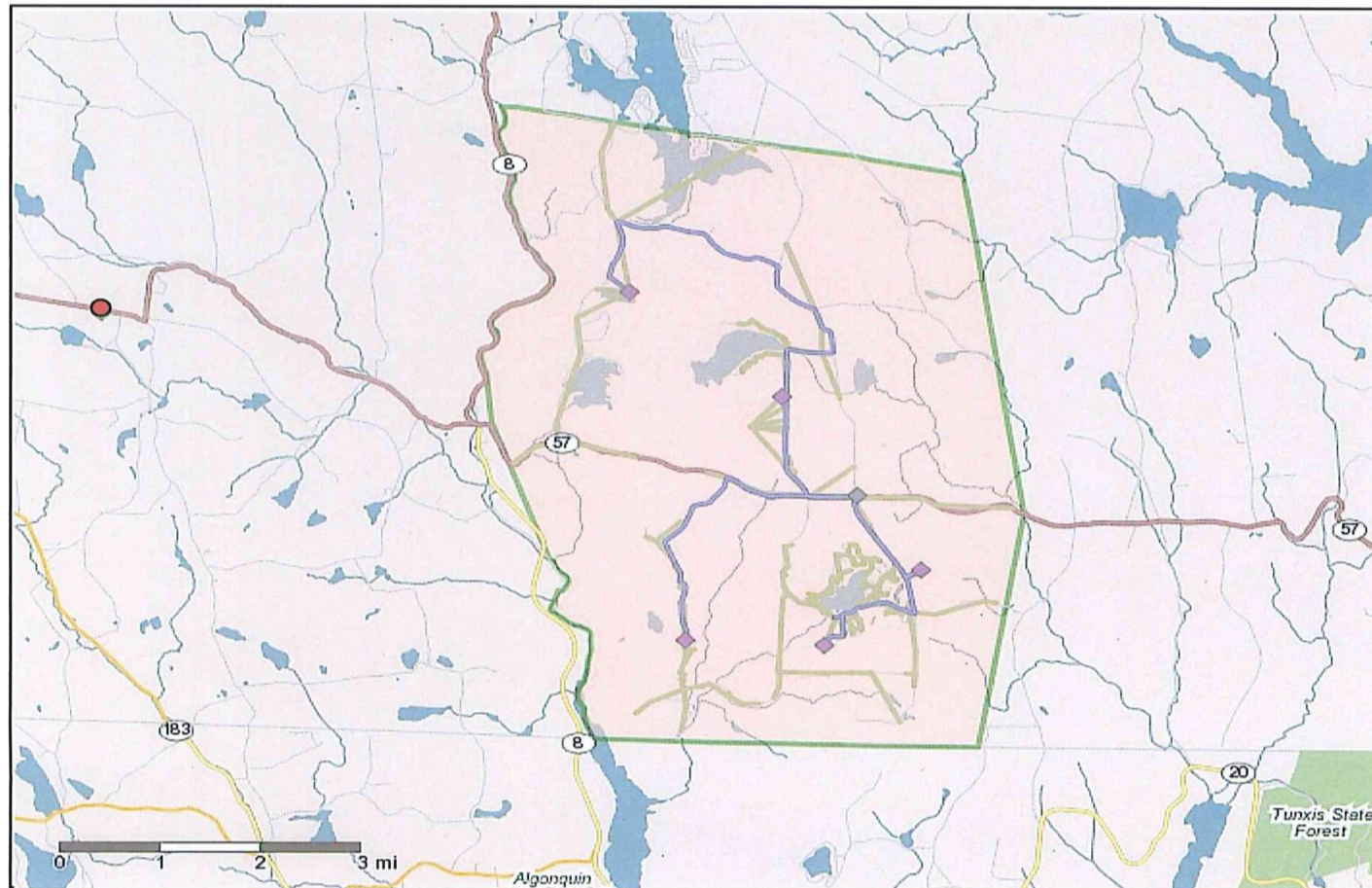


# Infrastructure and Capital Expenditure (MBI)

A Fiber to the Home Network (FTTH)  
February 2016 Profile from MBI



# Tolland: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

- Core Fiber (existing & redundant fiber)
- Distribution Fiber (core fiber to cabinet)
- Local Fiber (cabinets to premises)
- Existing Point of Interconnection (POI)
- ◆ Cabinet (equipment for local network)
- ◇ Hut (equipment for entire town network)
- Town Border

Sources: Experian, Tom Tom, MBI, Cartesian

Fiber-to-the-Home (FTTH) network enabling service to all homes in town. Costs include all capital required for the network, network equipment, and customer equipment needed to provide broadband service.

