

# MBI Last Mile Town Profiles

April 2016

**MBI**

MASSACHUSETTS  
BROADBAND INSTITUTE



at the MassTech  
Collaborative



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# About the MBI Last Mile Town Profiles

## *Introduction*

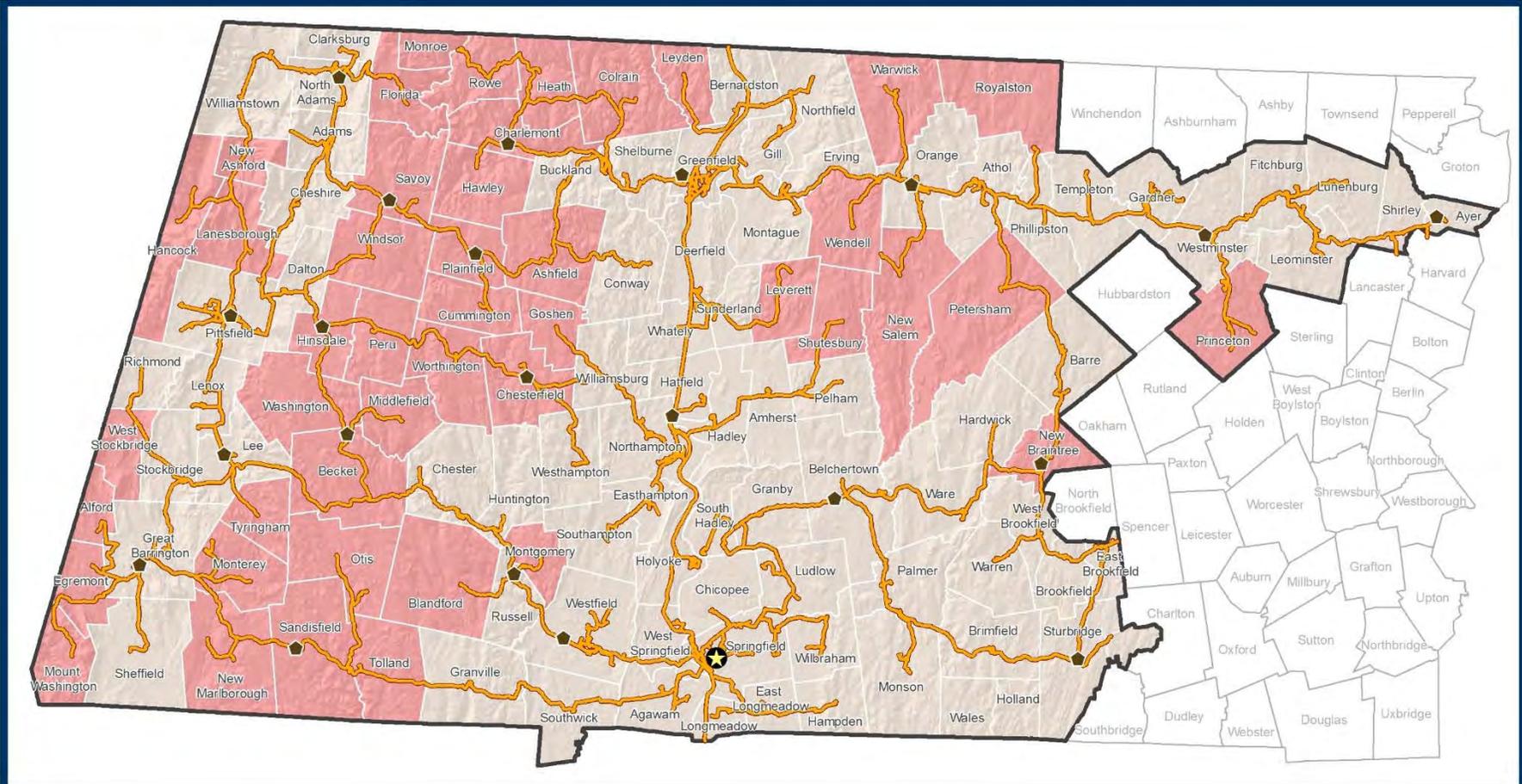
*The following pages provide town profiles for all 44 unserved towns. Each profile includes a map of the town with relevant data points such as unserved locations, connected “Community Anchor Institution” locations, MassBroadband 123 fiber optic cable infrastructure and interconnection points. The profiles also provide a breakdown of the capital expenditures and operating expenditures for each town.*

*The total construction costs are based on desktop modeling completed by an industry expert retained by MBI. That total cost is \$109 million for construction in the 44 unserved towns. These figures show the breakdown of the total construction cost per town, each town’s projected contribution to those costs and MBI’s proposed allocation to help subsidize the project. Additionally, these profiles include the expected increased property tax burden on each homeowner (if the town chooses to borrow the funds), as well as the projected monthly subscription costs based on various take rates.*

## *Assumptions of Analysis*

*Because there are so many variables and costs underpinning the complex financing of providing a fiber-to-the-home broadband network, MBI and its consultants have made certain assumptions as part of this analysis. The modeling assumes an entirely outsourced model, whereby the towns would contract with existing industry partners for network operations, ISP services, etc. Additionally, based on industry practice, MBI has modeled each town under the assumption of a \$50,000 annual profit to provide cash reserves to cover unexpected costs and needs (for example for repairs due to ice storms or blizzards). These annual profit calculations also assume that the costs will not cover debt service for the town’s share of the build and will not cover administrative costs inuring to the town. However, MLP costs, depreciation reserves, and customer premise equipment costs are included.*

## MassBroadband 123 Service Area and Network Towns without Cable Broadband



### Broadband Availability

■ No Cable Broadband

### MassBroadband 123 Network

  Service Area

— Fiber Optic Network

◆ Network Points of Interconnection

★ Internet Point of Presence



Map Date: 01 July 2015

## Last Mile Planning

Broadband Infrastructure and Service in:

### ALFORD, MA

#### Serviceable Premises

- Connected CAI Locations (3)
- Unserved Locations (341)

#### Existing Broadband Infrastructure

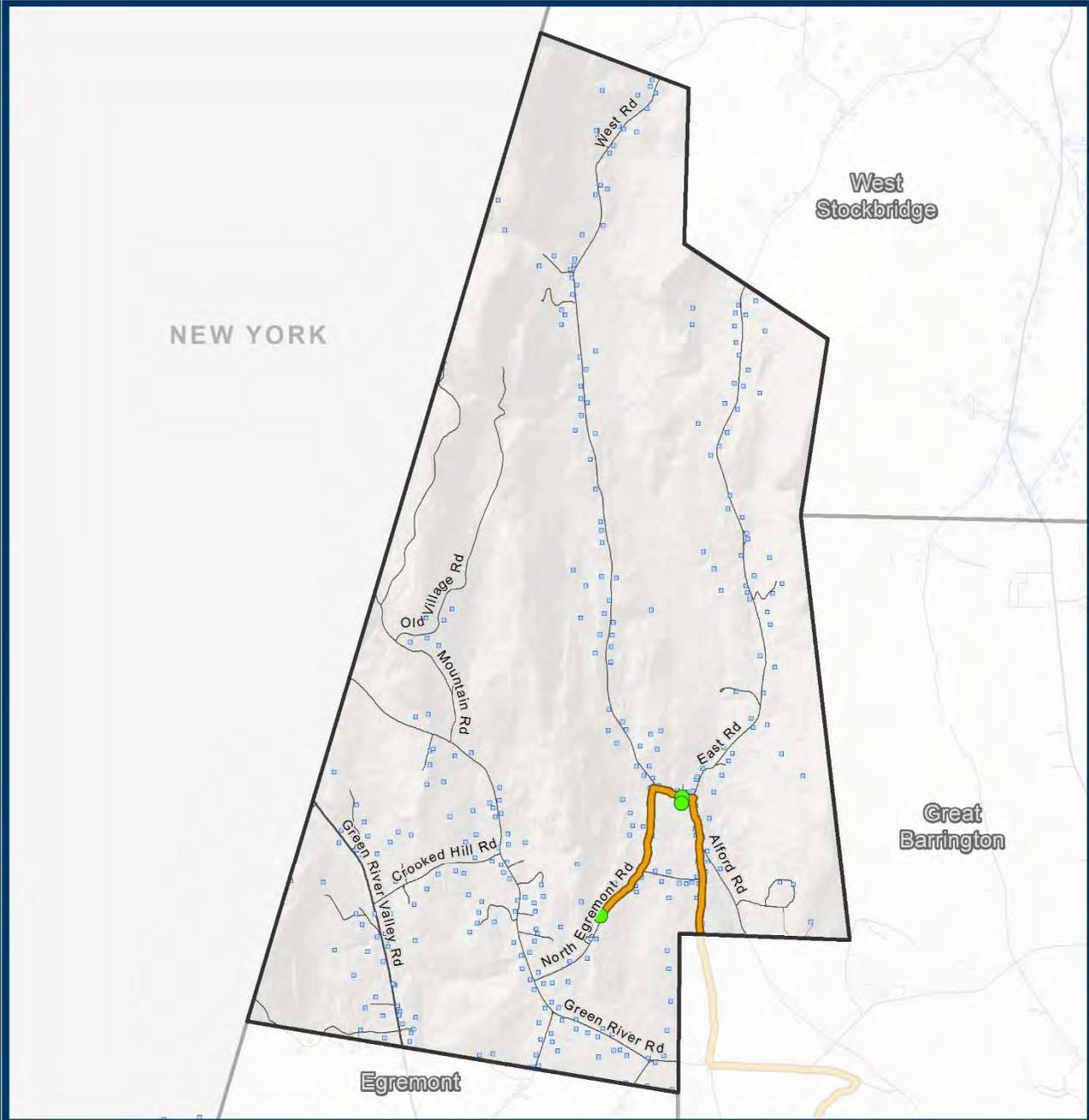
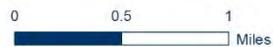
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

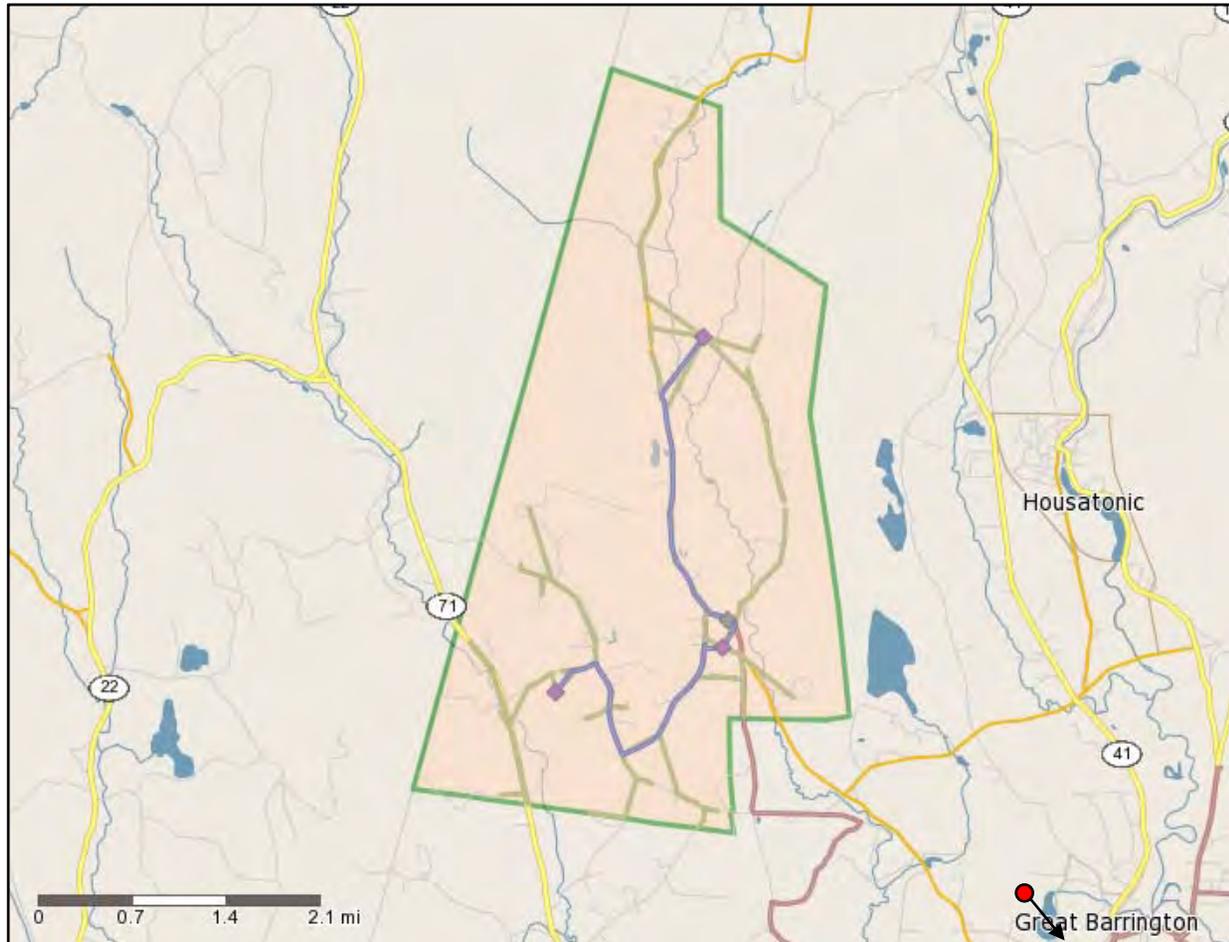
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Alford: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 322 |
| Fiber Miles Modeled | 25  |
| Poles Modeled       | 605 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,310,000 |
| Construction Costs Funded by MBI          | \$270,000   |
| Professional Services Costs Funded by MBI | \$210,000   |
| Projected Town Contribution               | \$830,000   |

# Alford: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$830,000 |
| Year 6 Debt Service @4% over 15 Years | \$65,000  |
| 2016 Total Assessed Value             | \$273M    |
| Year 6 Rate Impact per mil            | \$0.24    |

## 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               | \$35.70                      |
| \$250,000               | \$59.40                      |
| \$500,000               | \$118.90                     |

## 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

# Alford: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 322       |
| Subscribers Modeled               | 151       |
| Entry Level Broadband Price       | \$86      |
| Average Revenue Per Unit (ARPU)** | \$109     |
| Annual Revenue                    | \$198,000 |
| Annual Operating Cost             | \$148,000 |
| 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 | \$128 |
| 60% Take Rate | \$86  |
| 75% Take Rate | \$69  |

## 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
  - 33% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

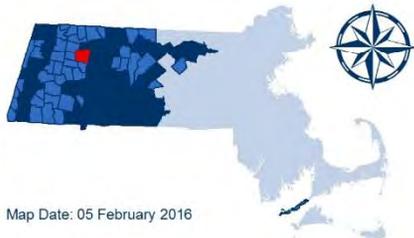
- Connected CAI Locations (4)
- Unserved Locations (815)

### Existing Broadband Infrastructure

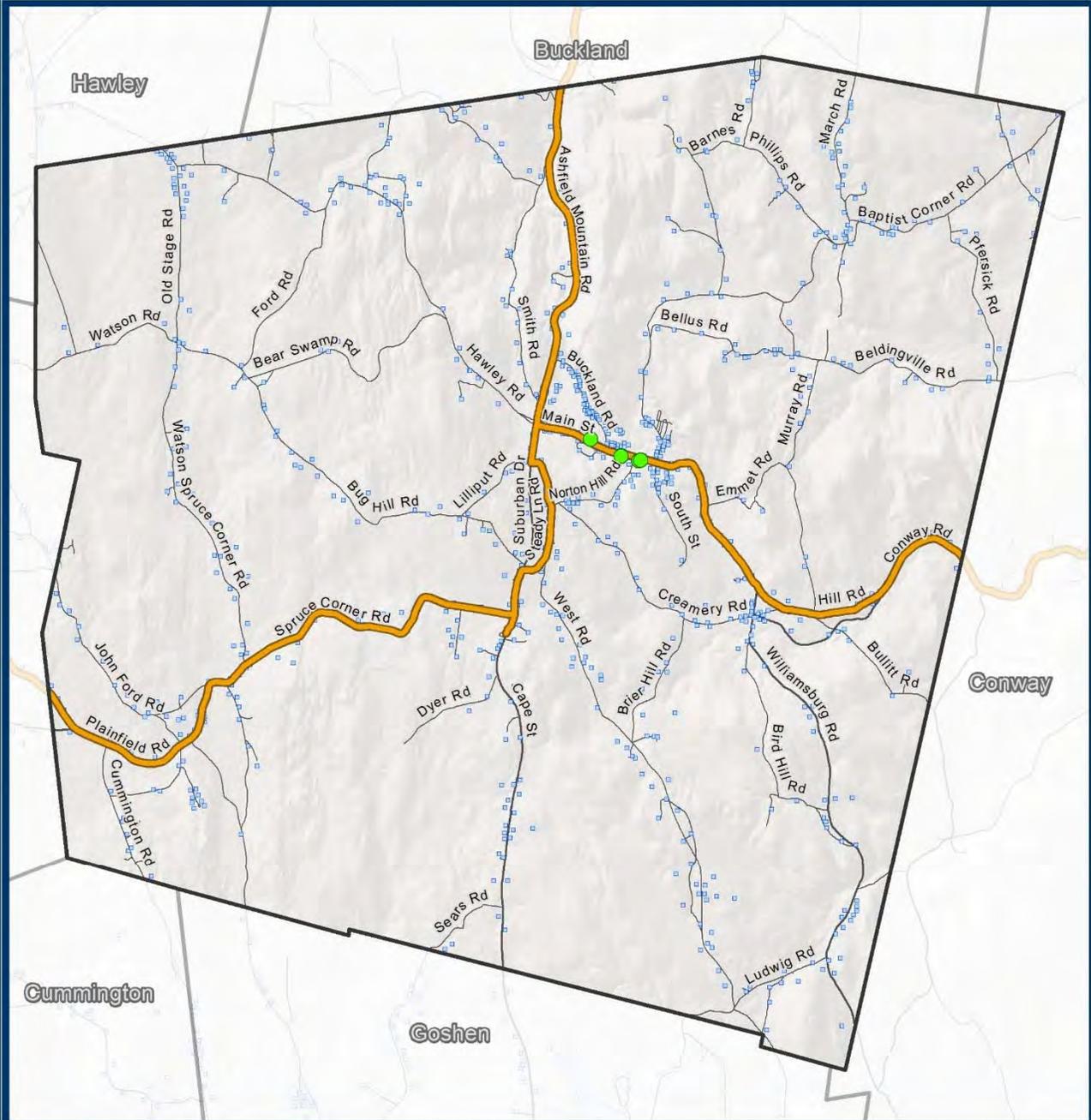
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

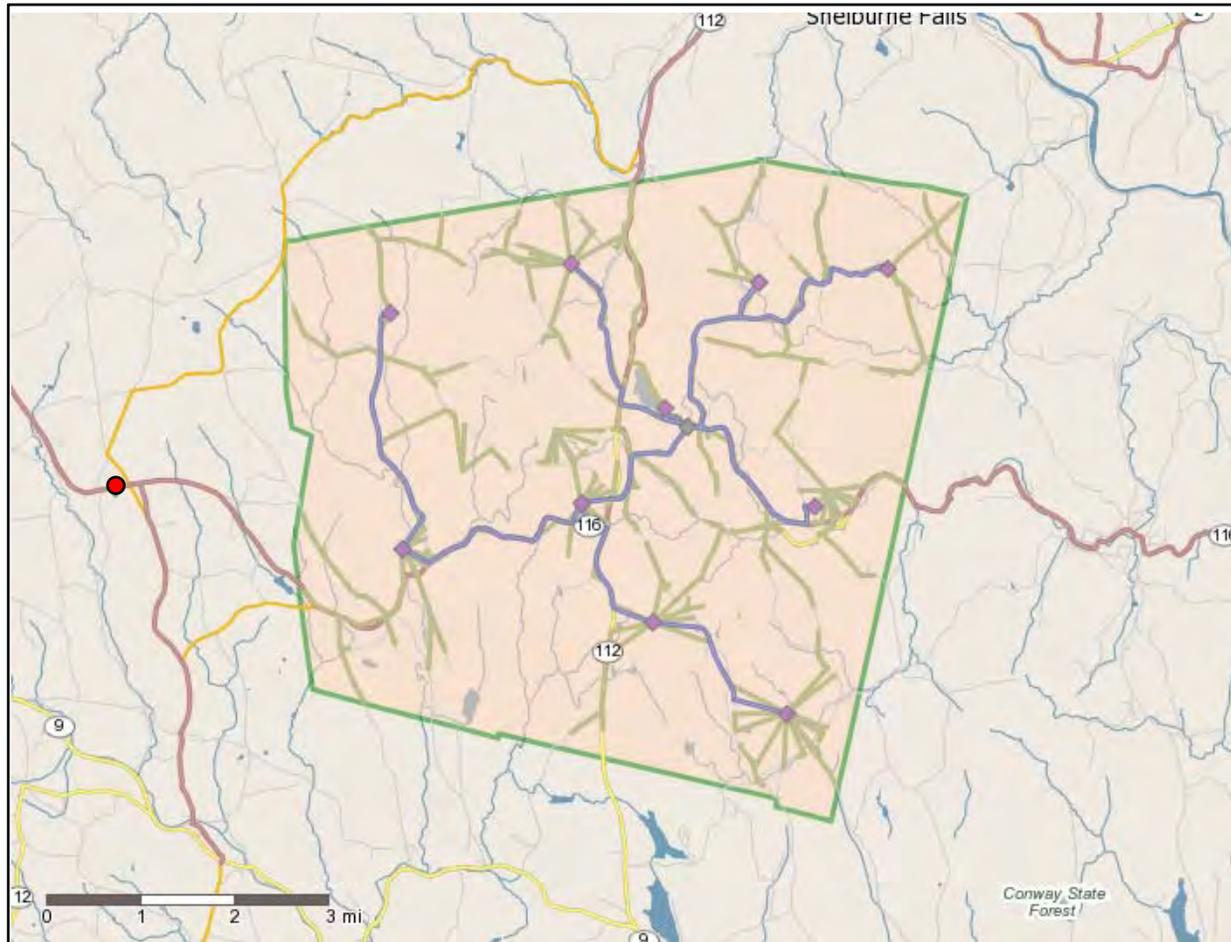
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Ashfield: 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* | 866  |
| Fiber Miles Modeled | 83   |
| Poles Modeled       | 1677 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$3,710,000 |
| Construction Costs Funded by MBI          | \$770,000   |
| Professional Services Costs Funded by MBI | \$640,000   |
| Projected Town Contribution               | \$2,300,000 |

# Ashfield: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$2,300,000 |
| Year 6 Debt Service @4% over 15 Years | \$180,200   |
| 2016 Total Assessed Value             | \$225M      |
| Year 6 Rate Impact per mil            | \$0.80      |

## 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               | \$120.10                     |
| \$250,000               | \$200.10                     |
| \$500,000               | \$400.20                     |

## 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

# Ashfield: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 866       |
| Subscribers Modeled               | 486       |
| Entry Level Broadband Price       | \$56      |
| Average Revenue Per Unit (ARPU)** | \$79      |
| Annual Revenue                    | \$462,000 |
| Annual Operating Cost             | \$412,000 |
| 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 | \$83 |
| 60% Take Rate | \$56 |
| 75% Take Rate | \$46 |

## 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
  - 10% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

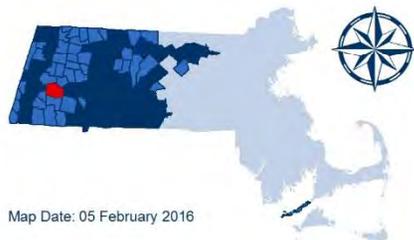
- Connected CAI Locations (5)
- Unserved Locations (1,823)

### Existing Broadband Infrastructure

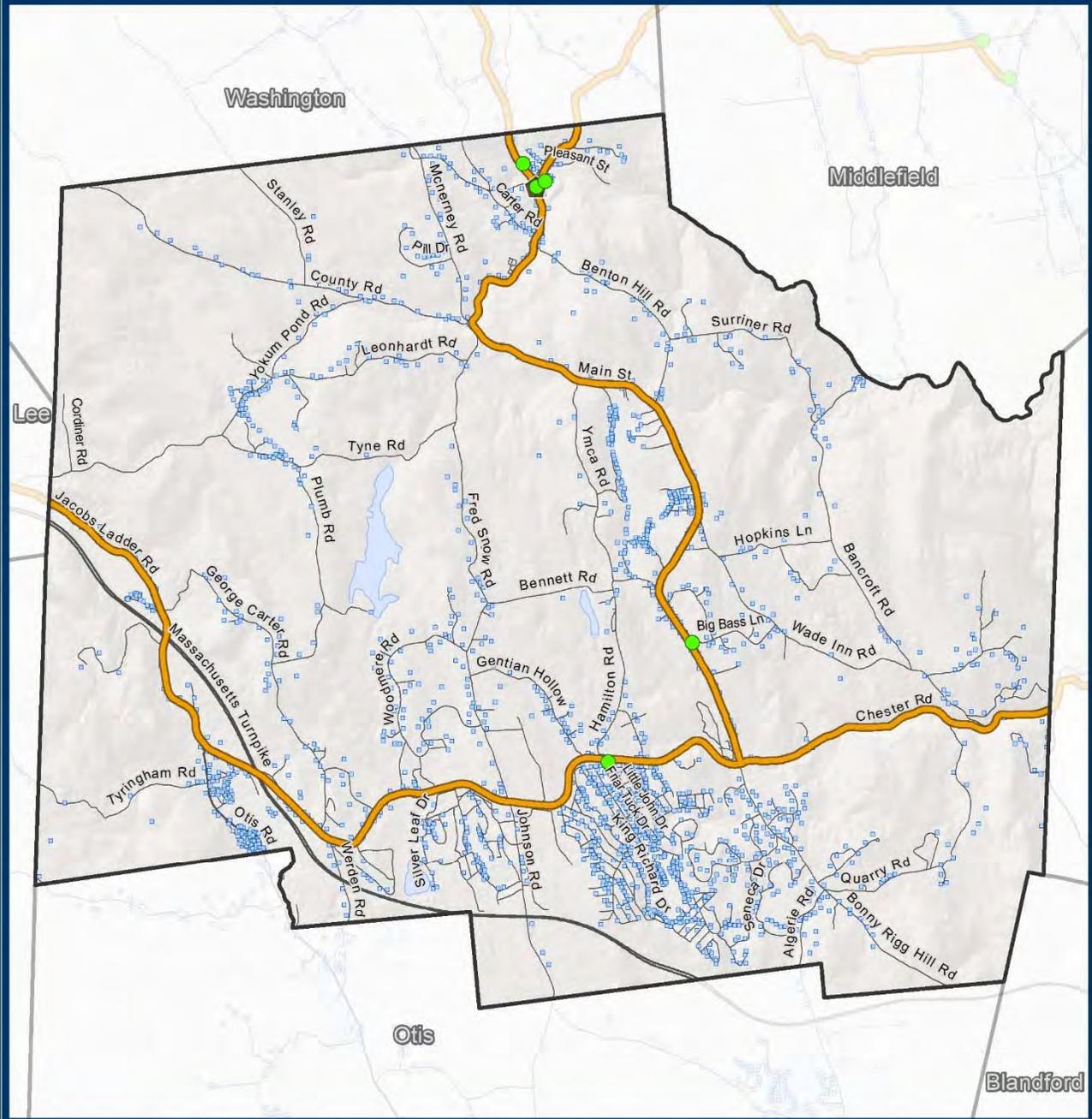
- ◆ MassBroadband 123 Interconnection Points
- MassBroadband 123 Fiber-Optic Cable

### Base Map

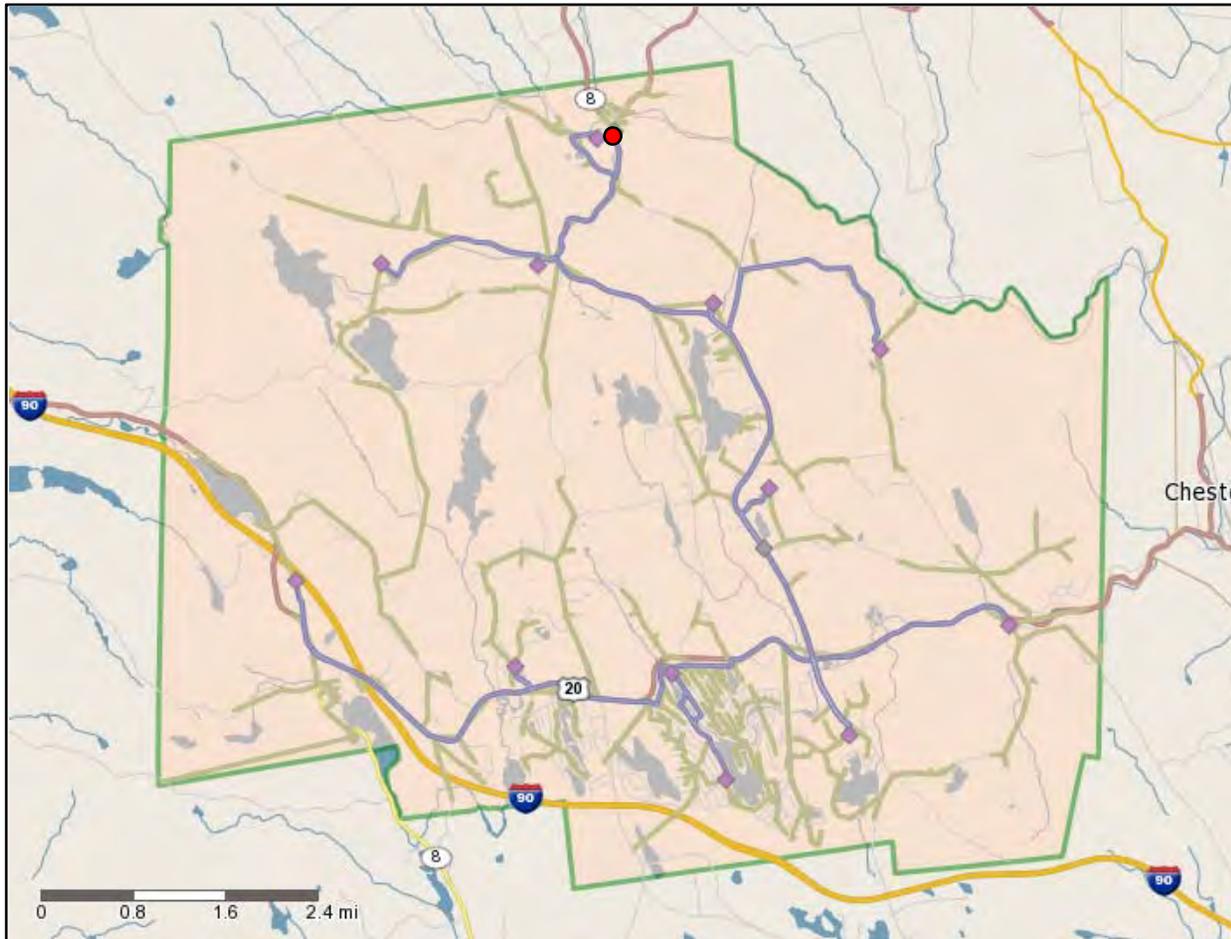
- Building Locations
- Town Boundaries
- Roads
- Water Bodies



Map Date: 05 February 2016



# Becket: 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* | 1,802 |
| Fiber Miles Modeled | 121   |
| Poles Modeled       | 2517  |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$5,900,000 |
| Construction Costs Funded by MBI          | \$1,290,000 |
| Professional Services Costs Funded by MBI | \$860,000   |
| Projected Town Contribution               | \$3,750,000 |

# Becket: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$3,750,000 |
| Year 6 Debt Service @4% over 15 Years | \$293,800   |
| 2016 Total Assessed Value             | \$502M      |
| Year 6 Rate Impact per mil            | \$0.59      |

## 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               | \$87.80                      |
| \$250,000               | \$146.30                     |
| \$500,000               | \$292.60                     |

## 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

# Becket: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 1802      |
| Subscribers Modeled               | 710       |
| Entry Level Broadband Price       | \$57      |
| Average Revenue Per Unit (ARPU)** | \$79      |
| Annual Revenue                    | \$677,000 |
| Annual Operating Cost             | \$627,000 |
| 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 | \$83 |
| 60% Take Rate | \$57 |
| 75% Take Rate | \$46 |

## 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
  - 52% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **BLANDFORD, MA**

#### Serviceable Premises

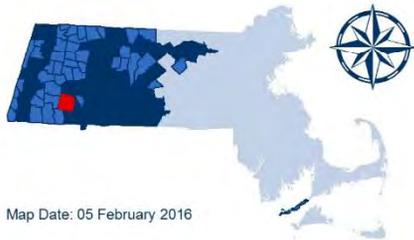
- Connected CAI Locations (4)
- Unserved Locations (587)

#### Existing Broadband Infrastructure

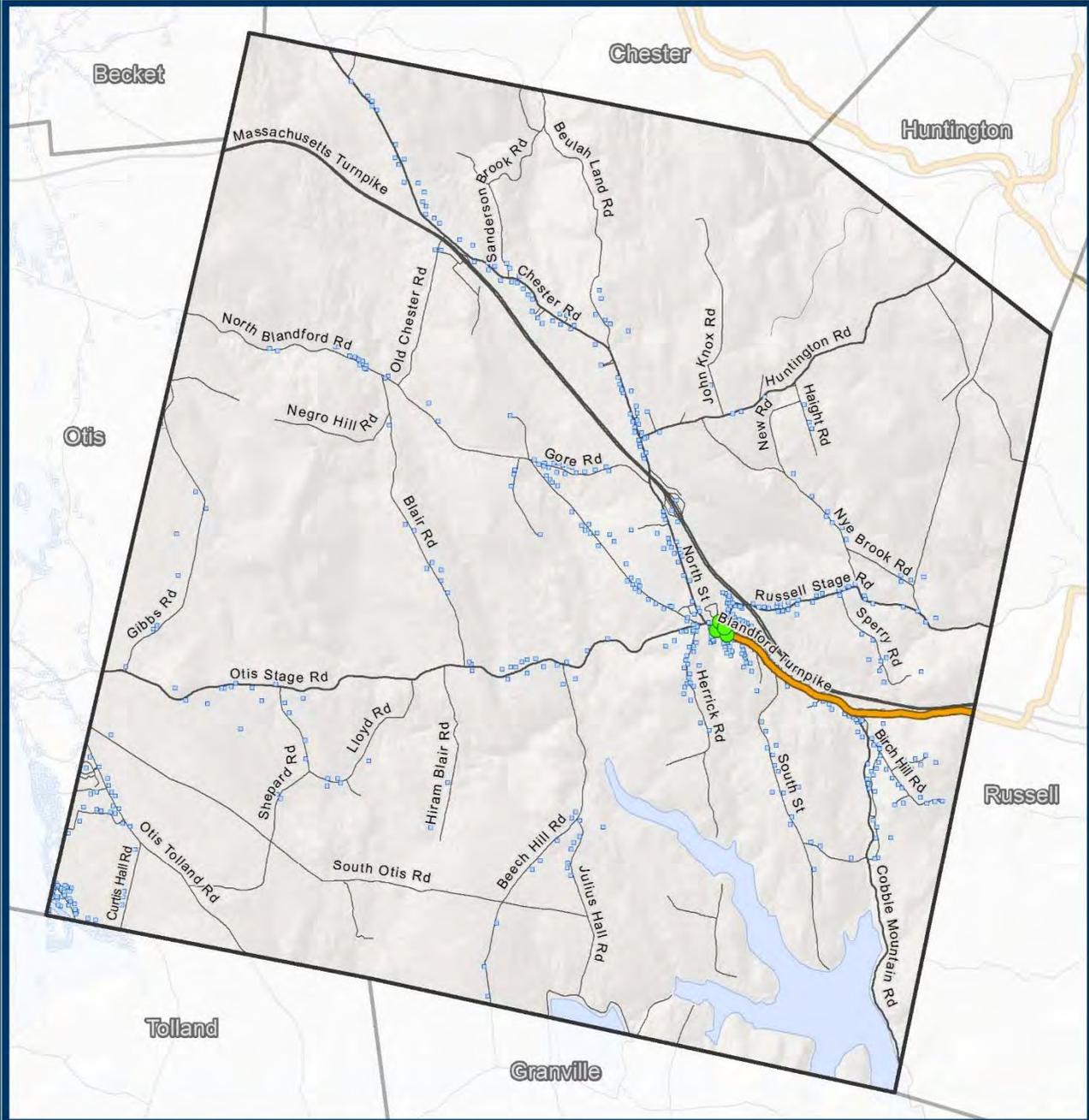
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

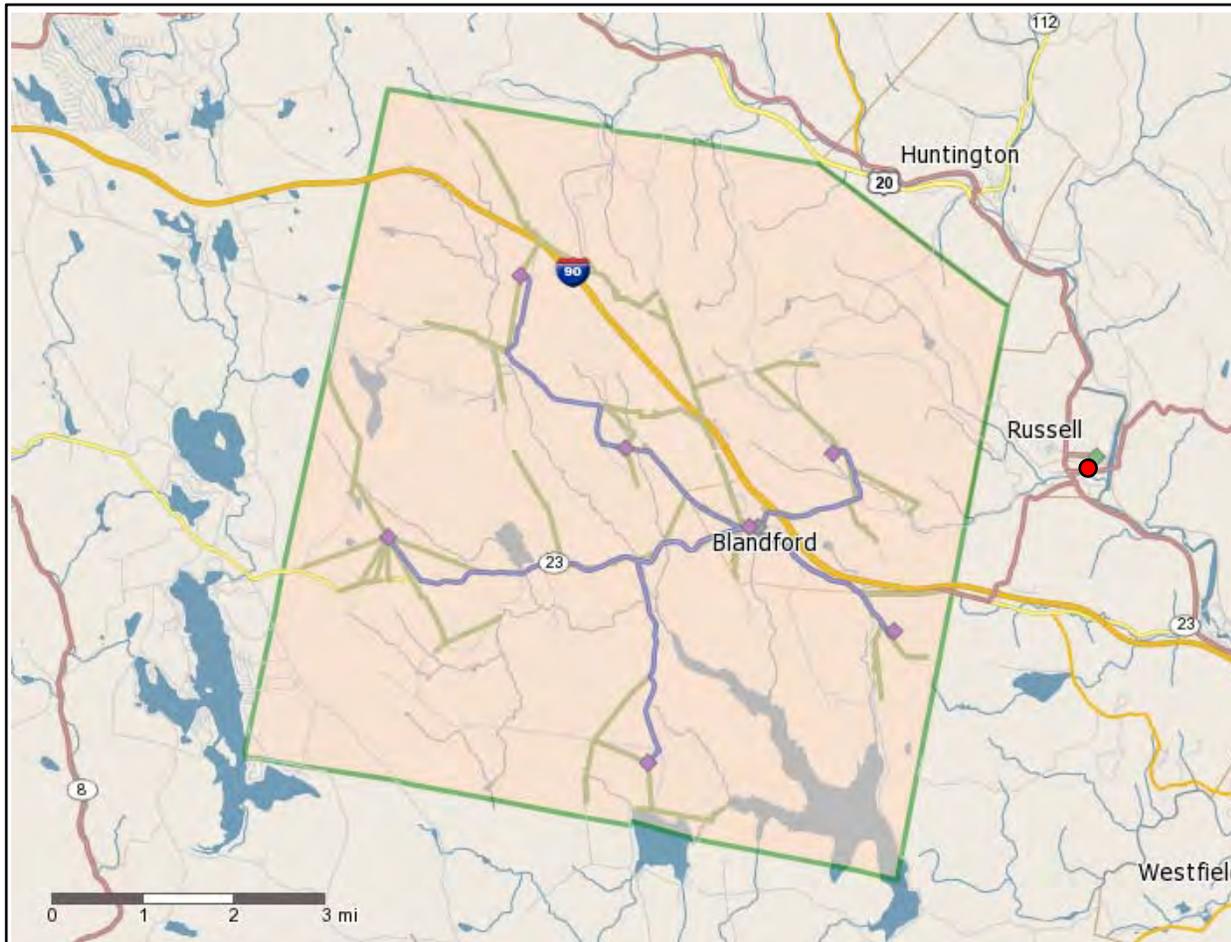
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Blandford: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 605  |
| Fiber Miles Modeled | 63   |
| Poles Modeled       | 1435 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,800,000 |
| Construction Costs Funded by MBI          | \$560,000   |
| Professional Services Costs Funded by MBI | \$480,000   |
| Projected Town Contribution               | \$1,760,000 |

# Blandford: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,760,000 |
| Year 6 Debt Service @4% over 15 Years | \$137,900   |
| 2016 Total Assessed Value             | \$172M      |
| Year 6 Rate Impact per mil            | \$0.80      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | Passed        |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$120.30                     |
| \$250,000               | \$200.50                     |
| \$500,000               | \$401.10                     |

## 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

# Blandford: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 605       |
| Subscribers Modeled               | 339       |
| Entry Level Broadband Price       | \$63      |
| Average Revenue Per Unit (ARPU)** | \$86      |
| Annual Revenue                    | \$349,000 |
| Annual Operating Cost             | \$299,000 |
| 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 | \$93 |
| 60% Take Rate | \$63 |
| 75% Take Rate | \$51 |

## 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
  - 10% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **CHARLEMONT, MA**

#### Serviceable Premises

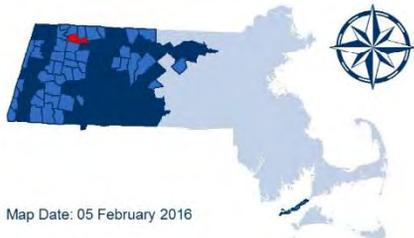
- Connected CAI Locations (6)
- Unserved Locations (588)

#### Existing Broadband Infrastructure

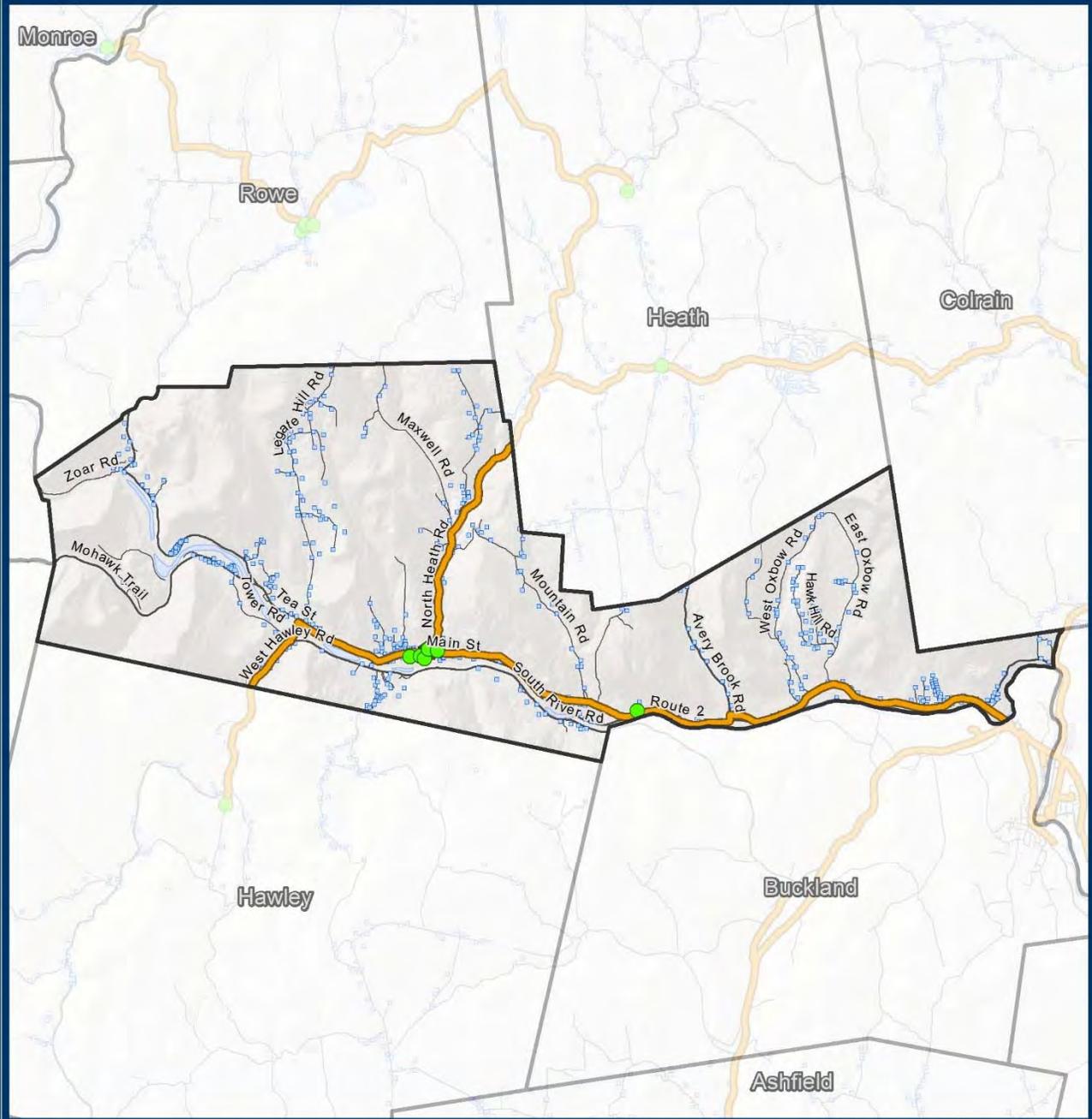
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

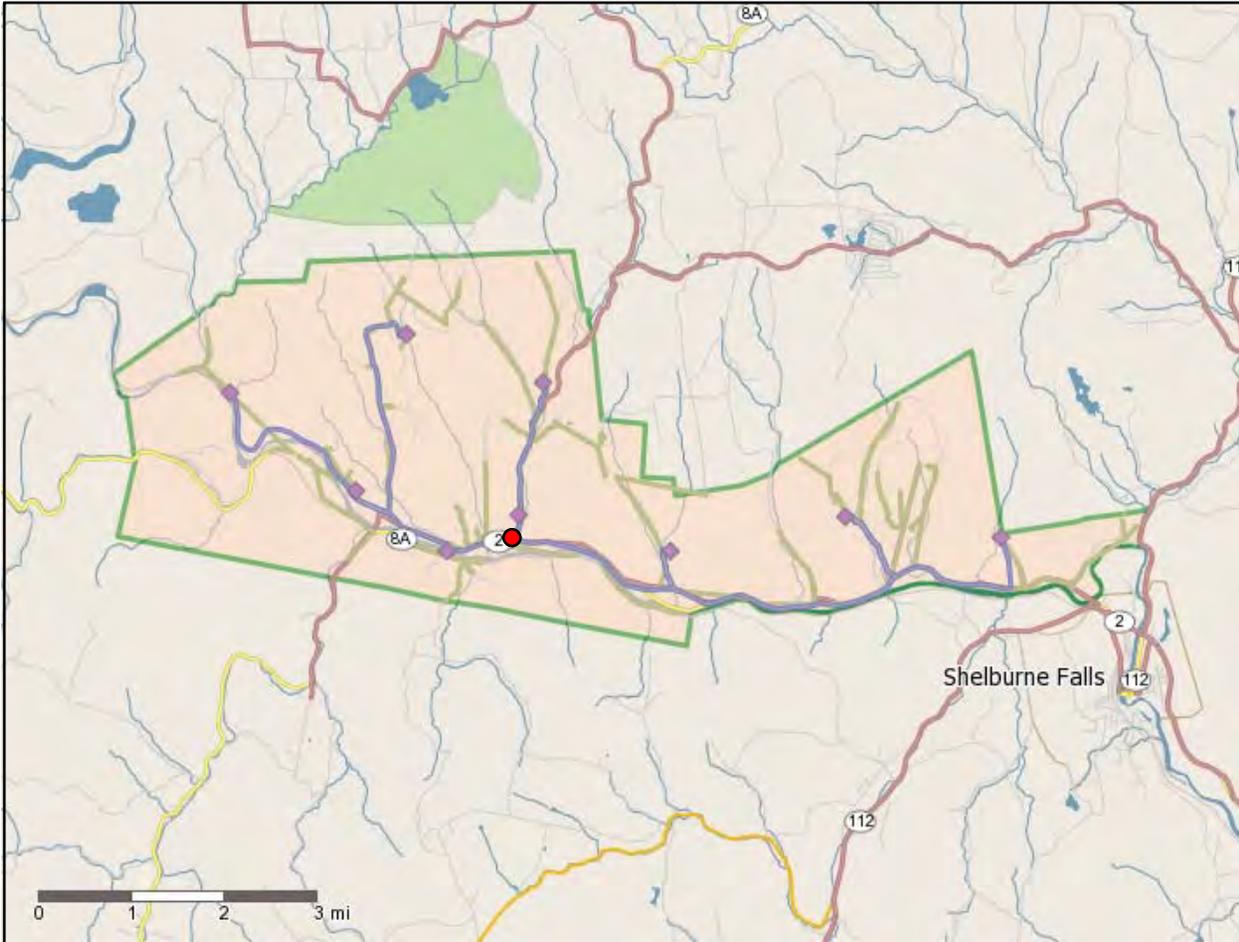
- Building Locations
- ⬛ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Charlemont: Initial Model of Infrastructure & CAPEX



