# Fairhaven Board of Selectmen
## Meeting Minutes
## February 8, 2021

**Present:** Chairman Daniel Freitas Vice-Chairman Robert Espindola, Selectman Keith Silvia, interim Town Administrator Wendy Graves and Cable Access Director Derek Frates.

**Present via Zoom:** Town Counsel Tom Crotty, Administrative Assistant Vicki Oliveira and Cable Production Coordinator Eric Sa.

The meeting was videotaped on Cable Access and Zoom meeting application.

Chairman Freitas opened the meeting at 6:30 pm in the Town Hall Banquet Room and read the following statement:

*"This Open Meeting of the Fairhaven Board of Selectmen is being conducted remotely consistent with Governor Baker's Executive Order of March 12, 2020, due to the current State of Emergency in the Commonwealth due to the outbreak of the "COVID-19 Virus."*

*In order to mitigate the transmission of the COVID-19 Virus, we have been advised and directed by the Commonwealth to suspend public gatherings, and as such, the Governor's Order suspends the requirement of the Open Meeting Law to have all meetings in a publicly accessible physical location. Further, all members of public bodies are allowed and encouraged to participate remotely.*

*The Order, which you can find posted with agenda materials for this meeting allows public bodies to meet entirely remotely so long as reasonable public access is afforded so that the public can follow along with the deliberations of the meeting.*

*Ensuring public access does not ensure public participation unless such participation is required by law. This meeting will allow public comment related to the posted agenda items only. For this meeting, Fairhaven Board of Selectmen is convening by telephone conference/video conference via Zoom App as posted on the Town's Website identifying how the public may join.*

**MINUTES**

Mr. Espindola made a motion to approve the minutes of January 25, 2021 – Open Session. Mr. Silvia seconded. Vote was unanimous. (3-0)

Mr. Espindola requested to table the minutes of January 25, 2021 – Executive Session for further review.

**TOWN ADMINISTRATOR'S REPORT**

Ms. Graves told the Board:

A burst pipe at the Recreation Center has been cleared up but has not been repaired, the Rec Center will remain closed until the repairs have been made.

Ms. Graves is working with MindSetGo to set up training for leadership and communication.

Ms. Graves met with Cooke and Company to discuss the pre-estimates for rates for FY22 and it appears that the rates will be substantial this year, there is not an official estimate at this time.

Ms. Graves reported that the handicap access ramp project began at the Academy Building during the week of January 25.

Ms. Graves was pleased to announce that Fairhaven TV has won the Massachusetts Creator Award for Best Remote Event for their virtual Haunted Halloween Party in 2020. Mr. Frates said it was a group effort with his staff and himself.

## COMMITTEE LIAISON REPORTS

Mr. Freitas said the Academy project has started and Historical Chairman Wayne Oliveira will be the Clerk of the Works on this project.

Mr. Espindola said the Broadband Study Committee voted to send their final report of the consultant Entry Point, to the Board of Selectmen and to recommend the Board of Selectmen establish a municipal light plant in town. They also discussed a community engagement process and would like to place an article on the town meeting warrant to fund an existing study.

Mr. Espindola said the Southcoast Bikeway Alliance meets tomorrow.

SRPEDD Commission met last week and discussed transportation funding during COVID-19.

Mr. Espindola said there will be a virtual conference on Off Shore Wind sponsored by SRPEDD.

Mr. Espindola said the Marine Resources Committee (MRC) will hold a public hearing on March 4, 2021 for the Waterways rules and regulations. The MRC would like the Board of Selectmen to join them if possible.

Mr. Freitas said he met with the Town Administrator Search Committee.

## SUSTAINABILITY REQUESTS: CHANGING MEMBERSHIP

Mr. Freitas read a memo from Sustainability Coordinator Whitney McClees requesting a slight change in membership on the Sustainability Committee.

Mr. Espindola made a motion to move Jim Anderson from the alternate slot to the voting member slot and move Anne O'Brien from the voting slot to the alternate slot. Mr. Silvia seconded. Vote was unanimous. (3-0)

## LARRY FOWLER AQUACULTURE LICENSE

Harbormaster Tim Cox told the Board this is the final step for Mr. Fowler for his aquaculture license. (Attachment A). The Board has previously already approved all the documents that are necessary.

Mr. Espindola made a motion to approve the aquaculture license for Larry Fowler. Mr. Silvia seconded. Vote was unanimous. (3-0)

**RICHARD N. DUSSAULT, 99 SPRING STREET —BUSINESS NAME CHANGE ONLY**

Mr. Freitas said this is a routine transaction for a name change on a business license and all the taxes are current.