## Infrastructure Components

Households Modeled*	509
Fiber Miles Modeled	41
Poles Modeled	801

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

Estimated Total Network Cost	\$2,650,000
Construction Costs Funded by MBI	\$430,000
Professional Services Costs Funded by MBI	\$400,000
Projected Town Contribution	\$1,820,000



# Tolland: Town Financing Information



## Financing Required

Projected Town Contribution	\$1,820,000
Year 6 Debt Service @4% over 15 Years	\$142,600
2016 Total Assessed Value	\$194M
Year 6 Rate Impact per mil	\$0.74

## Town Status

Vote	Action
Bond Authorization @ Town Meeting	Passed
Debt Exclusion @ Town Election	Passed

## Example Tax Bill Impact

Assessed Property Value	Annual Property Tax Increase
\$150,000	\$110.30
\$250,000	\$183.90
\$500,000	\$367.70

## Notes

- 2016 Town Assessed Values from DLS Data Bank
- Analysis scenario reflects:
  - Interest only payments in Years 1 & 2
  - Interest and partial principal payments in Years 3, 4 & 5
- Issuance of bonds in Year 6
  - Amount borrowed is lower than net cost to town due to principal paydown in Years 3, 4 & 5
- Debt service payments remain level in Years 6-20
- Tax impacts can be influenced by changes in overall project costs, interest rates, home values and the town's total assessed value
- Example tax bill impact shows annual property tax impacts for the project



# Tolland: Operating Expenditures (OPEX)



## Profit & Loss (P&L) @ 60% Take Rate

Households Modeled*	509
Subscribers Modeled	190
Entry Level Broadband Price	\$82
Average Revenue Per Unit (ARPU)**	\$105
Annual Revenue	\$240,000
Annual Operating Cost	\$190,000
Annual Profit	\$50,000

\* Approximate household locations from Experian

## Monthly Price Required for Basic Internet to Generate Profit of \$50,000 / year

40% Take Rate	\$122
60% Take Rate	\$82
75% Take Rate	\$66

## Assumptions

- Fully outsourced model
- Costs include:
  - Depreciation reserves
  - Customer Premise Equipment (CPE)
  - Municipal Light Plant (MLP) ongoing operating expenses
- Costs exclude:
  - Debt service
  - Town administration
- Subscription assumptions (included in ARPU\*\*):
  - Video breaks even at \$54/month and 10% of subscribers
  - Phone Cost of Goods Sold (COGS) of \$10/month, revenue of \$25/month and 40% of subscribers
  - 20% of subscribers selecting a higher speed and higher priced internet package
  - 57% of households modeled are seasonal premises occupied for an average of 4 complete months/ year



# MLP Operating and Maintenance Costs

- Depreciation of fiber plant
- Depreciation of electronics
- PURMA dues-Insurance coop
- Insurance
- Bond fee for poles
- Pole rental
- Accountant
- Bookkeeper, manager, Town Treasurer
- Routing Maintenance
- Legal
- Electricity
- Contingency



<u>Cost Category</u>	<u>Cost</u>	<u>Revenue</u>
Project-related costs	Debt Service on General Obligation Bond (\$142,600)/year	Tolland Taxpayers- Average \$278.60 /year
+	+	
Operating & Maintenance Cost	Insurance, pole rentals, labor, electricity, etc, \$310,111/year	MLP Fee from Tolland Customers \$310,111
<hr/>		
Total Annual Cash Cost	\$452,711 /year	\$452,711 year