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* | 681  |
| Fiber Miles Modeled | 54   |
| Poles Modeled       | 1253 |

\* Approximate household locations from Experian

### Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,670,000 |
| Construction Costs Funded by MBI          | \$530,000   |
| Professional Services Costs Funded by MBI | \$430,000   |
| Projected Town Contribution               | \$1,710,000 |

**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

# Charlemont: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,710,000 |
| Year 6 Debt Service @4% over 15 Years | \$134,000   |
| 2016 Total Assessed Value             | \$129M      |
| Year 6 Rate Impact per mil            | \$1.04      |

## 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               | \$155.80                     |
| \$250,000               | \$259.60                     |
| \$500,000               | \$519.20                     |

## 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

# Charlemont: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 681       |
| Subscribers Modeled               | 382       |
| Entry Level Broadband Price       | \$55      |
| Average Revenue Per Unit (ARPU)** | \$78      |
| Annual Revenue                    | \$357,000 |
| Annual Operating Cost             | \$307,000 |
| 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 | \$81 |
| 60% Take Rate | \$55 |
| 75% Take Rate | \$44 |

## 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
  - 10% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

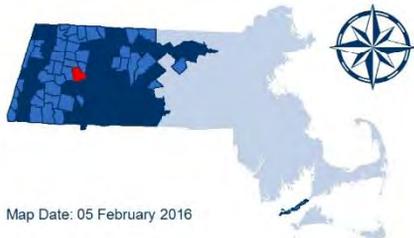
- Connected CAI Locations (5)
- Unserved Locations (601)

### Existing Broadband Infrastructure

- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

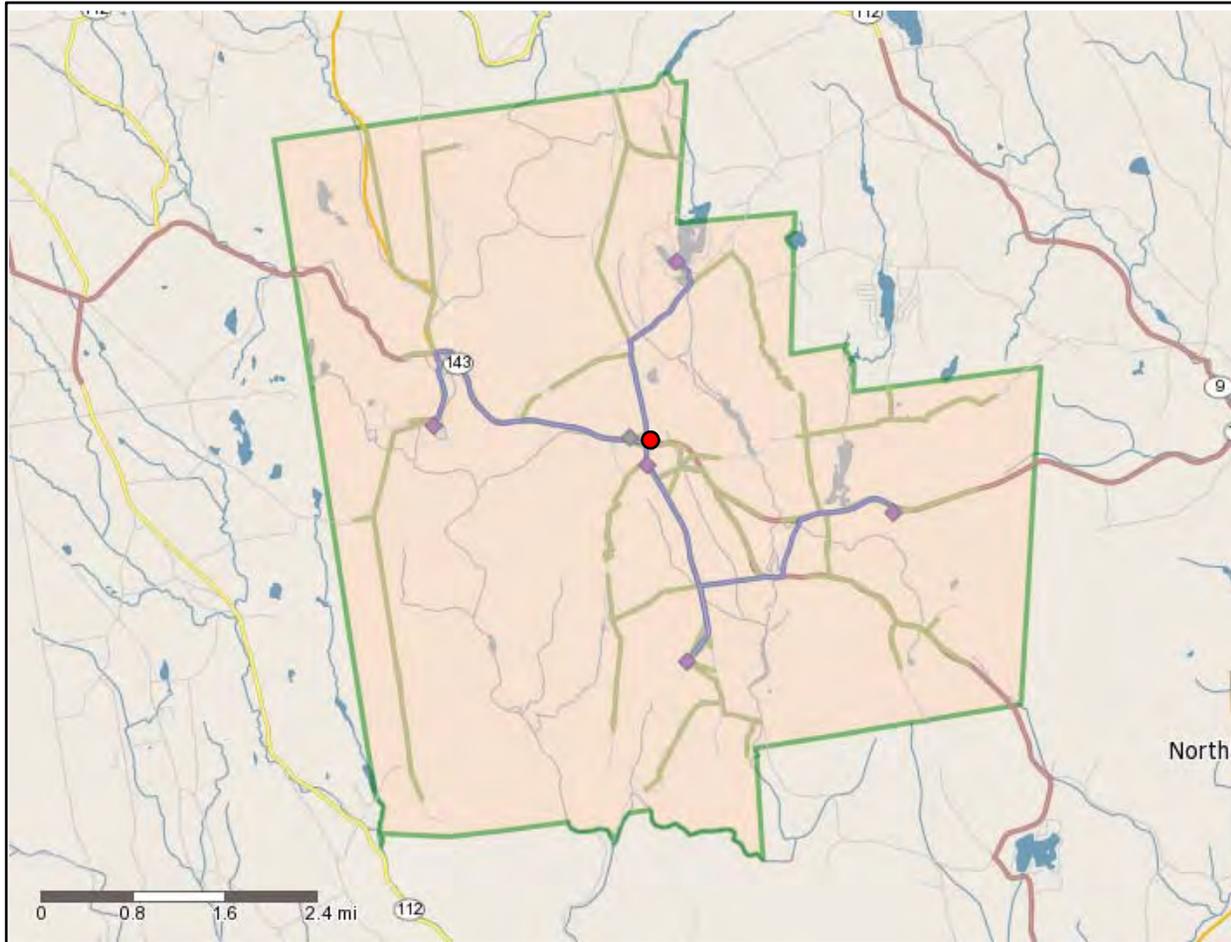
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Chesterfield: 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* | 597  |
| Fiber Miles Modeled | 51   |
| Poles Modeled       | 1143 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,400,000 |
| Construction Costs Funded by MBI          | \$500,000   |
| Professional Services Costs Funded by MBI | \$390,000   |
| Projected Town Contribution               | \$1,510,000 |

# Chesterfield: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,510,000 |
| Year 6 Debt Service @4% over 15 Years | \$118,300   |
| 2016 Total Assessed Value             | \$146M      |
| Year 6 Rate Impact per mil            | \$0.81      |

## 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               | \$121.40                     |
| \$250,000               | \$202.40                     |
| \$500,000               | \$404.70                     |

## 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

# Chesterfield: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 597       |
| Subscribers Modeled               | 331       |
| Entry Level Broadband Price       | \$60      |
| Average Revenue Per Unit (ARPU)** | \$83      |
| Annual Revenue                    | \$330,000 |
| Annual Operating Cost             | \$280,000 |
| 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 | \$89 |
| 60% Take Rate | \$60 |
| 75% Take Rate | \$49 |

## 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
  - 11% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

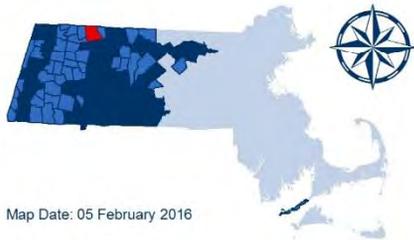
- Connected CAI Locations (4)
- Unserved Locations (804)

### Existing Broadband Infrastructure

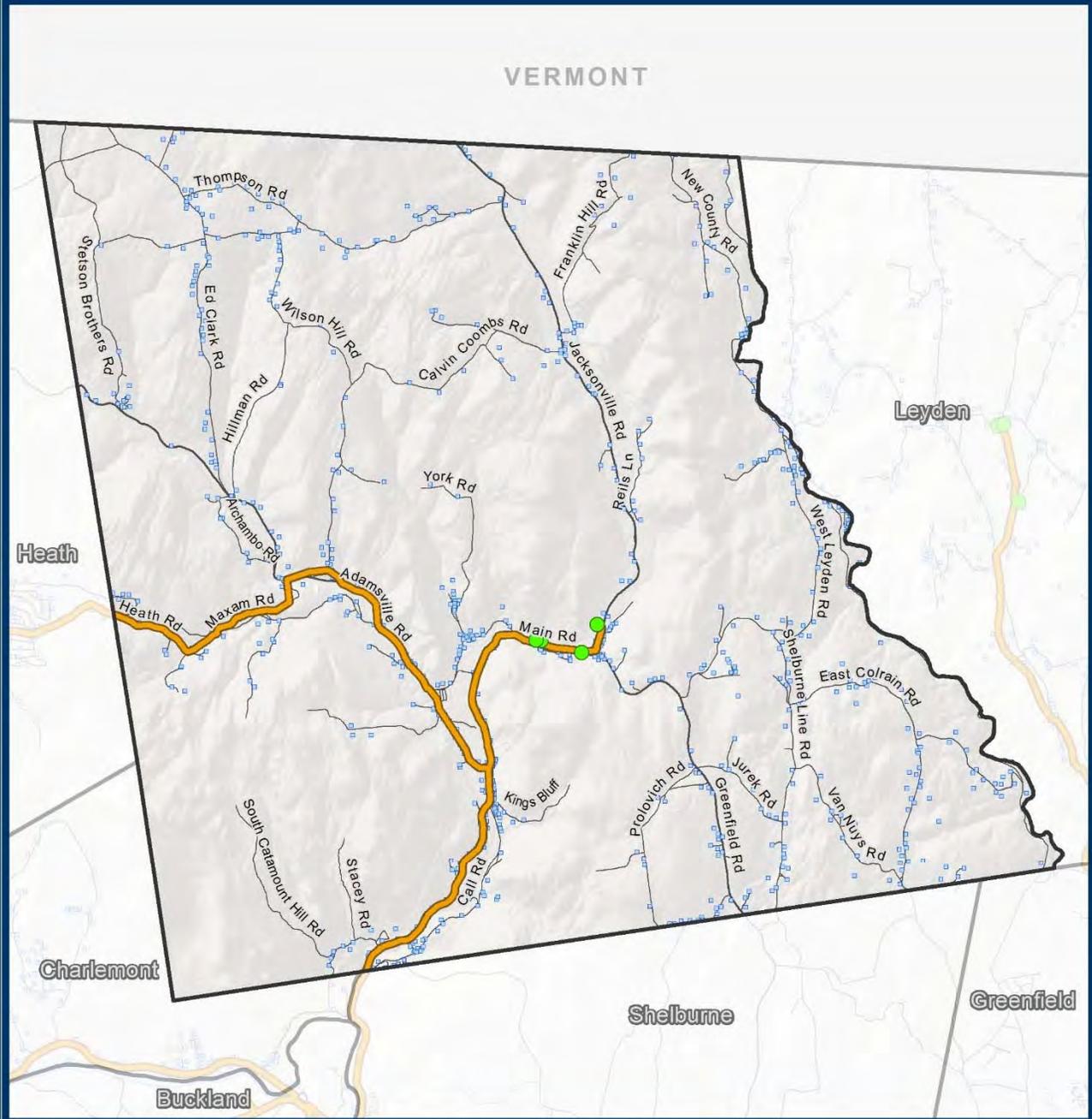
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

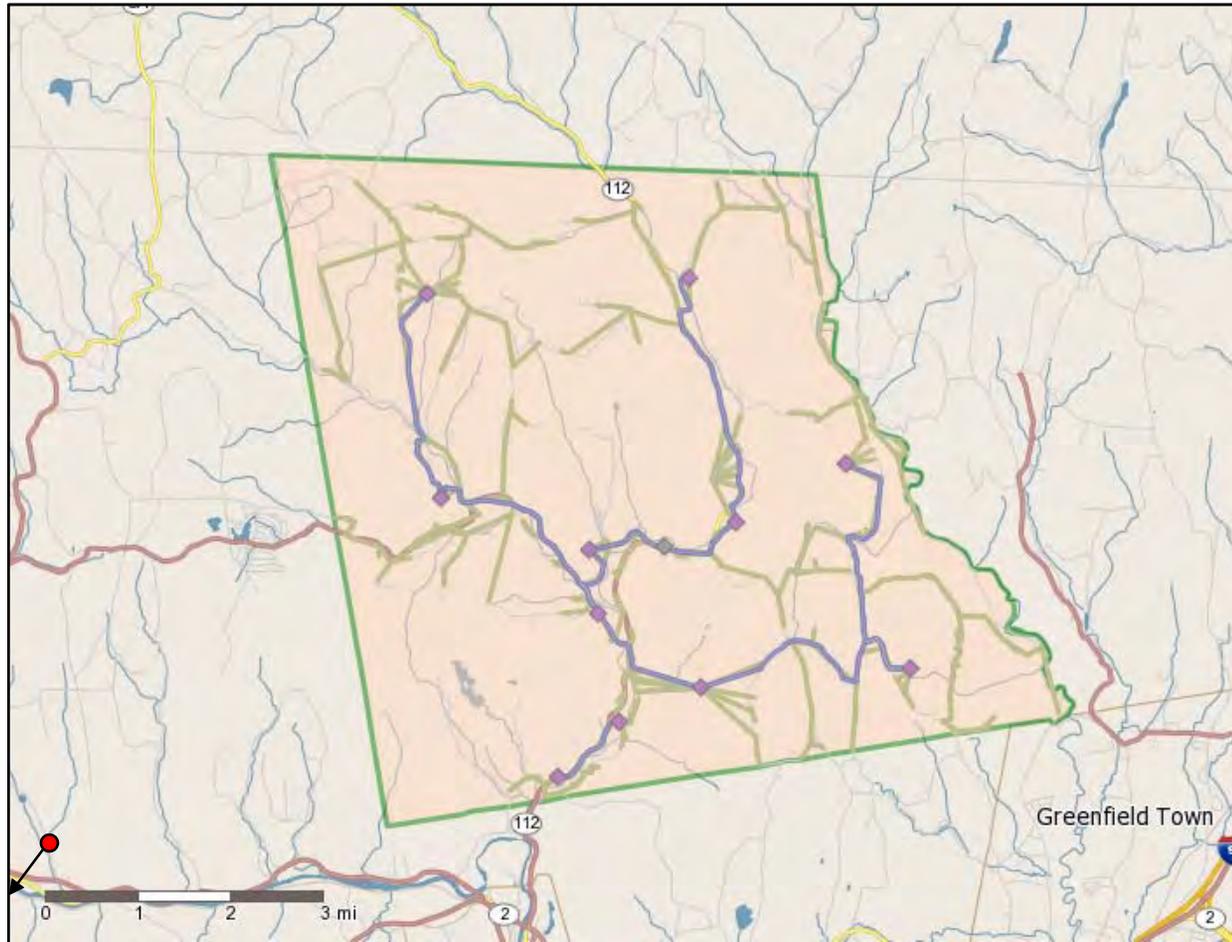
- Building Locations
- ▭ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Colrain: Initial Model of Infrastructure & CAPEX



**Modeled Network Infrastructure**

|  |  |
|--|--|
| <span style="color: yellow;">—</span> Core Fiber (existing & redundant fiber)  | <span style="color: red;">●</span> Existing Point of Interconnection (POI)   |
| <span style="color: blue;">—</span> Distribution Fiber (core fiber to cabinet) | <span style="color: purple;">◆</span> Cabinet (equipment for local network)  |
| <span style="color: green;">—</span> Local Fiber (cabinets to premises)        | <span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Hut (equipment for entire town network) |
|  | <span style="color: green;">—</span> 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* | 755   |
| Fiber Miles Modeled | 83    |
| Poles Modeled       | 1,582 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$3,550,000 |
| Construction Costs Funded by MBI          | \$690,000   |
| Professional Services Costs Funded by MBI | \$610,000   |
| Projected Town Contribution               | \$2,250,000 |

# Colrain: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$2,250,000 |
| Year 6 Debt Service @4% over 15 Years | \$176,300   |
| 2016 Total Assessed Value             | \$168M      |
| Year 6 Rate Impact per mil            | \$1.05      |

## 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               | \$157.30                     |
| \$250,000               | \$262.20                     |
| \$500,000               | \$524.30                     |

## 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

# Colrain: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 755       |
| Subscribers Modeled               | 428       |
| Entry Level Broadband Price       | \$59      |
| Average Revenue Per Unit (ARPU)** | \$82      |
| Annual Revenue                    | \$422,000 |
| Annual Operating Cost             | \$372,000 |
| 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 | \$88 |
| 60% Take Rate | \$59 |
| 75% Take Rate | \$48 |

## 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
  - 8% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (4)
- Unserved Locations (463)

### Existing Broadband Infrastructure

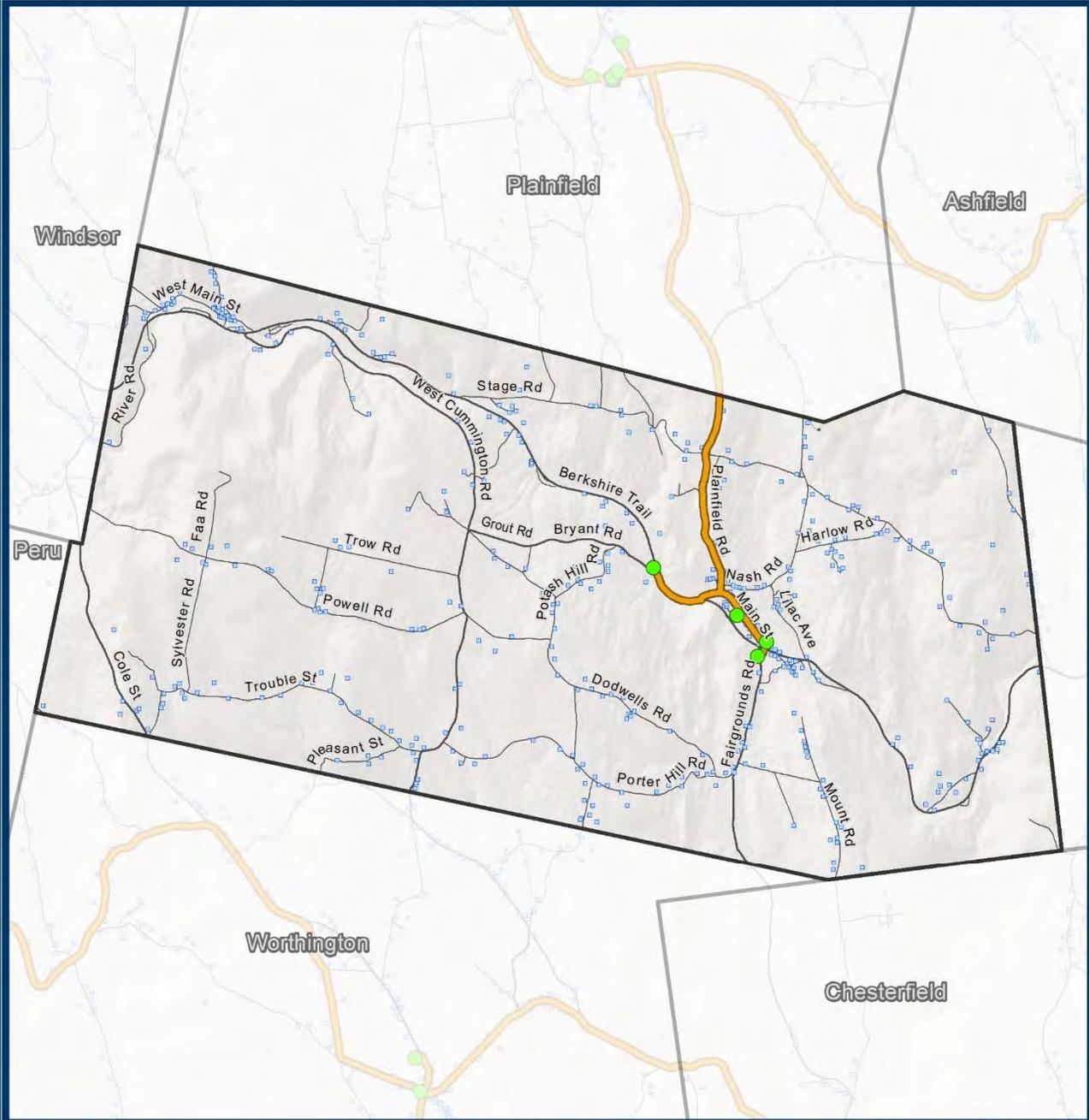
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

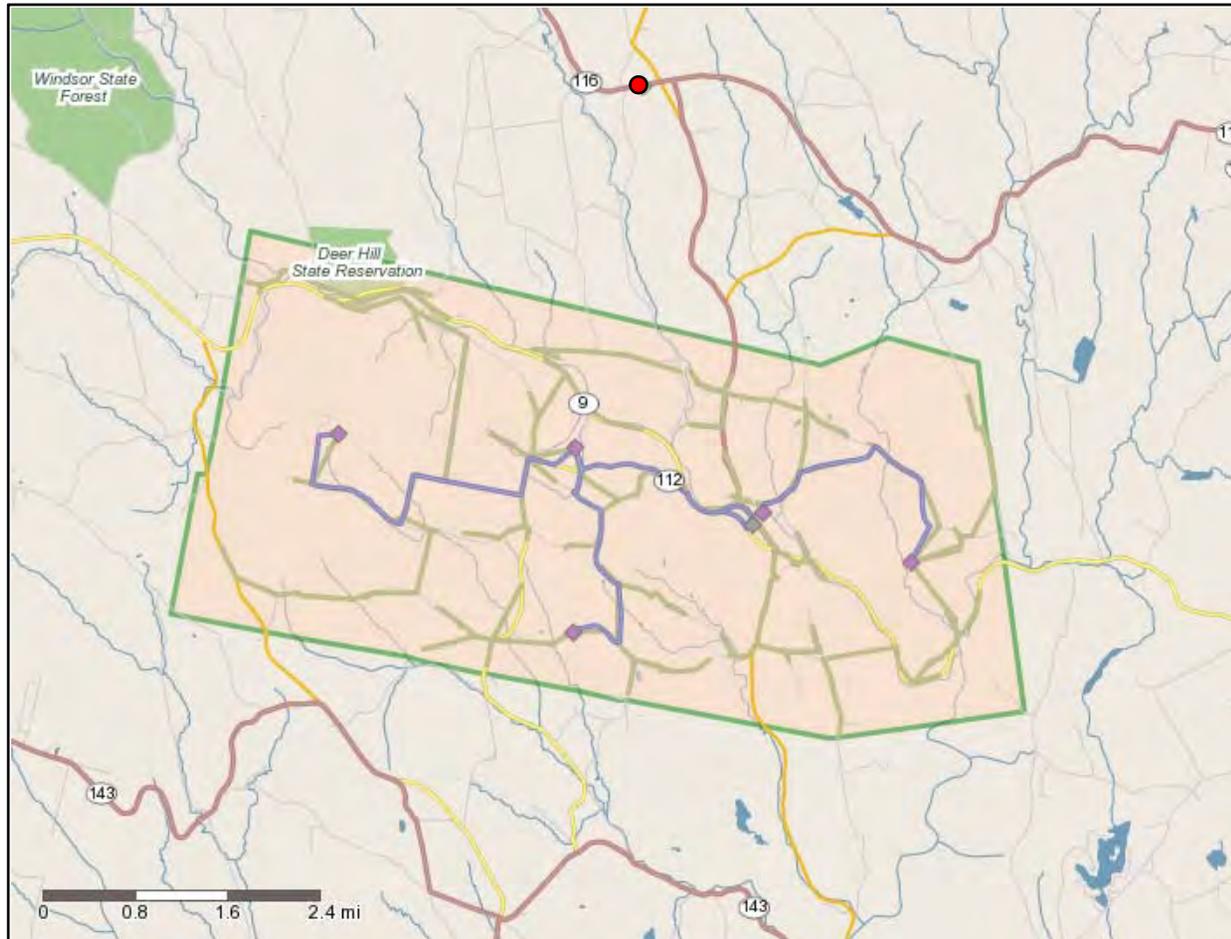
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Cummington: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 451  |
| Fiber Miles Modeled | 54   |
| Poles Modeled       | 1093 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,210,000 |
| Construction Costs Funded by MBI          | \$450,000   |
| Professional Services Costs Funded by MBI | \$390,000   |
| Projected Town Contribution               | \$1,370,000 |

# Cummington: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,370,000 |
| Year 6 Debt Service @4% over 15 Years | \$107,300   |
| 2016 Total Assessed Value             | \$130M      |
| Year 6 Rate Impact per mil            | \$0.83      |

## 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               | \$124.20                     |
| \$250,000               | \$207.00                     |
| \$500,000               | \$414.00                     |

## 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

# Cummington: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 451       |
| Subscribers Modeled               | 249       |
| Entry Level Broadband Price       | \$74      |
| Average Revenue Per Unit (ARPU)** | \$97      |
| Annual Revenue                    | \$288,000 |
| Annual Operating Cost             | \$238,000 |
| 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 | \$109 |
| 60% Take Rate | \$74  |
| 75% Take Rate | \$59  |

## 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
  - 12% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

## EGREMONT, MA

### Serviceable Premises

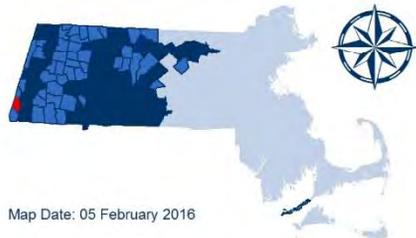
- Connected CAI Locations (5)
- Unserved Locations (920)

### Existing Broadband Infrastructure

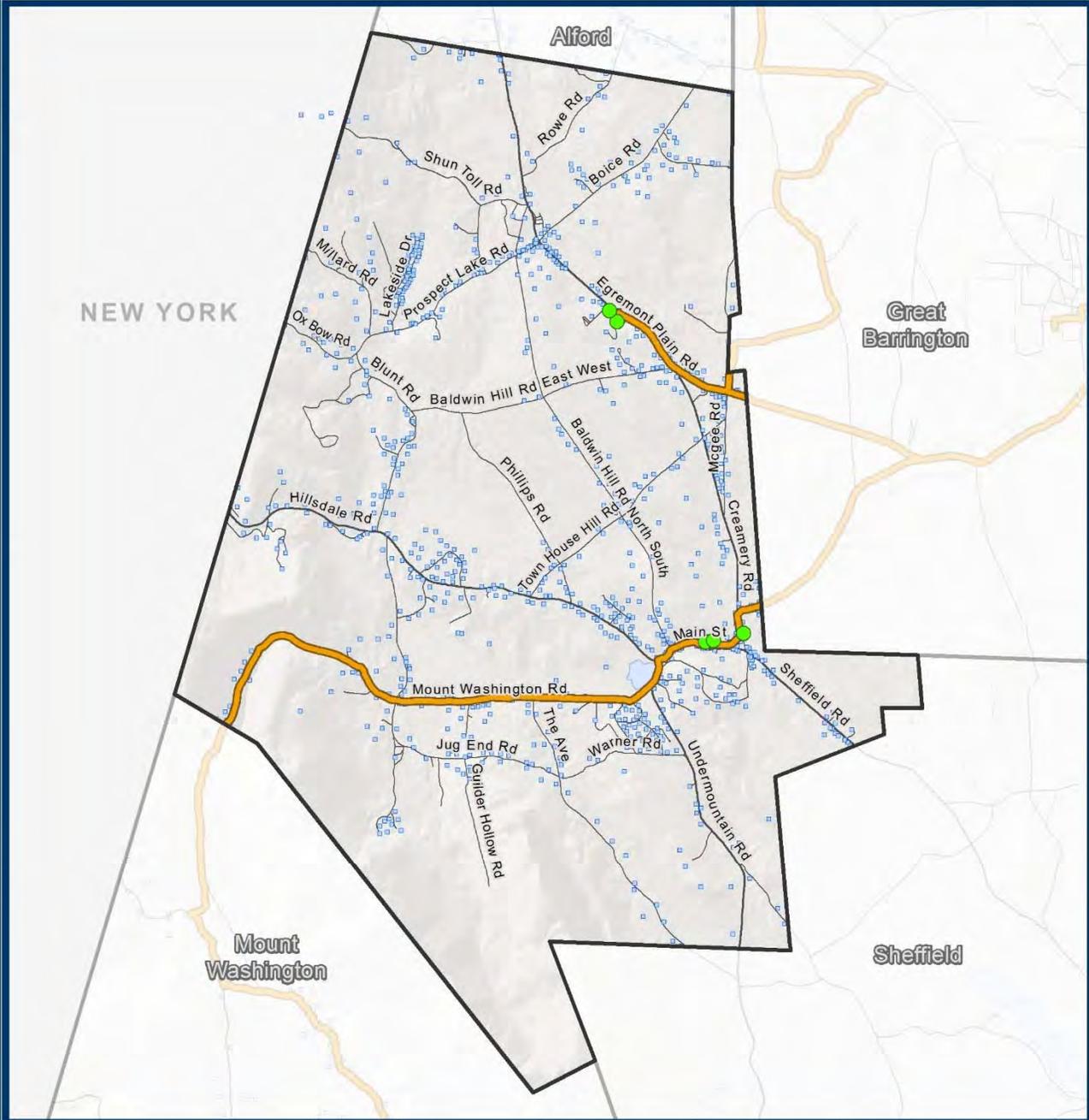
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

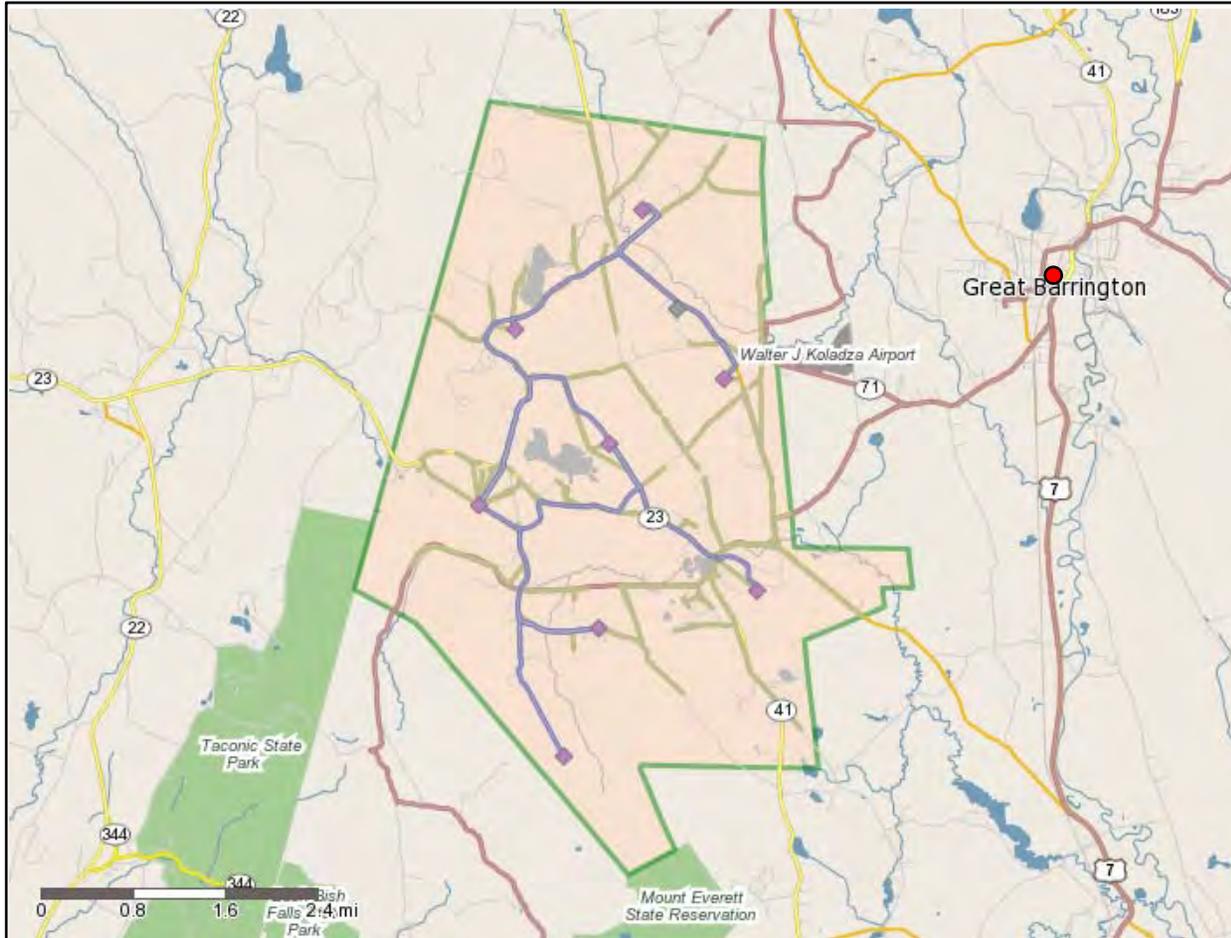
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Egremont: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 947   |
| Fiber Miles Modeled | 57    |
| Poles Modeled       | 1,368 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,940,000 |
| Construction Costs Funded by MBI          | \$660,000   |
| Professional Services Costs Funded by MBI | \$410,000   |
| Projected Town Contribution               | \$1,870,000 |

# Egremont: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,870,000 |
| Year 6 Debt Service @4% over 15 Years | \$146,500   |
| 2016 Total Assessed Value             | \$384M      |
| Year 6 Rate Impact per mil            | \$0.38      |

## Town Status

| Vote                              | Action         |
|-----------------------------------|----------------|
| Bond Authorization @ Town Meeting | Passed         |
| Debt Exclusion @ Town Election    | No Vote Taken* |

\* Town believes they have sufficient borrowing capacity.

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$57.20                      |
| \$250,000               | \$95.40                      |
| \$500,000               | \$190.70                     |

## 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

# Egremont: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 947       |
| Subscribers Modeled               | 434       |
| Entry Level Broadband Price       | \$54      |
| Average Revenue Per Unit (ARPU)** | \$77      |
| Annual Revenue                    | \$402,000 |
| Annual Operating Cost             | \$352,000 |
| 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 | \$80 |
| 60% Take Rate | \$54 |
| 75% Take Rate | \$44 |

## 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
  - 35% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (4)
- Unserved Locations (380)

### Existing Broadband Infrastructure

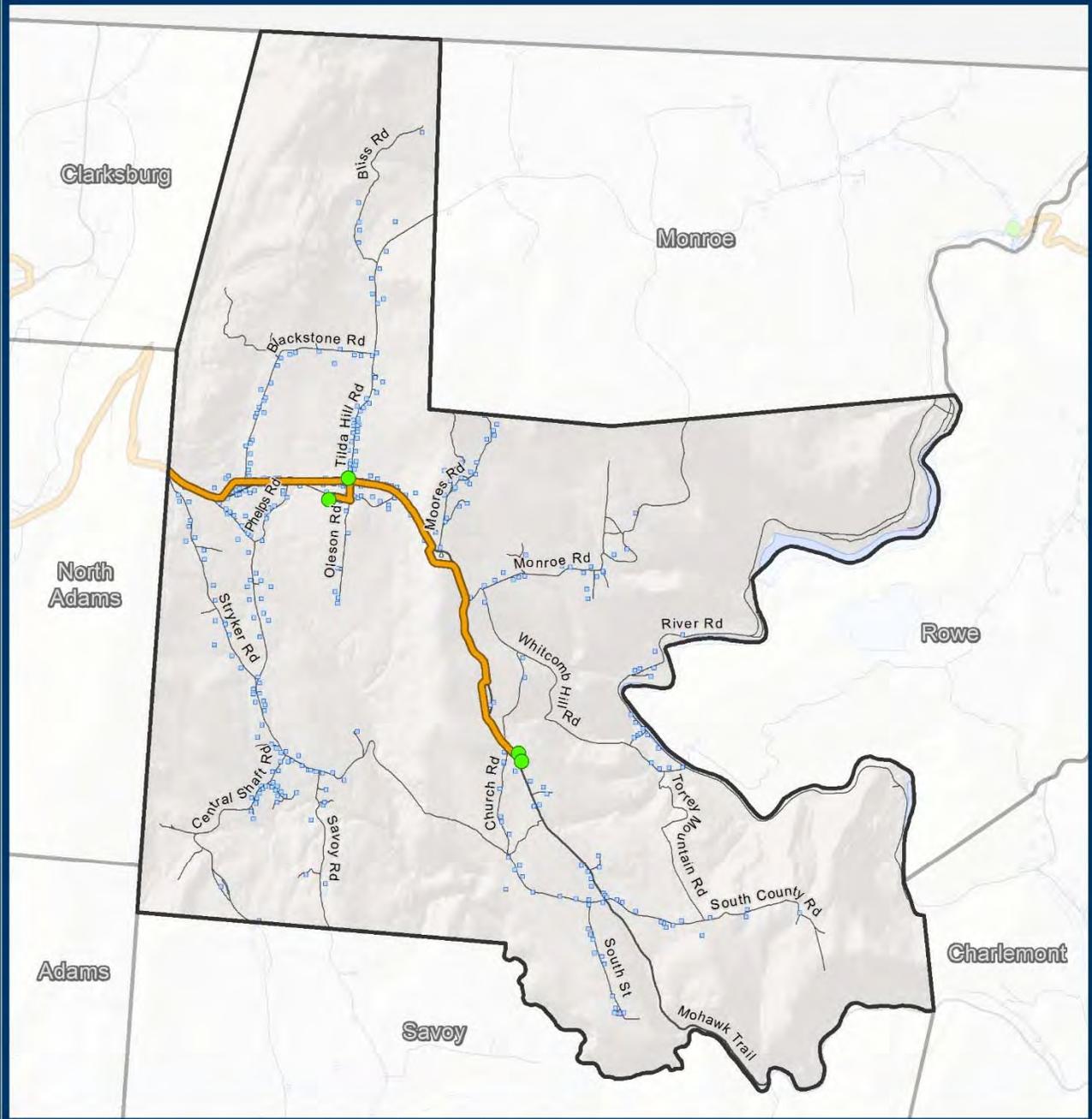
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

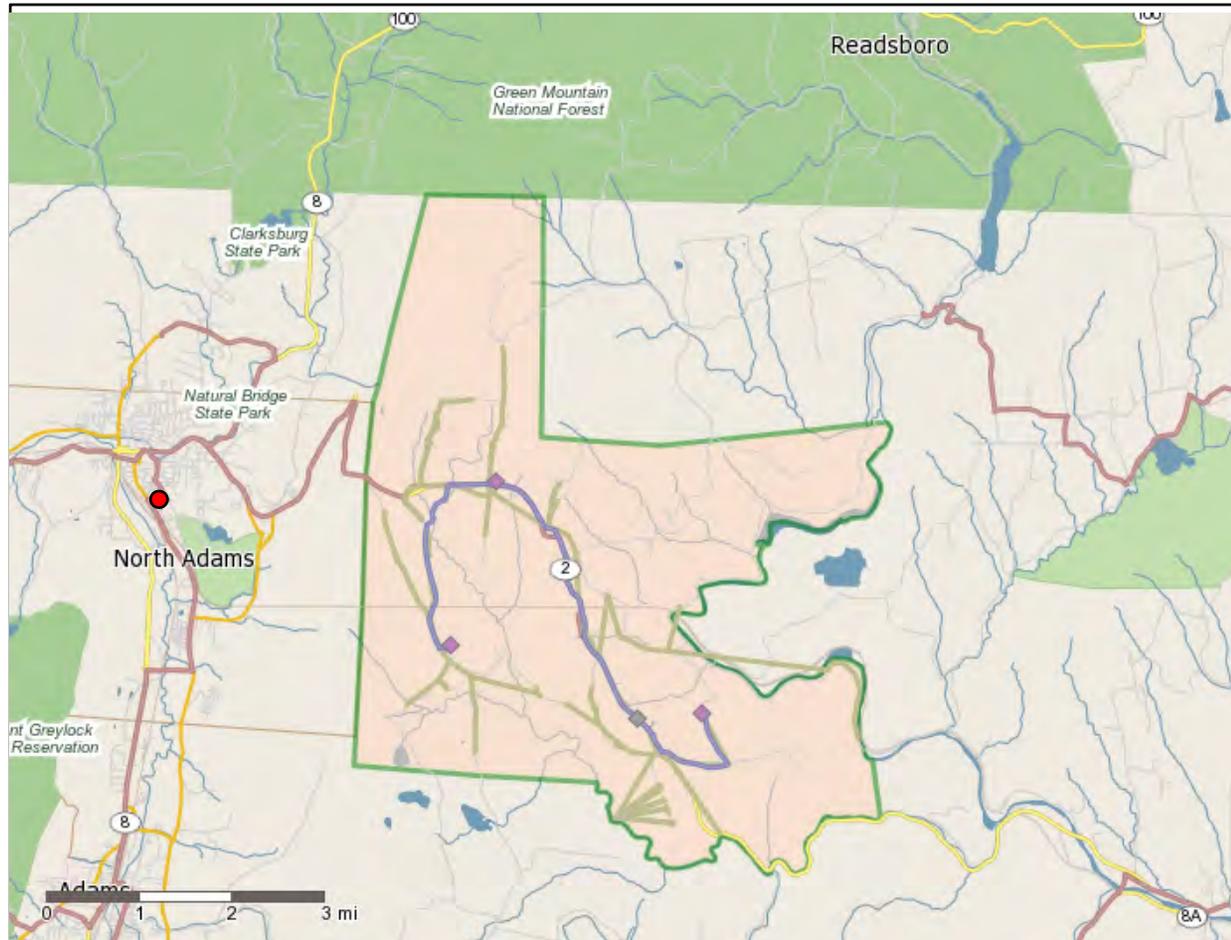
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Florida: 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* | 376 |
| Fiber Miles Modeled | 33  |
| Poles Modeled       | 894 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,700,000 |
| Construction Costs Funded by MBI          | \$350,000   |
| Professional Services Costs Funded by MBI | \$290,000   |
| Projected Town Contribution               | \$1,060,000 |

# Florida: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,060,000 |
| Year 6 Debt Service @4% over 15 Years | \$83,000    |
| 2016 Total Assessed Value             | \$125M      |
| Year 6 Rate Impact per mil            | \$0.33*     |

\*Florida has a split tax rate. The number above indicates the residential tax rate impact. The Commercial, Industrial, and Personal Property (CIP) tax rate impact would be .88.

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$49.76**                    |
| \$250,000               | \$82.93**                    |
| \$500,000               | \$165.85**                   |

\*\*Florida has a split tax rate. These numbers indicate residential annual property tax increases.

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## 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

# Florida: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 376       |
| Subscribers Modeled               | 217       |
| Entry Level Broadband Price       | \$71      |
| Average Revenue Per Unit (ARPU)** | \$94      |
| Annual Revenue                    | \$245,000 |
| Annual Operating Cost             | \$195,000 |
| 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 | \$106 |
| 60% Take Rate | \$71  |
| 75% Take Rate | \$58  |

## 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
  - 6% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

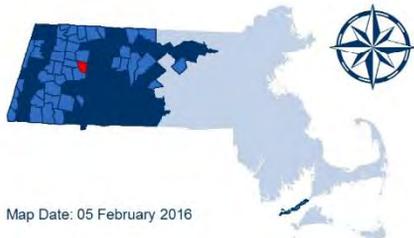
- Connected CAI Locations (2)
- Unserved Locations (585)

### Existing Broadband Infrastructure

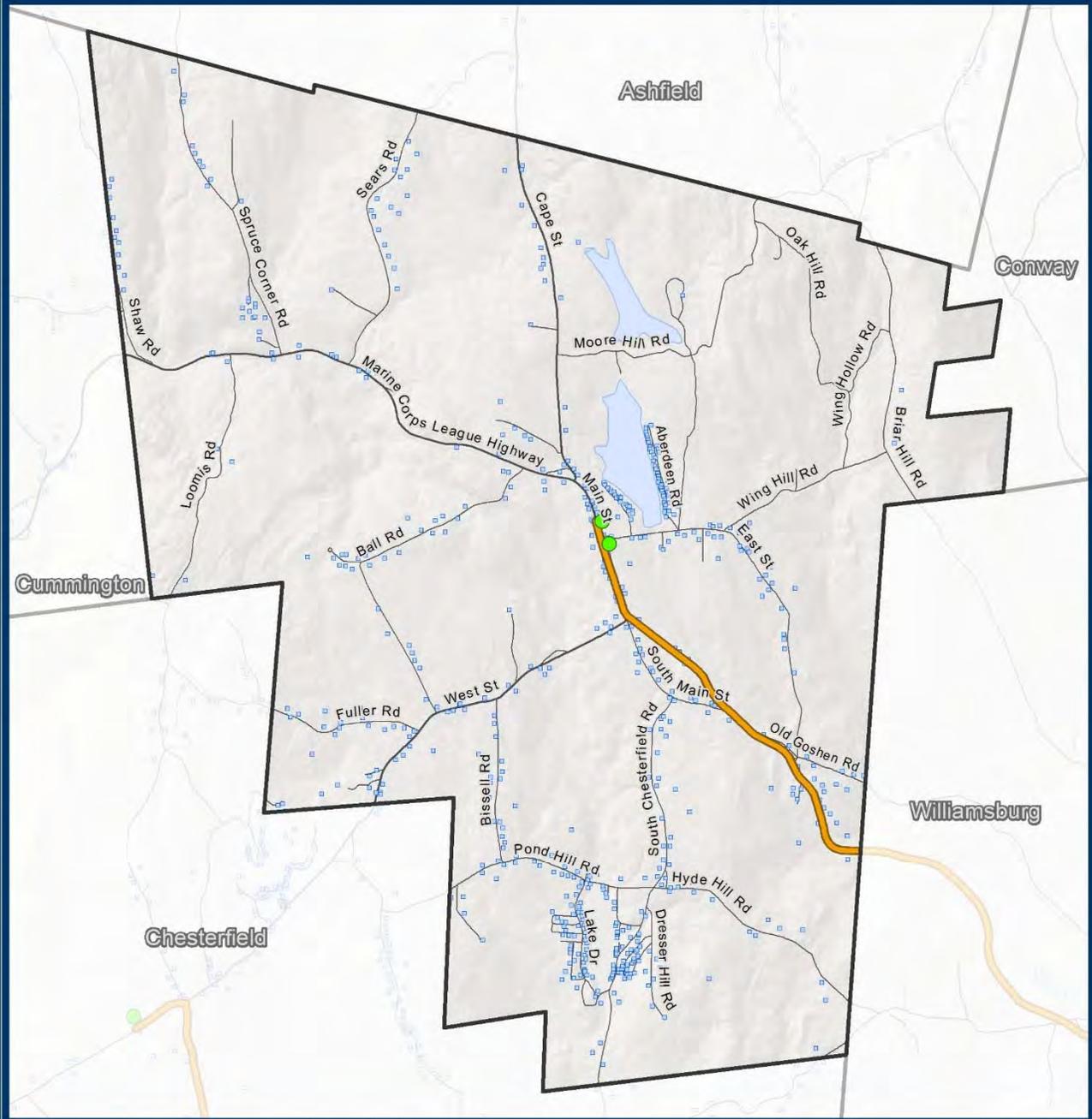
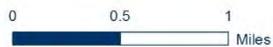
- ◆ MassBroadband 123 Interconnection Points
- MassBroadband 123 Fiber-Optic Cable

### Base Map

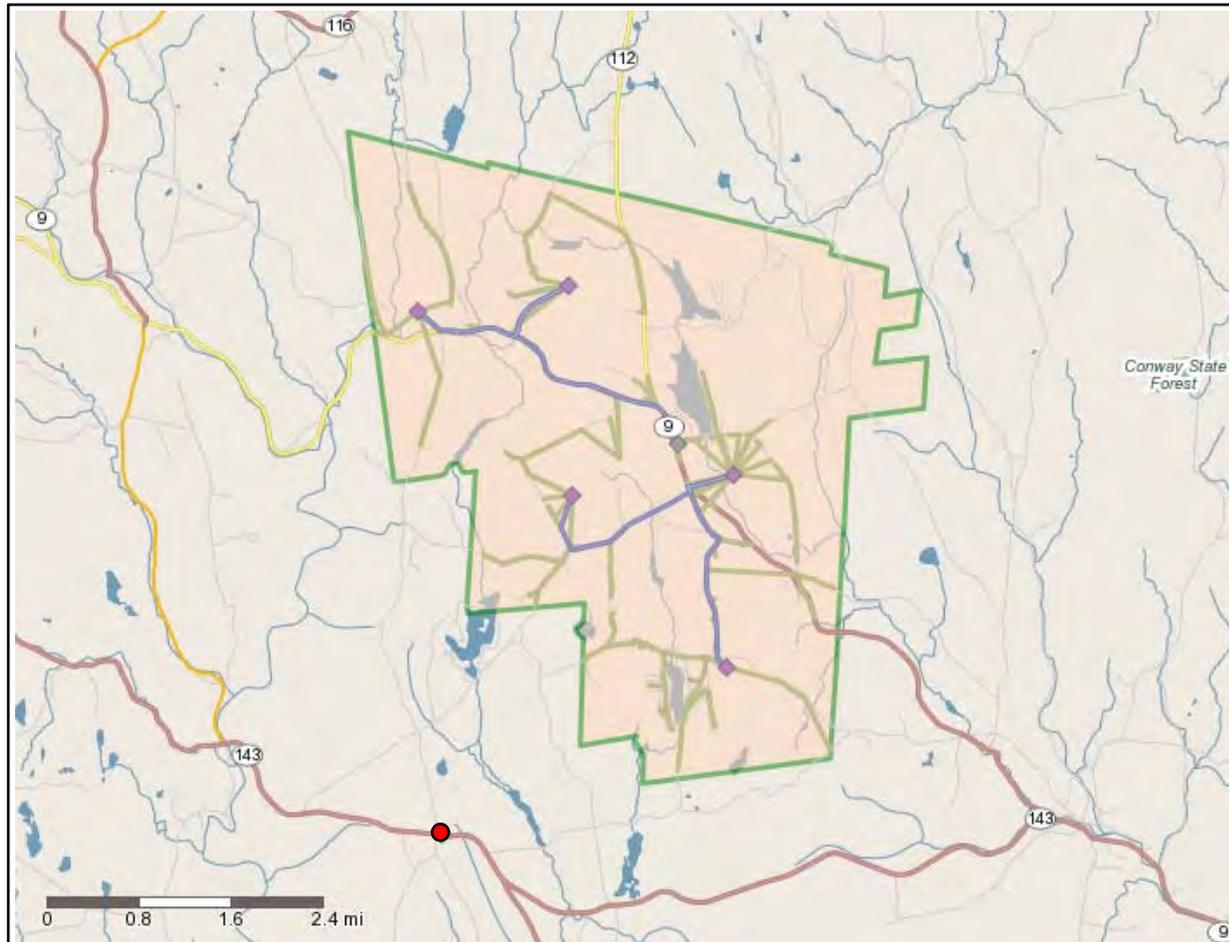
- Building Locations
- ▣ Town Boundaries
- Roads
- Water Bodies



Map Date: 05 February 2016



# Goshen: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 584  |
| Fiber Miles Modeled | 39   |
| Poles Modeled       | 1092 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,150,000 |
| Construction Costs Funded by MBI          | \$450,000   |
| Professional Services Costs Funded by MBI | \$320,000   |
| Projected Town Contribution               | \$1,380,000 |

# Goshen: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,380,000 |
| Year 6 Debt Service @4% over 15 Years | \$108,100   |
| 2016 Total Assessed Value             | \$140M      |
| Year 6 Rate Impact per mil            | \$0.77      |

## 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               | \$115.60                     |
| \$250,000               | \$192.70                     |
| \$500,000               | \$385.50                     |

## 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

# Goshen: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 584       |
| Subscribers Modeled               | 289       |
| Entry Level Broadband Price       | \$62      |
| Average Revenue Per Unit (ARPU)** | \$85      |
| Annual Revenue                    | \$294,000 |
| Annual Operating Cost             | \$244,000 |
| 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 | \$92 |
| 60% Take Rate | \$62 |
| 75% Take Rate | \$50 |

## 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
  - 26% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### HANCOCK, MA

#### Serviceable Premises

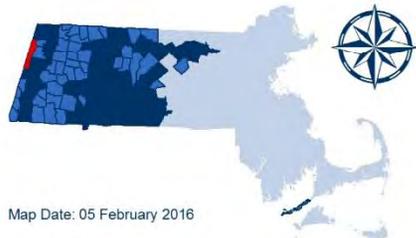
- Connected CAI Locations (4)
- Unserved Locations (682)

#### Existing Broadband Infrastructure

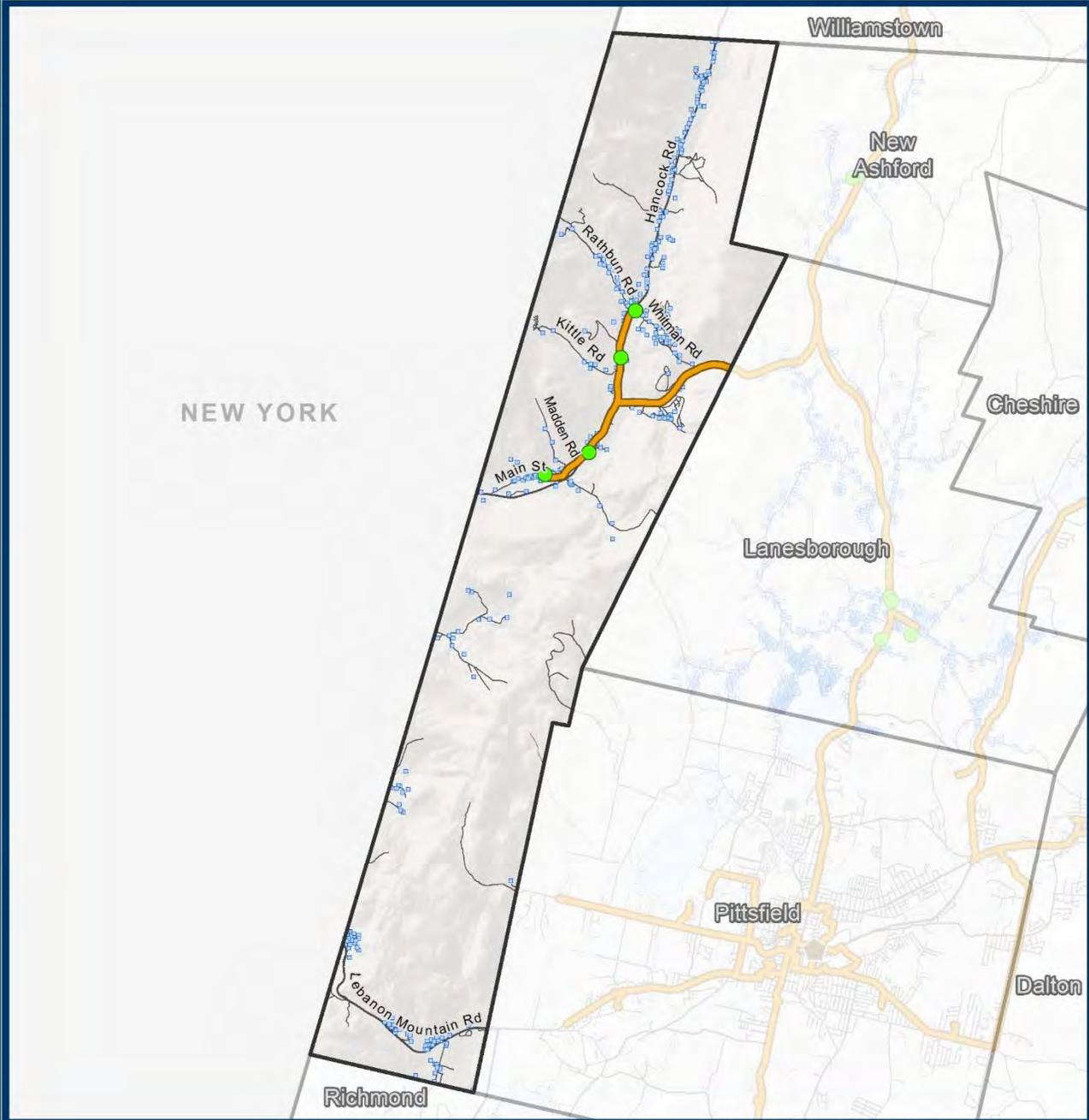
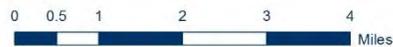
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

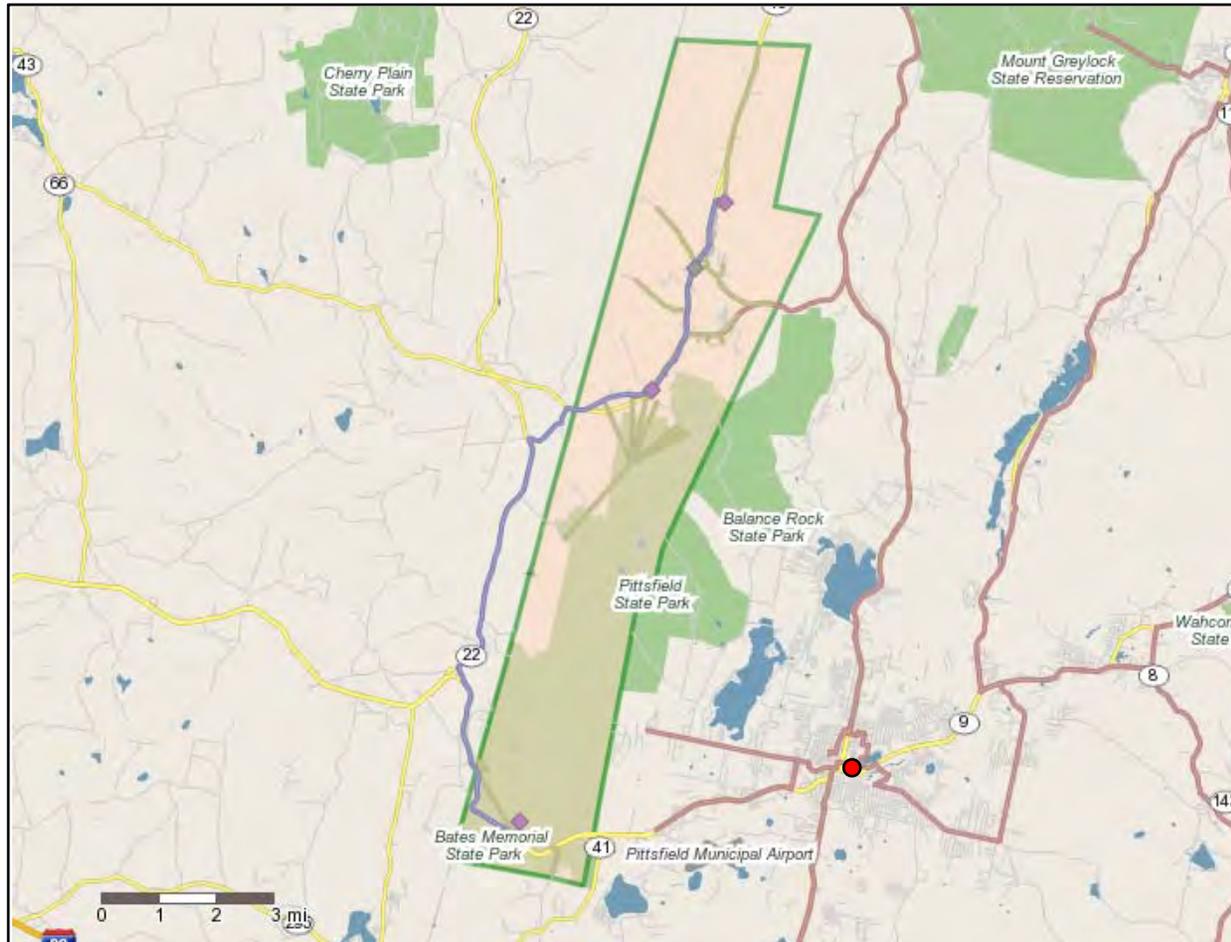
- Building Locations
- 🗺️ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Hancock: 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* | 606 |
| Fiber Miles Modeled | 42  |
| Poles Modeled       | 904 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,200,000 |
| Construction Costs Funded by MBI          | \$480,000   |
| Professional Services Costs Funded by MBI | \$330,000   |
| Projected Town Contribution               | \$1,390,000 |

# Hancock: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,390,000 |
| Year 6 Debt Service @4% over 15 Years | \$108,900   |
| 2016 Total Assessed Value             | \$298M      |
| Year 6 Rate Impact per mil            | \$0.36      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$54.70                      |
| \$250,000               | \$91.20                      |
| \$500,000               | \$182.50                     |

## 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

# Hancock: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 606       |
| Subscribers Modeled               | 269       |
| Entry Level Broadband Price       | \$69      |
| Average Revenue Per Unit (ARPU)** | \$92      |
| Annual Revenue                    | \$296,000 |
| Annual Operating Cost             | \$246,000 |
| 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 | \$102 |
| 60% Take Rate | \$69  |
| 75% Take Rate | \$55  |

## 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
  - 39% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### HAWLEY, MA

#### Serviceable Premises

- Connected CAI Locations (1)
- Unserved Locations (198)

#### Existing Broadband Infrastructure

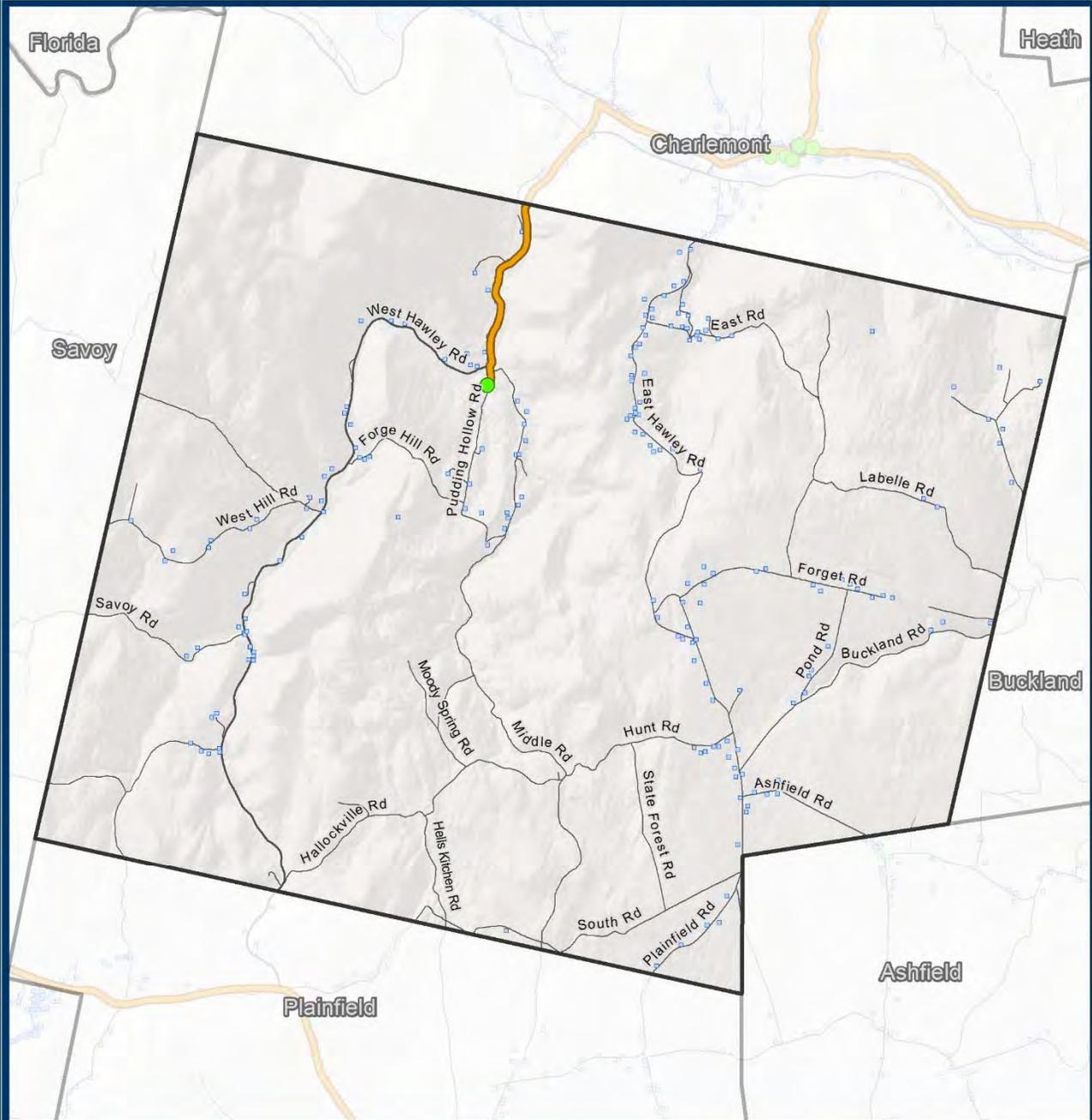
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

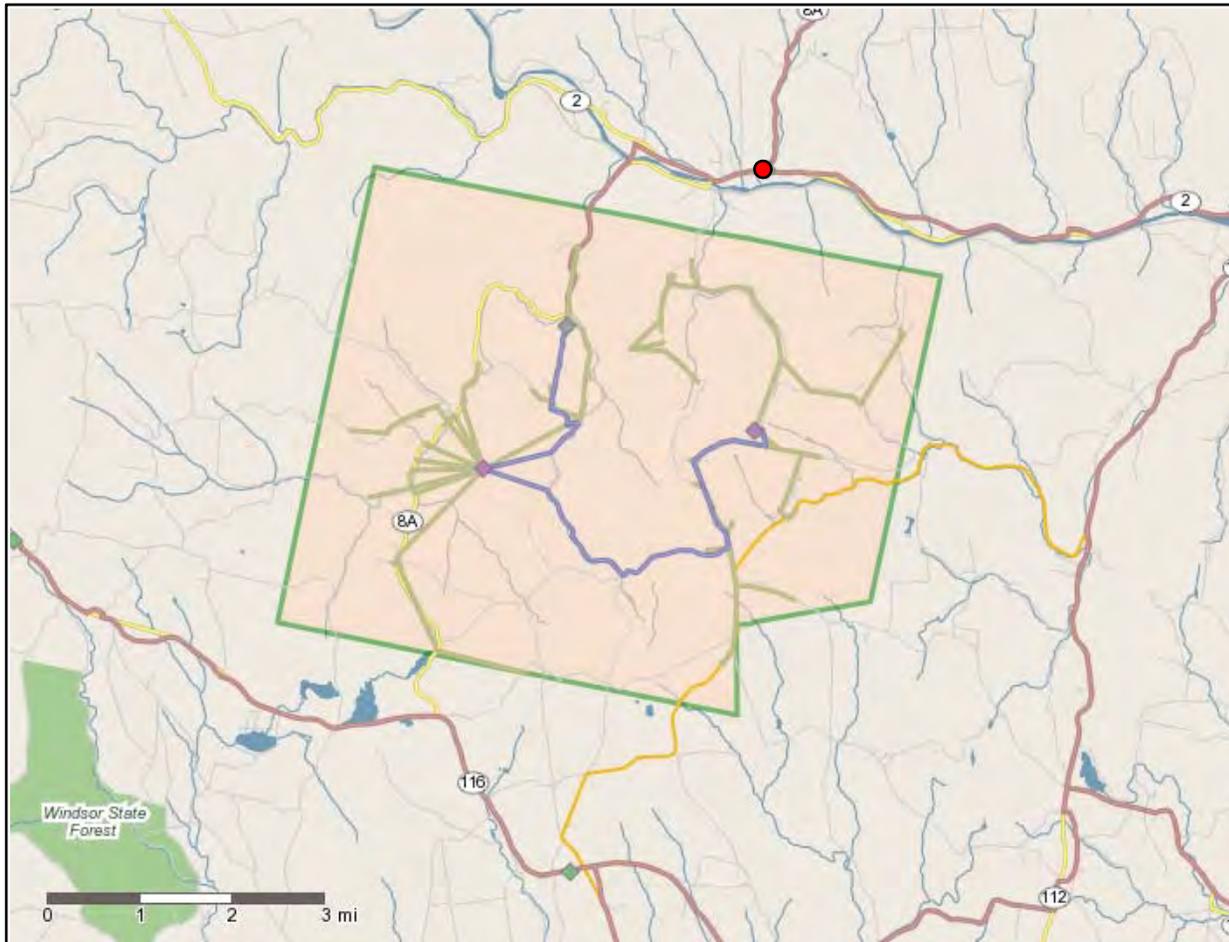
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Hawley: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 197 |
| Fiber Miles Modeled | 35  |
| Poles Modeled       | 729 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,540,000 |
| Construction Costs Funded by MBI          | \$250,000   |
| Professional Services Costs Funded by MBI | \$270,000   |
| Projected Town Contribution               | \$1,020,000 |

# Hawley: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,020,000 |
| Year 6 Debt Service @4% over 15 Years | \$79,900    |
| 2016 Total Assessed Value             | \$51M       |
| Year 6 Rate Impact per mil            | \$1.56      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Take  |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$233.50                     |
| \$250,000               | \$389.20                     |
| \$500,000               | \$778.30                     |

## 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

# Hawley: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 197       |
| Subscribers Modeled               | 94        |
| Entry Level Broadband Price       | \$142     |
| Average Revenue Per Unit (ARPU)** | \$165     |
| Annual Revenue                    | \$186,000 |
| Annual Operating Cost             | \$136,000 |
| 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 | \$212 |
| 60% Take Rate | \$142 |
| 75% Take Rate | \$114 |

## 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
  - 31% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### HEATH, MA

#### Serviceable Premises

- Connected CAI Locations (2)
- Unserved Locations (401)

#### Existing Broadband Infrastructure

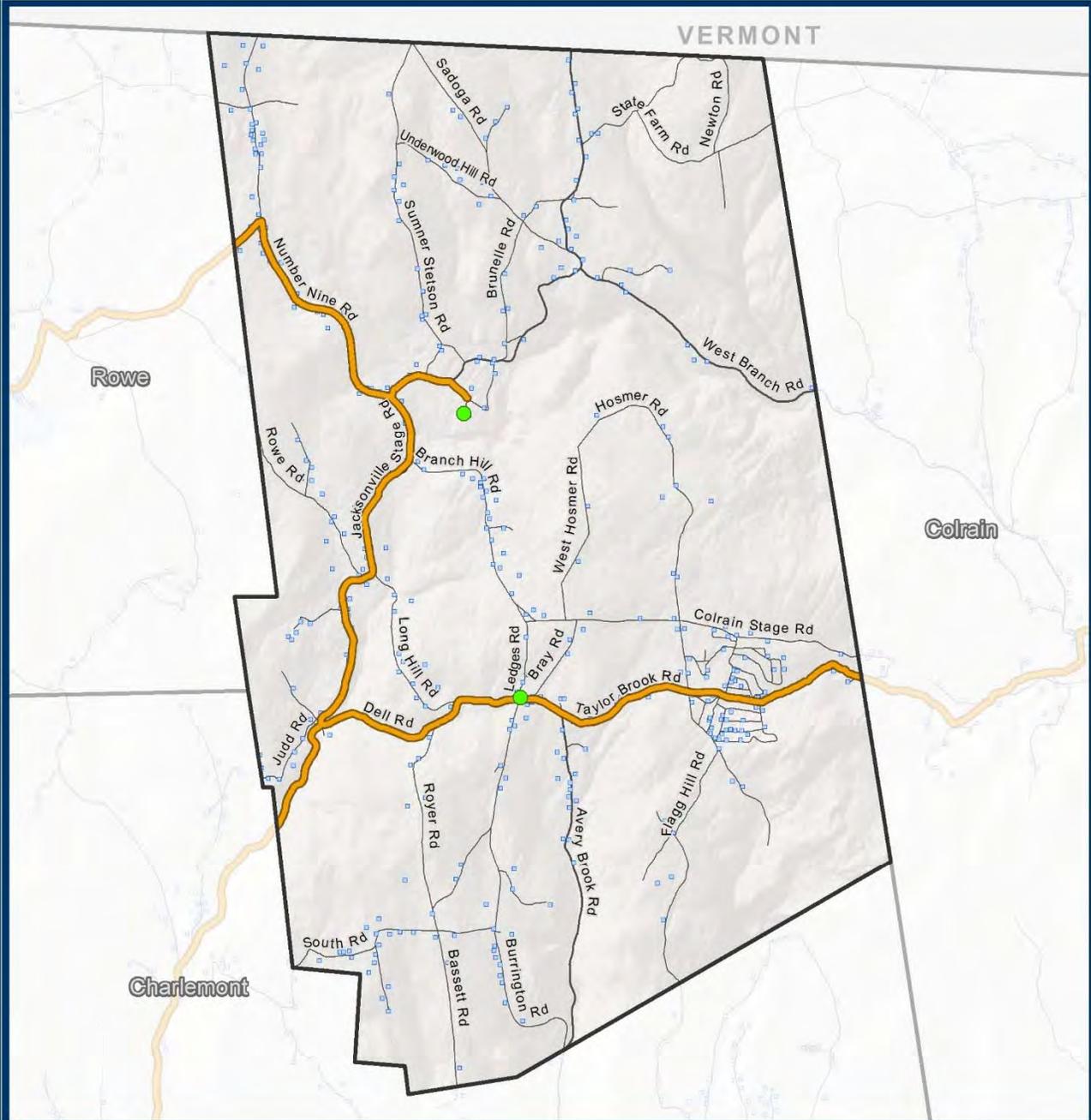
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

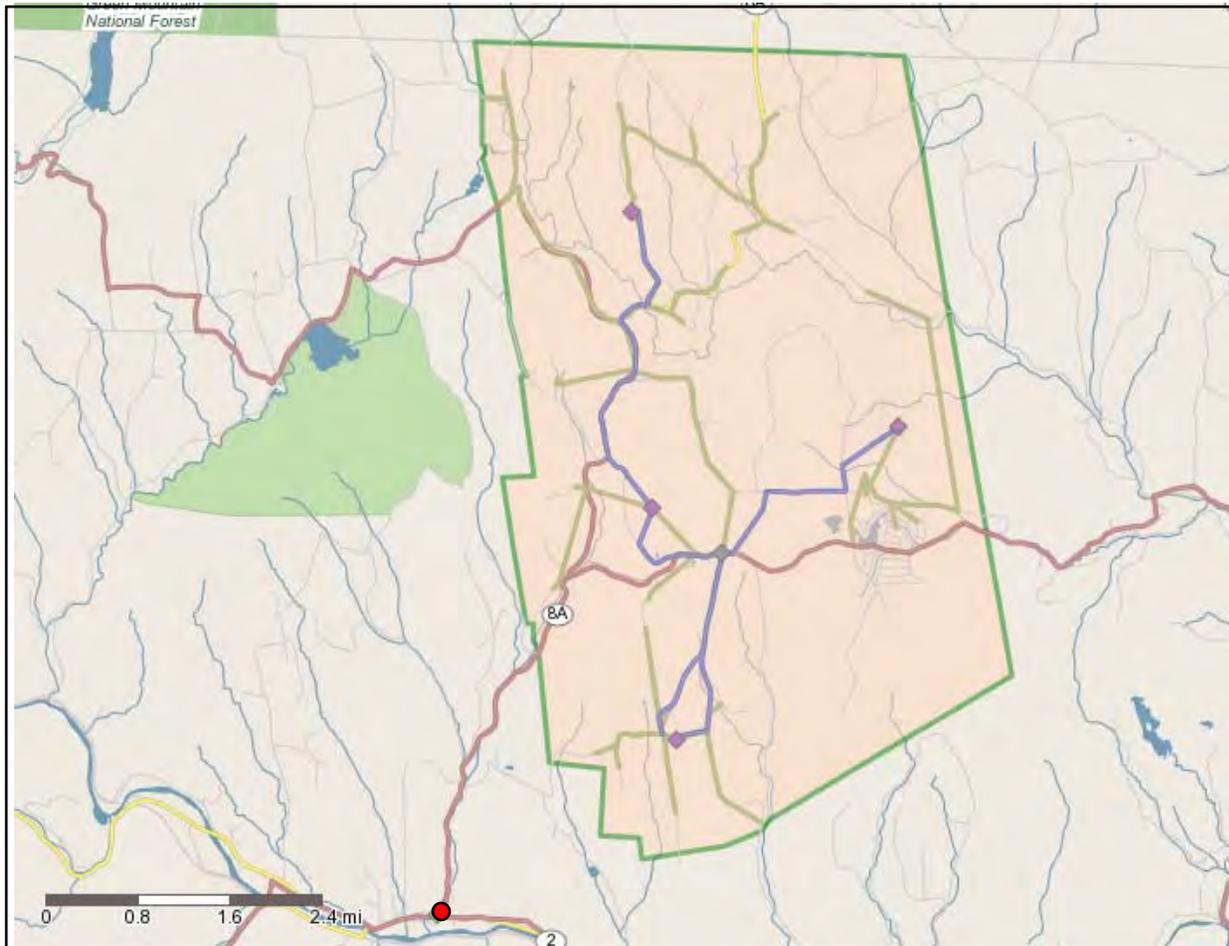
- Building Locations
- ▭ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Heath: 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* | 465  |
| Fiber Miles Modeled | 53   |
| Poles Modeled       | 1207 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,240,000 |
| Construction Costs Funded by MBI          | \$440,000   |
| Professional Services Costs Funded by MBI | \$380,000   |
| Projected Town Contribution               | \$1,420,000 |

# Heath: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,420,000 |
| Year 6 Debt Service @4% over 15 Years | \$111,200   |
| 2016 Total Assessed Value             | \$91M       |
| Year 6 Rate Impact per mil            | \$1.23      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | Passed        |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$184.30                     |
| \$250,000               | \$307.10                     |
| \$500,000               | \$614.20                     |

## 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

# Heath: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 465       |
| Subscribers Modeled               | 186       |
| Entry Level Broadband Price       | \$100     |
| Average Revenue Per Unit (ARPU)** | \$123     |
| Annual Revenue                    | \$273,000 |
| Annual Operating Cost             | \$233,000 |
| 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 | \$149 |
| 60% Take Rate | \$100 |
| 75% Take Rate | \$80  |

## 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
  - 50% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (4)
- Unserved Locations (1,043)

### Existing Broadband Infrastructure

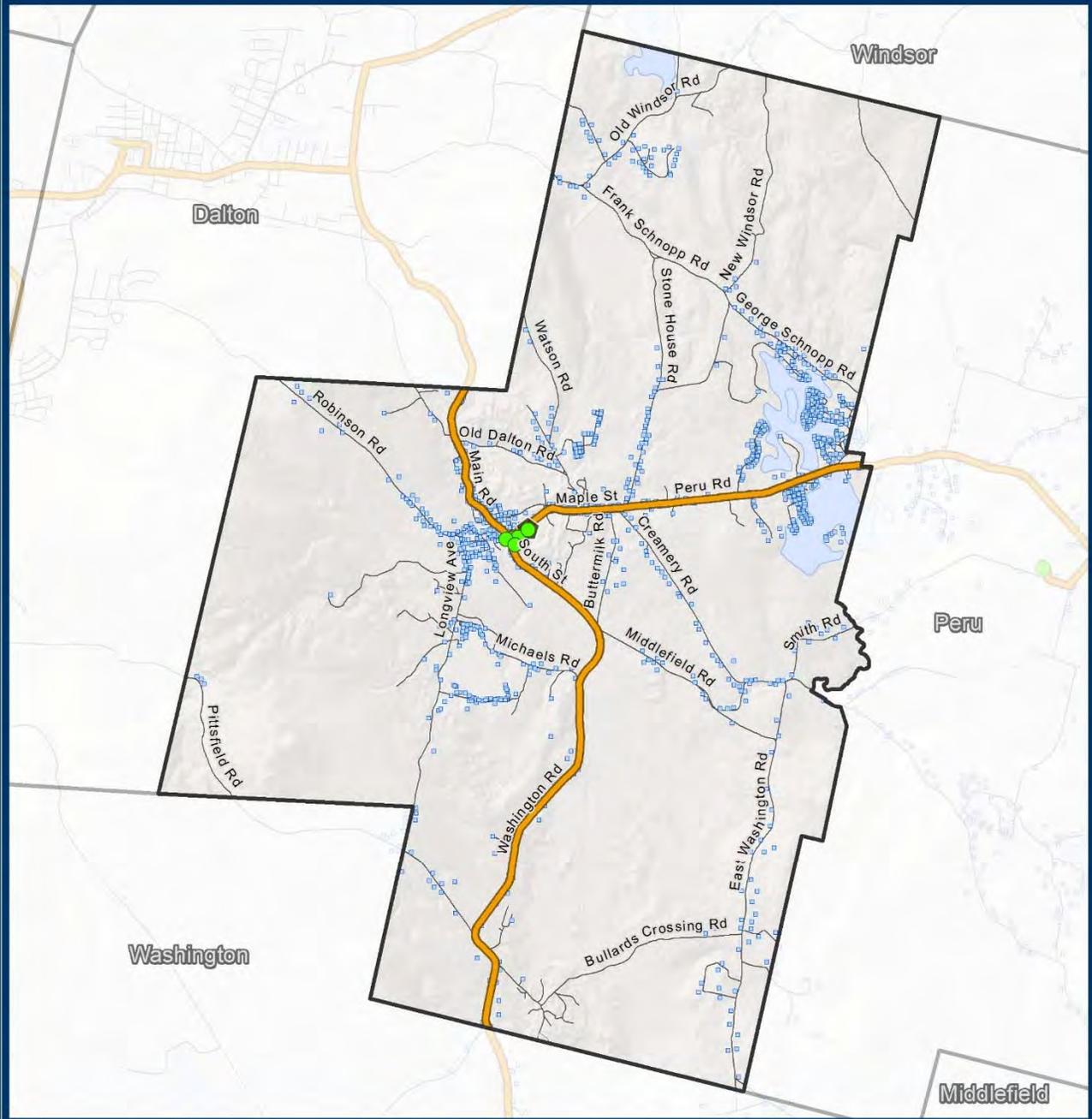
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

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



Map Date: 05 February 2016



# Hinsdale: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 1,004 |
| Fiber Miles Modeled | 49    |
| Poles Modeled       | 1,000 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,780,000 |
| Construction Costs Funded by MBI          | \$630,000   |
| Professional Services Costs Funded by MBI | \$380,000   |
| Projected Town Contribution               | \$1,770,000 |

# Hinsdale: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,770,000 |
| Year 6 Debt Service @4% over 15 Years | \$138,700   |
| 2016 Total Assessed Value             | \$295M      |
| Year 6 Rate Impact per mil            | \$0.47      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$70.50                      |
| \$250,000               | \$117.50                     |
| \$500,000               | \$235.10                     |

## 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

# Hinsdale: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 1004      |
| Subscribers Modeled               | 526       |
| Entry Level Broadband Price       | \$43      |
| Average Revenue Per Unit (ARPU)** | \$66      |
| Annual Revenue                    | \$418,000 |
| Annual Operating Cost             | \$368,000 |
| 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 | \$64 |
| 60% Take Rate | \$43 |
| 75% Take Rate | \$35 |

## 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
  - 19% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **LANESBOROUGH, MA**

#### Serviceable Premises

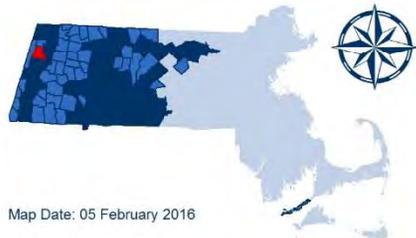
- Connected CAI Locations (4)
- Unserved Locations (1,417)

#### Existing Broadband Infrastructure

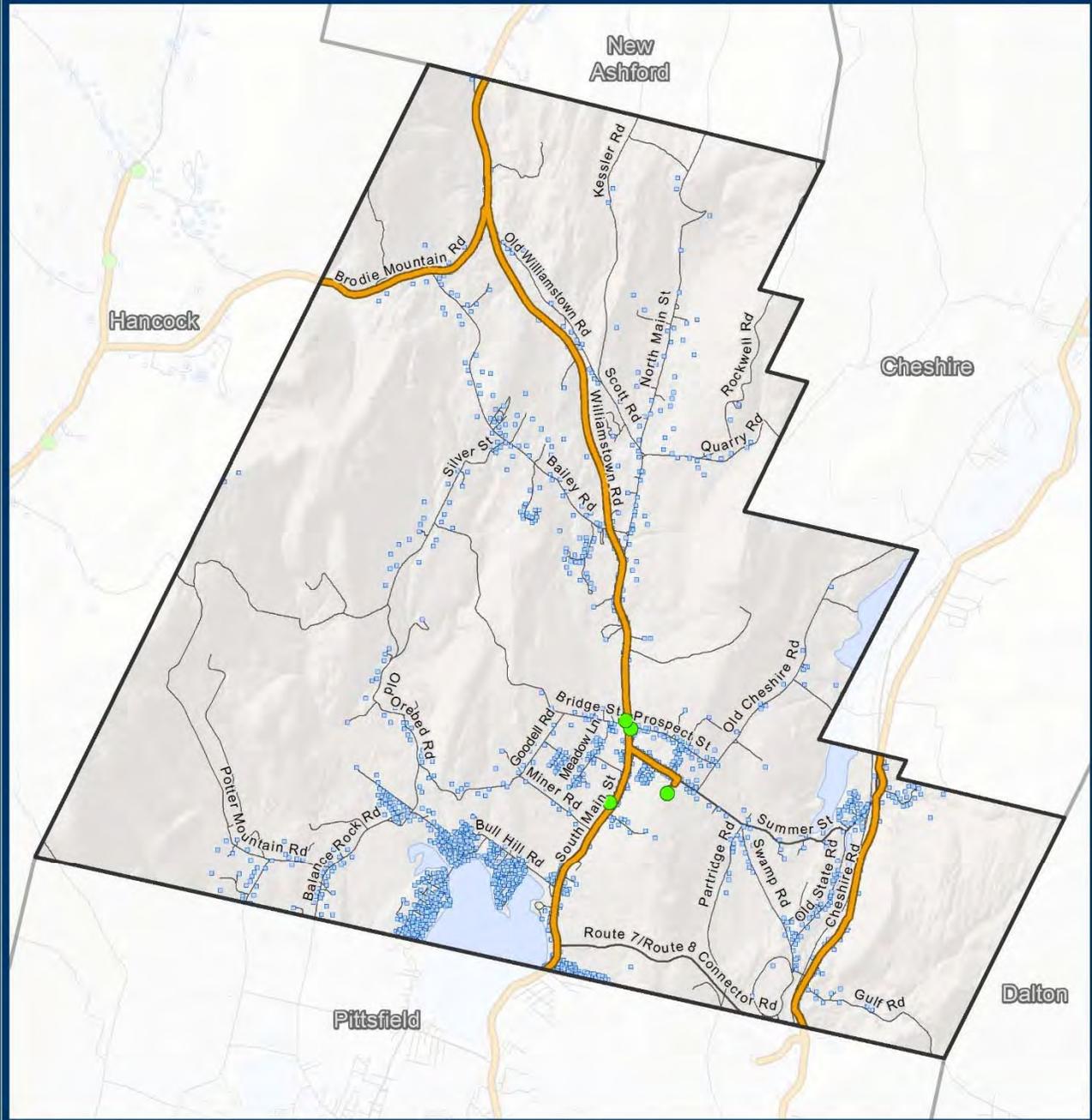
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

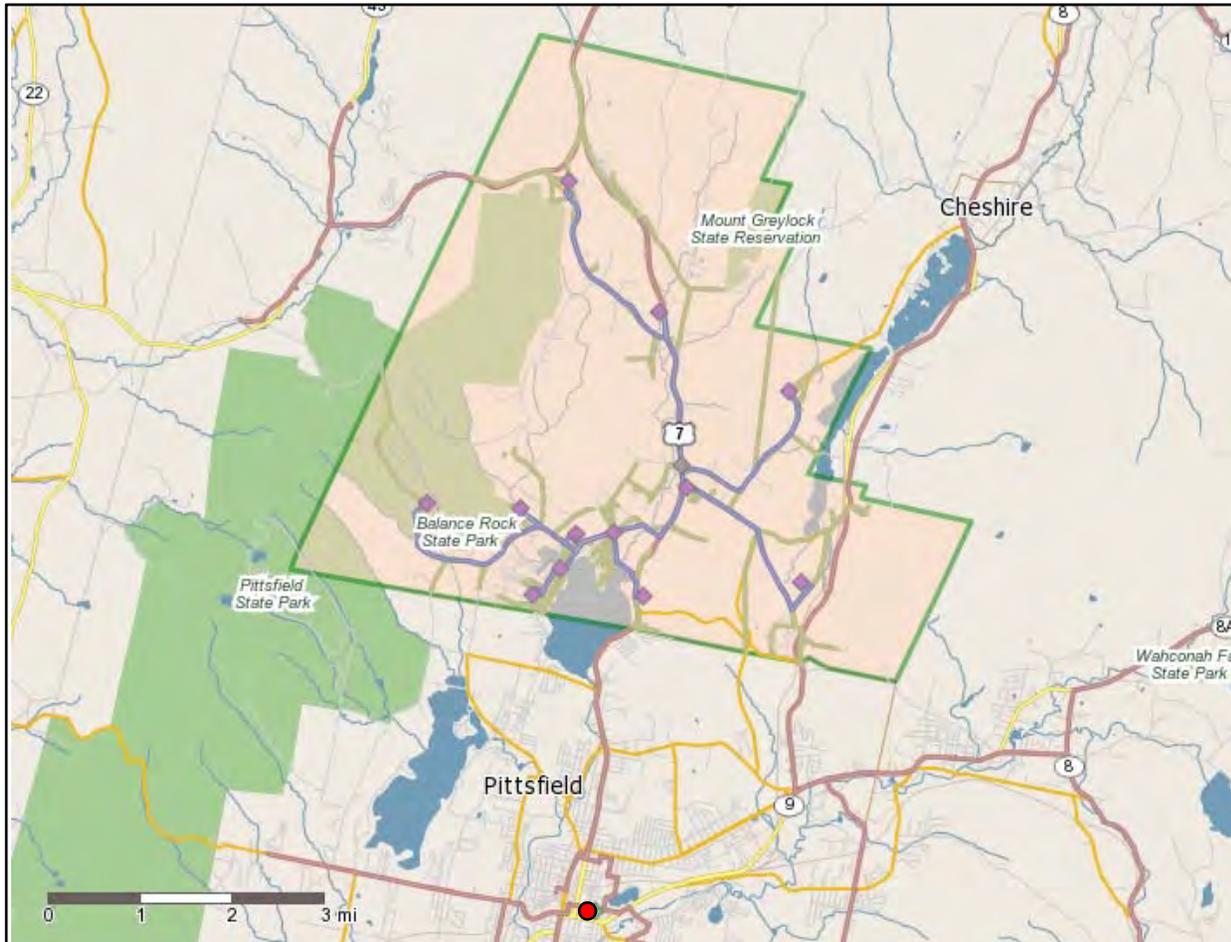
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Lanesborough: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 1,437 |
| Fiber Miles Modeled | 61    |
| Poles Modeled       | 1,346 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$3,880,000 |
| Construction Costs Funded by MBI          | \$890,000   |
| Professional Services Costs Funded by MBI | \$490,000   |
| Projected Town Contribution               | \$2,500,000 |

# Lanesborough: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$2,500,000 |
| Year 6 Debt Service @4% over 15 Years | \$195,800   |
| 2016 Total Assessed Value             | \$397M      |
| Year 6 Rate Impact per mil            | \$0.49      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$73.90                      |
| \$250,000               | \$123.20                     |
| \$500,000               | \$246.40                     |

## 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

# Lanesborough: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 1,437     |
| Subscribers Modeled               | 819       |
| Entry Level Broadband Price       | \$36      |
| Average Revenue Per Unit (ARPU)** | \$59      |
| Annual Revenue                    | \$575,000 |
| Annual Operating Cost             | \$525,000 |
| 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 | \$52 |
| 60% Take Rate | \$36 |
| 75% Take Rate | \$29 |

## 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
  - 8% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### LEYDEN, MA

#### Serviceable Premises

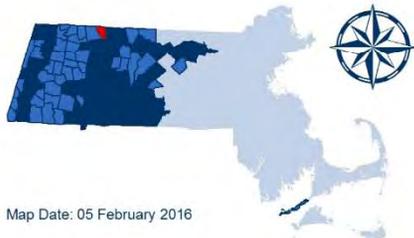
- Connected CAI Locations (3)
- Unserved Locations (334)

#### Existing Broadband Infrastructure

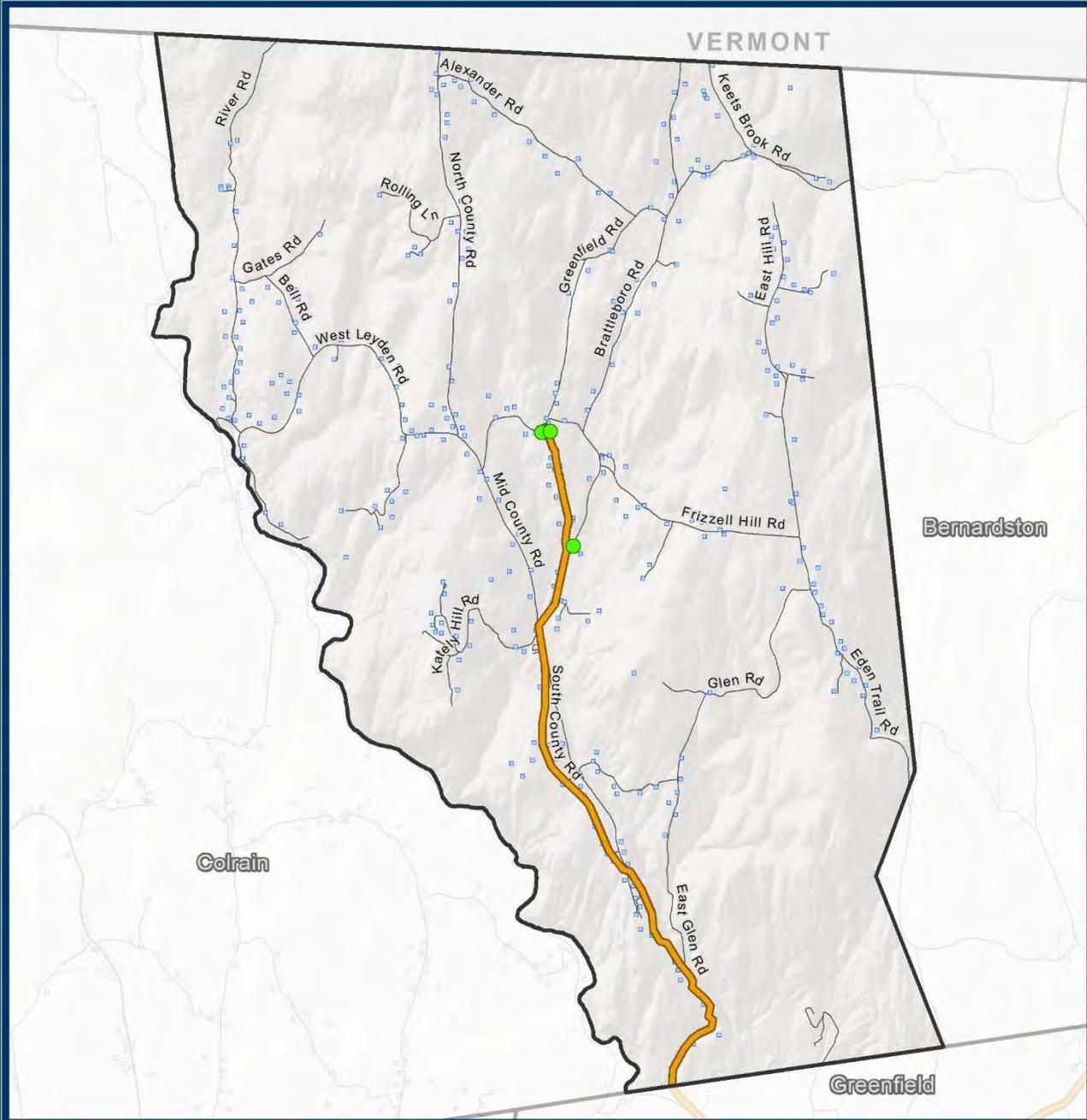
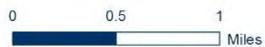
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