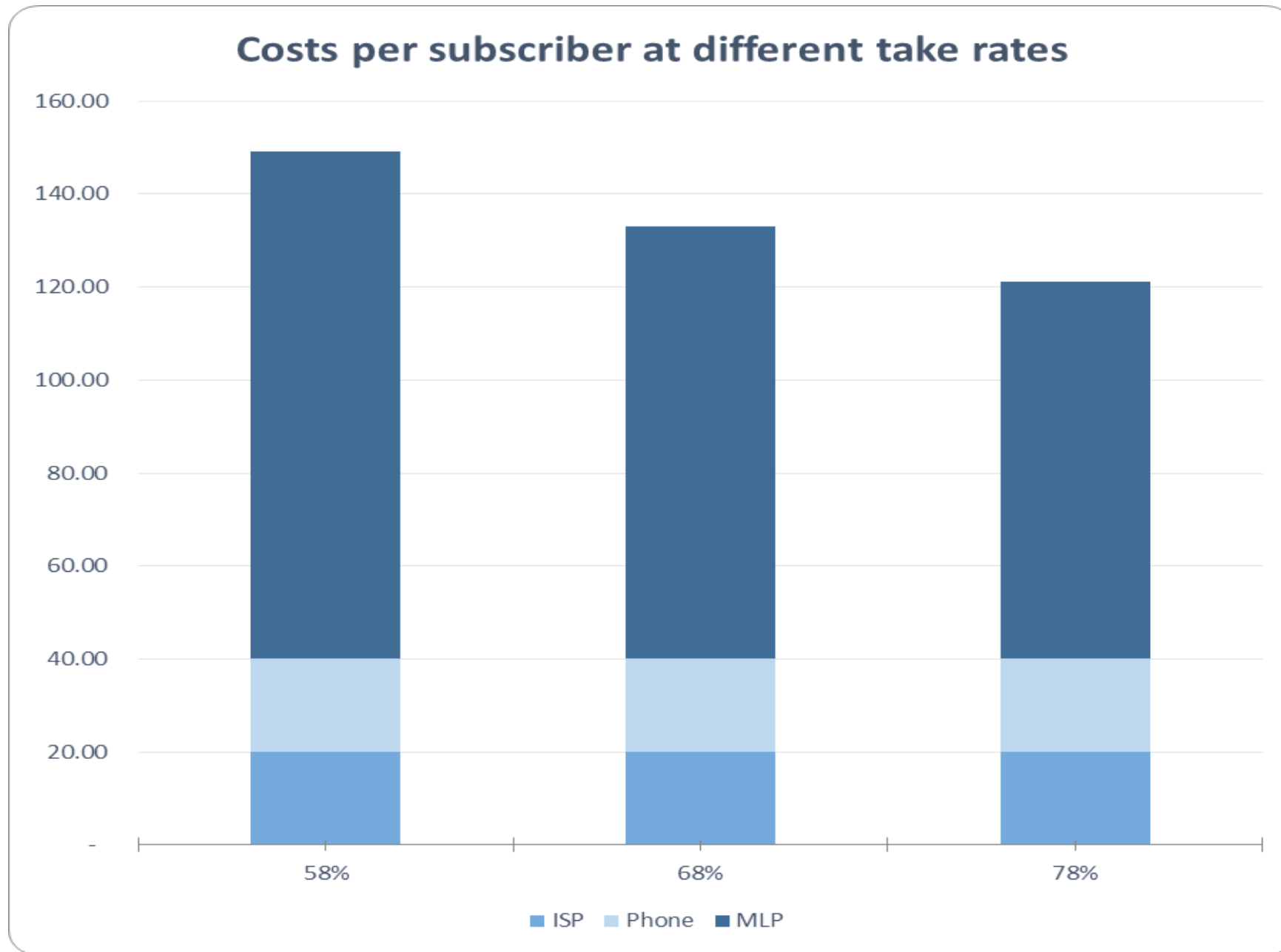


# Last Mile Readiness draft results

- Revenue from Taxpayers pays for the towns portion of the Fiber & Electronics for the network
- Operating and Maintenance Costs are paid by Subscribers to the MLP through an MLP fee & subscription costs for services (Network operation and Internet Service Provider)