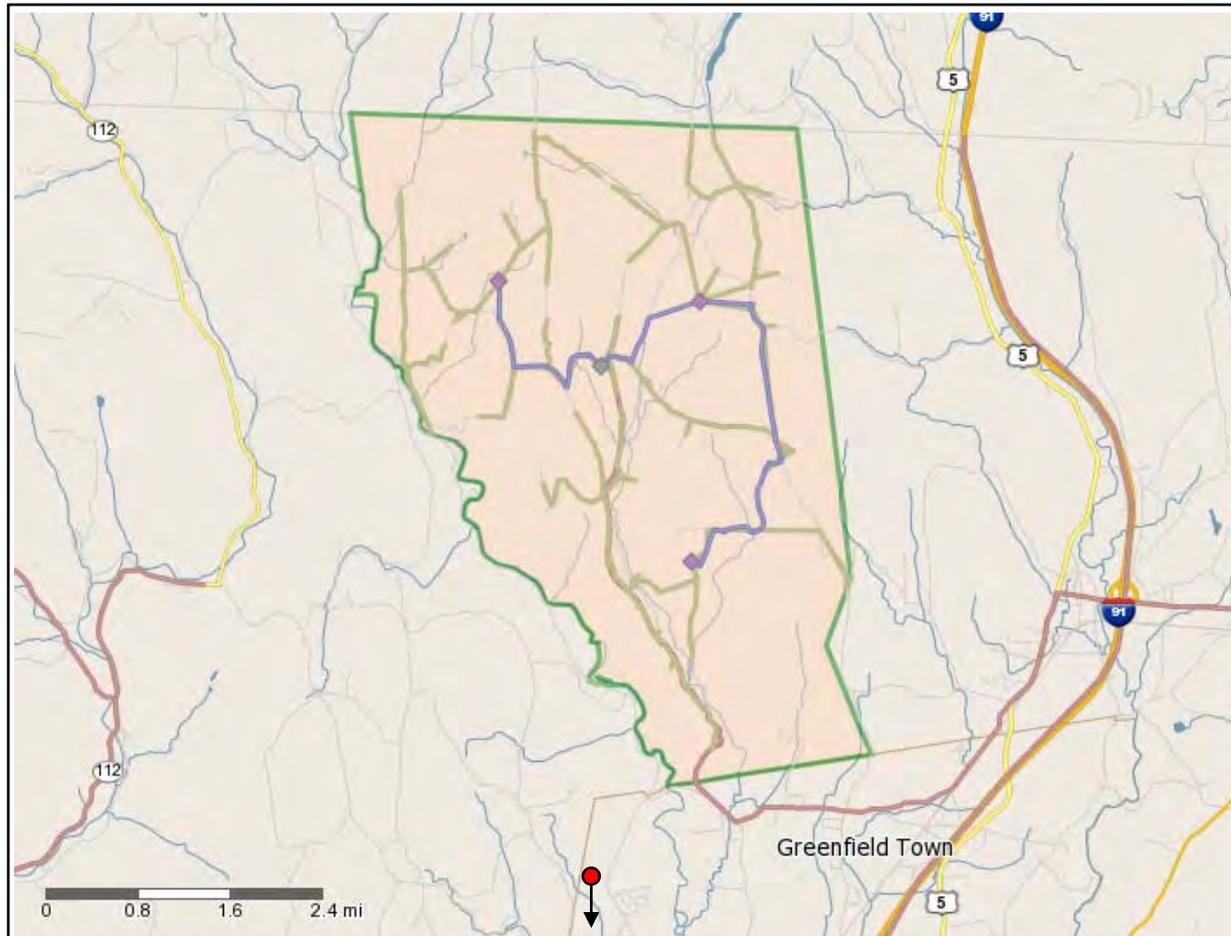
- Building Locations
- 🗺️ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Leyden: Initial Model of Infrastructure & CAPEX



## Modeled Network Infrastructure

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

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* | 361 |
| Fiber Miles Modeled | 44  |
| Poles Modeled       | 906 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,750,000 |
| Construction Costs Funded by MBI          | \$370,000   |
| Professional Services Costs Funded by MBI | \$310,000   |
| Projected Town Contribution               | \$1,070,000 |

# Leyden: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,070,000 |
| Year 6 Debt Service @4% over 15 Years | \$83,800    |
| 2016 Total Assessed Value             | \$84M       |
| Year 6 Rate Impact per mil            | \$1.00      |

## 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               | \$150.00                     |
| \$250,000               | \$250.00                     |
| \$500,000               | \$500.00                     |

## 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

# Leyden: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 361       |
| Subscribers Modeled               | 205       |
| Entry Level Broadband Price       | \$53      |
| Average Revenue Per Unit (ARPU)** | \$76      |
| Annual Revenue                    | \$188,000 |
| Annual Operating Cost             | \$138,000 |
| 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 | \$78 |
| 60% Take Rate | \$53 |
| 75% Take Rate | \$43 |

## 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
  - 8% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

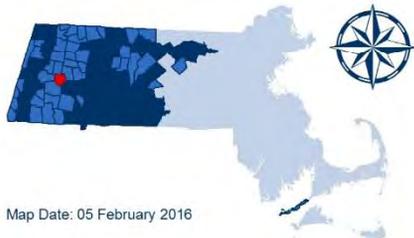
- Connected CAI Locations (2)
- Unserved Locations (280)

### Existing Broadband Infrastructure

- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

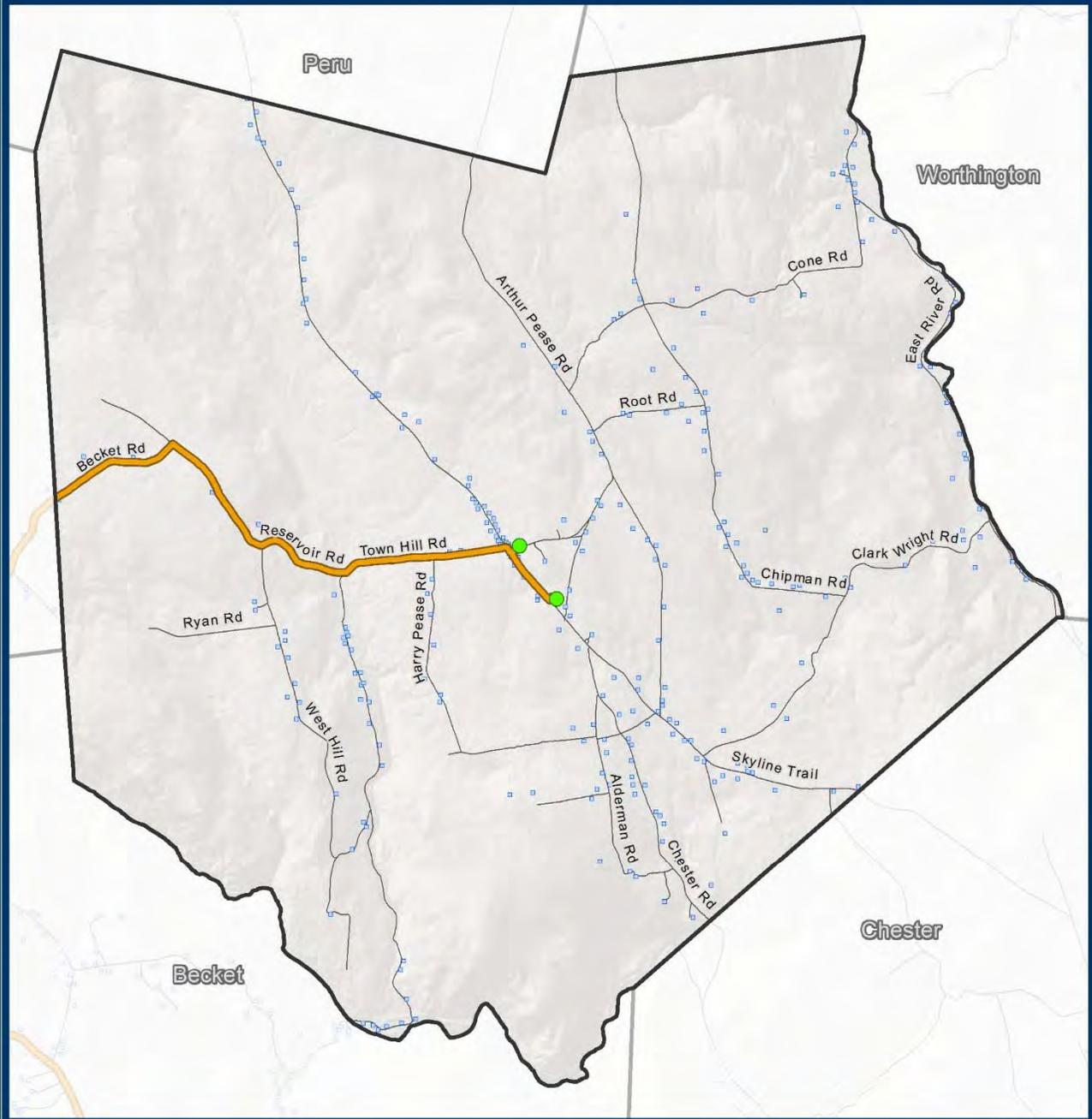
### Base Map

- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies

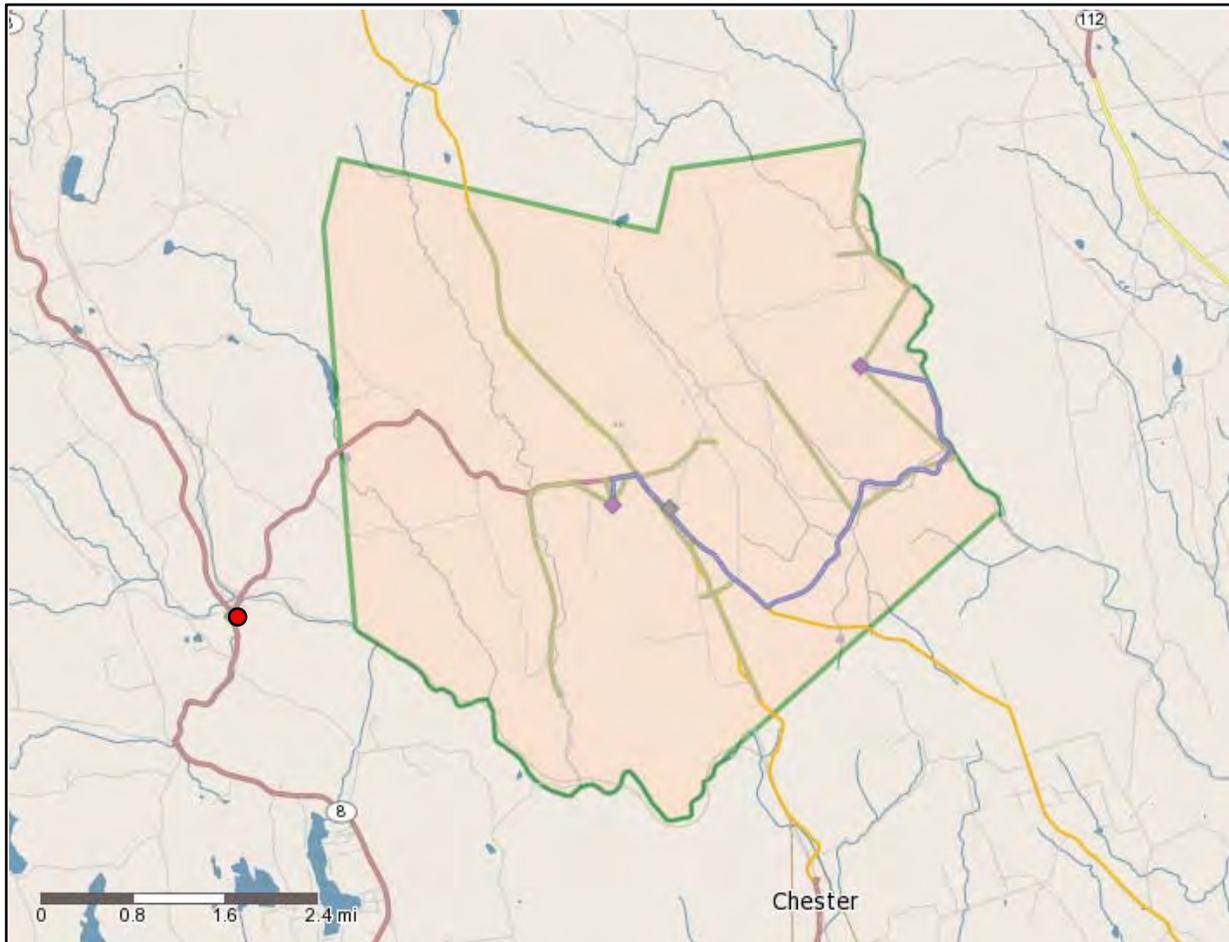


Map Date: 05 February 2016

0 0.5 1  
Miles



# Middlefield: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 292 |
| Fiber Miles Modeled | 41  |
| Poles Modeled       | 803 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,590,000 |
| Construction Costs Funded by MBI          | \$310,000   |
| Professional Services Costs Funded by MBI | \$270,000   |
| Projected Town Contribution               | \$1,010,000 |

# Middlefield: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,010,000 |
| Year 6 Debt Service @4% over 15 Years | \$79,100    |
| 2016 Total Assessed Value             | \$65M       |
| Year 6 Rate Impact per mil            | \$1.21      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | Did Not Pass  |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$181.20                     |
| \$250,000               | \$301.90                     |
| \$500,000               | \$603.90                     |

## 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

# Middlefield: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 292       |
| Subscribers Modeled               | 155       |
| Entry Level Broadband Price       | \$66      |
| Average Revenue Per Unit (ARPU)** | \$89      |
| Annual Revenue                    | \$165,000 |
| Annual Operating Cost             | \$115,000 |
| 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 | \$98 |
| 60% Take Rate | \$66 |
| 75% Take Rate | \$53 |

## 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
  - 18% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (1)
- Unserved Locations (81)

### Existing Broadband Infrastructure

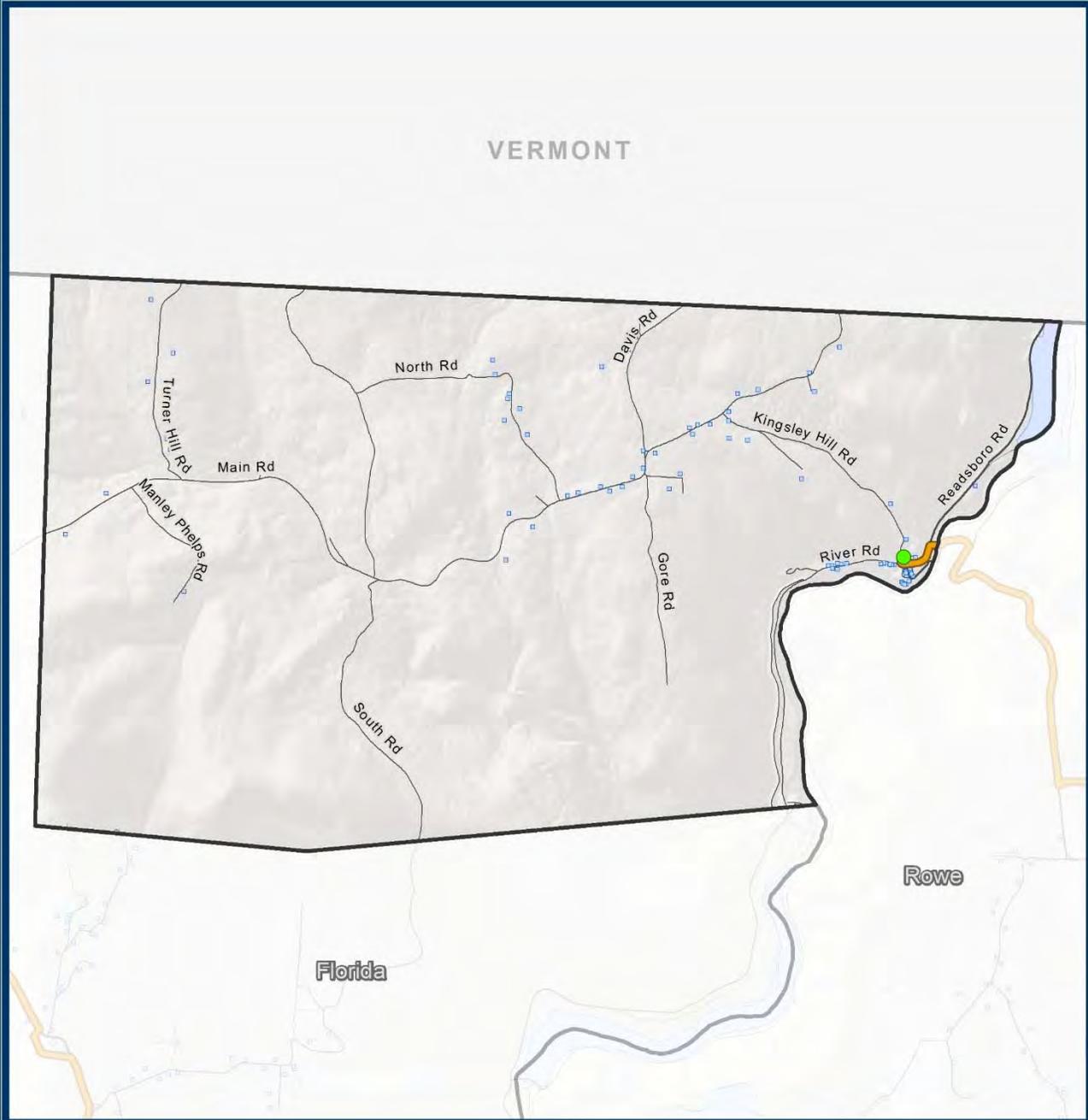
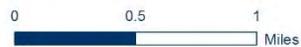
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

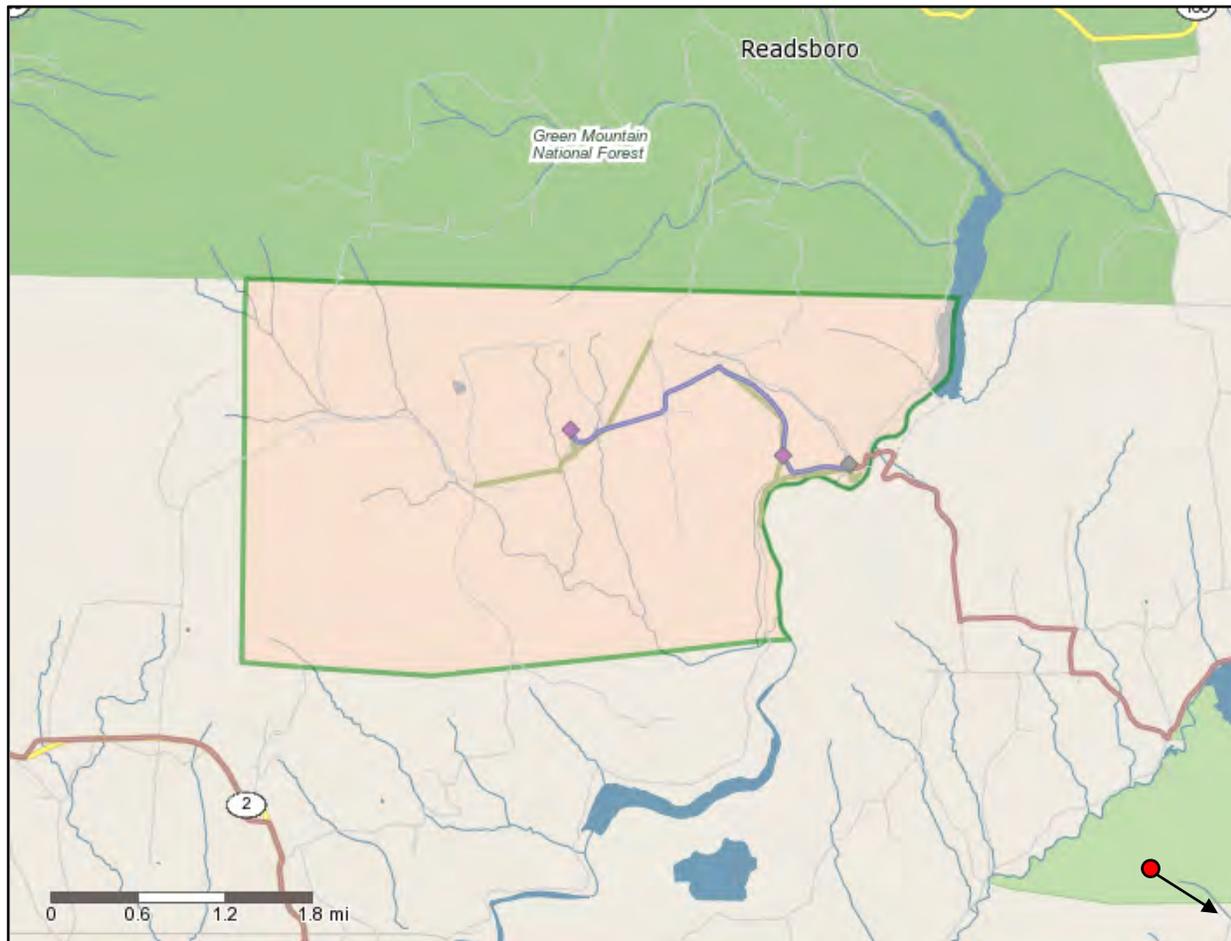
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Monroe: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 59  |
| Fiber Miles Modeled | 8   |
| Poles Modeled       | 431 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,080,000 |
| Construction Costs Funded by MBI          | \$130,000   |
| Professional Services Costs Funded by MBI | \$200,000   |
| Projected Town Contribution               | \$750,000   |

# Monroe: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$750,000 |
| Year 6 Debt Service @4% over 15 Years | \$58,800  |
| 2016 Total Assessed Value             | \$26M     |
| Year 6 Rate Impact per mil            | \$1.48*   |

\*Monroe has a split tax rate. The number above indicates the residential tax rate impact. The Commercial, Industrial, and Personal Property (CIP) tax rate impact would be 2.75.

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$221.84**                   |
| \$250,000               | \$369.74**                   |
| \$500,000               | \$739.48**                   |

\*\* Monroe has a split tax rate. These numbers indicate residential annual property tax impacts for the project.

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## 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

# Monroe: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 59        |
| Subscribers Modeled               | 31        |
| Entry Level Broadband Price       | \$290     |
| Average Revenue Per Unit (ARPU)** | \$313     |
| Annual Revenue                    | \$118,000 |
| Annual Operating Cost             | \$68,000  |
| 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 | \$431 |
| 60% Take Rate | \$290 |
| 75% Take Rate | \$232 |

## 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
  - 17% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

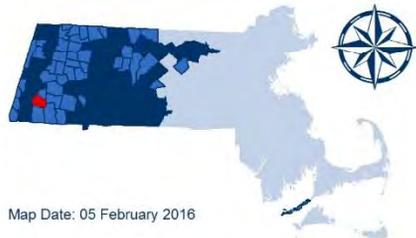
- Connected CAI Locations (3)
- Unserved Locations (874)

### Existing Broadband Infrastructure

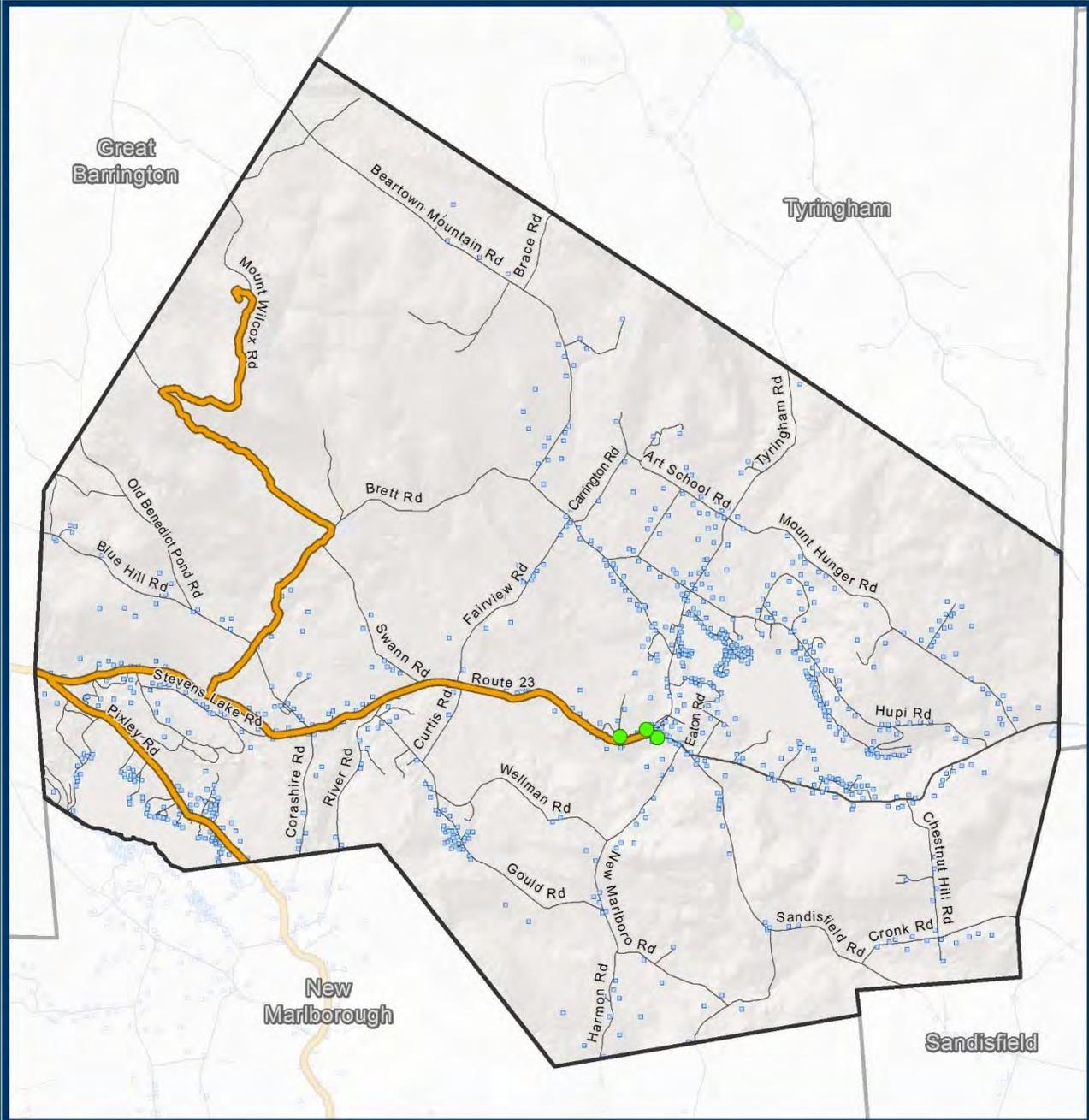
- ◆ MassBroadband 123 Interconnection Points
- ~ MassBroadband 123 Fiber-Optic Cable

### Base Map

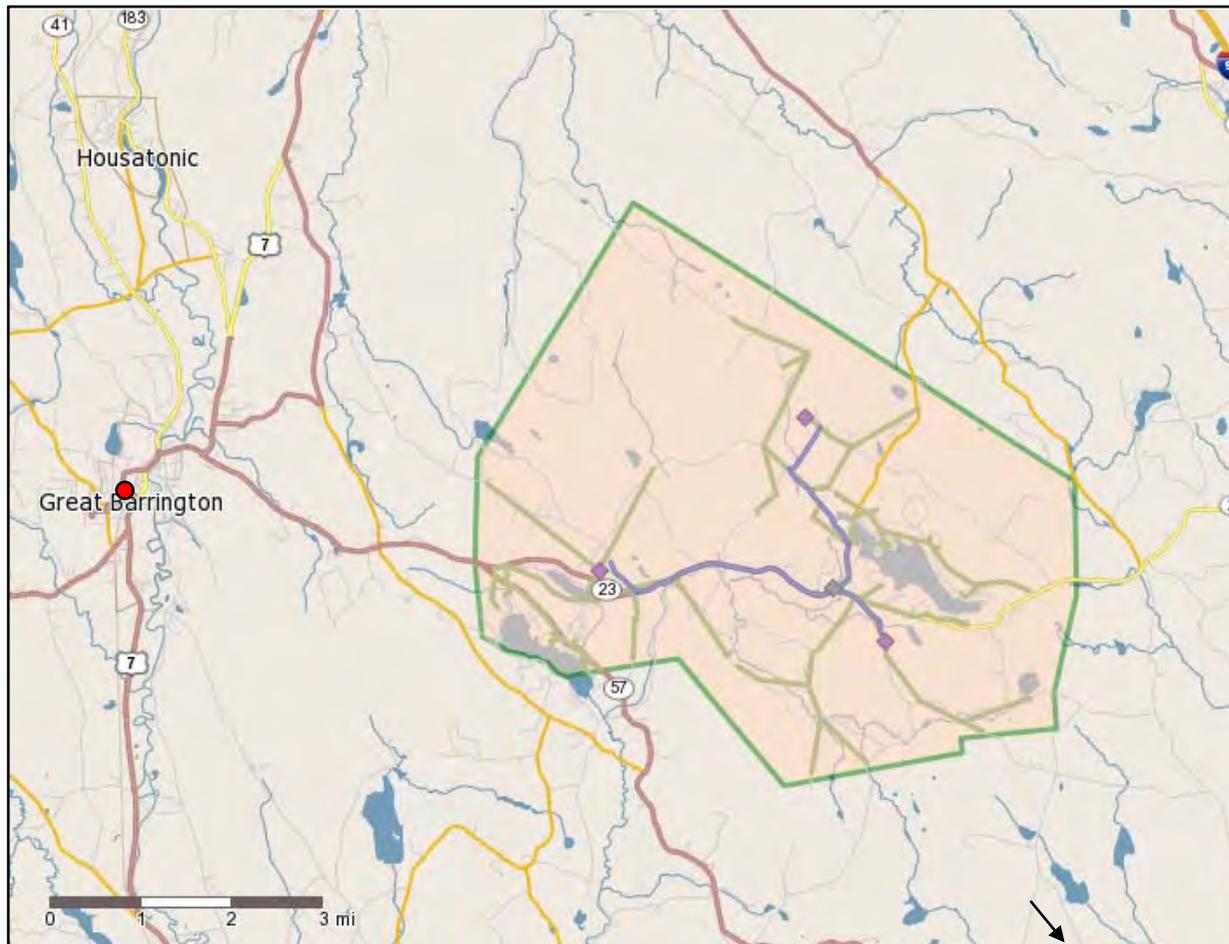
- Building Locations
- Town Boundaries
- ~ Roads
- Water Bodies



Map Date: 05 February 2016



# Monterey: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 944   |
| Fiber Miles Modeled | 66    |
| Poles Modeled       | 1,505 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$3,100,000 |
| Construction Costs Funded by MBI          | \$680,000   |
| Professional Services Costs Funded by MBI | \$460,000   |
| Projected Town Contribution               | \$1,960,000 |

# Monterey: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,960,000 |
| Year 6 Debt Service @4% over 15 Years | \$153,500   |
| 2016 Total Assessed Value             | \$504M      |
| Year 6 Rate Impact per mil            | \$0.30      |

## Town Status

| Vote                              | Action         |
|-----------------------------------|----------------|
| Bond Authorization @ Town Meeting | Passed         |
| Debt Exclusion @ Town Election    | No Vote Taken* |

\* Town believed that they did not need to vote until they needed to borrow.

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$45.70                      |
| \$250,000               | \$76.10                      |
| \$500,000               | \$152.20                     |

## 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

# Monterey: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 944       |
| Subscribers Modeled               | 378       |
| Entry Level Broadband Price       | \$64      |
| Average Revenue Per Unit (ARPU)** | \$87      |
| Annual Revenue                    | \$395,000 |
| Annual Operating Cost             | \$345,000 |
| 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 | \$95 |
| 60% Take Rate | \$64 |
| 75% Take Rate | \$52 |

## 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
  - 50% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **MONTGOMERY, MA**

#### Serviceable Premises

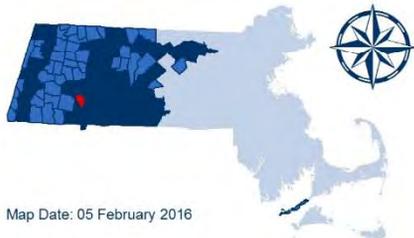
- Connected CAI Locations (2)
- Unserved Locations (360)

#### Existing Broadband Infrastructure

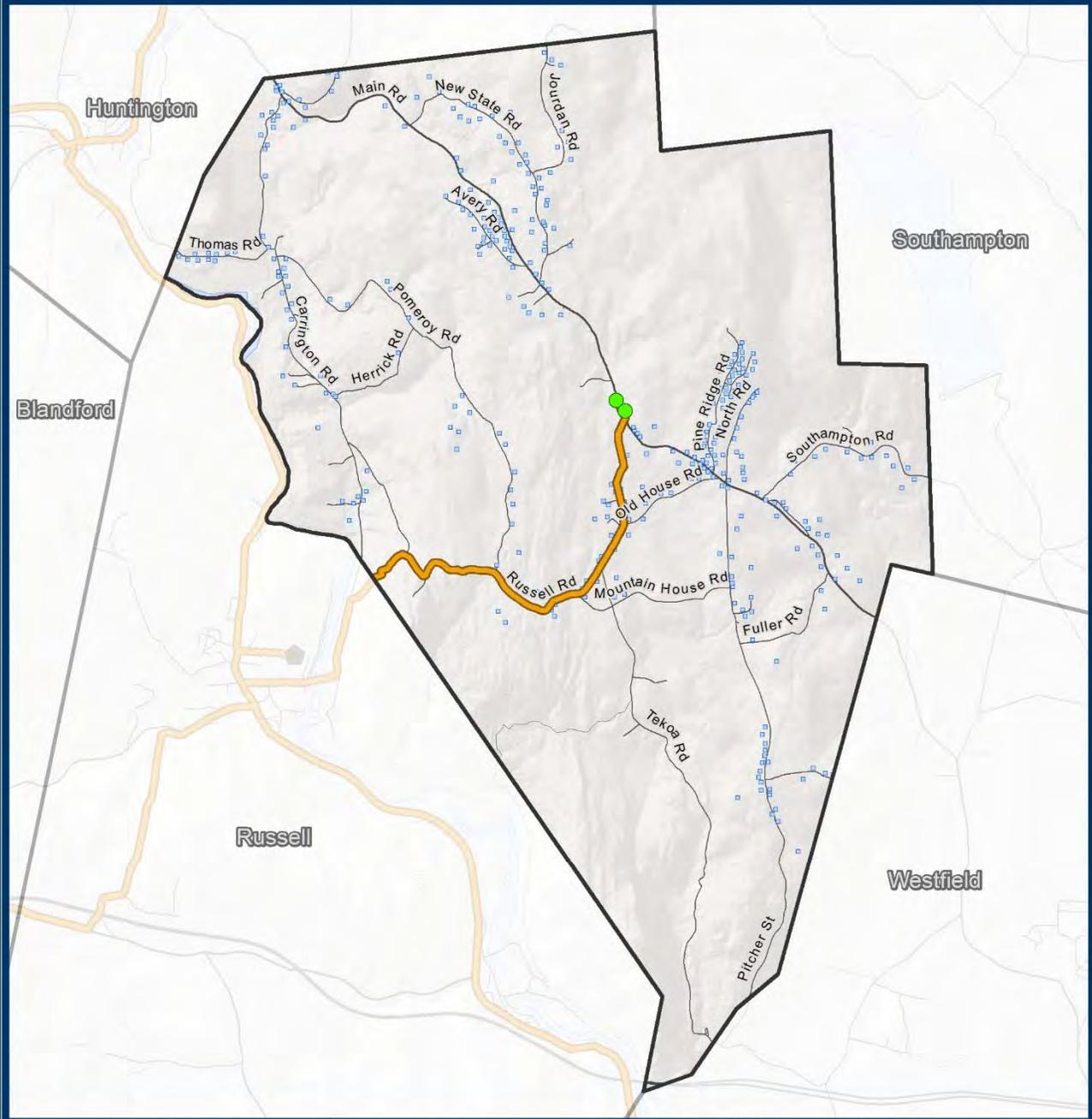
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

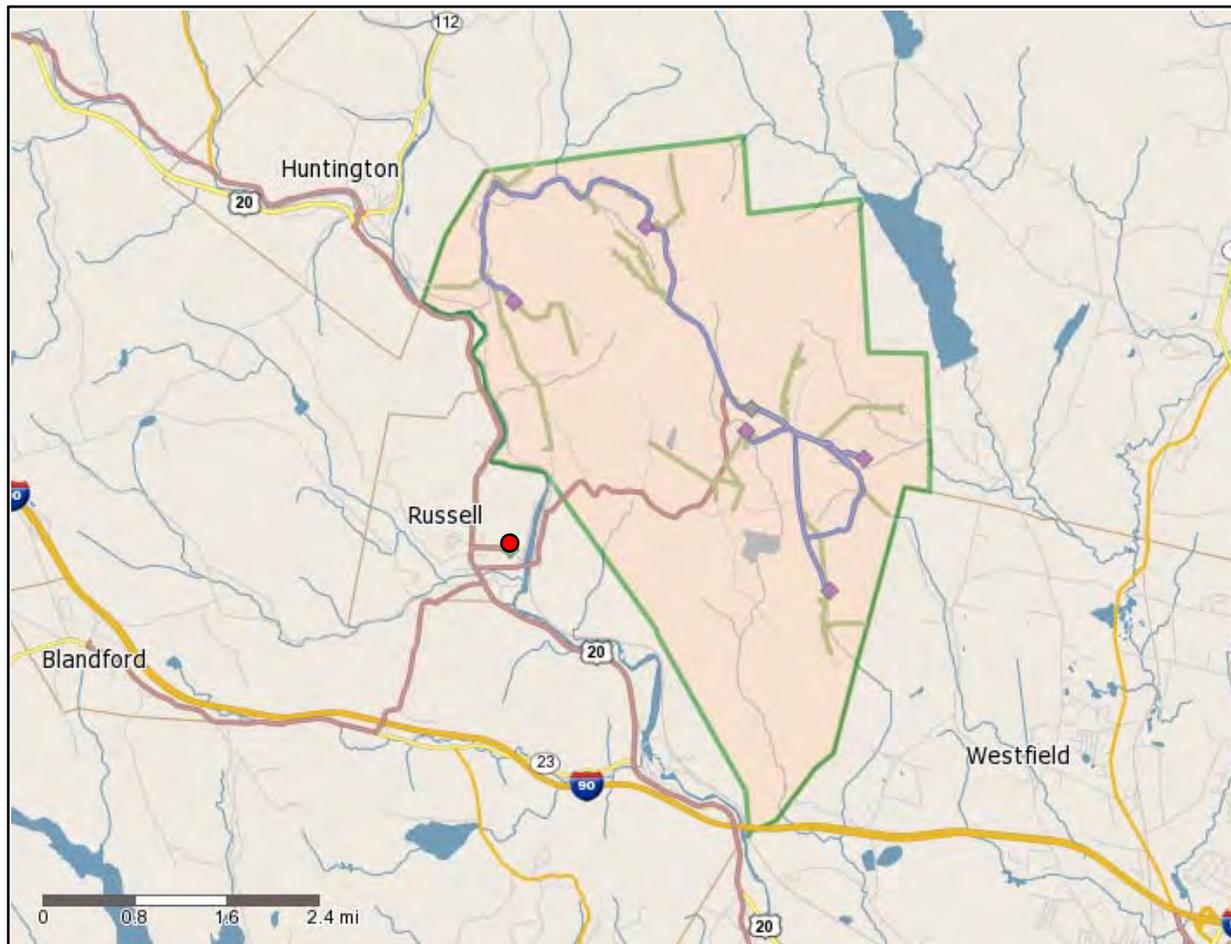
- Building Locations
- 🗺️ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Montgomery: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 351 |
| Fiber Miles Modeled | 27  |
| Poles Modeled       | 724 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,500,000 |
| Construction Costs Funded by MBI          | \$300,000   |
| Professional Services Costs Funded by MBI | \$250,000   |
| Projected Town Contribution               | \$950,000   |

# Montgomery: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$950,000 |
| Year 6 Debt Service @4% over 15 Years | \$74,400  |
| 2016 Total Assessed Value             | \$106M    |
| Year 6 Rate Impact per mil            | \$0.70    |

## Town Status

| Vote                              | Action       |
|-----------------------------------|--------------|
| Bond Authorization @ Town Meeting | Did Not Pass |
| Debt Exclusion @ Town Election    | Did Not Pass |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$105.40                     |
| \$250,000               | \$175.60                     |
| \$500,000               | \$351.30                     |

## 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

# Montgomery: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 351       |
| Subscribers Modeled               | 208       |
| Entry Level Broadband Price       | \$88      |
| Average Revenue Per Unit (ARPU)** | \$111     |
| Annual Revenue                    | \$276,000 |
| Annual Operating Cost             | \$226,000 |
| 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 | \$130 |
| 60% Take Rate | \$88  |
| 75% Take Rate | \$71  |

## 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
  - 2% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **MOUNT WASHINGTON,**

#### Serviceable Premises

- Connected CAI Locations (1)
- Unserved Locations (155)

#### Existing Broadband Infrastructure

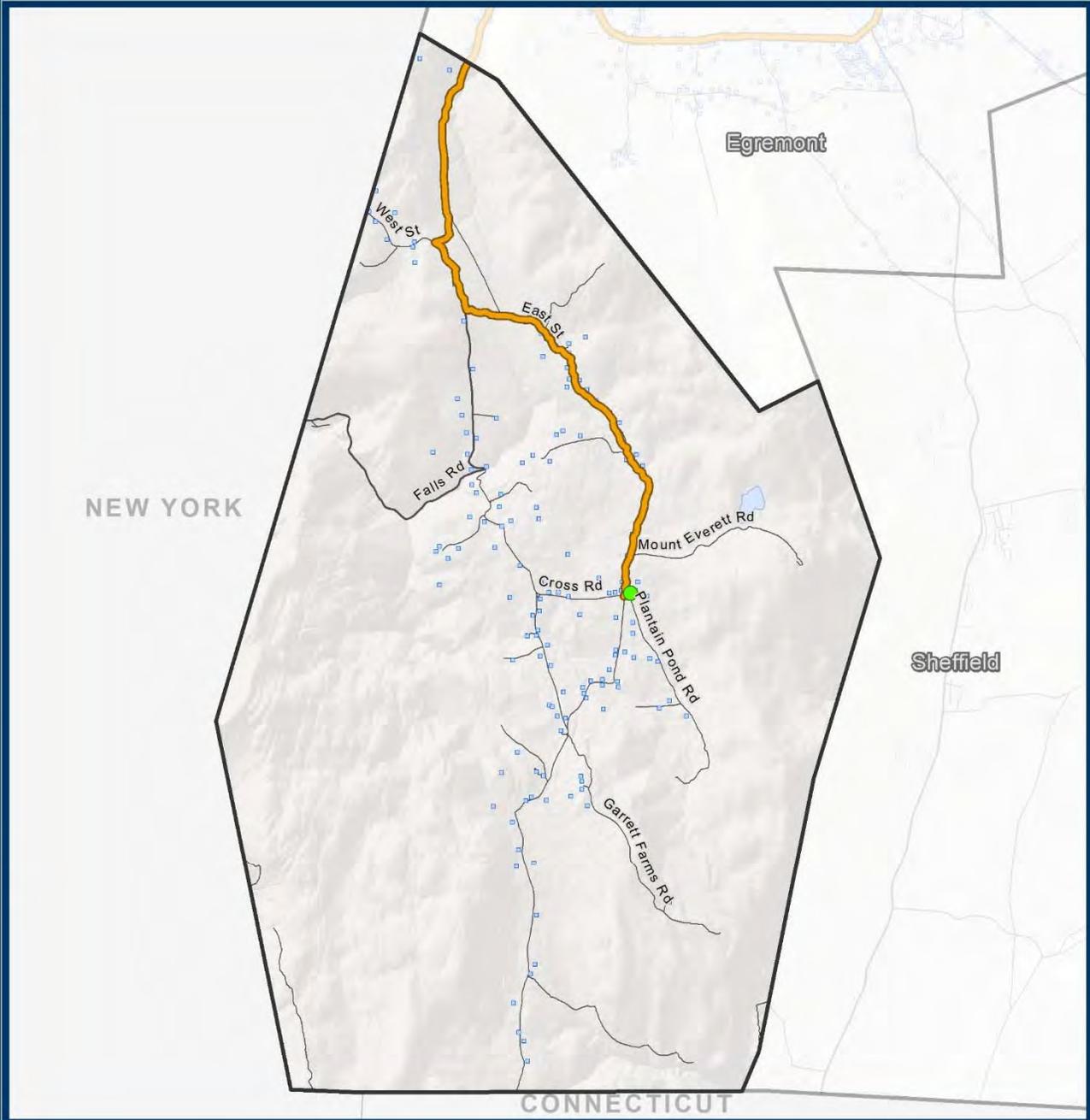
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

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



Map Date: 05 February 2016



# Mount Washington: Initial Model of Infrastructure & CAPEX

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.

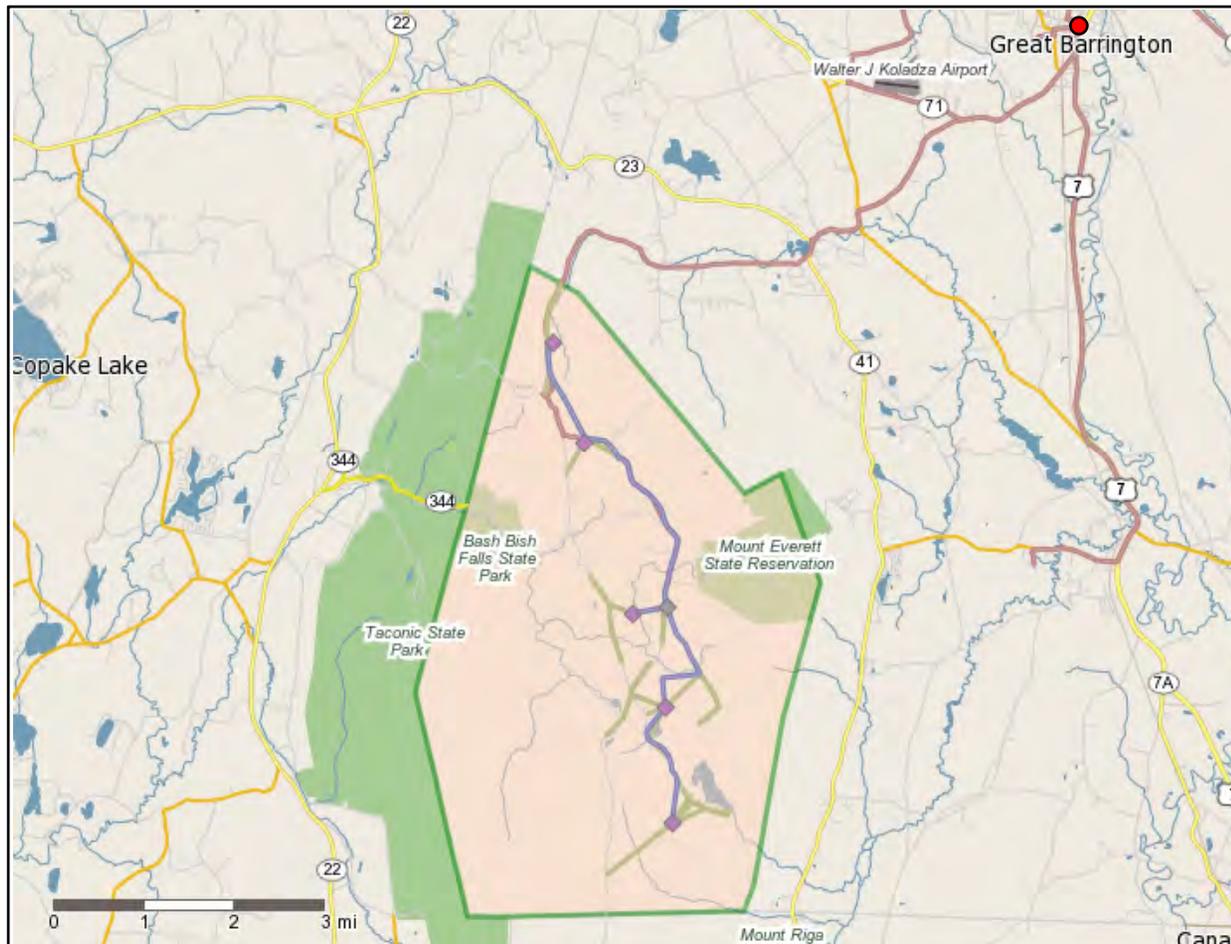
## Infrastructure Components

|                     |     |
|---------------------|-----|
| Households Modeled* | 186 |
| Fiber Miles Modeled | 23  |
| Poles Modeled       | 663 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,250,000 |
| Construction Costs Funded by MBI          | \$230,000   |
| Professional Services Costs Funded by MBI | \$220,000   |
| Projected Town Contribution               | \$800,000   |



### Modeled Network Infrastructure

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

Sources: Experian, Tom Tom, MBI, Cartesian

# Mount Washington: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$800,000 |
| Year 6 Debt Service @4% over 15 Years | \$62,700  |
| 2016 Total Assessed Value             | \$83M     |
| Year 6 Rate Impact per mil            | \$0.75    |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$113.00                     |
| \$250,000               | \$188.30                     |
| \$500,000               | \$376.70                     |

## 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

# Mount Washington: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 186       |
| Subscribers Modeled               | 77        |
| Entry Level Broadband Price       | \$145     |
| Average Revenue Per Unit (ARPU)** | \$167     |
| Annual Revenue                    | \$156,000 |
| Annual Operating Cost             | \$106,000 |
| 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 | \$216 |
| 60% Take Rate | \$145 |
| 75% Take Rate | \$116 |

## 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
  - 46% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:  
**NEW ASHFORD, MA**

### Serviceable Premises

- Connected CAI Locations (2)
- Unserved Locations (107)

### Existing Broadband Infrastructure

- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

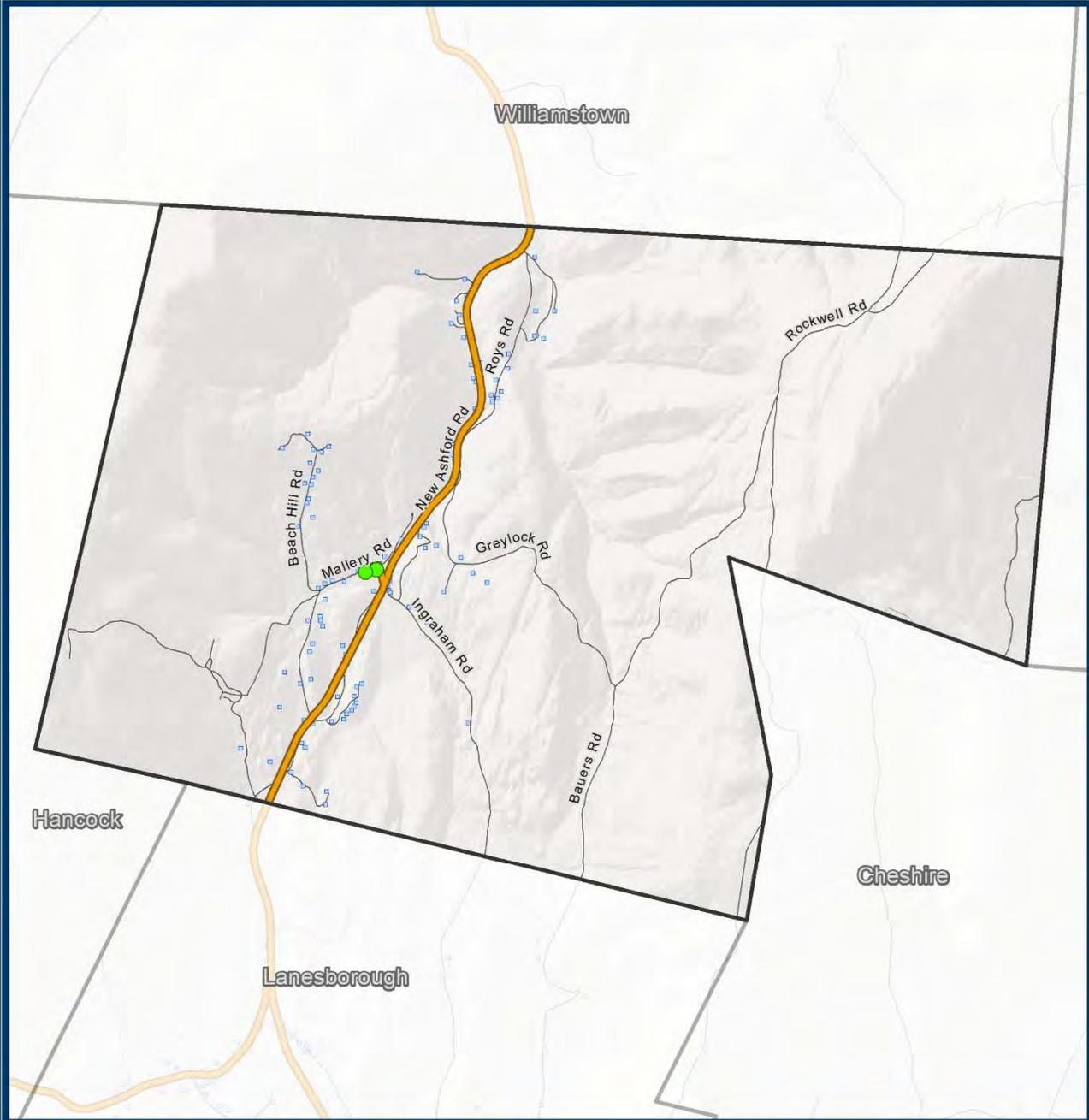
### Base Map

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

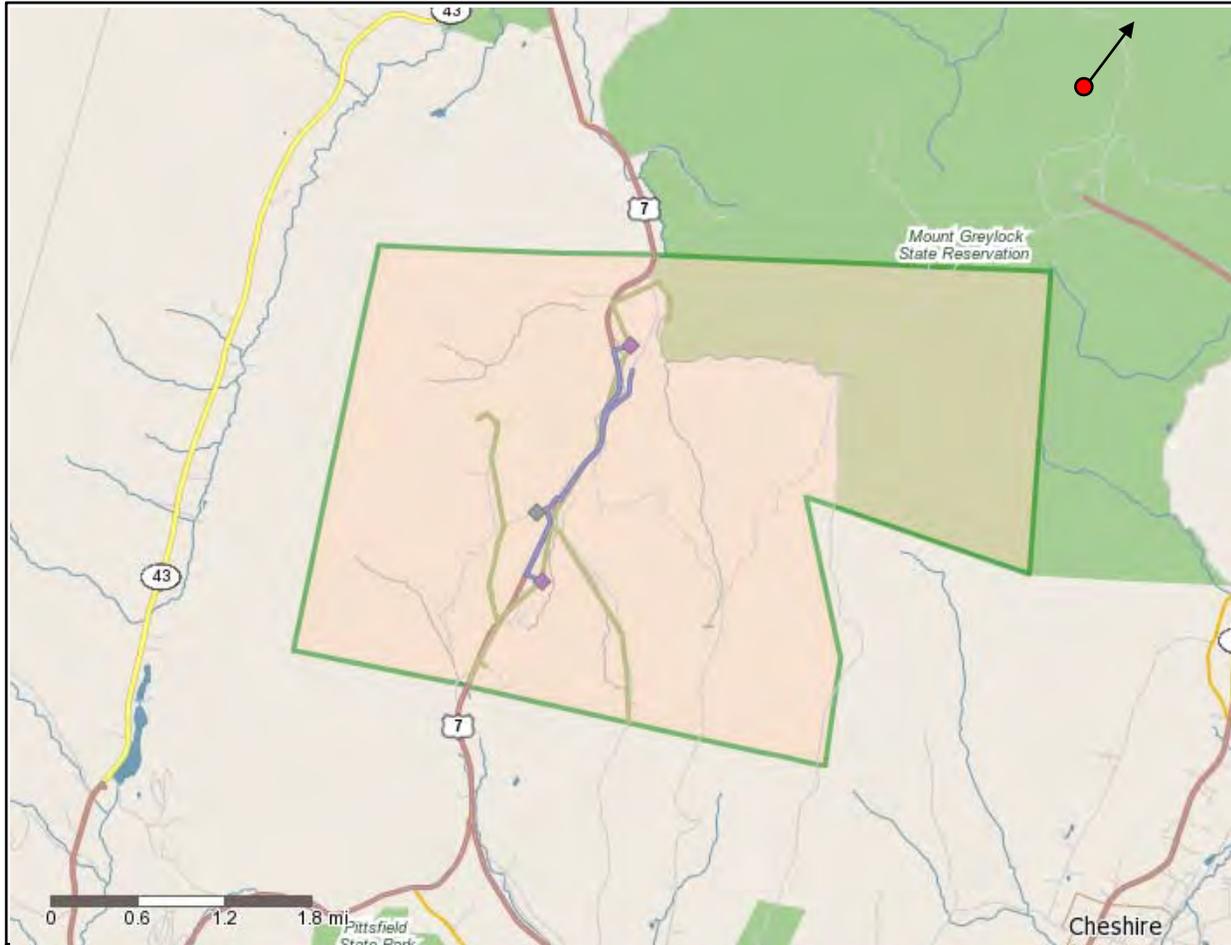


Map Date: 05 February 2016

0 0.5 1  
Miles



# New Ashford: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 126 |
| Fiber Miles Modeled | 11  |
| Poles Modeled       | 319 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |           |
|---|-----------|
| Estimated Total Network Cost              | \$700,000 |
| Construction Costs Funded by MBI          | \$150,000 |
| Professional Services Costs Funded by MBI | \$130,000 |
| Projected Town Contribution               | \$420,000 |

# New Ashford: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$420,000 |
| Year 6 Debt Service @4% over 15 Years | \$32,900  |
| 2016 Total Assessed Value             | \$41M     |
| Year 6 Rate Impact per mil            | \$0.75*   |

*\*New Ashford has a split tax rate. The number above indicates the residential tax rate impact. The Commercial, Industrial, and Personal Property (CIP) tax rate impact would be 1.05.*

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$112.11**                   |
| \$250,000               | \$186.85**                   |
| \$500,000               | \$373.71**                   |

*\*\* New Ashford has a split tax rate. These numbers indicate residential annual property tax impacts for the project.*

## Town Status

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

## 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

# New Ashford: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 126       |
| Subscribers Modeled               | 72        |
| Entry Level Broadband Price       | \$126     |
| Average Revenue Per Unit (ARPU)** | \$149     |
| Annual Revenue                    | \$129,000 |
| Annual Operating Cost             | \$79,000  |
| 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 | \$188 |
| 60% Take Rate | \$126 |
| 75% Take Rate | \$102 |

## 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
  - 7% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **NEW BRAINTREE, MA**

#### Serviceable Premises

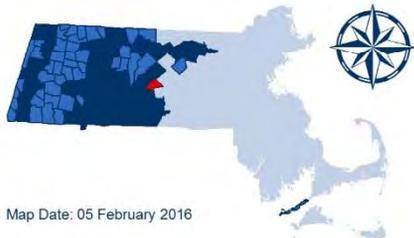
- Connected CAI Locations (5)
- Unserved Locations (379)

#### Existing Broadband Infrastructure

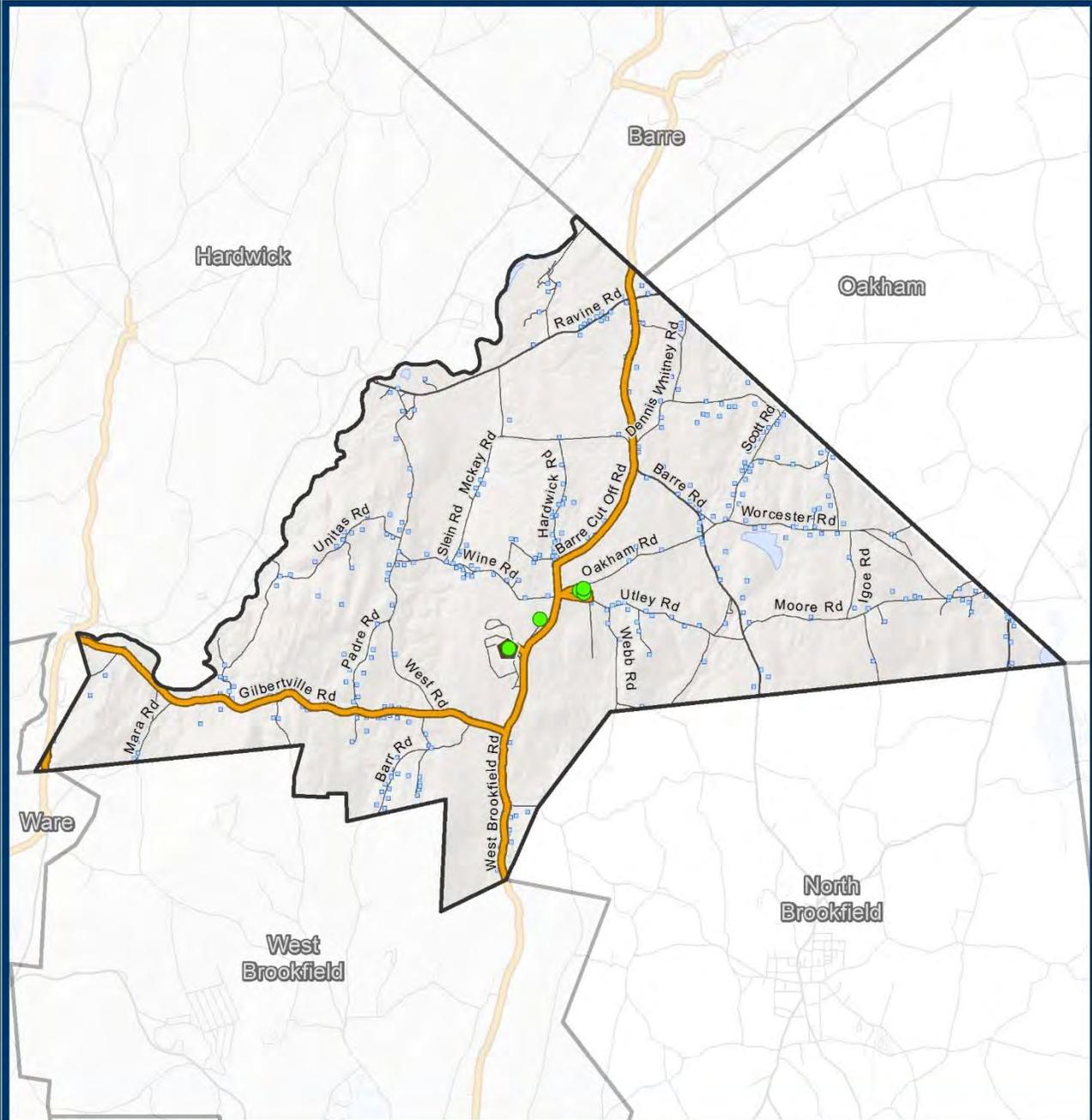
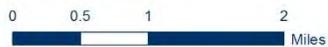
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

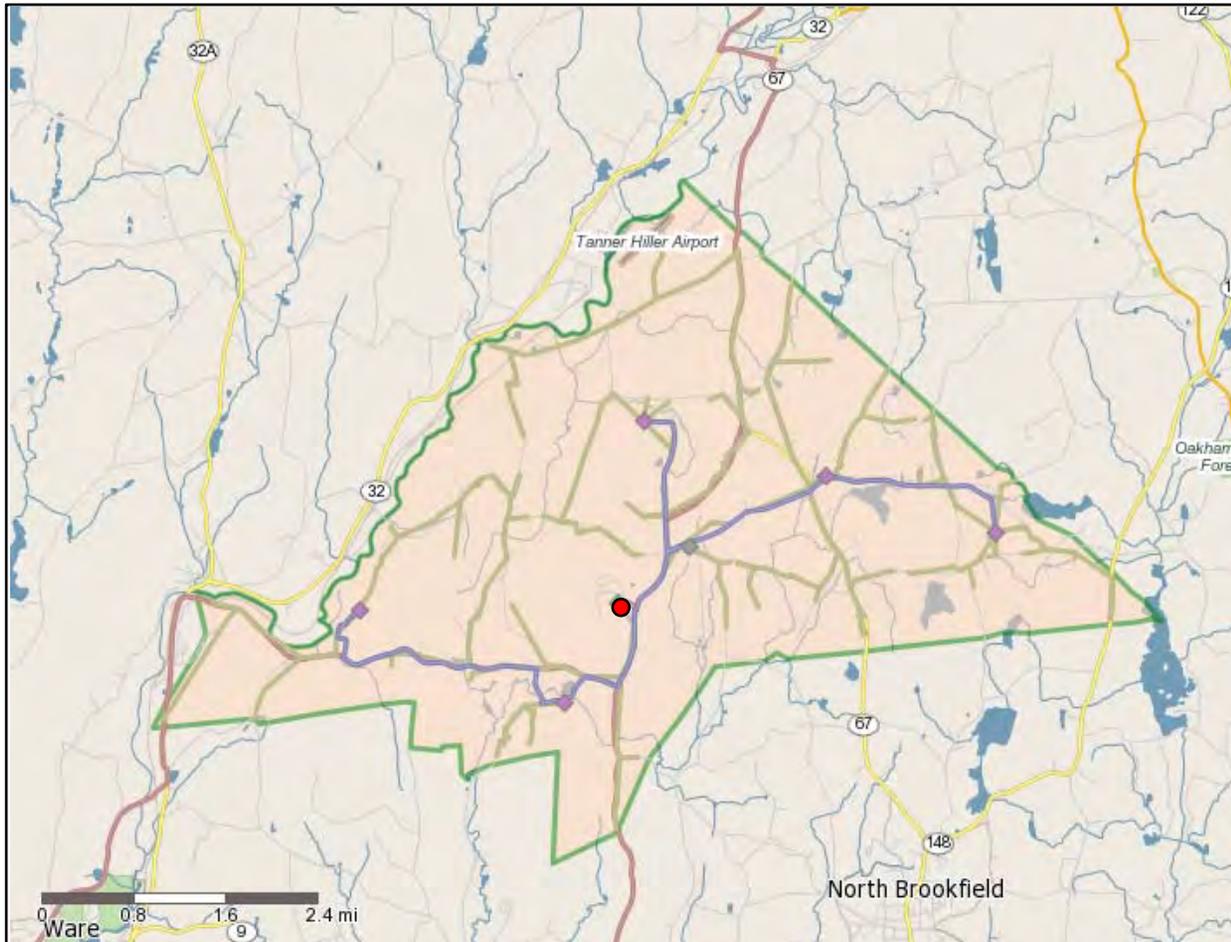
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# New Braintree: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 341  |
| Fiber Miles Modeled | 49   |
| Poles Modeled       | 1280 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,910,000 |
| Construction Costs Funded by MBI          | \$380,000   |
| Professional Services Costs Funded by MBI | \$340,000   |
| Projected Town Contribution               | \$1,190,000 |

# New Braintree: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,190,000 |
| Year 6 Debt Service @4% over 15 Years | \$93,200    |
| 2016 Total Assessed Value             | \$105M      |
| Year 6 Rate Impact per mil            | \$0.89      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$133.10                     |
| \$250,000               | \$221.80                     |
| \$500,000               | \$443.60                     |

## 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

# New Braintree: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 341       |
| Subscribers Modeled               | 203       |
| Entry Level Broadband Price       | \$85      |
| Average Revenue Per Unit (ARPU)** | \$108     |
| Annual Revenue                    | \$264,000 |
| Annual Operating Cost             | \$214,000 |
| 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 | \$127 |
| 60% Take Rate | \$85  |
| 75% Take Rate | \$69  |

## 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
  - 1% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **NEW MARLBOROUGH, MA**

#### Serviceable Premises

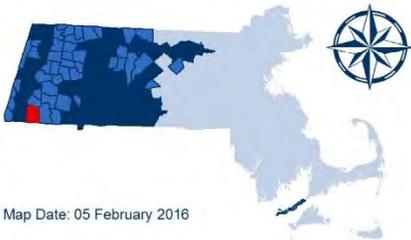
- Connected CAI Locations (4)
- Unserved Locations (1,086)

#### Existing Broadband Infrastructure

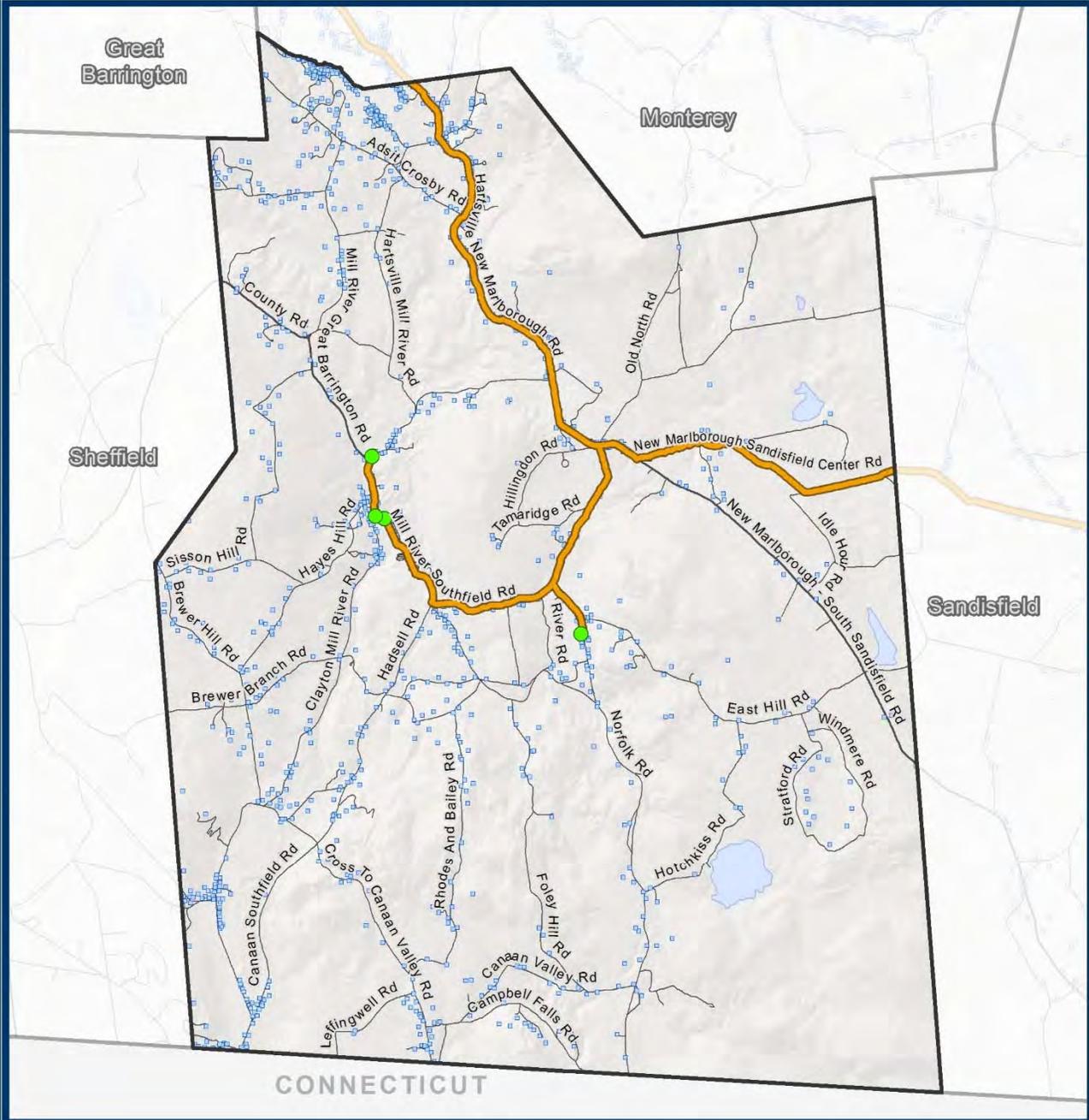
- ◆ MassBroadband 123 Interconnection Points
- ~ MassBroadband 123 Fiber-Optic Cable

#### Base Map

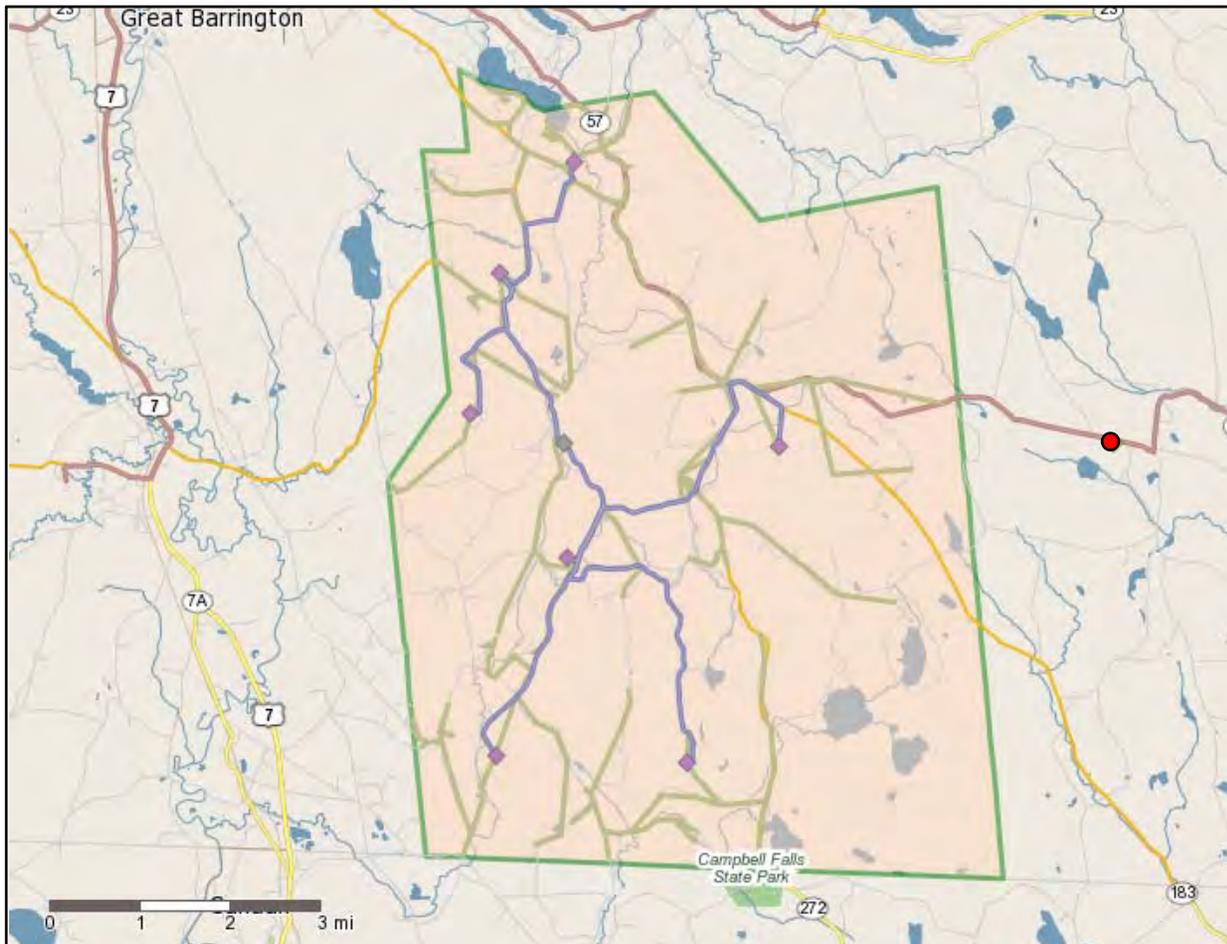
- Building Locations
- Town Boundaries
- ~ Roads
- Water Bodies



Map Date: 05 February 2016



# New Marlborough: 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* | 1,007 |
| Fiber Miles Modeled | 103   |
| Poles Modeled       | 2383  |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$4,730,000 |
| Construction Costs Funded by MBI          | \$920,000   |
| Professional Services Costs Funded by MBI | \$790,000   |
| Projected Town Contribution               | \$3,020,000 |

# New Marlborough: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$3,020,000 |
| Year 6 Debt Service @4% over 15 Years | \$236,600   |
| 2016 Total Assessed Value             | \$485M      |
| Year 6 Rate Impact per mil            | \$0.49      |

## Town Status

| Vote                              | Action         |
|-----------------------------------|----------------|
| Bond Authorization @ Town Meeting | No Vote Taken* |
| Debt Exclusion @ Town Election    | Passed         |

\* Vote planned for Special Town Meeting in April 2016.

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$73.10                      |
| \$250,000               | \$121.90                     |
| \$500,000               | \$243.80                     |

## 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

# New Marlborough: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 1007      |
| Subscribers Modeled               | 470       |
| Entry Level Broadband Price       | \$66      |
| Average Revenue Per Unit (ARPU)** | \$89      |
| Annual Revenue                    | \$499,000 |
| Annual Operating Cost             | \$449,000 |
| 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 | \$97 |
| 60% Take Rate | \$66 |
| 75% Take Rate | \$53 |

## 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
  - 33% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:  
**NEW SALEM, MA**

### Serviceable Premises

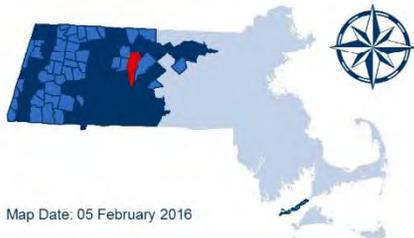
- Connected CAI Locations (6)
- Unserved Locations (464)

### Existing Broadband Infrastructure

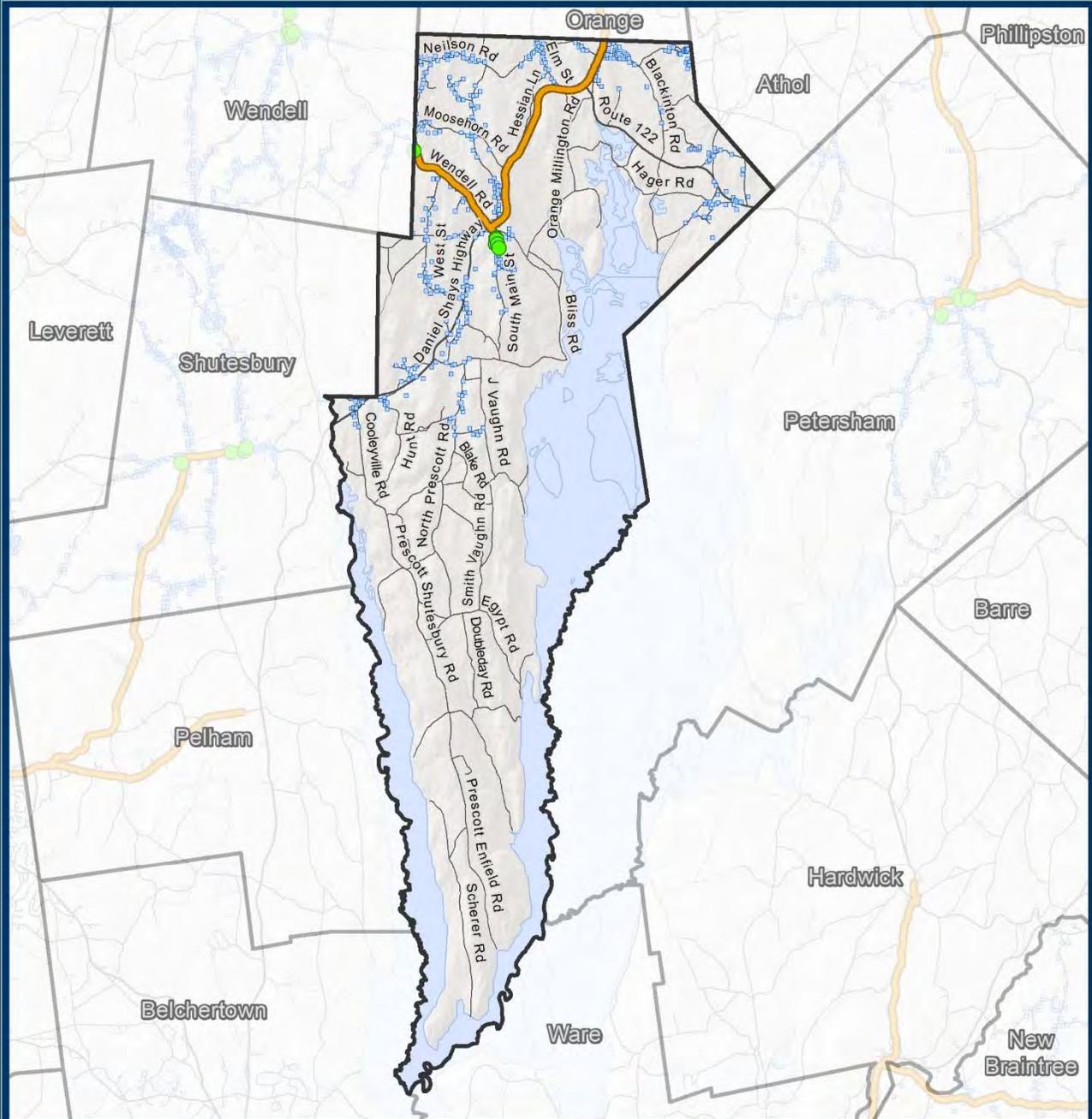
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

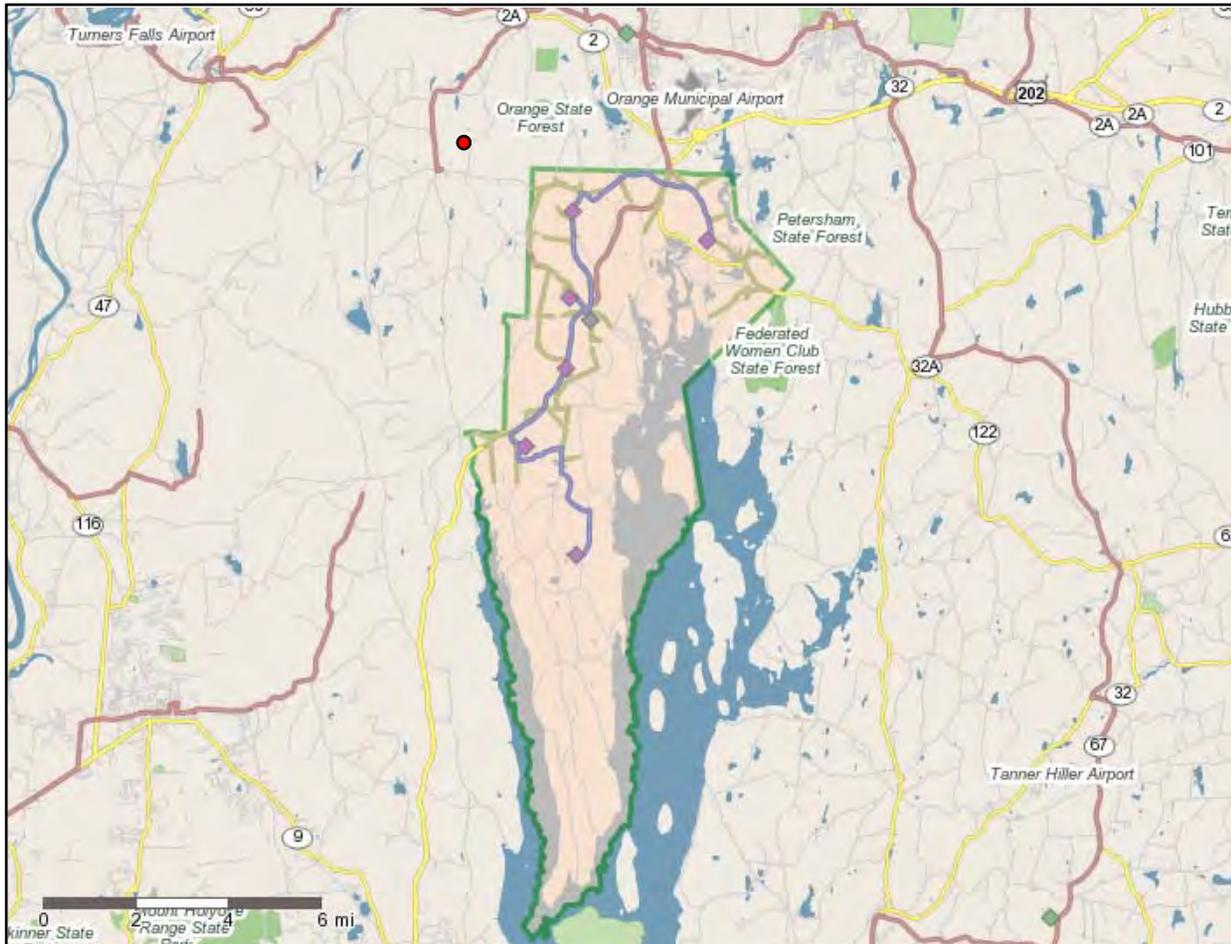
- Building Locations
- ⊞ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# New Salem: 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* | 465   |
| Fiber Miles Modeled | 41    |
| Poles Modeled       | 1,009 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,140,000 |
| Construction Costs Funded by MBI          | \$400,000   |
| Professional Services Costs Funded by MBI | \$350,000   |
| Projected Town Contribution               | \$1,390,000 |

# New Salem: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,390,000 |
| Year 6 Debt Service @4% over 15 Years | \$108,900   |
| 2016 Total Assessed Value             | \$105M      |
| Year 6 Rate Impact per mil            | \$1.01*     |

*\*New Salem has a split tax rate. The number above indicates the residential tax rate impact. The Commercial, Industrial, and Personal Property (CIP) tax rate impact would be 1.35.*

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$151.29**                   |
| \$250,000               | \$252.16**                   |
| \$500,000               | \$504.32**                   |

*\*\*New Salem has a split tax rate. These numbers indicate residential annual property tax impacts for the project.*

## Town Status

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

## 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

# New Salem: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 465       |
| Subscribers Modeled               | 266       |
| Entry Level Broadband Price       | \$64      |
| Average Revenue Per Unit (ARPU)** | \$87      |
| Annual Revenue                    | \$277,000 |
| Annual Operating Cost             | \$227,000 |
| 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 | \$94 |
| 60% Take Rate | \$64 |
| 75% Take Rate | \$51 |

## 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
  - 7% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### OTIS, MA

#### Serviceable Premises

- Connected CAI Locations (5)
- Unserved Locations (1,687)

#### Existing Broadband Infrastructure

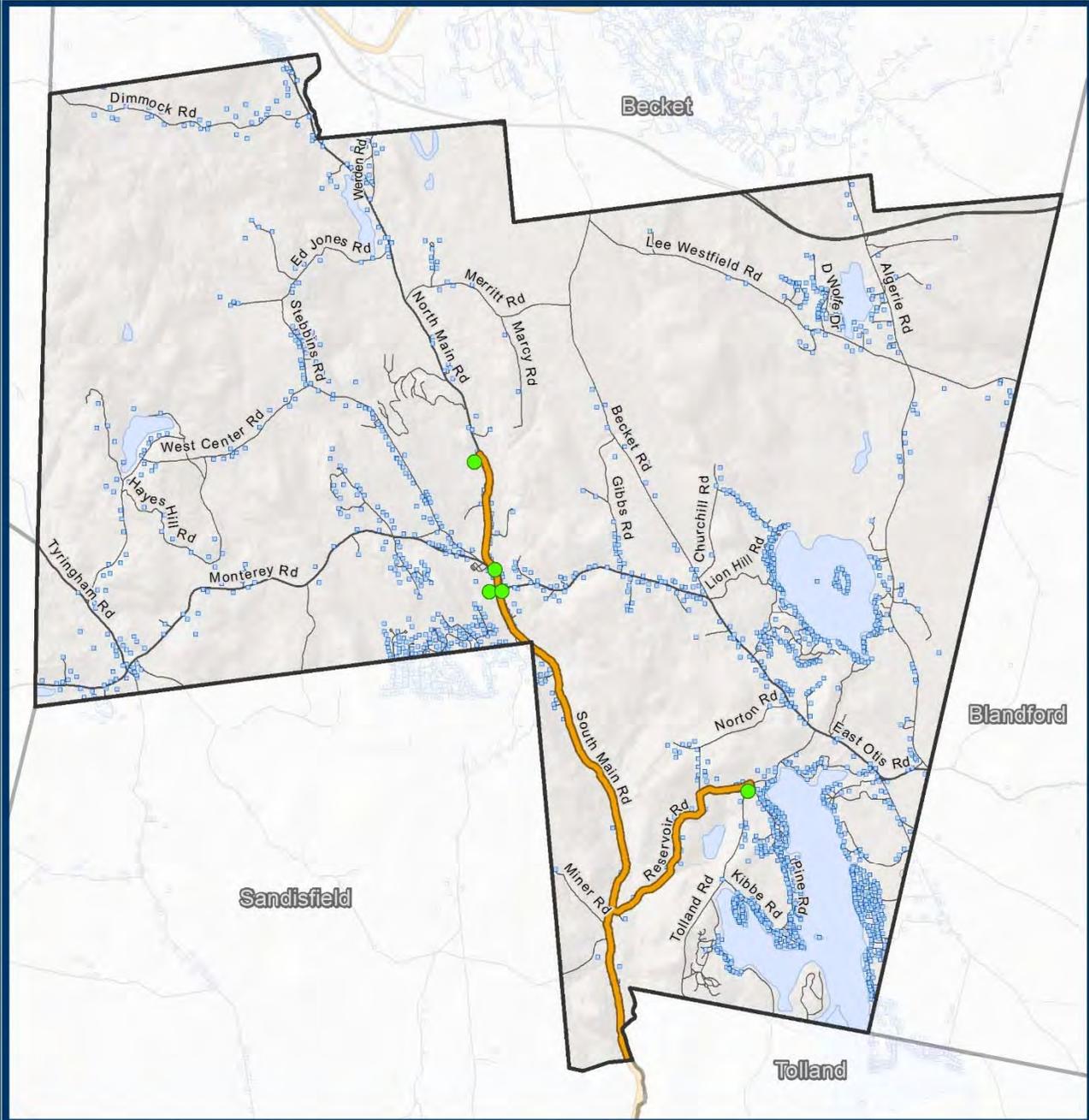
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

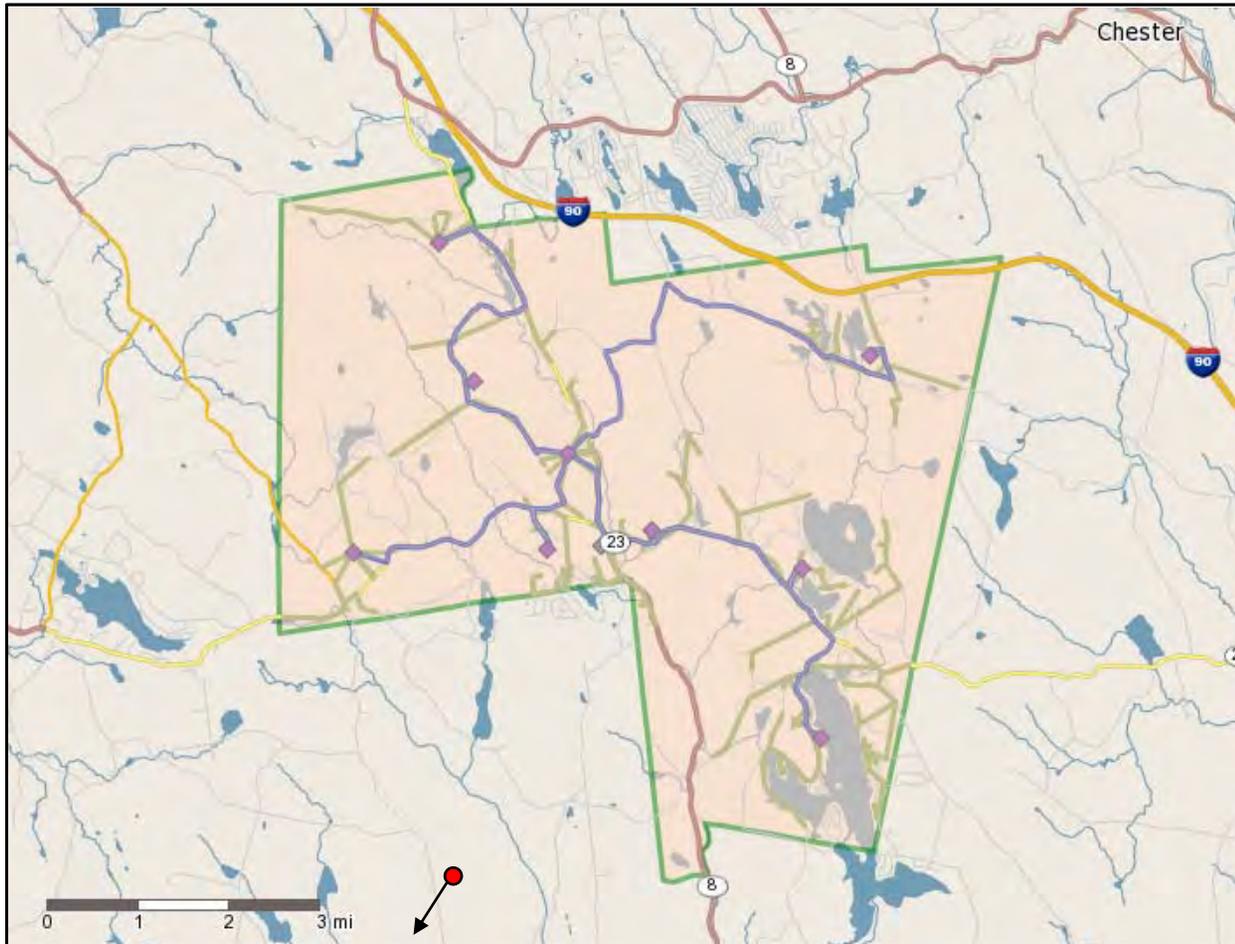
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Otis: Initial Model of Infrastructure & CAPEX



**Modeled Network Infrastructure**

|  |  |
|--|--|
| <span style="color: yellow;">—</span> Core Fiber (existing & redundant fiber)    | <span style="color: red;">●</span> Existing Point of Interconnection (POI)   |
| <span style="color: purple;">—</span> Distribution Fiber (core fiber to cabinet) | <span style="color: purple;">◆</span> Cabinet (equipment for local network)  |
| <span style="color: green;">—</span> Local Fiber (cabinets to premises)          | <span style="color: green;">◆</span> Hut (equipment for entire town network) |
| <span style="color: green;">—</span> 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* | 1,612 |
| Fiber Miles Modeled | 85    |
| Poles Modeled       | 1,941 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$4,870,000 |
| Construction Costs Funded by MBI          | \$1,080,000 |
| Professional Services Costs Funded by MBI | \$690,000   |
| Projected Town Contribution               | \$3,100,000 |

# Otis: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$3,100,000 |
| Year 6 Debt Service @4% over 15 Years | \$242,800   |
| 2016 Total Assessed Value             | \$608M      |
| Year 6 Rate Impact per mil            | \$0.40      |

## 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               | \$59.90                      |
| \$250,000               | \$99.80                      |
| \$500,000               | \$199.60                     |

## 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

# Otis: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 1,612     |
| Subscribers Modeled               | 612       |
| Entry Level Broadband Price       | \$55      |
| Average Revenue Per Unit (ARPU)** | \$78      |
| Annual Revenue                    | \$574,000 |
| Annual Operating Cost             | \$524,000 |
| 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 | \$81 |
| 60% Take Rate | \$55 |
| 75% Take Rate | \$45 |

## 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
  - 55% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (3)
- Unserved Locations (427)

### Existing Broadband Infrastructure

- ◆ MassBroadband 123 Interconnection Points
- ~ MassBroadband 123 Fiber-Optic Cable

### Base Map

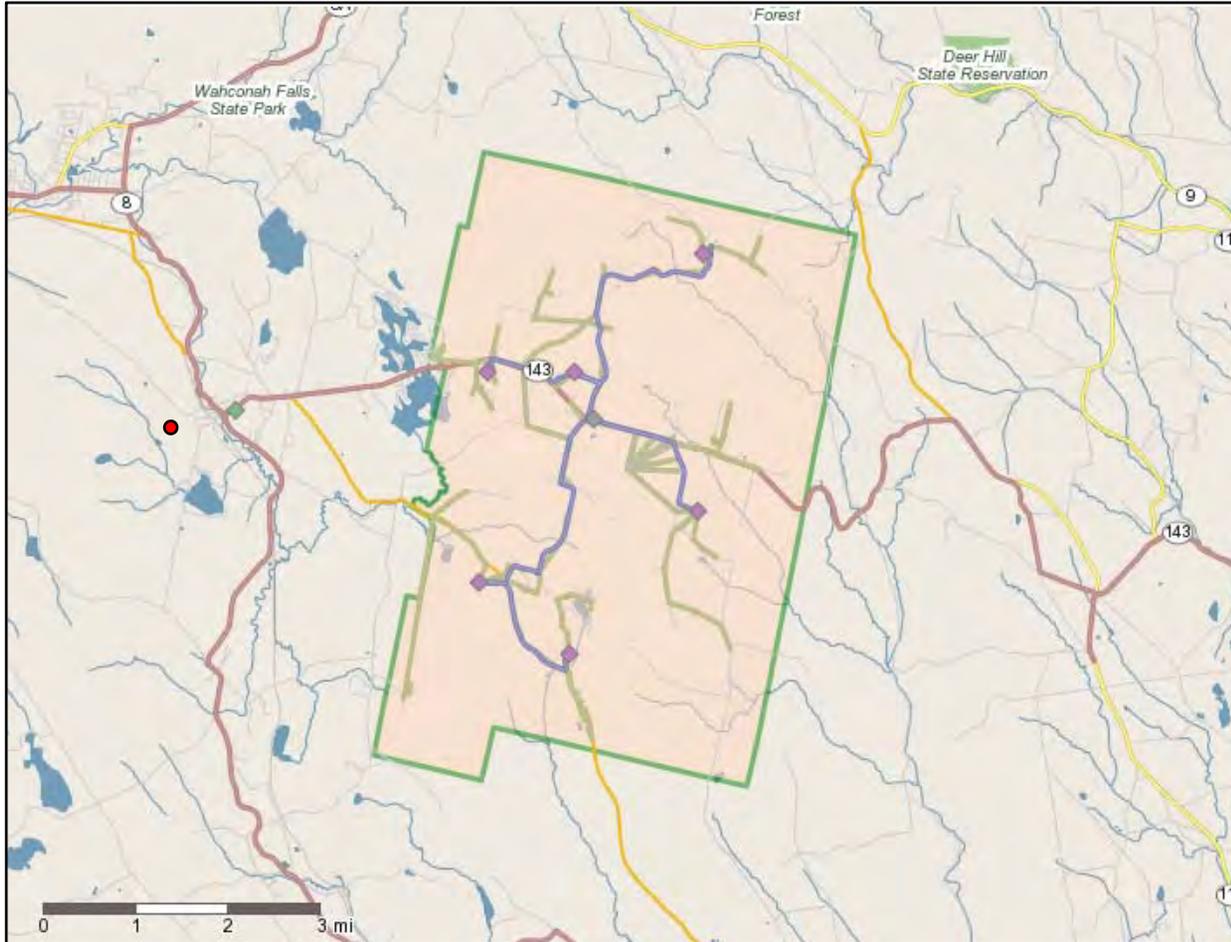
- Building Locations
- ◻ Town Boundaries
- ~ Roads
- ◐ Water Bodies