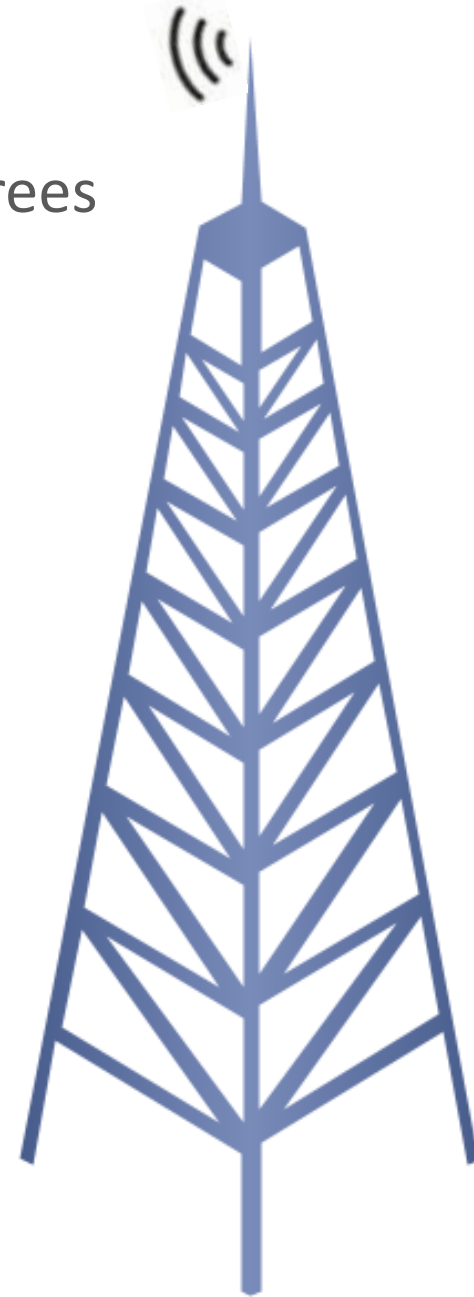
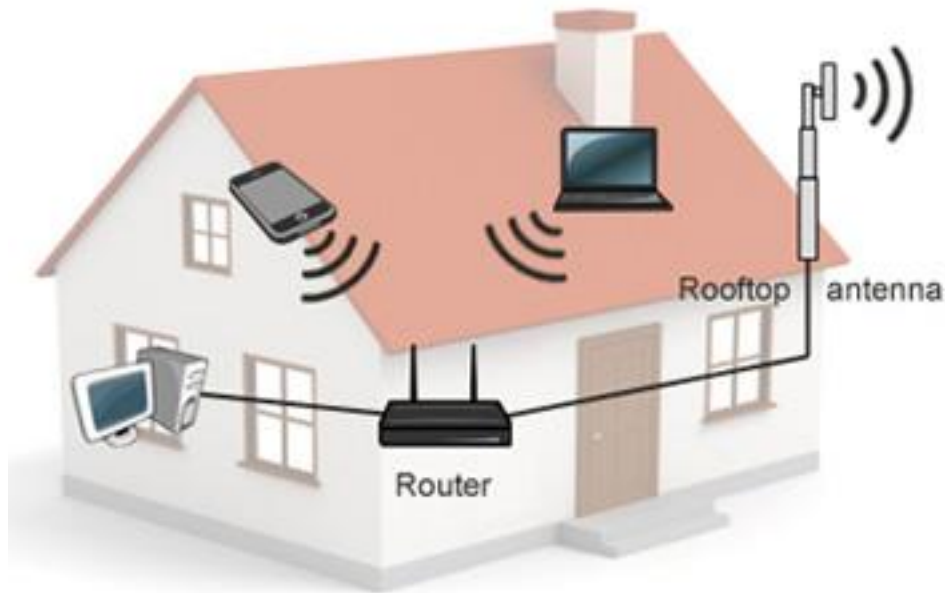
# Take Rate and Cost





# Wireless Network

- Reliability concerns due to weather conditions
- Line of site required, speed loss due to obstructions such as trees
- Installation of towers (requires approval from land owners/associations for install)
- Approx \$80 per month for 25/5 Mbps