Map Date: 05 February 2016



# Peru: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 419 |
| Fiber Miles Modeled | 39  |
| Poles Modeled       | 859 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,840,000 |
| Construction Costs Funded by MBI          | \$380,000   |
| Professional Services Costs Funded by MBI | \$310,000   |
| Projected Town Contribution               | \$1,150,000 |

# Peru: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,150,000 |
| Year 6 Debt Service @4% over 15 Years | \$90,100    |
| 2016 Total Assessed Value             | \$86M       |
| Year 6 Rate Impact per mil            | \$1.04      |

## 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               | \$156.50                     |
| \$250,000               | \$260.90                     |
| \$500,000               | \$521.70                     |

## 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

# Peru: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 419       |
| Subscribers Modeled               | 227       |
| Entry Level Broadband Price       | \$69      |
| Average Revenue Per Unit (ARPU)** | \$92      |
| Annual Revenue                    | \$251,000 |
| Annual Operating Cost             | \$201,000 |
| 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 | \$102 |
| 60% Take Rate | \$69  |
| 75% Take Rate | \$56  |

## 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
  - 14% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

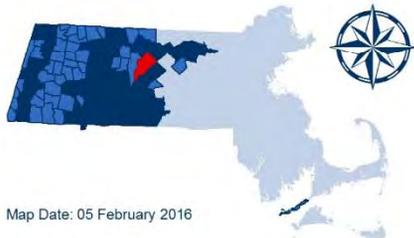
- Connected CAI Locations (5)
- Unserved Locations (534)

### Existing Broadband Infrastructure

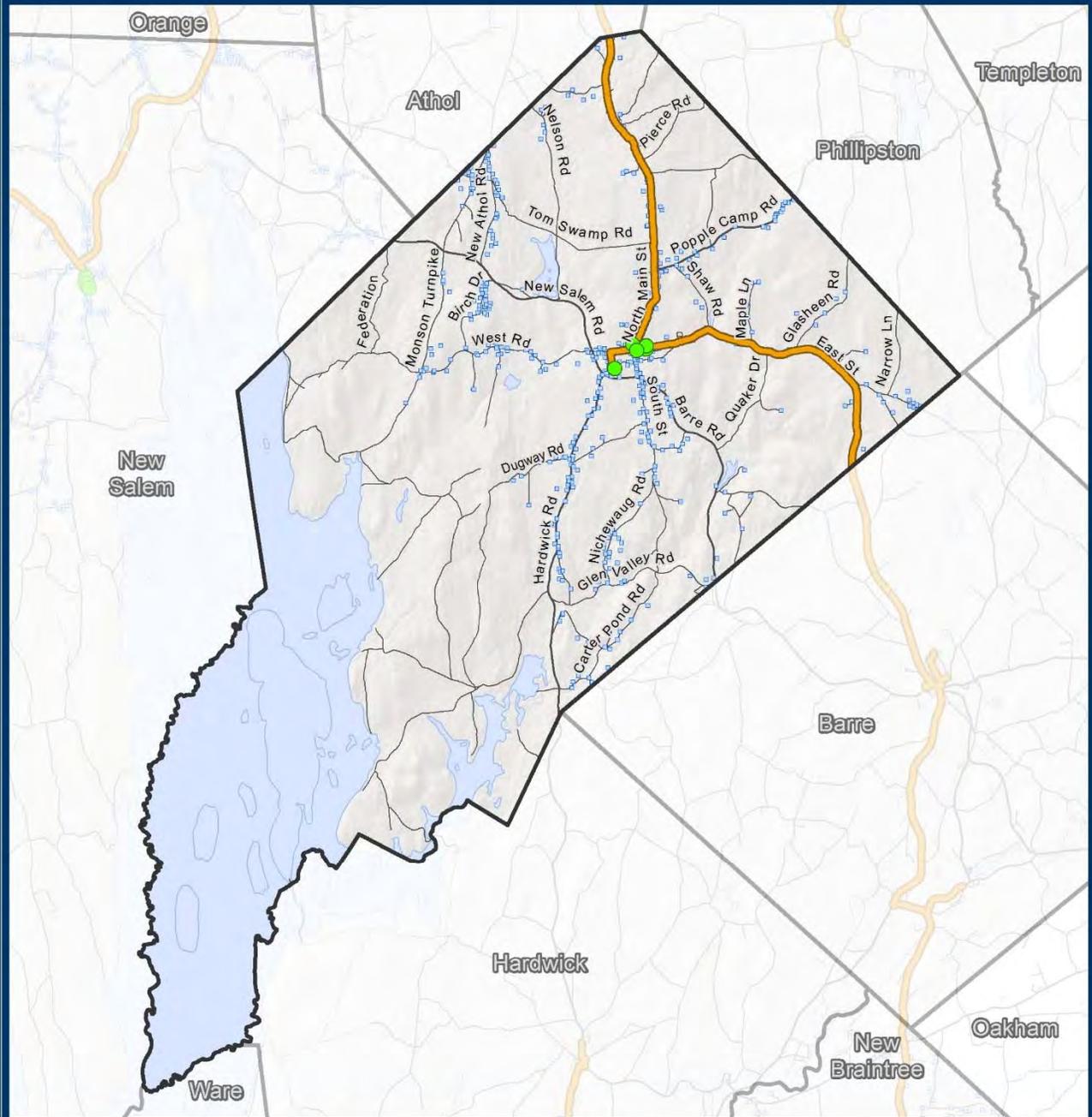
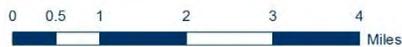
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

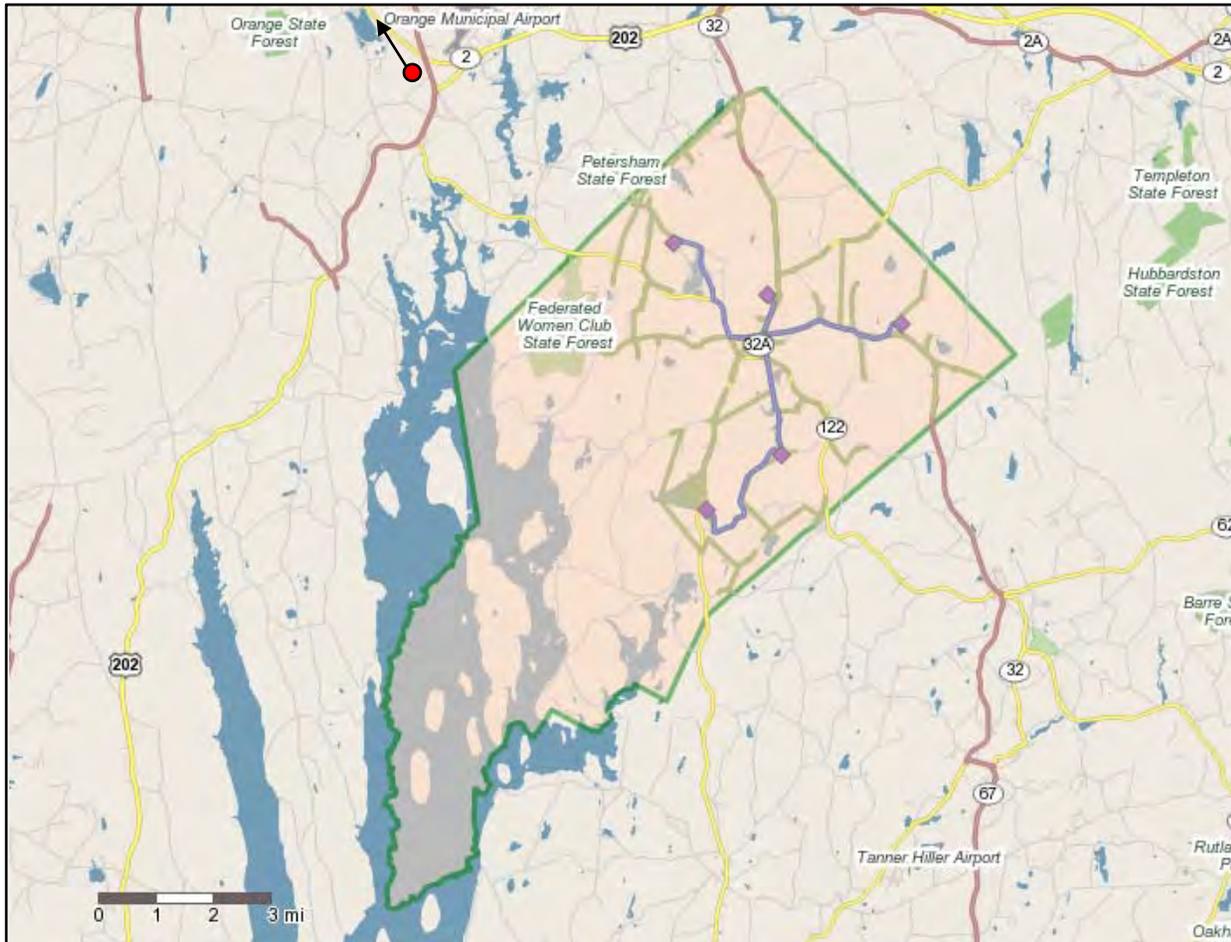
- Building Locations
- ▭ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Petersham: 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* | 493  |
| Fiber Miles Modeled | 56   |
| Poles Modeled       | 1375 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,530,000 |
| Construction Costs Funded by MBI          | \$460,000   |
| Professional Services Costs Funded by MBI | \$420,000   |
| Projected Town Contribution               | \$1,650,000 |

# Petersham: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,650,000 |
| Year 6 Debt Service @4% over 15 Years | \$129,300   |
| 2016 Total Assessed Value             | \$149M      |
| Year 6 Rate Impact per mil            | \$0.87      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$130.50                     |
| \$250,000               | \$217.40                     |
| \$500,000               | \$434.90                     |

## 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

# Petersham: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 493       |
| Subscribers Modeled               | 288       |
| Entry Level Broadband Price       | \$68      |
| Average Revenue Per Unit (ARPU)** | \$91      |
| Annual Revenue                    | \$313,000 |
| Annual Operating Cost             | \$263,000 |
| Annual Profit                     | \$50      |

\* Approximate household locations from Experian

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

|               |       |
|---------------|-------|
| 40% Take Rate | \$100 |
| 60% Take Rate | \$68  |
| 75% Take Rate | \$55  |

## 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
  - 4% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (4)
- Unserved Locations (347)

### Existing Broadband Infrastructure

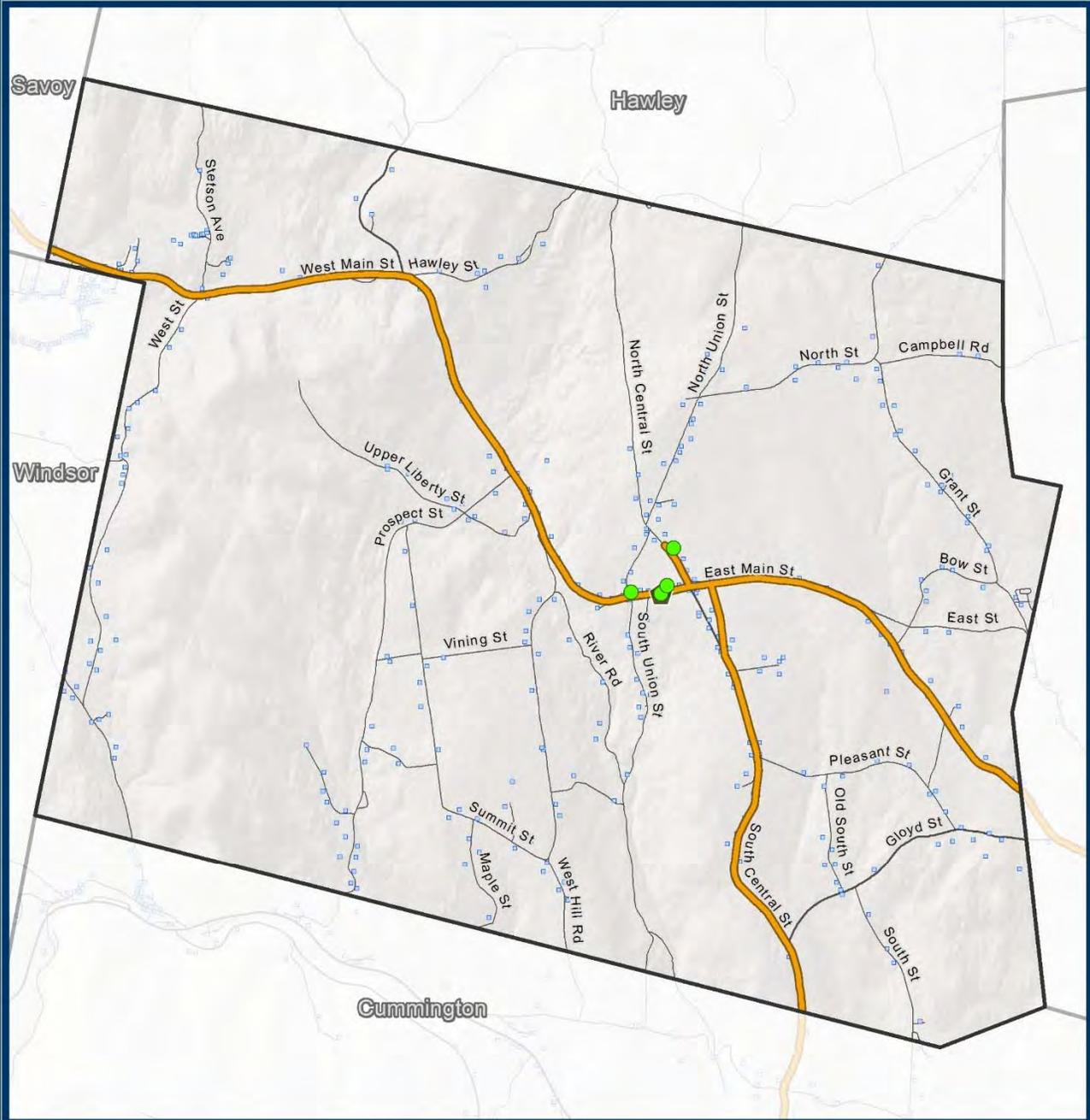
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

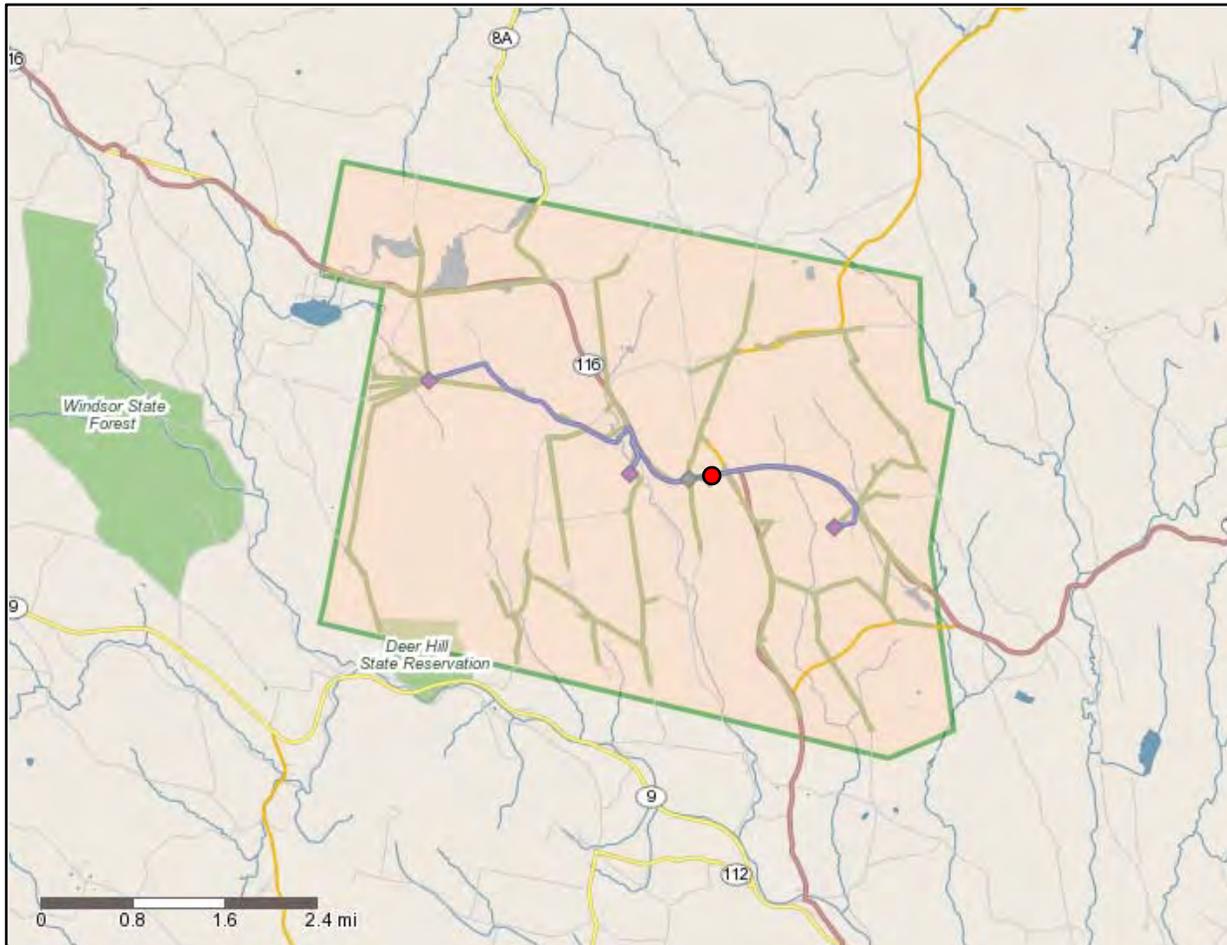
- Building Locations
- 🗺️ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Plainfield: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 334 |
| Fiber Miles Modeled | 41  |
| Poles Modeled       | 895 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,760,000 |
| Construction Costs Funded by MBI          | \$350,000   |
| Professional Services Costs Funded by MBI | \$300,000   |
| Projected Town Contribution               | \$1,110,000 |

# Plainfield: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,110,000 |
| Year 6 Debt Service @4% over 15 Years | \$87,000    |
| 2016 Total Assessed Value             | \$85M       |
| Year 6 Rate Impact per mil            | \$1.02      |

## 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               | \$153.40                     |
| \$250,000               | \$255.70                     |
| \$500,000               | \$511.30                     |

## 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

# Plainfield: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 334       |
| Subscribers Modeled               | 182       |
| Entry Level Broadband Price       | \$89      |
| Average Revenue Per Unit (ARPU)** | \$112     |
| Annual Revenue                    | \$244,000 |
| Annual Operating Cost             | \$194,000 |
| 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 | \$132 |
| 60% Take Rate | \$89  |
| 75% Take Rate | \$72  |

## 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
  - 14% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

## PRINCETON, MA

### Serviceable Premises

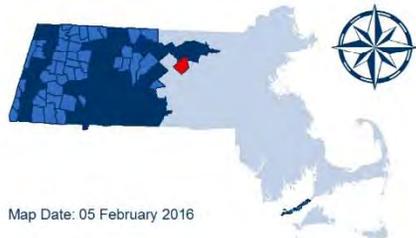
- Connected CAI Locations (8)
- Unserved Locations (1,325)

### Existing Broadband Infrastructure

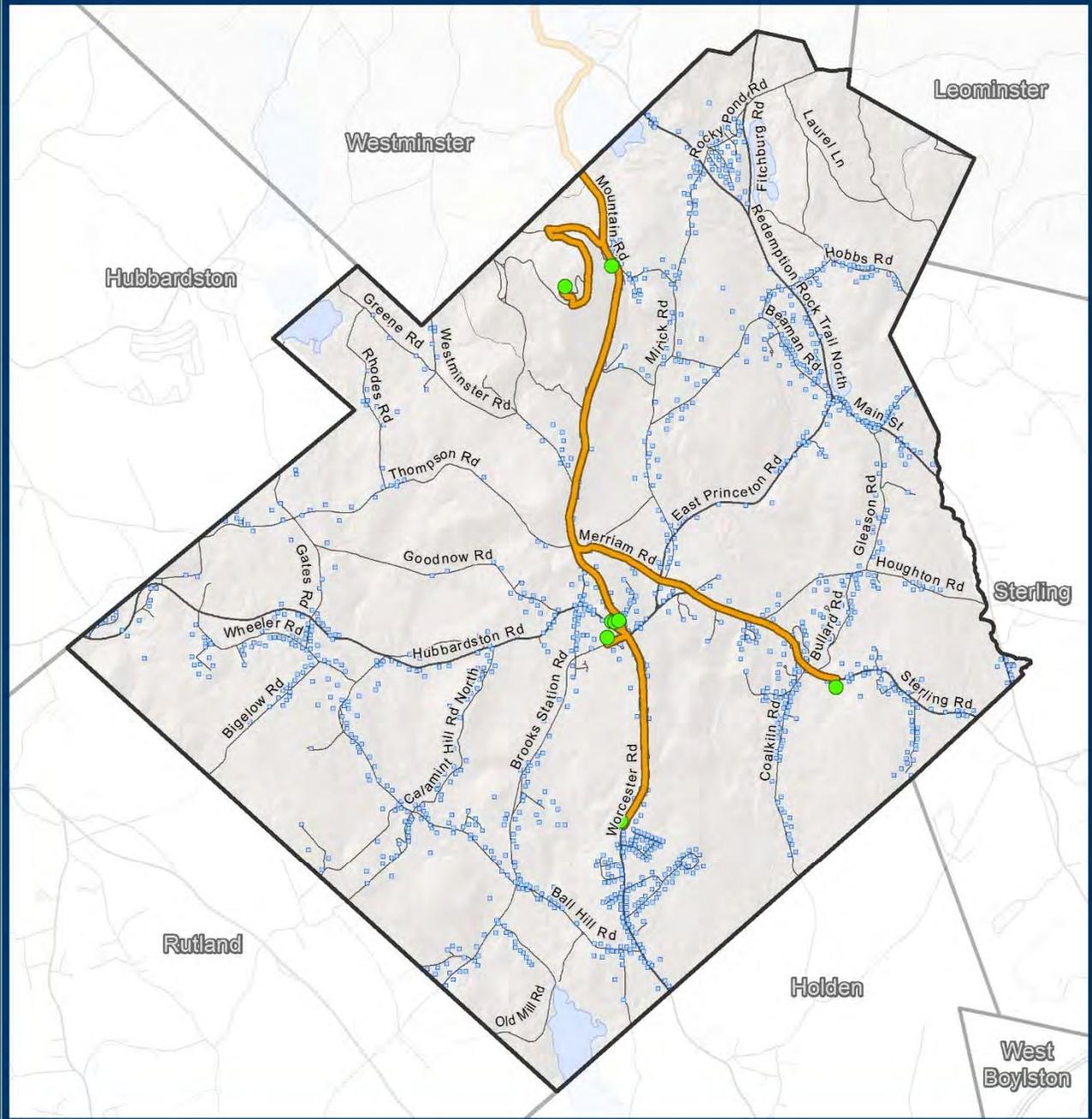
- ◆ MassBroadband 123 Interconnection Points
- MassBroadband 123 Fiber-Optic Cable

### Base Map

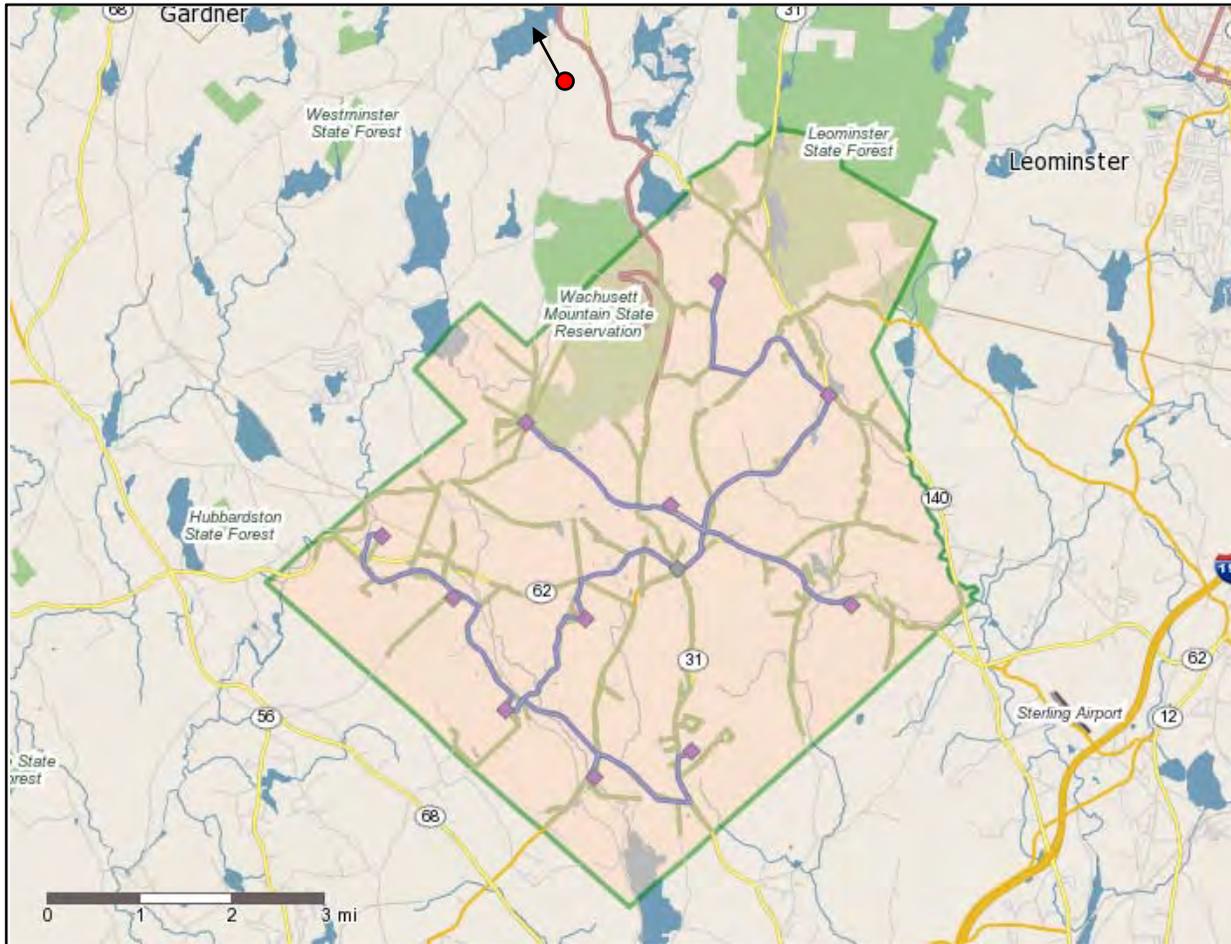
- Building Locations
- Town Boundaries
- Roads
- Water Bodies



Map Date: 05 February 2016



# Princeton: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 1245 |
| Fiber Miles Modeled | 80   |
| Poles Modeled       | 2278 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$4,400,000 |
| Construction Costs Funded by MBI          | \$910,000   |
| Professional Services Costs Funded by MBI | \$640,000   |
| Projected Town Contribution               | \$2,850,000 |

# Princeton: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$2,850,000 |
| Year 6 Debt Service @4% over 15 Years | \$223,300   |
| 2016 Total Assessed Value             | \$448M      |
| Year 6 Rate Impact per mil            | \$0.50      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | Passed        |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$74.80                      |
| \$250,000               | \$124.60                     |
| \$500,000               | \$249.30                     |

## 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

# Princeton: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 1245      |
| Subscribers Modeled               | 742       |
| Entry Level Broadband Price       | \$42      |
| Average Revenue Per Unit (ARPU)** | \$65      |
| Annual Revenue                    | \$574,000 |
| Annual Operating Cost             | \$524,000 |
| 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 | \$61 |
| 60% Take Rate | \$42 |
| 75% Take Rate | \$34 |

## 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
  - 1% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### ROWE, MA

#### Serviceable Premises

- Connected CAI Locations (5)
- Unserved Locations (227)

#### Existing Broadband Infrastructure

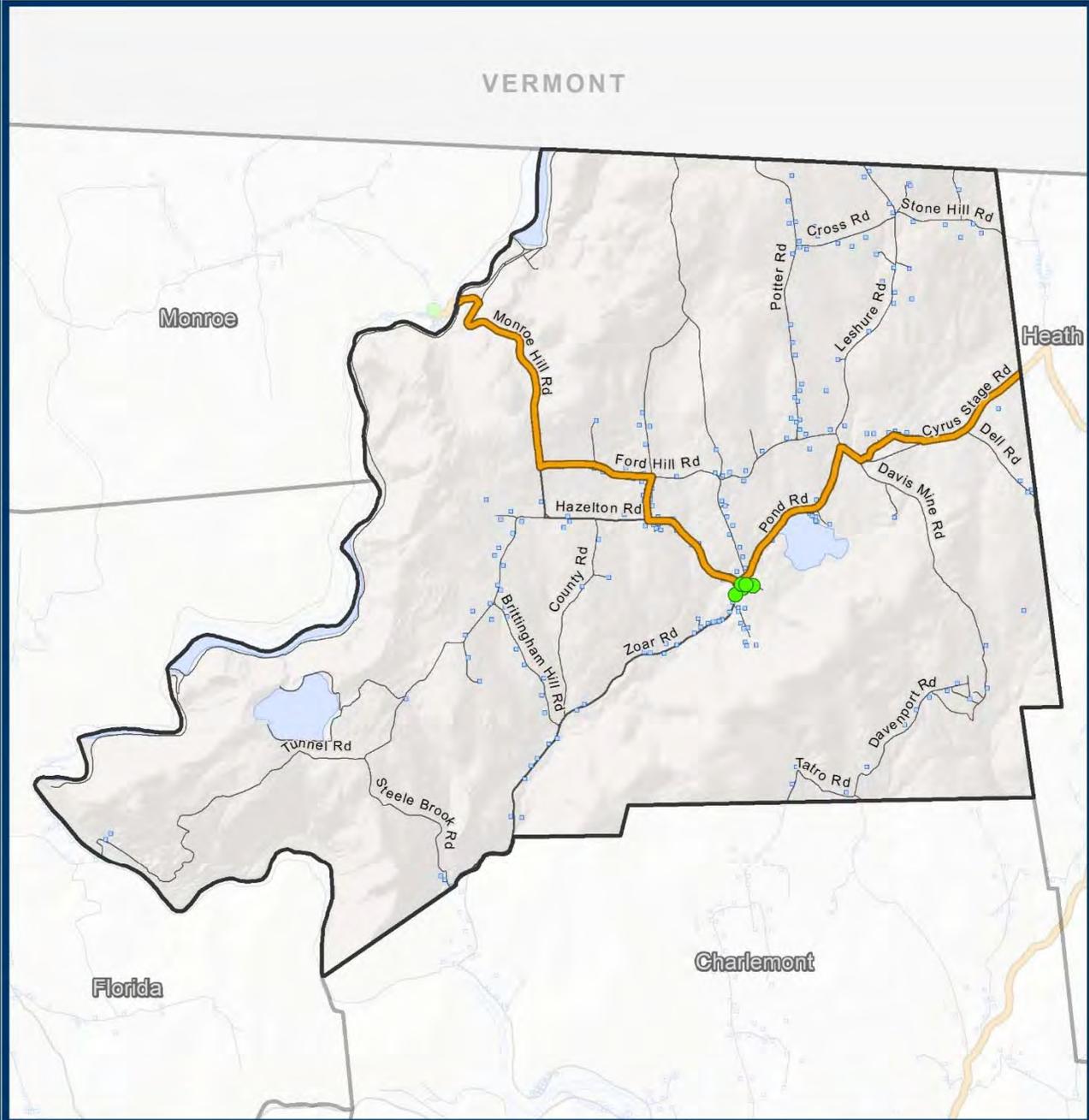
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

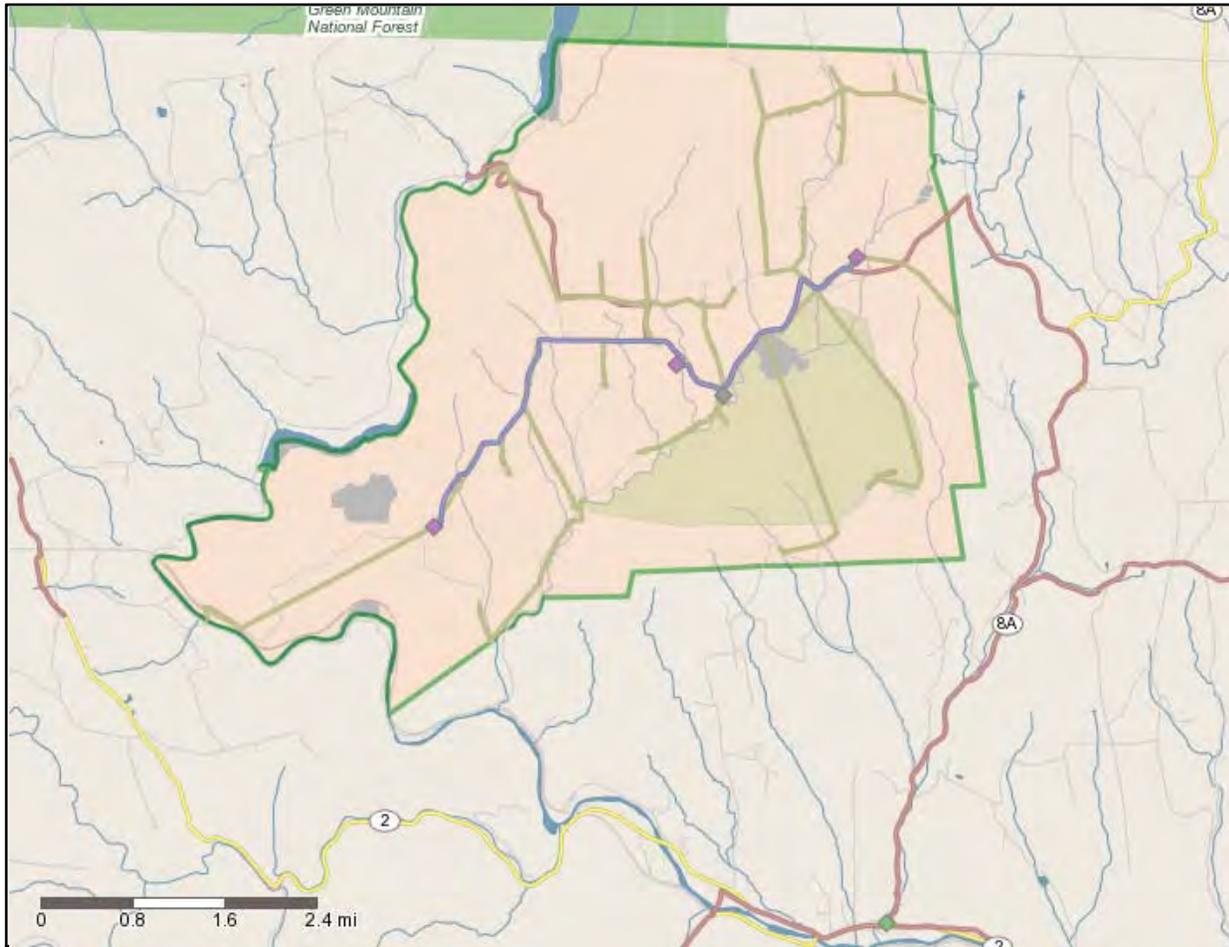
- Building Locations
- ⬛ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Rowe: 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* | 212 |
| Fiber Miles Modeled | 31  |
| Poles Modeled       | 672 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,300,000 |
| Construction Costs Funded by MBI          | \$220,000   |
| Professional Services Costs Funded by MBI | \$220,000   |
| Projected Town Contribution               | \$860,000   |

# Rowe: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$860,000 |
| Year 6 Debt Service @4% over 15 Years | \$67,400  |
| 2016 Total Assessed Value             | \$295M    |
| Year 6 Rate Impact per mil            | \$0.11*   |

\*Rowe has a split tax rate, the number above indicates the residential tax rate impact. The Commercial, Industrial, and Personal Property (CIP) tax rate impact would be .25.

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$17.17**                    |
| \$250,000               | \$28.62**                    |
| \$500,000               | \$57.25**                    |

\*\*Rowe has a split tax rate. These numbers indicate residential annual property tax impacts for the project.

## Town Status

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

## 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

# Rowe: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 212       |
| Subscribers Modeled               | 109       |
| Entry Level Broadband Price       | \$115     |
| Average Revenue Per Unit (ARPU)** | \$138     |
| Annual Revenue                    | \$180,000 |
| Annual Operating Cost             | \$130,000 |
| 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 | \$173 |
| 60% Take Rate | \$115 |
| 75% Take Rate | \$93  |

## 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
  - 22% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **ROYALSTON, MA**

#### Serviceable Premises

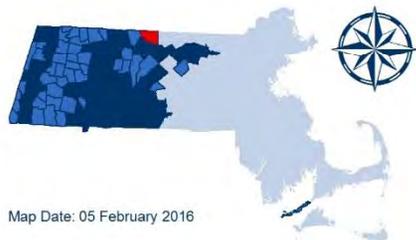
- Connected CAI Locations (2)
- Unserved Locations (651)

#### Existing Broadband Infrastructure

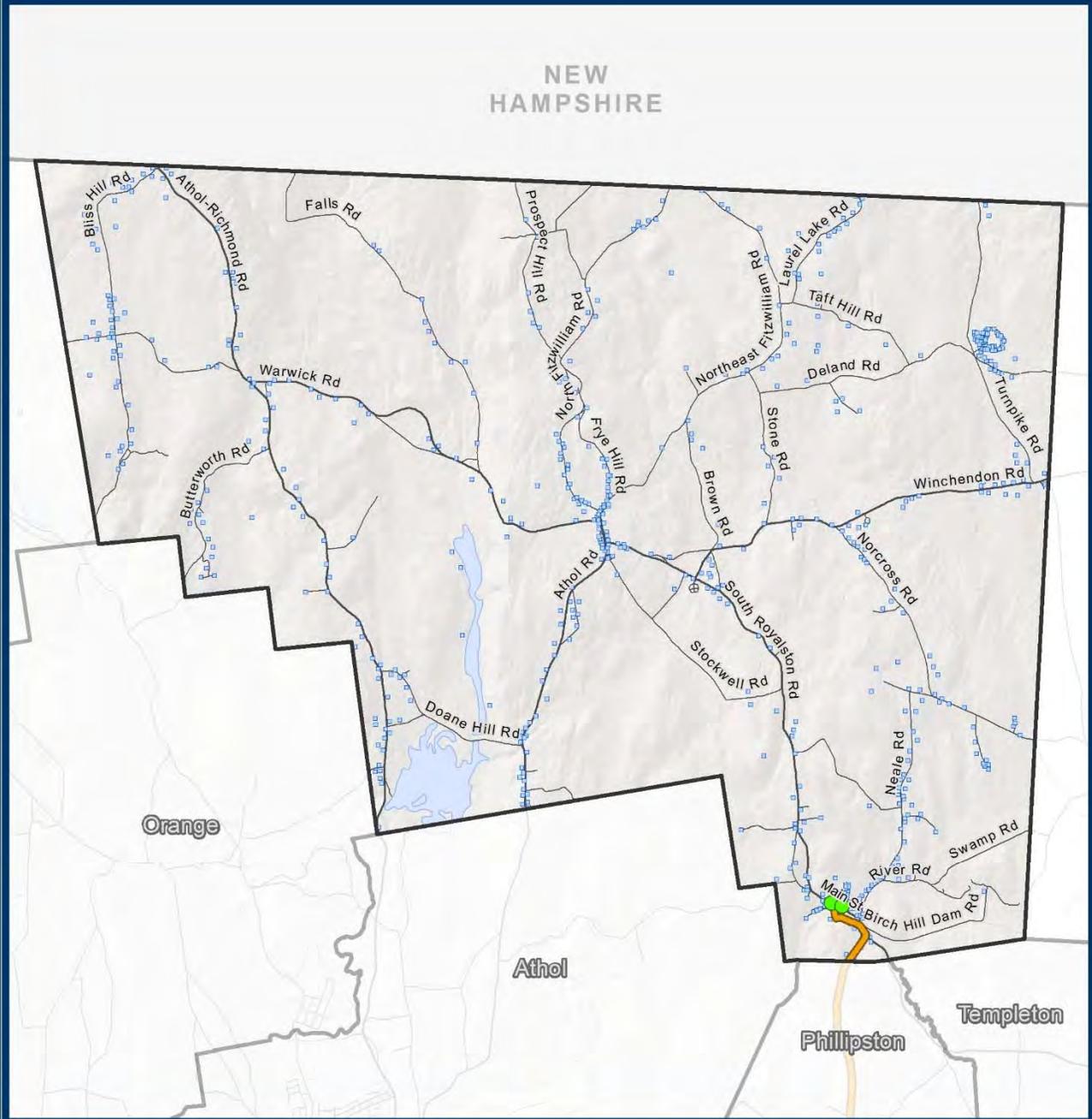
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

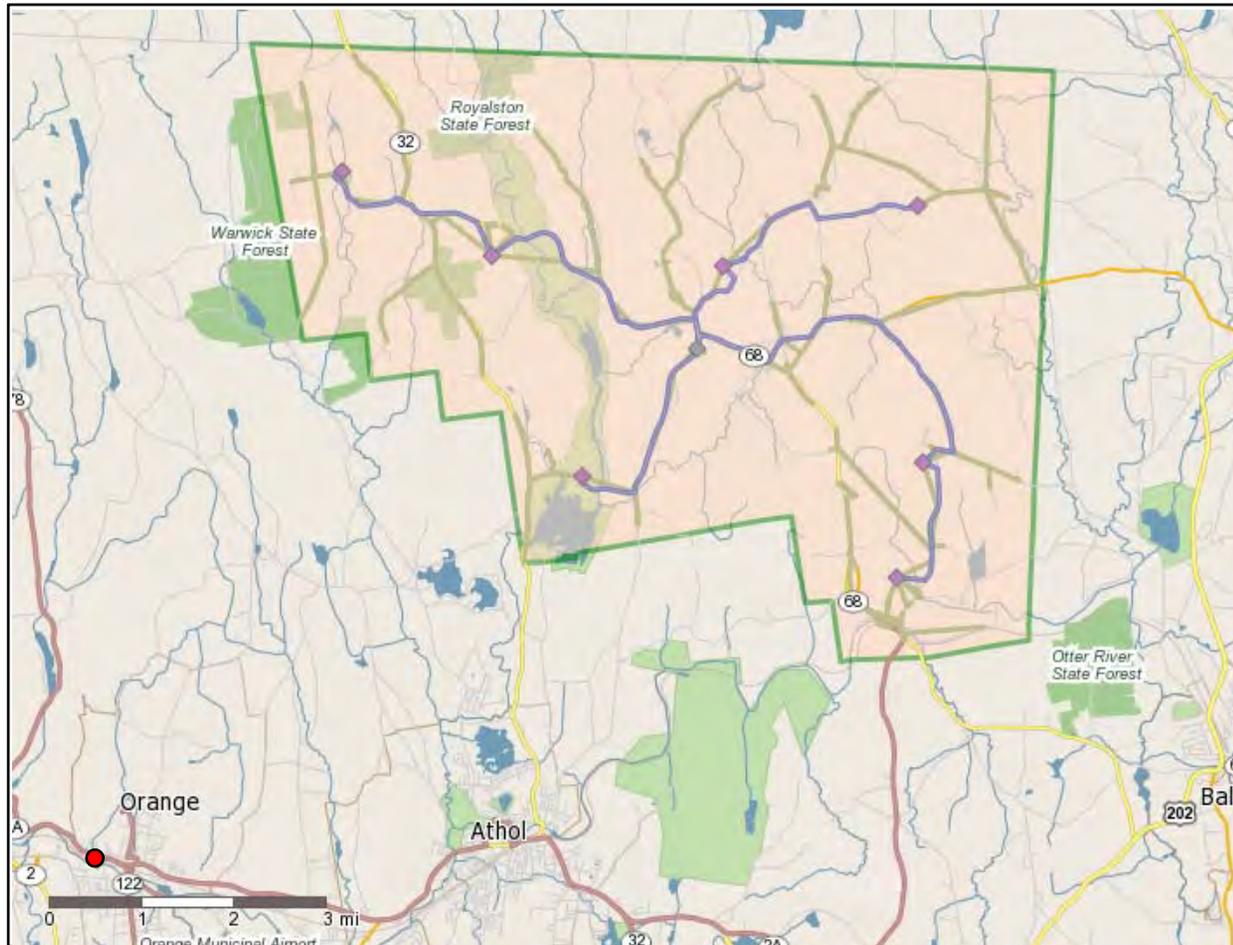
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Royalston: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 580  |
| Fiber Miles Modeled | 69   |
| Poles Modeled       | 1838 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$3,180,000 |
| Construction Costs Funded by MBI          | \$610,000   |
| Professional Services Costs Funded by MBI | \$560,000   |
| Projected Town Contribution               | \$2,010,000 |

# Royalston: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$2,010,000 |
| Year 6 Debt Service @4% over 15 Years | \$157,500   |
| 2016 Total Assessed Value             | \$120M      |
| Year 6 Rate Impact per mil            | \$1.32      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$197.70                     |
| \$250,000               | \$329.40                     |
| \$500,000               | \$658.90                     |

## 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

# Royalston: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 580       |
| Subscribers Modeled               | 327       |
| Entry Level Broadband Price       | \$69      |
| Average Revenue Per Unit (ARPU)** | \$92      |
| Annual Revenue                    | \$360,000 |
| Annual Operating Cost             | \$310,000 |
| 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 | \$102 |
| 60% Take Rate | \$69  |
| 75% Take Rate | \$55  |

## 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
  - 9% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (5)
- Unserved Locations (687)