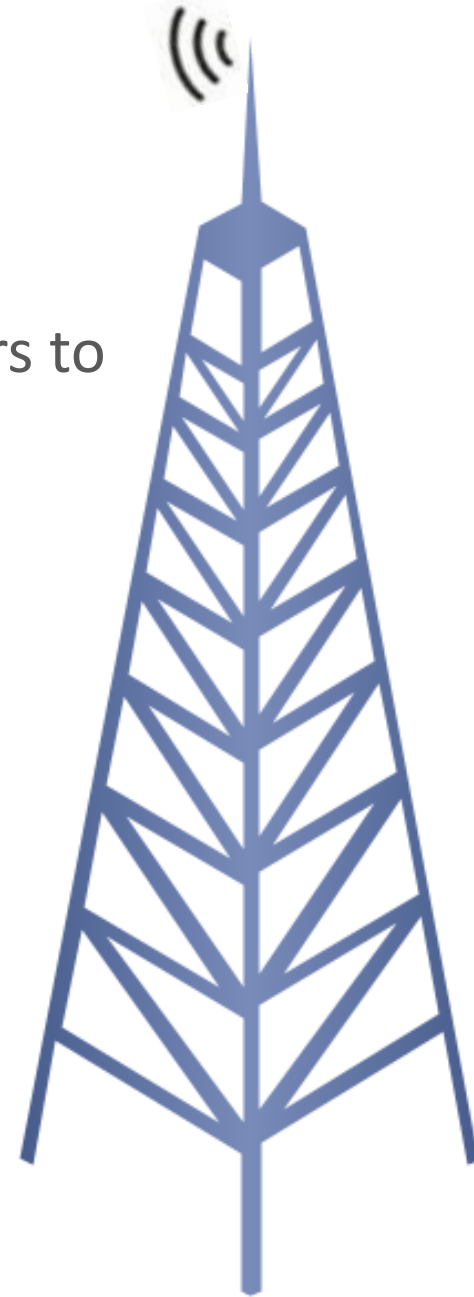
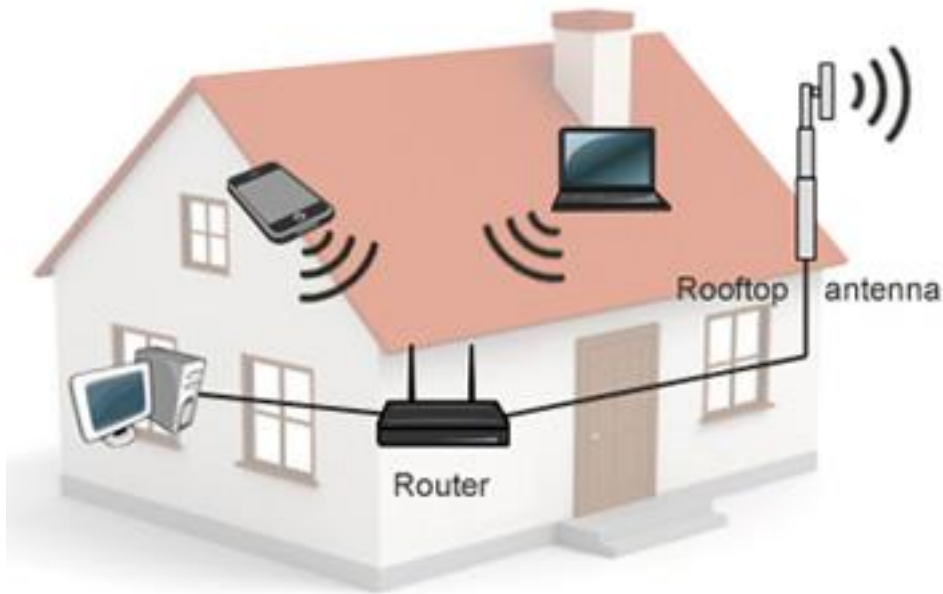






# Wireless Network

- Build Cost is Lower- could be built without spending our bond authorization of \$1,800,000
- Speed and reliability suffer
- We could be spending another \$400,000-\$500,000 in 6-7 years to upgrade to new technology





# Where we go from here?

- MEETINGS, MEETINGS
- Decide who will design and build our network
  - MBI
  - Local Municipal Light Plant, Private?
  - What to build, FTTH or Fixed Wireless
- Getting DOR greenlight
- Hire clerk of the works, paid or volunteer!
- Make ready work- Authorize spending





# Where we go from here?

- Questions?
- Comments?



# Where we go from here?

- Thank you for attending!!





# Tolland Tax Impact vs. Savings

House Value	monthly tax	annual tax
\$ 150,000	\$ 8.86	\$ 118.00
\$ 295,000	\$ 19.44	\$ 233.30
\$ 425,000	\$ 31.23	\$ 375.00
\$ 600,000	\$ 42.74	\$ 513.00



Worst case yr 6 scenario – assumes network pays none of debt service.

Service	Monthly			Annual
	AVG	VW	Savings	
Internet	\$ 51	\$ 49	\$ 2	24
Phone	\$ 55	\$ 25	\$ 30	360
TV	\$ 81	\$ 65	\$ 16	192
	\$ 187	\$ 139	\$ 48	576

*Note: TV pricing not yet finalized*