### Existing Broadband Infrastructure

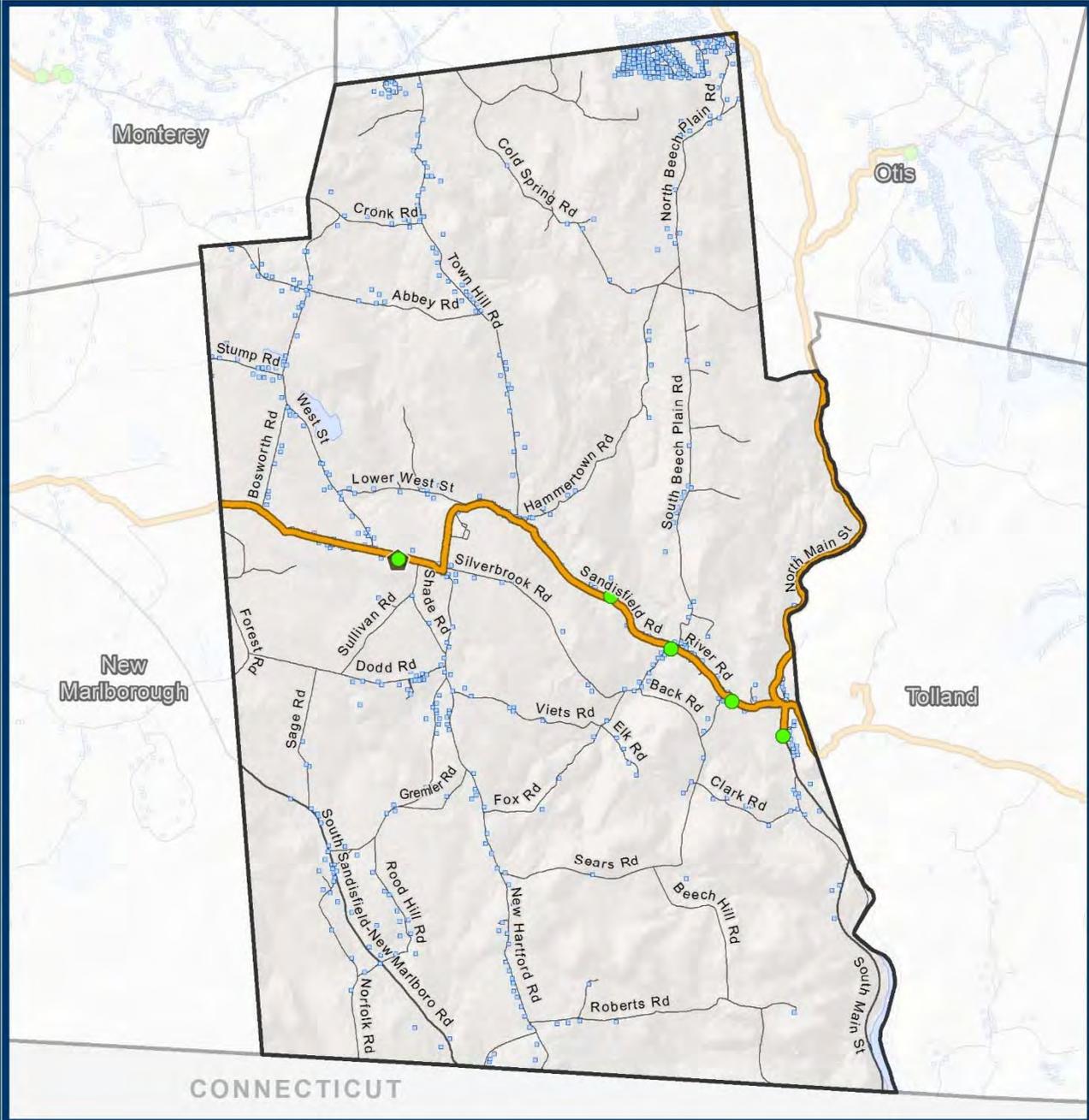
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

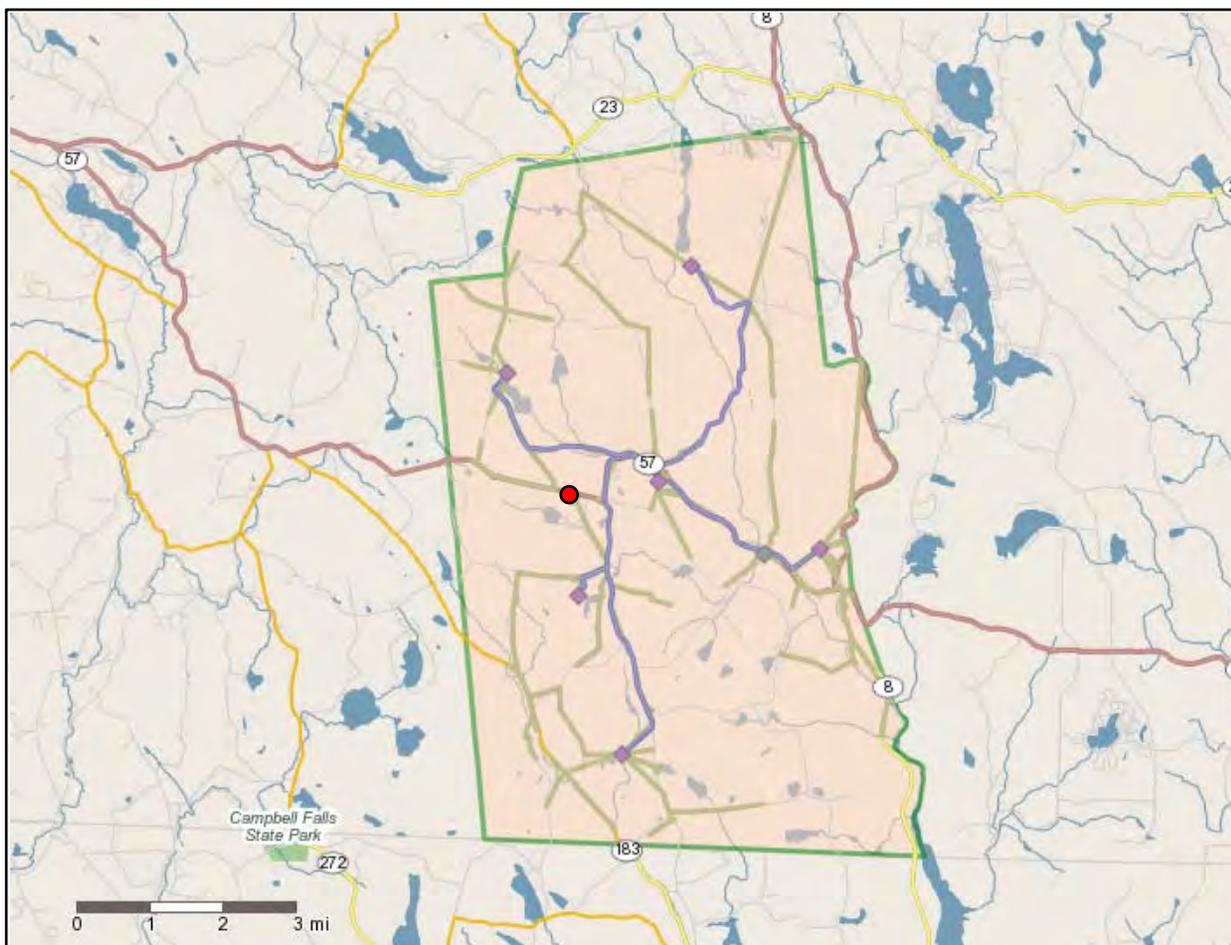
- Building Locations
- ⊞ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Sandisfield: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 619  |
| Fiber Miles Modeled | 74   |
| Poles Modeled       | 1422 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$3,610,000 |
| Construction Costs Funded by MBI          | \$620,000   |
| Professional Services Costs Funded by MBI | \$610,000   |
| Projected Town Contribution               | \$2,380,000 |

# Sandisfield: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$2,380,000 |
| Year 6 Debt Service @4% over 15 Years | \$186,400   |
| 2016 Total Assessed Value             | \$216M      |
| Year 6 Rate Impact per mil            | \$0.86      |

## 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               | \$129.20                     |
| \$250,000               | \$215.40                     |
| \$500,000               | \$430.80                     |

## 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

# Sandisfield: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 619       |
| Subscribers Modeled               | 272       |
| Entry Level Broadband Price       | \$86      |
| Average Revenue Per Unit (ARPU)** | \$109     |
| Annual Revenue                    | \$355,000 |
| Annual Operating Cost             | \$305,000 |
| 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 | \$128 |
| 60% Take Rate | \$86  |
| 75% Take Rate | \$69  |

## 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
  - 40% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

Broadband Infrastructure and Service in:

### SAVOY, MA

#### Serviceable Premises

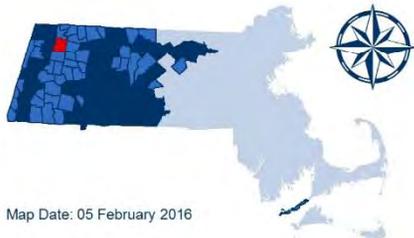
- Connected CAI Locations (3)
- Unserved Locations (372)

#### Existing Broadband Infrastructure

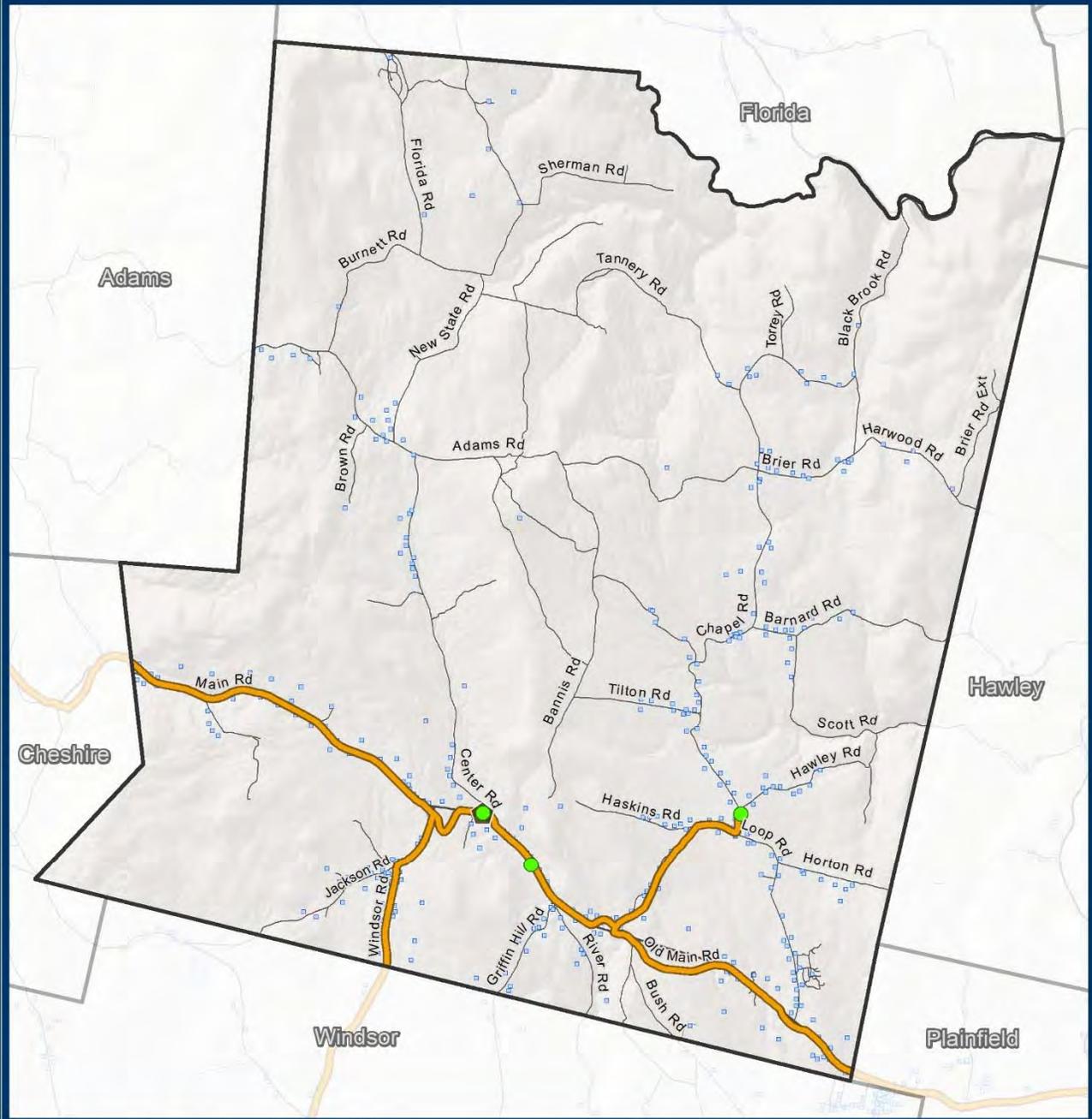
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

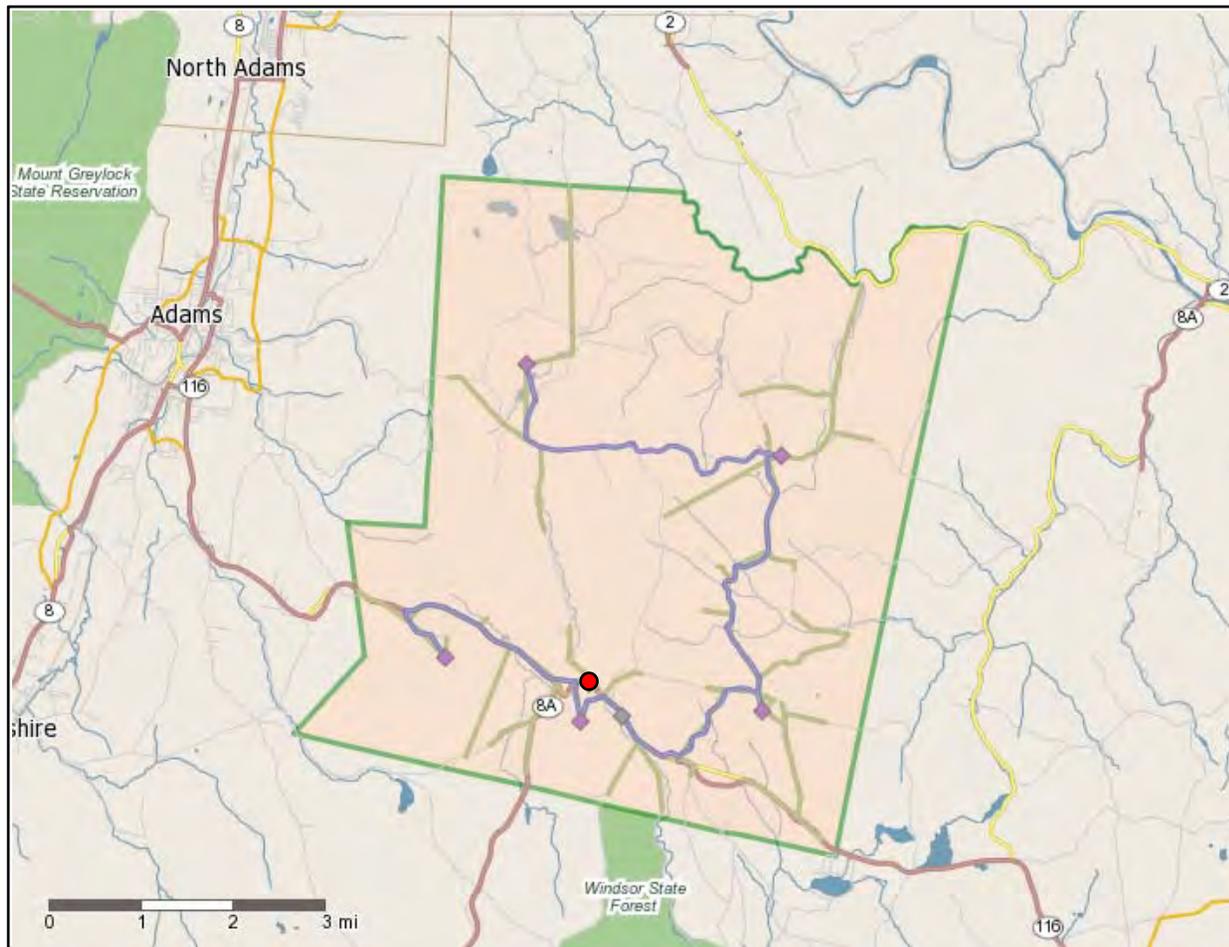
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Savoy: 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* | 407 |
| Fiber Miles Modeled | 43  |
| Poles Modeled       | 691 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,760,000 |
| Construction Costs Funded by MBI          | \$350,000   |
| Professional Services Costs Funded by MBI | \$300,000   |
| Projected Town Contribution               | \$1,110,000 |

# Savoy: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,110,000 |
| Year 6 Debt Service @4% over 15 Years | \$87,000    |
| 2016 Total Assessed Value             | \$67M       |
| Year 6 Rate Impact per mil            | \$1.30      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$194.30                     |
| \$250,000               | \$323.80                     |
| \$500,000               | \$647.70                     |

## 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

# Savoy: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 407       |
| Subscribers Modeled               | 226       |
| Entry Level Broadband Price       | \$70      |
| Average Revenue Per Unit (ARPU)** | \$93      |
| Annual Revenue                    | \$252,000 |
| Annual Operating Cost             | \$202,000 |
| 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 | \$104 |
| 60% Take Rate | \$70  |
| 75% Take Rate | \$56  |

## 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
  - 11% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

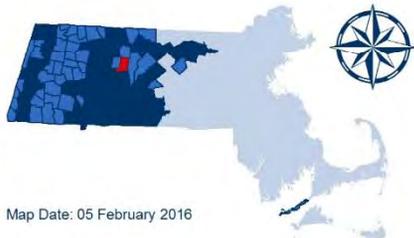
- Connected CAI Locations (4)
- Unserved Locations (845)

### Existing Broadband Infrastructure

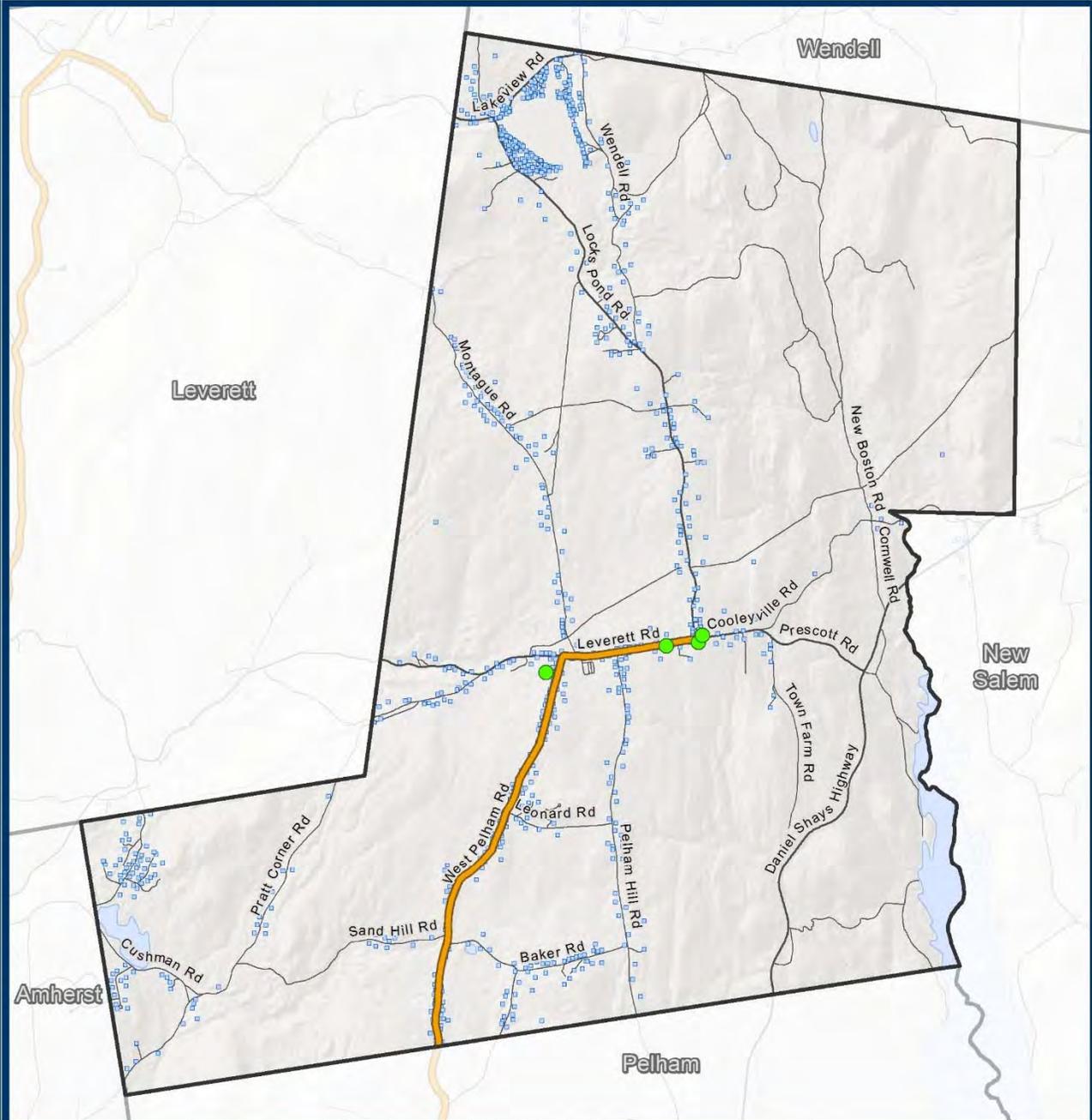
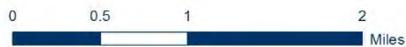
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

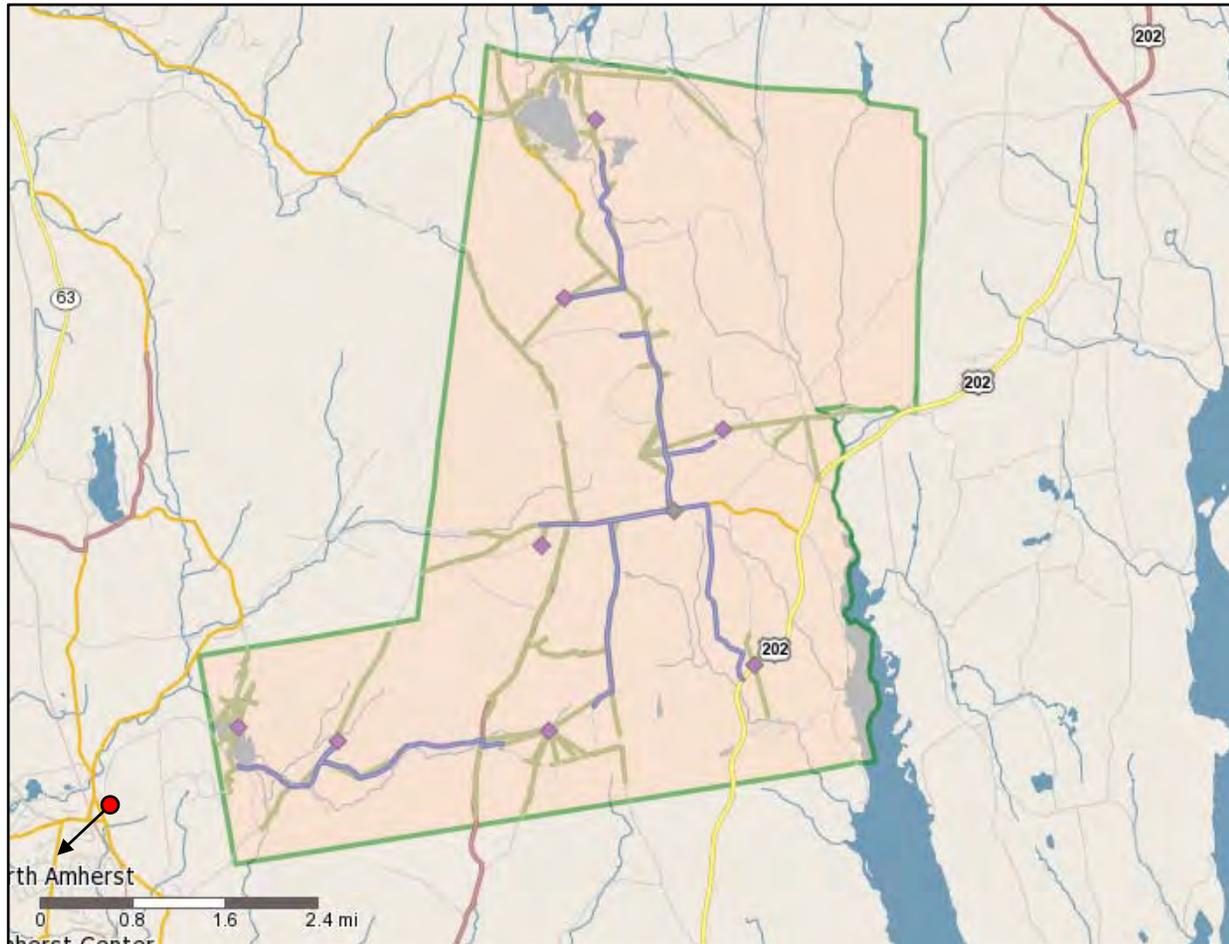
- Building Locations
- ⊞ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Shutesbury: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 713  |
| Fiber Miles Modeled | 39   |
| Poles Modeled       | 1160 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,440,000 |
| Construction Costs Funded by MBI          | \$510,000   |
| Professional Services Costs Funded by MBI | \$360,000   |
| Projected Town Contribution               | \$1,570,000 |

# Shutesbury: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,570,000 |
| Year 6 Debt Service @4% over 15 Years | \$123,000   |
| 2016 Total Assessed Value             | \$212M      |
| Year 6 Rate Impact per mil            | \$0.58      |

## 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               | \$86.90                      |
| \$250,000               | \$144.90                     |
| \$500,000               | \$289.70                     |

## 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

# Shutesbury: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 713       |
| Subscribers Modeled               | 392       |
| Entry Level Broadband Price       | \$49      |
| Average Revenue Per Unit (ARPU)** | \$72      |
| Annual Revenue                    | \$339,000 |
| Annual Operating Cost             | \$289,000 |
| 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 | \$72 |
| 60% Take Rate | \$49 |
| 75% Take Rate | \$40 |

## 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
  - 13% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

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

### Existing Broadband Infrastructure

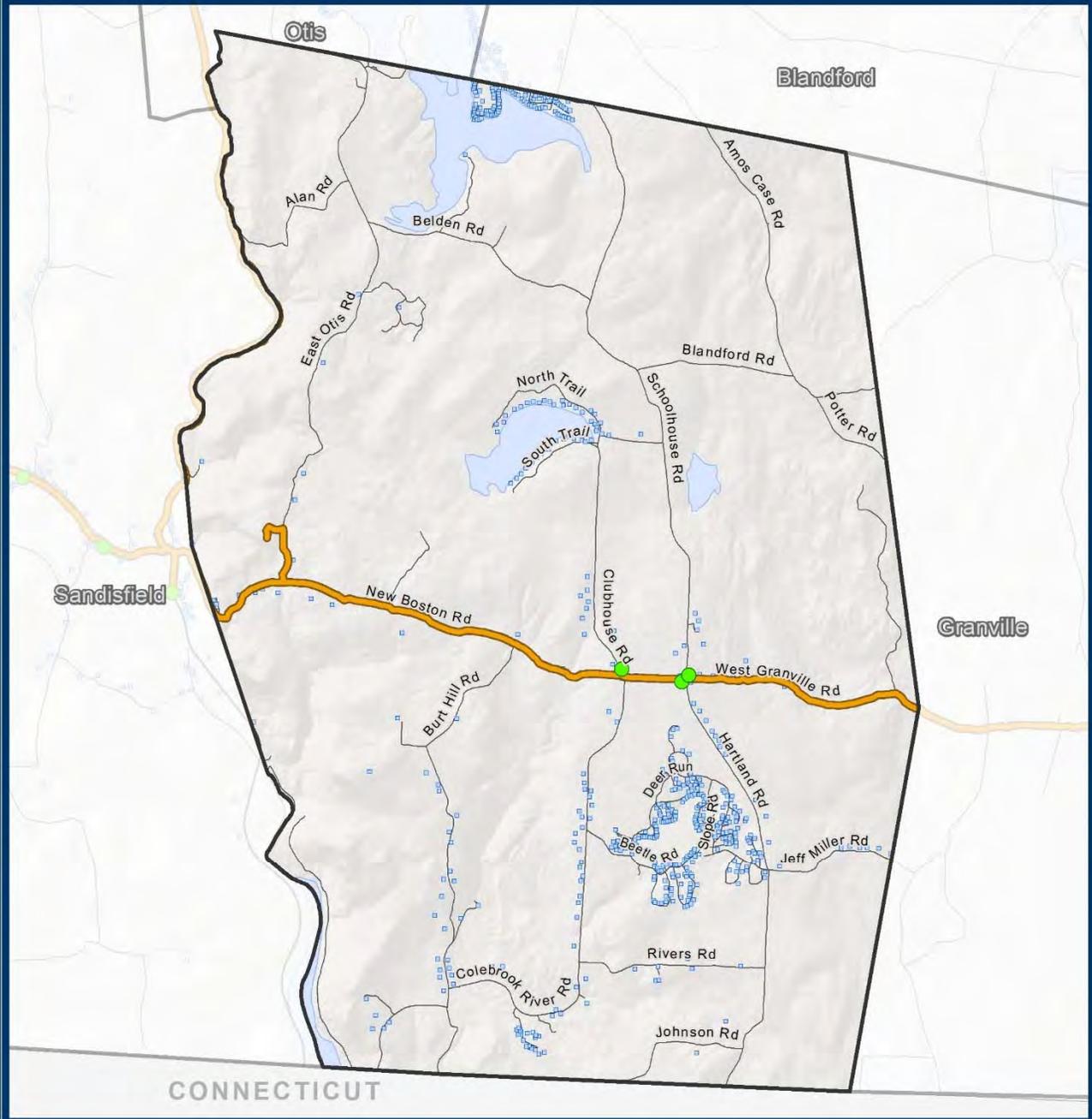
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

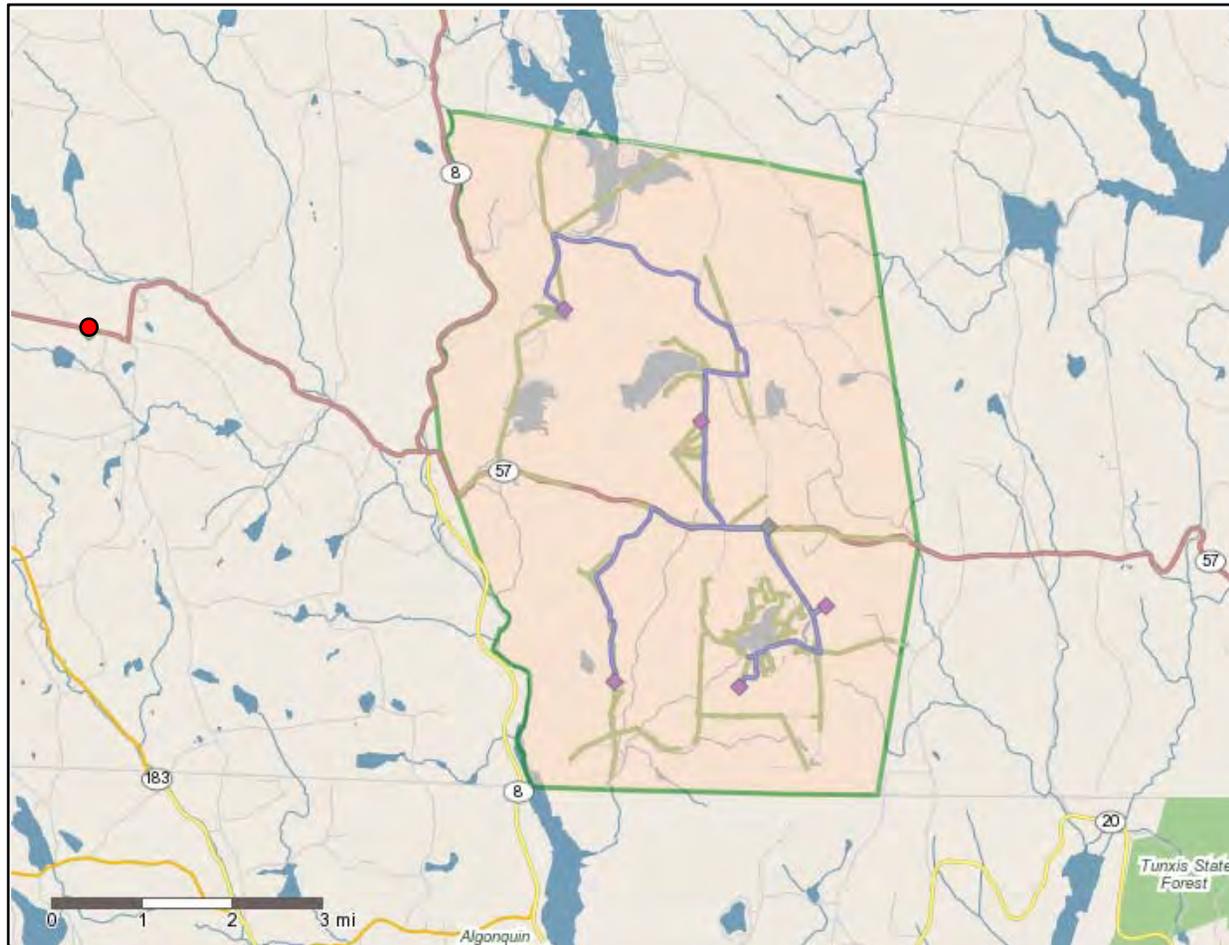
- Building Locations
- ⊞ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# 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)
- Town Border
- Existing Point of Interconnection (POI)
- ◆ Cabinet (equipment for local network)
- ◇ Hut (equipment for entire town network)

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

## Last Mile Planning

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

### Serviceable Premises

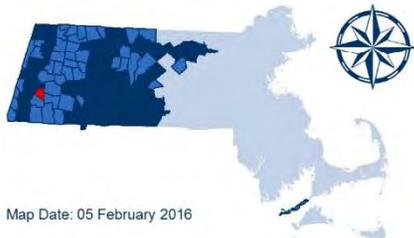
- Connected CAI Locations (3)
- Unserved Locations (308)

### Existing Broadband Infrastructure

- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

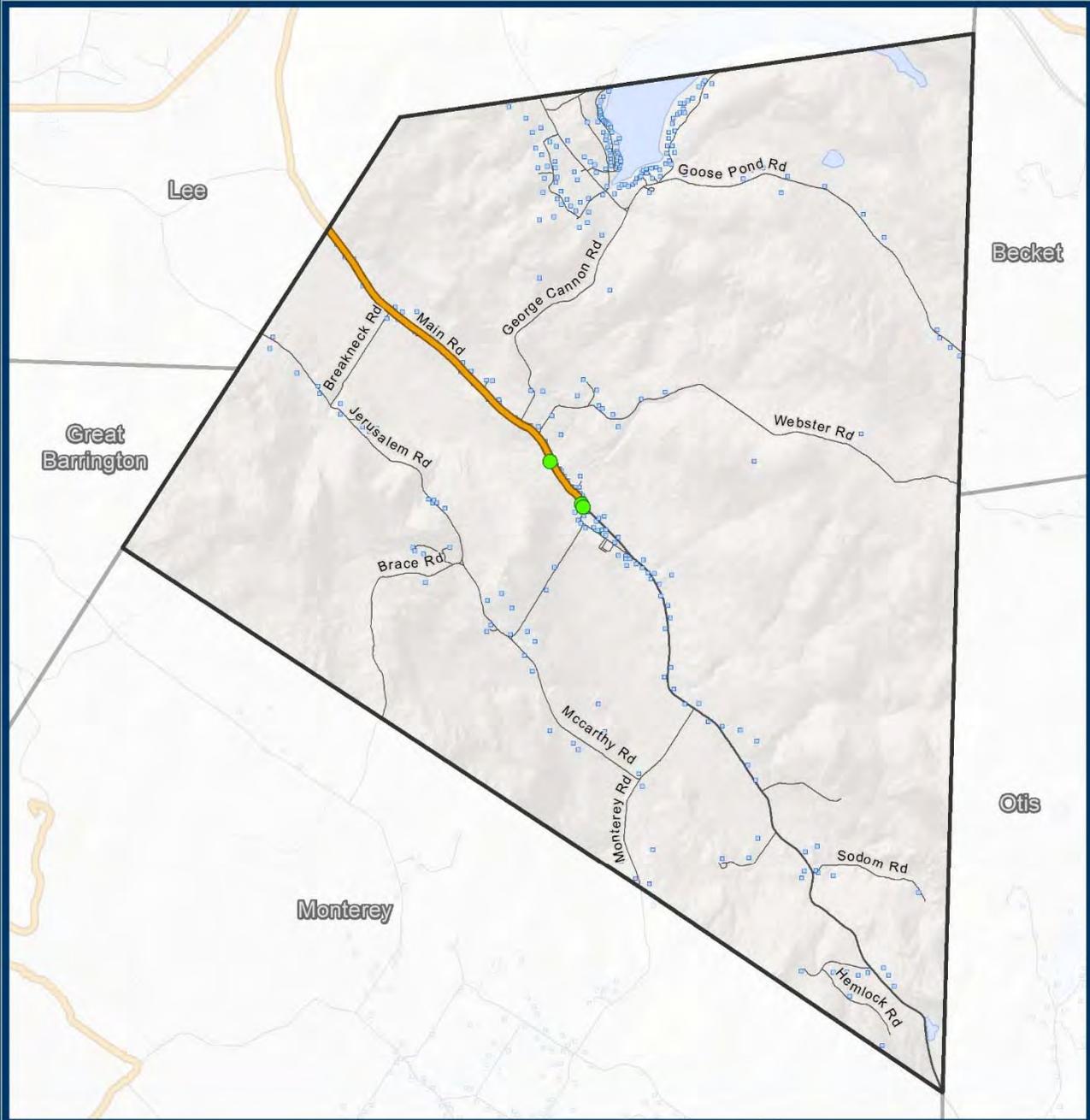
### Base Map

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

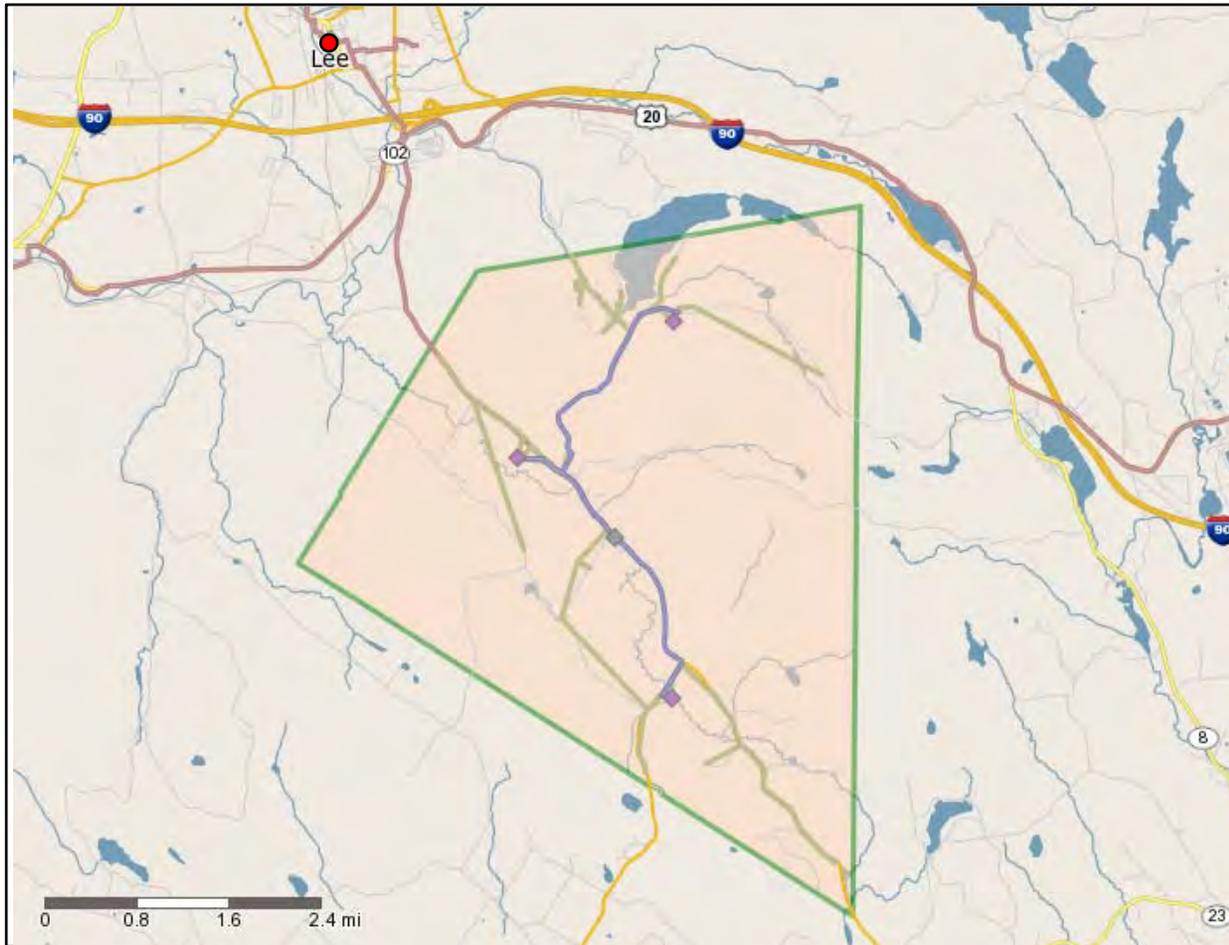


Map Date: 05 February 2016

0 0.5 1  
Miles



# Tyringham: 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* | 286 |
| Fiber Miles Modeled | 24  |
| Poles Modeled       | 746 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,380,000 |
| Construction Costs Funded by MBI          | \$260,000   |
| Professional Services Costs Funded by MBI | \$220,000   |
| Projected Town Contribution               | \$900,000   |

# Tyringham: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$900,000 |
| Year 6 Debt Service @4% over 15 Years | \$70,500  |
| 2016 Total Assessed Value             | \$193M    |
| Year 6 Rate Impact per mil            | \$0.37    |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$54.80                      |
| \$250,000               | \$91.40                      |
| \$500,000               | \$182.80                     |

## 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

# Tyringham: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 286       |
| Subscribers Modeled               | 118       |
| Entry Level Broadband Price       | \$111     |
| Average Revenue Per Unit (ARPU)** | \$134     |
| Annual Revenue                    | \$189,000 |
| Annual Operating Cost             | \$139,000 |
| 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 | \$166 |
| 60% Take Rate | \$111 |
| 75% Take Rate | \$90  |

## 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
  - 47% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

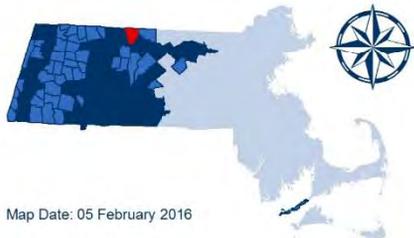
- Connected CAI Locations (6)
- Unserved Locations (392)

### Existing Broadband Infrastructure

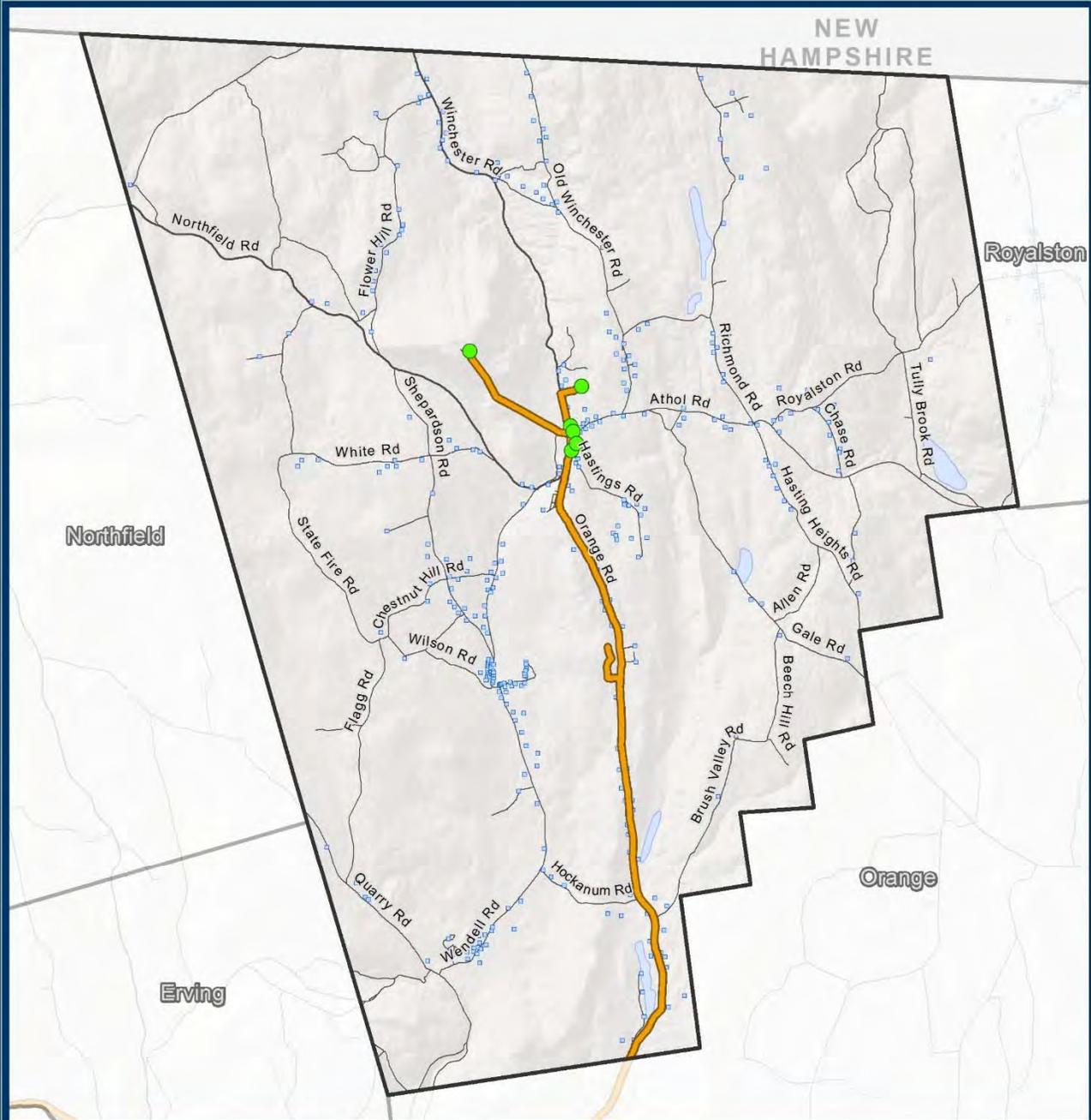
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

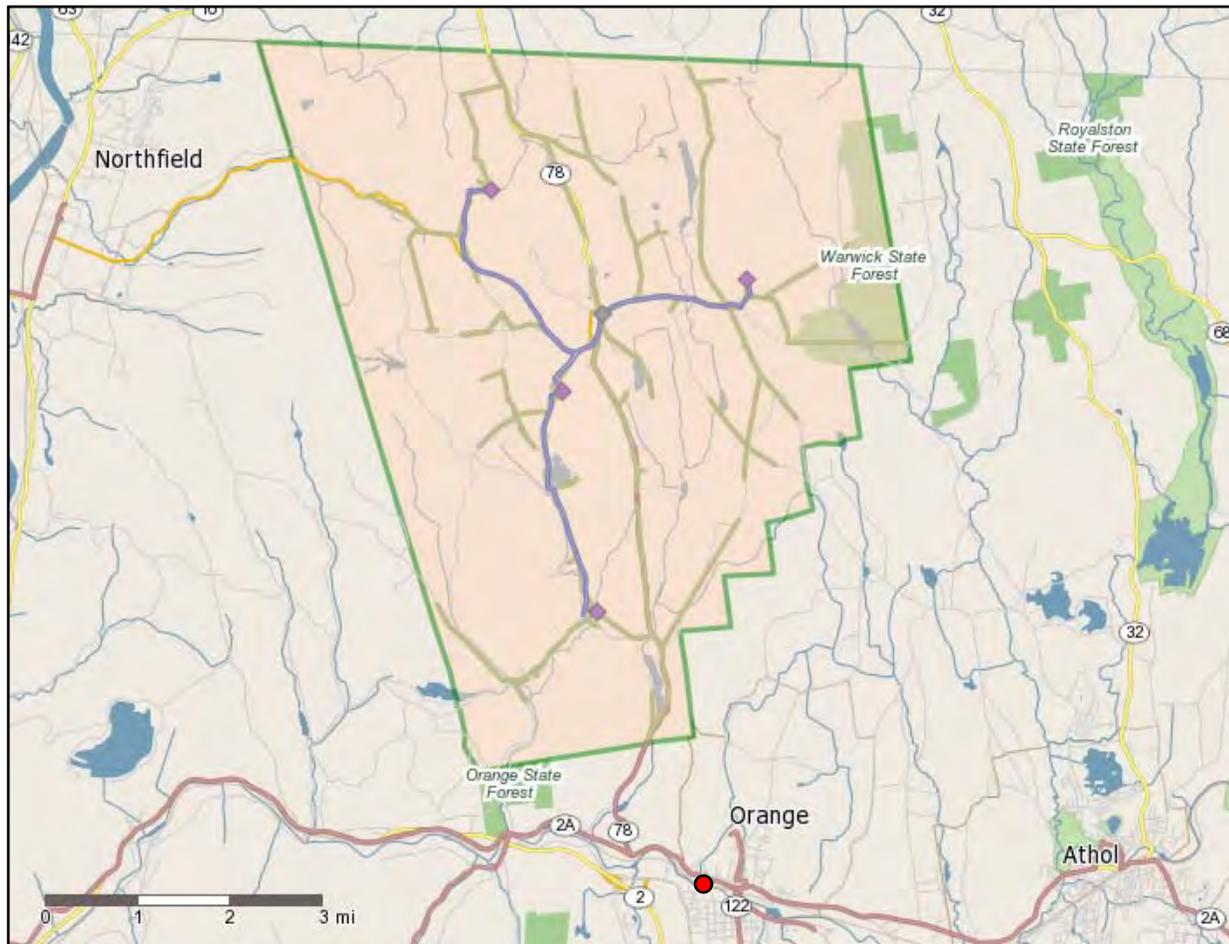
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Warwick: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 418  |
| Fiber Miles Modeled | 52   |
| Poles Modeled       | 1392 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,480,000 |
| Construction Costs Funded by MBI          | \$450,000   |
| Professional Services Costs Funded by MBI | \$420,000   |
| Projected Town Contribution               | \$1,610,000 |

# Warwick: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,610,000 |
| Year 6 Debt Service @4% over 15 Years | \$126,100   |
| 2016 Total Assessed Value             | \$72M       |
| Year 6 Rate Impact per mil            | \$1.73      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$259.80                     |
| \$250,000               | \$433.00                     |
| \$500,000               | \$866.00                     |

## 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

# Warwick: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 418       |
| Subscribers Modeled               | 226       |
| Entry Level Broadband Price       | \$79      |
| Average Revenue Per Unit (ARPU)** | \$102     |
| Annual Revenue                    | \$277,000 |
| Annual Operating Cost             | \$227,000 |
| 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 | \$1118 |
| 60% Take Rate | \$79   |
| 75% Take Rate | \$64   |

## 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
  - 15% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

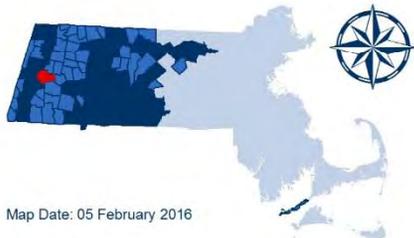
- Connected CAI Locations (2)
- Unserved Locations (268)

### Existing Broadband Infrastructure

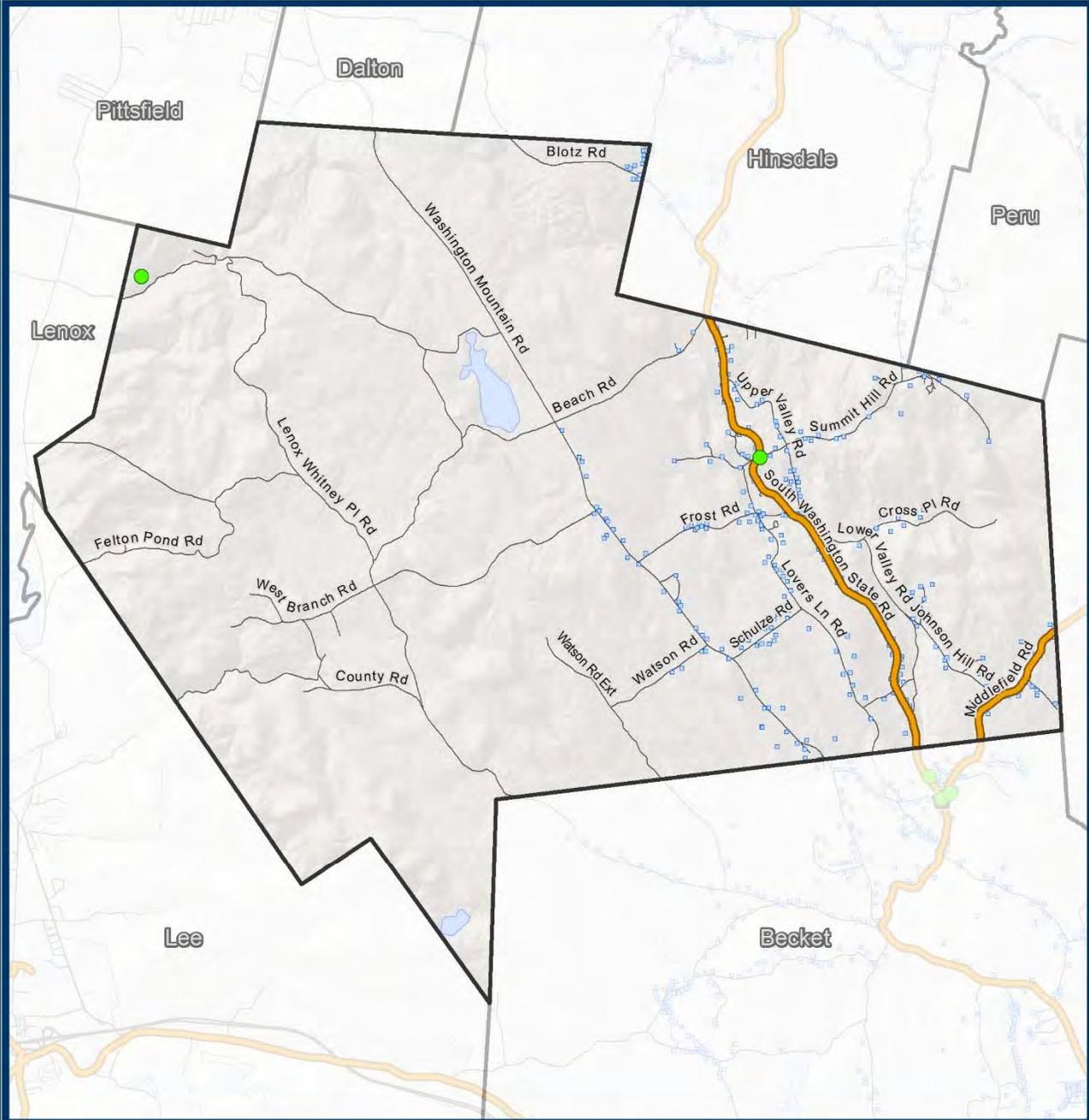
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

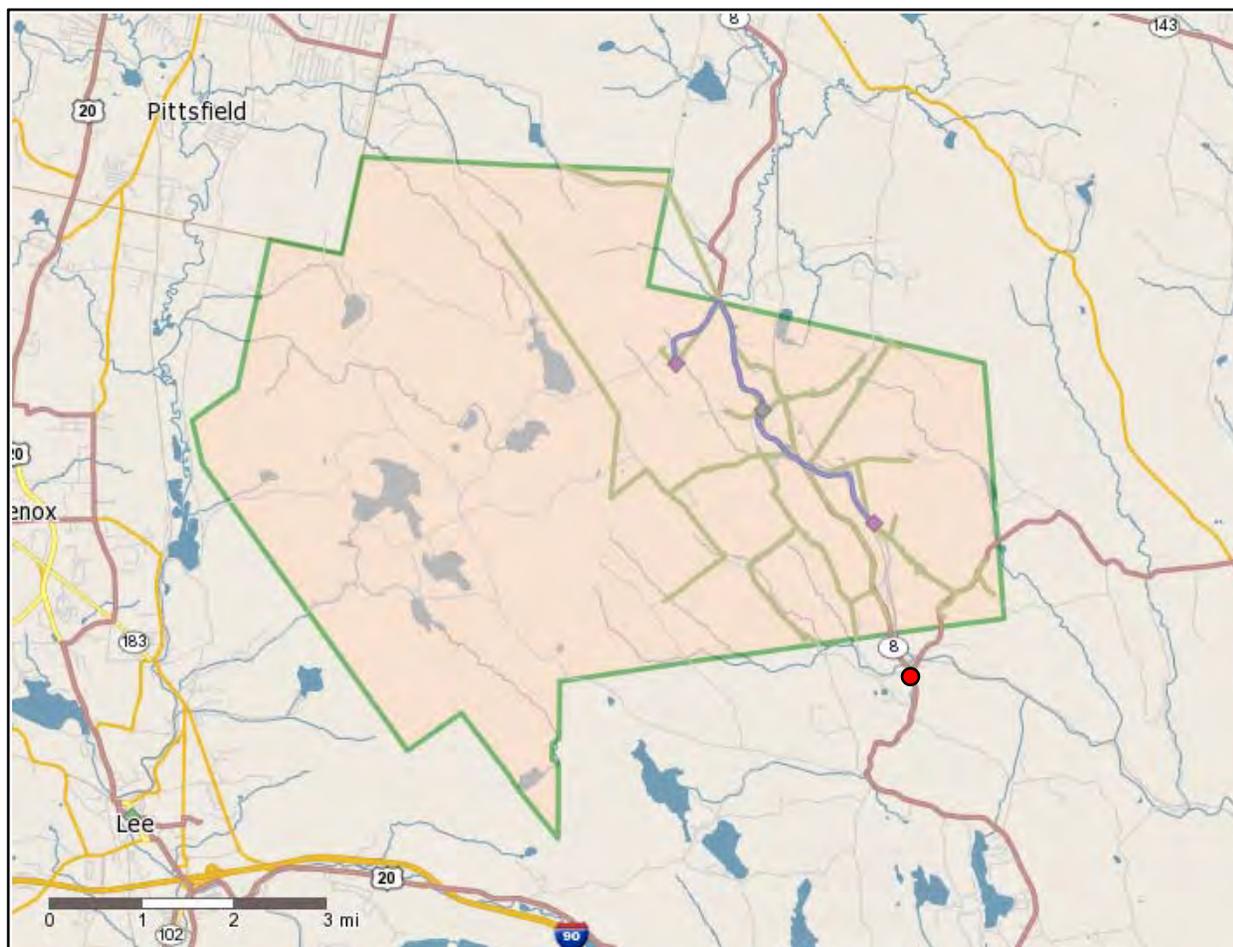
- Building Locations
- ⊞ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Washington: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 286 |
| Fiber Miles Modeled | 35  |
| Poles Modeled       | 605 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,260,000 |
| Construction Costs Funded by MBI          | \$270,000   |
| Professional Services Costs Funded by MBI | \$220,000   |
| Projected Town Contribution               | \$770,000   |

# Washington: Town Financing Information

## Financing Required

|                                       |           |
|---------------------------------------|-----------|
| Projected Town Contribution           | \$770,000 |
| Year 6 Debt Service @4% over 15 Years | \$60,300  |
| 2016 Total Assessed Value             | \$80M     |
| Year 6 Rate Impact per mil            | \$0.76    |

## 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               | \$113.40                     |
| \$250,000               | \$188.90                     |
| \$500,000               | \$377.90                     |

## 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

# Washington: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 286       |
| Subscribers Modeled               | 160       |
| Entry Level Broadband Price       | \$82      |
| Average Revenue Per Unit (ARPU)** | \$105     |
| Annual Revenue                    | \$202,000 |
| Annual Operating Cost             | \$152,000 |
| 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 | \$67  |

## 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
  - 10% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

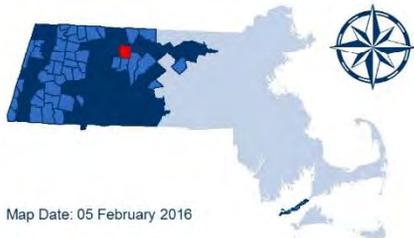
- Connected CAI Locations (7)
- Unserved Locations (461)

### Existing Broadband Infrastructure

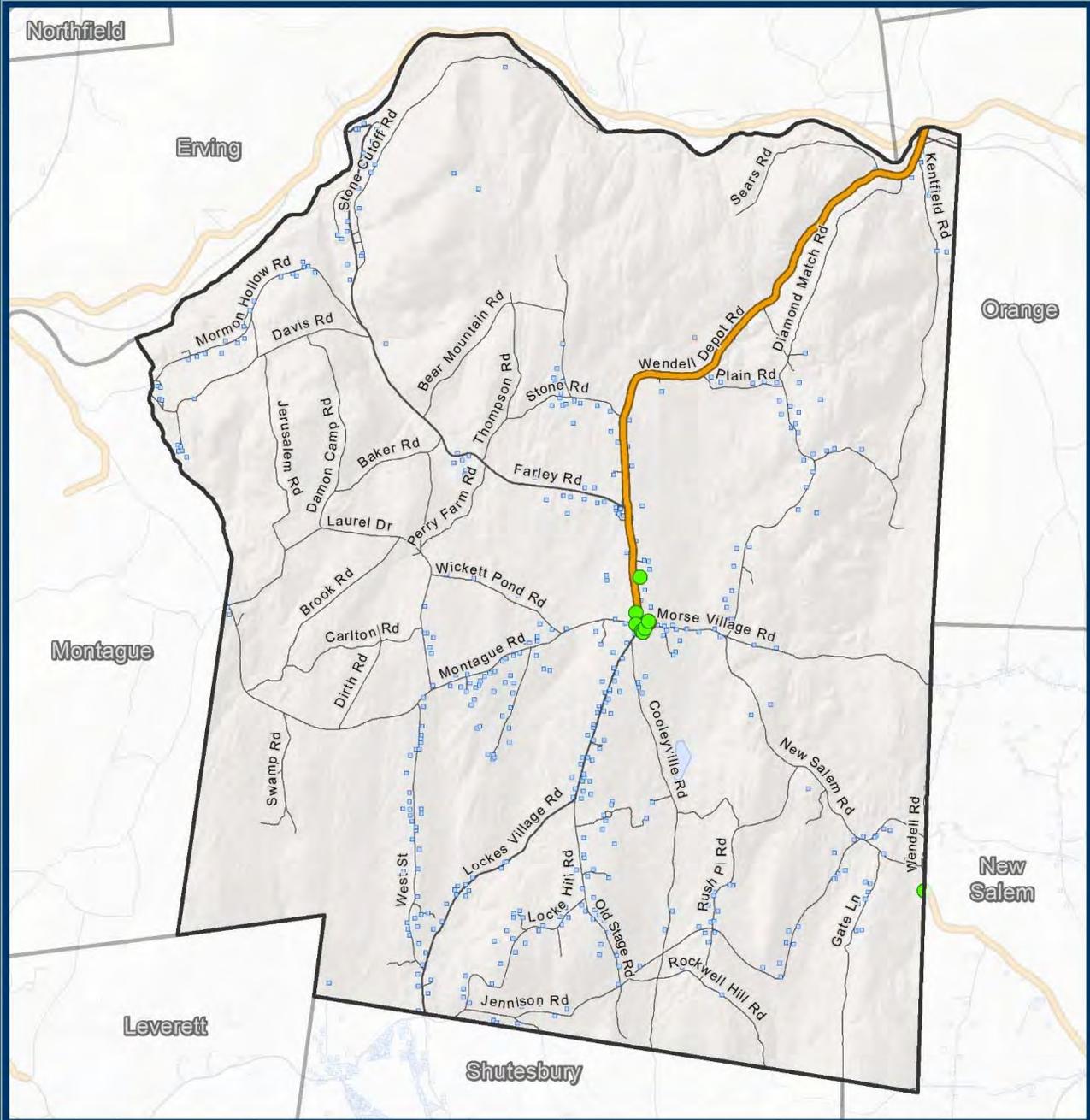
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

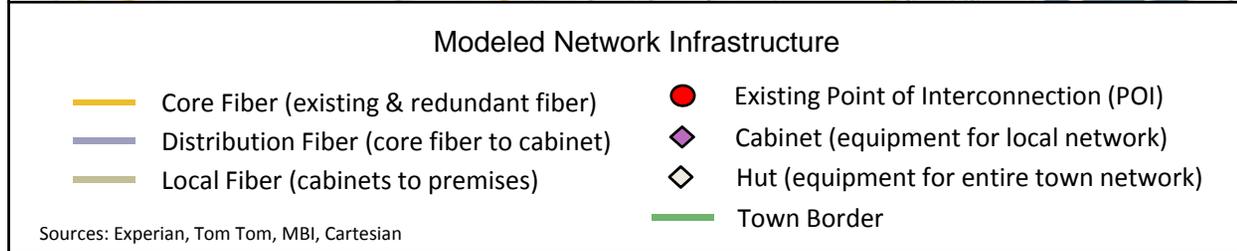
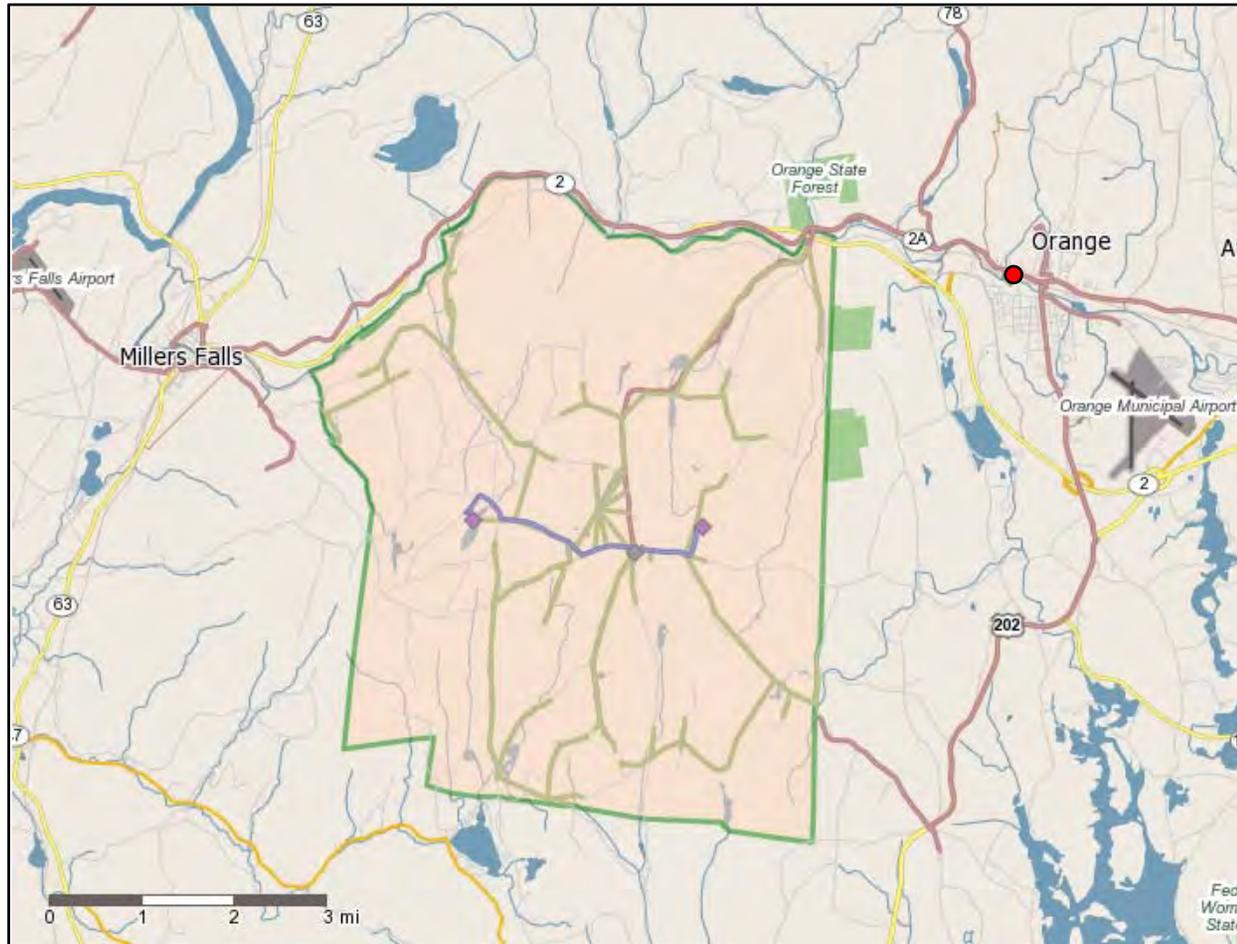
- Building Locations
- ⬛ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Wendell: Initial Model of Infrastructure & CAPEX



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* | 412   |
| Fiber Miles Modeled | 50    |
| Poles Modeled       | 1,132 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$1,900,000 |
| Construction Costs Funded by MBI          | \$410,000   |
| Professional Services Costs Funded by MBI | \$320,000   |
| Projected Town Contribution               | \$1,170,000 |

# Wendell: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,170,000 |
| Year 6 Debt Service @4% over 15 Years | \$91,700    |
| 2016 Total Assessed Value             | \$92M       |
| Year 6 Rate Impact per mil            | \$0.99      |

## 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               | \$149.20                     |
| \$250,000               | \$248.70                     |
| \$500,000               | \$497.30                     |

## 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

# Wendell: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 412       |
| Subscribers Modeled               | 241       |
| Entry Level Broadband Price       | \$73      |
| Average Revenue Per Unit (ARPU)** | \$96      |
| Annual Revenue                    | \$276,000 |
| Annual Operating Cost             | \$226,000 |
| 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 | \$108 |
| 60% Take Rate | \$73  |
| 75% Take Rate | \$59  |

## 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
  - 4% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

### Broadband Infrastructure and Service in: **WEST STOCKBRIDGE,**

#### Serviceable Premises

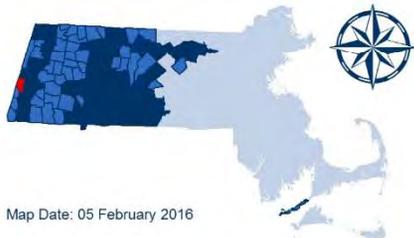
- Connected CAI Locations (2)
- Unserved Locations (827)

#### Existing Broadband Infrastructure

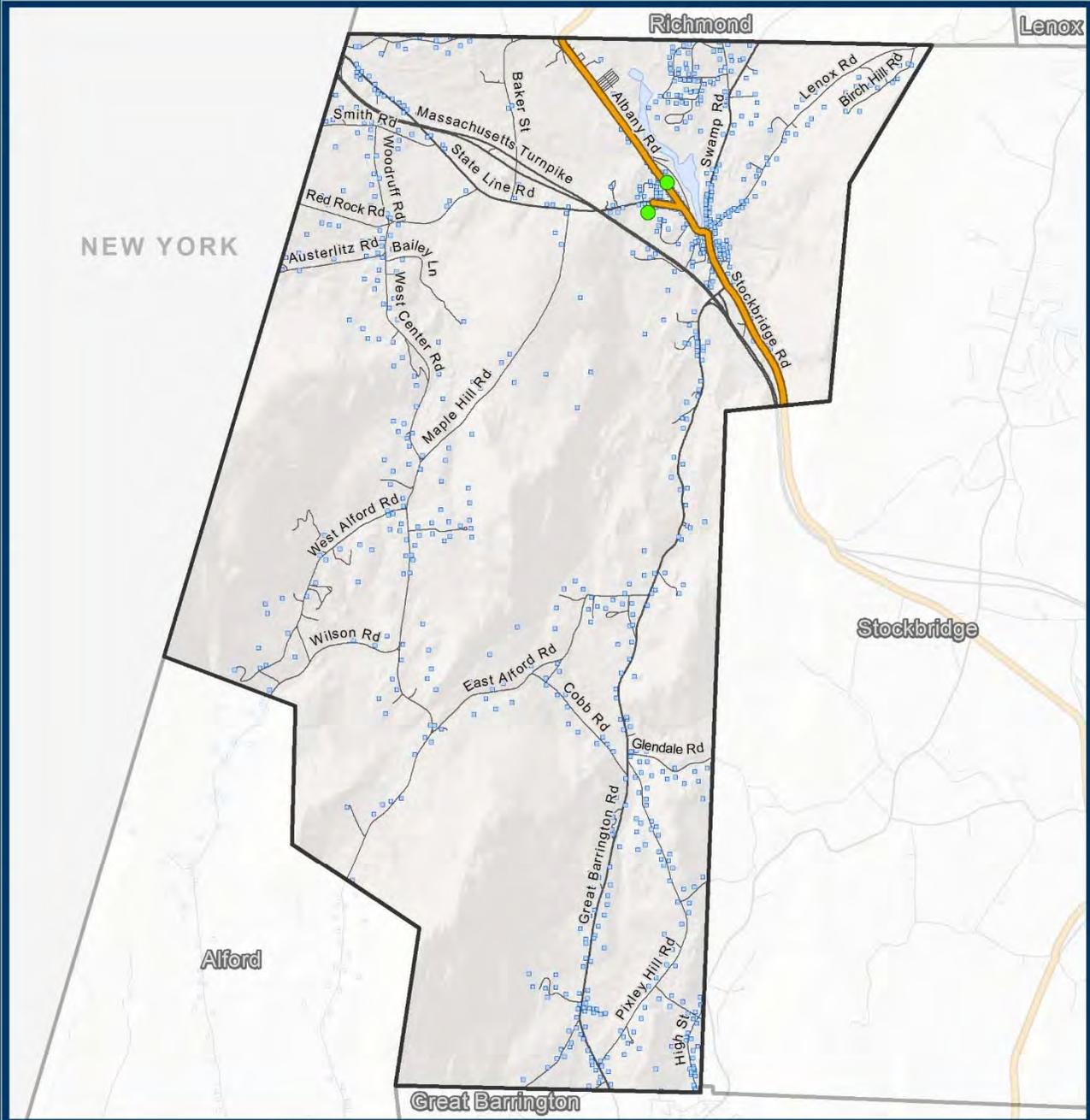
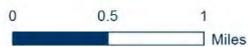
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

#### Base Map

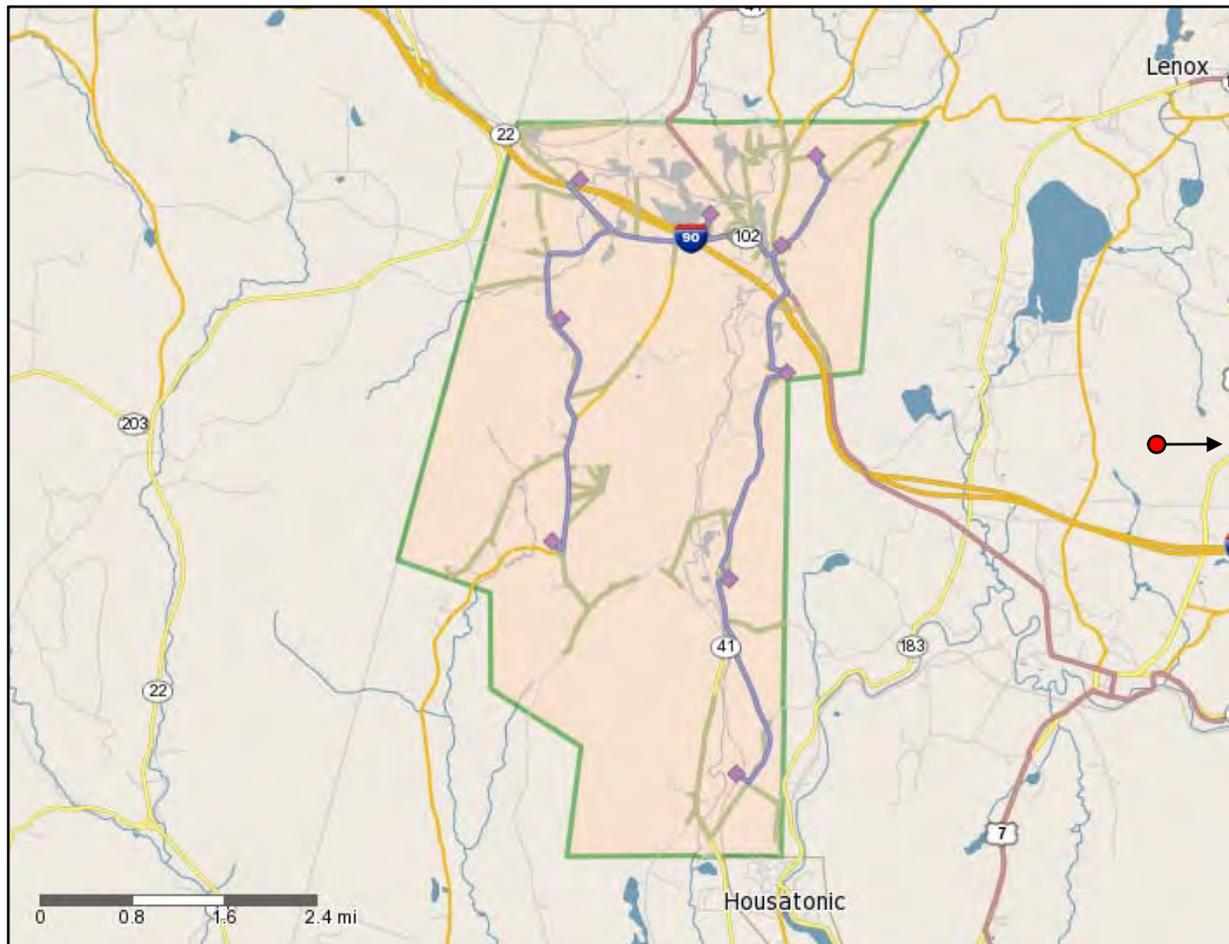
- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# West Stockbridge: Initial Model of Infrastructure & CAPEX



Modeled Network Infrastructure

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

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* | 809   |
| Fiber Miles Modeled | 51    |
| Poles Modeled       | 1,185 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,830,000 |
| Construction Costs Funded by MBI          | \$580,000   |
| Professional Services Costs Funded by MBI | \$420,000   |
| Projected Town Contribution               | \$1,830,000 |

# West Stockbridge: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,830,000 |
| Year 6 Debt Service @4% over 15 Years | \$143,400   |
| 2015 Total Assessed Value             | \$371M      |
| Year 6 Rate Impact per mil            | \$0.39      |

## 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               | \$57.90                      |
| \$250,000               | \$96.50                      |
| \$500,000               | \$193.10                     |

## 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

# West Stockbridge: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 809       |
| Subscribers Modeled               | 406       |
| Entry Level Broadband Price       | \$52      |
| Average Revenue Per Unit (ARPU)** | \$75      |
| Annual Revenue                    | \$363,000 |
| Annual Operating Cost             | \$313,000 |
| 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 | \$76 |
| 60% Take Rate | \$52 |
| 75% Take Rate | \$42 |

## 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
  - 25% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (3)
- Unserved Locations (498)

### Existing Broadband Infrastructure

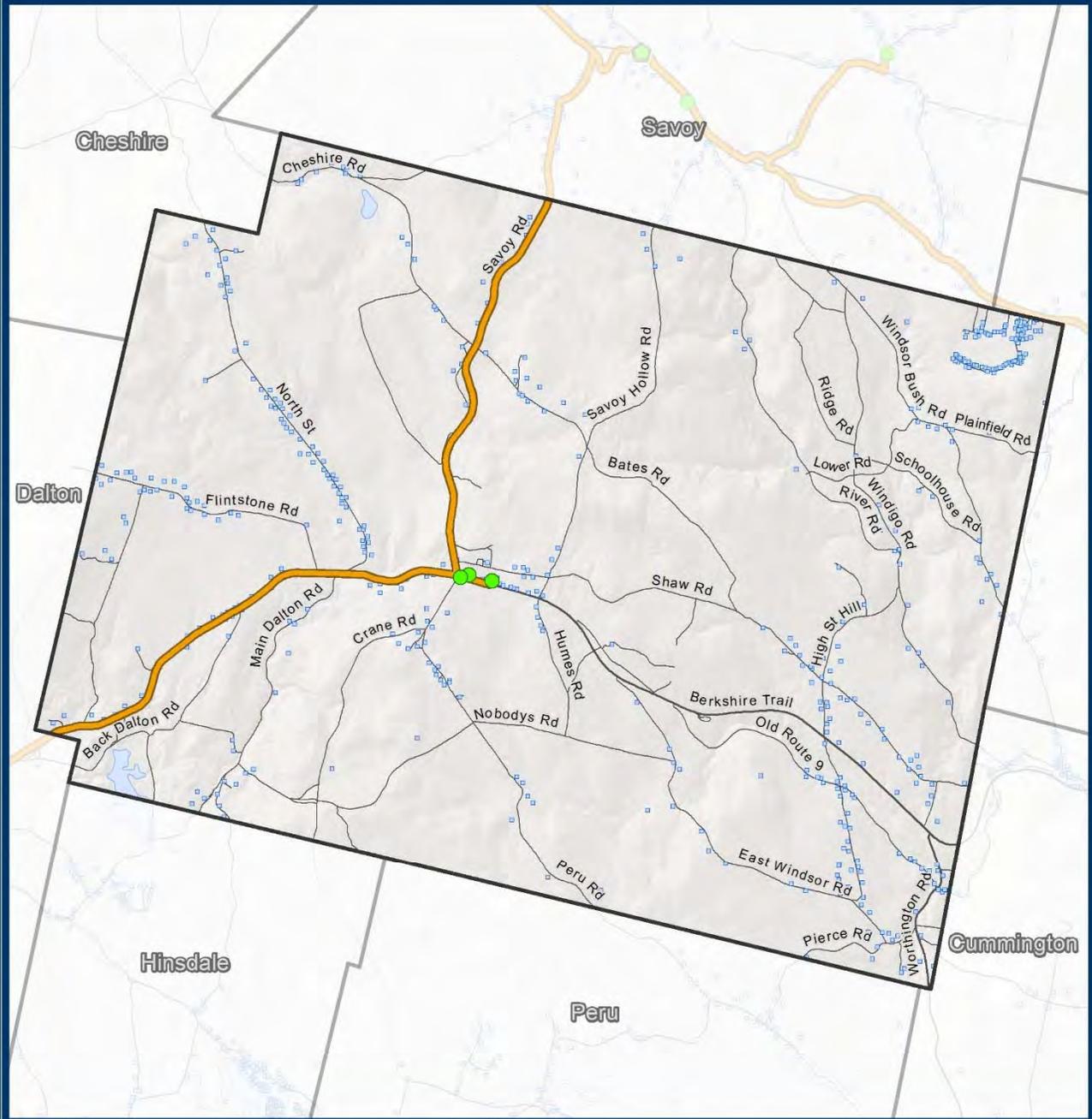
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

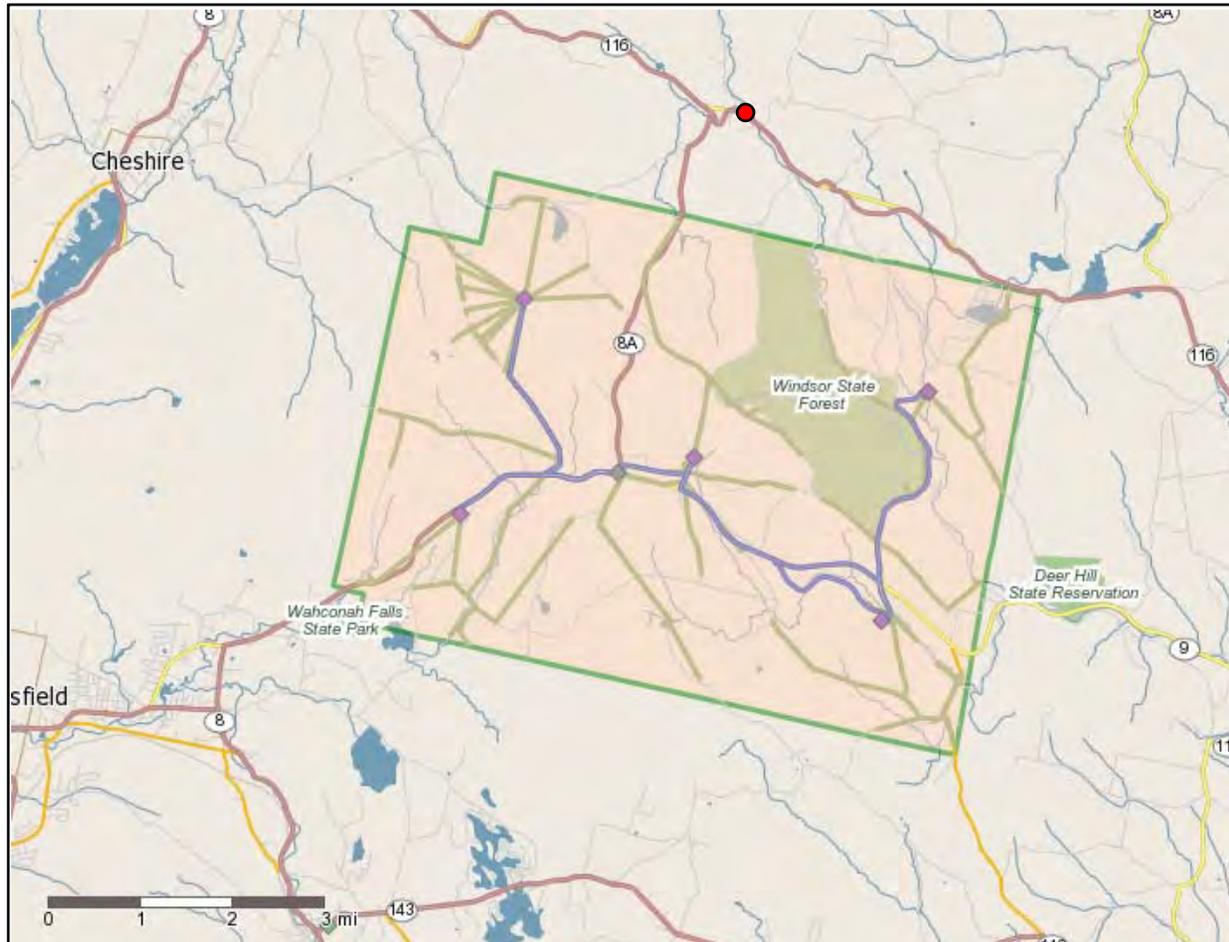
- Building Locations
- ⬛ Town Boundaries
- 🛣️ Roads
- 💧 Water Bodies



Map Date: 05 February 2016



# Windsor: 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* | 464  |
| Fiber Miles Modeled | 54   |
| Poles Modeled       | 1083 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,150,000 |
| Construction Costs Funded by MBI          | \$450,000   |
| Professional Services Costs Funded by MBI | \$380,000   |
| Projected Town Contribution               | \$1,320,000 |

# Windsor: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,320,000 |
| Year 6 Debt Service @4% over 15 Years | \$103,400   |
| 2016 Total Assessed Value             | \$108M      |
| Year 6 Rate Impact per mil            | \$0.96      |

## 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               | \$143.80                     |
| \$250,000               | \$239.60                     |
| \$500,000               | \$479.20                     |

## 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

# Windsor: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 464       |
| Subscribers Modeled               | 239       |
| Entry Level Broadband Price       | \$79      |
| Average Revenue Per Unit (ARPU)** | \$101     |
| Annual Revenue                    | \$291,000 |
| Annual Operating Cost             | \$241,000 |
| 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 | \$117 |
| 60% Take Rate | \$79  |
| 75% Take Rate | \$64  |

## 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
  - 21% of households modeled are seasonal premises occupied for an average of 4 complete months/ year

## Last Mile Planning

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

### Serviceable Premises

- Connected CAI Locations (5)
- Unserved Locations (635)

### Existing Broadband Infrastructure

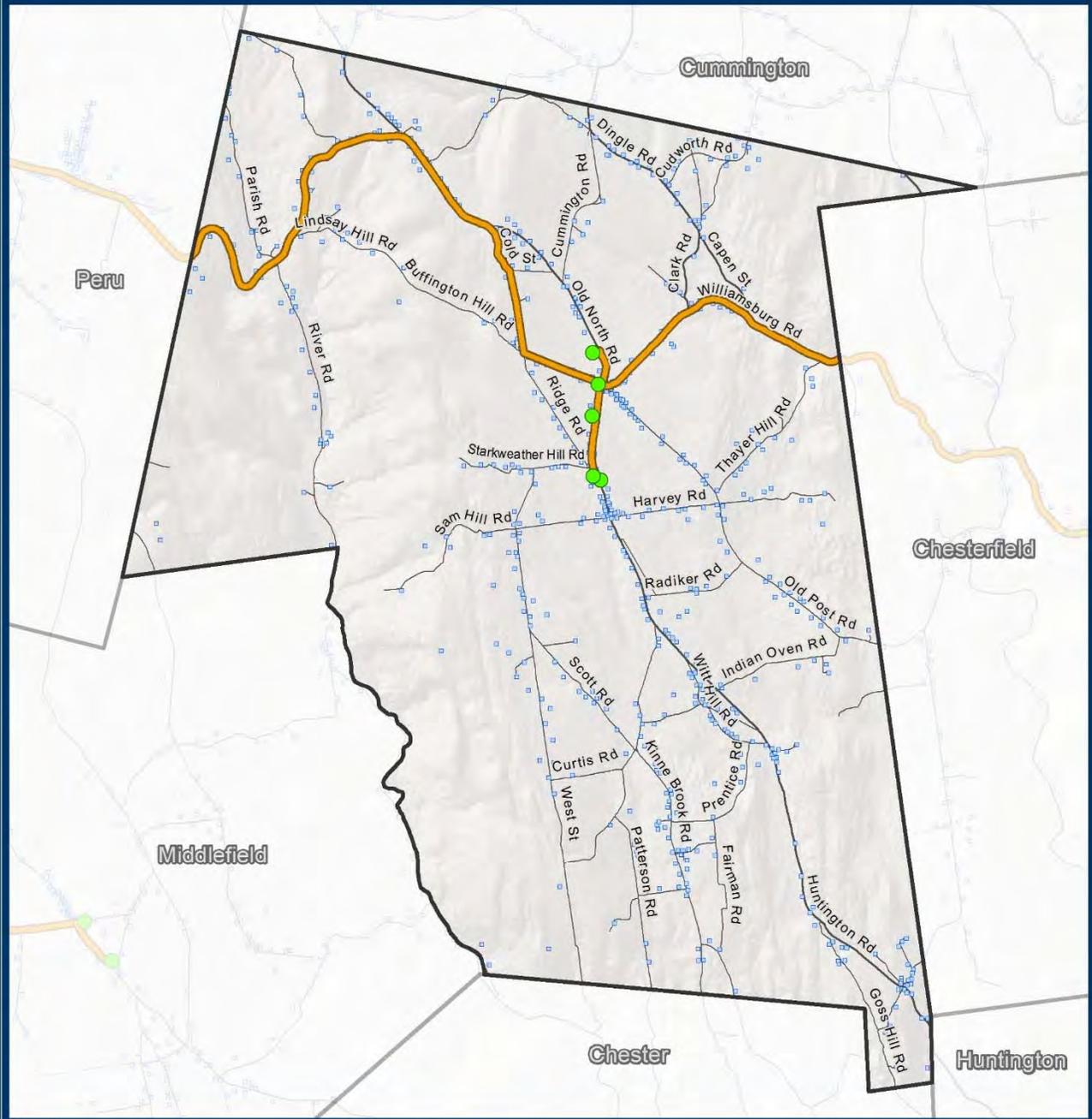
- ◆ MassBroadband 123 Interconnection Points
- 📶 MassBroadband 123 Fiber-Optic Cable

### Base Map

- Building Locations
- ⬜ Town Boundaries
- 🛣️ Roads
- 🌊 Water Bodies



Map Date: 05 February 2016



# Worthington: Initial Model of Infrastructure & CAPEX

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.

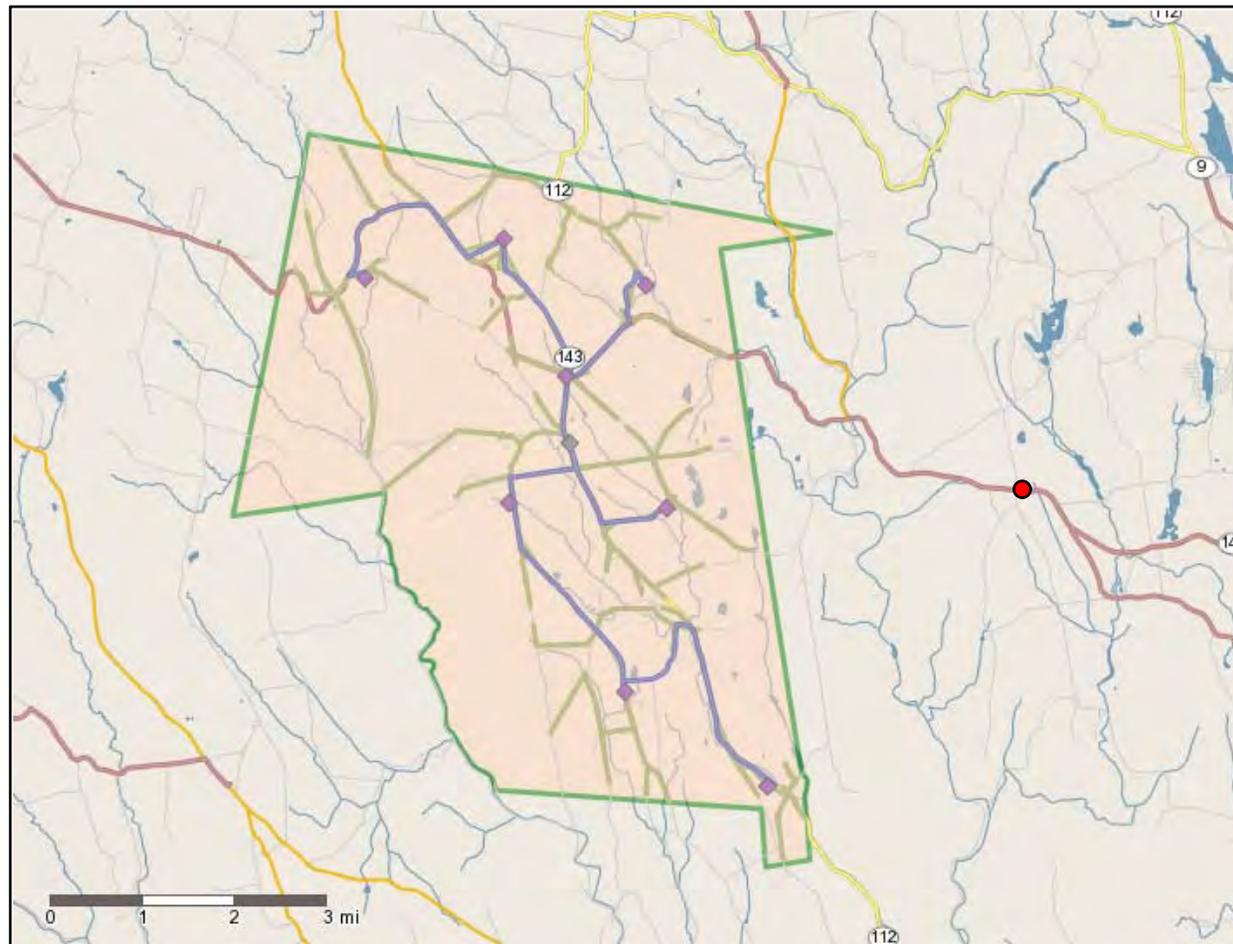
## Infrastructure Components

|                     |      |
|---------------------|------|
| Households Modeled* | 642  |
| Fiber Miles Modeled | 67   |
| Poles Modeled       | 1478 |

\* Approximate household locations from Experian

## Capital Expenditures (CAPEX)

|   |             |
|---|-------------|
| Estimated Total Network Cost              | \$2,860,000 |
| Construction Costs Funded by MBI          | \$590,000   |
| Professional Services Costs Funded by MBI | \$480,000   |
| Projected Town Contribution               | \$1,790,000 |



### 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

# Worthington: Town Financing Information

## Financing Required

|                                       |             |
|---------------------------------------|-------------|
| Projected Town Contribution           | \$1,790,000 |
| Year 6 Debt Service @4% over 15 Years | \$140,200   |
| 2016 Total Assessed Value             | \$167M      |
| Year 6 Rate Impact per mil            | \$0.84      |

## Town Status

| Vote                              | Action        |
|-----------------------------------|---------------|
| Bond Authorization @ Town Meeting | No Vote Taken |
| Debt Exclusion @ Town Election    | No Vote Taken |

## Example Tax Bill Impact

| Assessed Property Value | Annual Property Tax Increase |
|-------------------------|------------------------------|
| \$150,000               | \$126.10                     |
| \$250,000               | \$210.20                     |
| \$500,000               | \$420.50                     |

## 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

# Worthington: Operating Expenditures (OPEX)

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

|                                   |           |
|-----------------------------------|-----------|
| Households Modeled*               | 642       |
| Subscribers Modeled               | 354       |
| Entry Level Broadband Price       | \$63      |
| Average Revenue Per Unit (ARPU)** | \$86      |
| Annual Revenue                    | \$366,000 |
| Annual Operating Cost             | \$316,000 |
| 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 | \$94 |
| 60% Take Rate | \$63 |
| 75% Take Rate | \$51 |

## 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
  - 12% of households modeled are seasonal premises occupied for an average of 4 complete months/ year