Mr. Espindola made a motion to approve the Richard N. Dussault, d/b/a Dussault Auto Sales name change. Mr. Silvia seconded. Vote was unanimous. (3-0)

**REPORT FROM COMMUNITY PARADIGM ASSOCIATES: TOWN ADMINISTRATOR FINALISTS**

Community Paradigm Consultants Bernard Lynch and Sharon Flaherty met with the board via Zoom to announce that the Town Administrator Screening Committee interviewed 7 candidates for roughly 90 minutes to 2 hours and has narrowed the search to 3 finalists for the vacant position of Town Administrator. Mr. Lynch presented the names of Jennifer Callahan, Thomas Hutka, and Ari Sky as the finalists.

The Board set a date of Tuesday, February 16, 2021 to hold the interviews via Zoom.

**STRATFORD GROUP—CHANGES TO OXFORD SCHOOL**

Mr. Freitas said the Stratford group has made some changes to the design for the Oxford School housing project proposal and has dropped the number of units from 62 to 52. Building Commissioner Chris Carmichael told the Board the letter he had previously sent to the Board was informational regarding the changes. Attorney Crotty told the Board theses changes are the result of the Mass Historical Commission (MHC) grant that the Stratford Group applied for. MCH reviewed the project and required the roof of the addition building to be lowered because it blocked the view of the main building. The roof line changed from a hip to a flat roof. The Zoning Board of Appeals determined that under 40B regulations the changing of the roof was not a substantial change, therefore the ZBA adopted these changes. Mr. Crotty referred to the letter from MHC that was sent to the Stratford Group that explains the roof change. (Attachment B). He noted that the Stratford cannot change the roof back to a hip roof or they will lose their grant funding from MHC.

Resident Ann Richard has concerns regarding the change in the roof line from the original proposed design. Ms. Richard, a member of the Community Preservation Committee (CPC), told the Board that CPC had approved funding for this project twice and nothing regarding the roof change was ever noted. Ms. Richard would like Attorney Crotty to find out if CPC can withhold the approved funding because they were never notified of the roof change.

CPC Chairman Jeff Lucas feels that the roofline change was presented to the ZBA as "other business" and was snuck in.

Resident Lindsay Arsenault was not aware of the roofline change and has concerns if the developer can change the plans.

*At 7:50 pm the Board took a short recess to call the attorney for Stratford group to ask him to join the meeting, via Zoom. The meeting resumed at 7:58 pm.*

Attorney Kurt James joined the meeting to answer questions and concerns. Attorney James said that if the CPC funds are withheld the project cannot move forward with the project. The changes to the roof were not changes that Stratford put forth but changes that the State required.

Attorney Crotty told the Board that they don't have the authority to tell the Building Commissioner to not issue a building permit, they only have the authority to not sell the building to the Stratford Group. The Board of Selectmen could decide if they feel they want to cancel this sale.

Planning Board Chairman John Farrell asked Mr. James several questions regarding the project and his representation of the Stratford Group. Mr. James explained that he has been the attorney for Stratford for several years and when applying for a MHC grant there is an application that gets submitted, there is no waivers to their decision, they will dictate the instructions or what they feel are the requirements. Mr. James also said, he, himself had not gone before the ZBA on this issue to represent Stratford.

**ARCH COMMUNITIES/LANAGAN CO. LLC—PRELIMINARY PROPOSAL: ROGERS SCHOOL**

Mr. Freitas asked to table this to schedule a stand alone meeting to discuss this proposal.

**A-1 CRANE: CEASE AND DESIST ORDER**

A-1 Crane business owner, Pat Carr, met with the Board to discuss the cease and desist order that is on his business at 86 Middle Street. Mr. Carr feels that when the zoning was changed he was not properly notified of the changes. Attorney Crotty told the Board, that the statute is very clear about giving multiple notices regarding any zoning changes. A business can be "grandfathered" in on zoning as long as they are existing and continue the same use, once the use is abandoned, then the use now becomes the new zone. Atty Crotty noted that zoning is governed by the Building Commissioner, Conservation governs the wetlands and the Fire Department governs the fuel tank storage, the Board of Selectmen do not govern these. Building Commissioner Chris Carmichael is hoping that a middle ground can be found and this issue can move forward as quickly as possible to help find a resolution. Planning Director Paul Foley said the property was zoned mixed use by a 2/3 vote at Town Meeting, the business is allowed to continue to as a pre-existing non-conforming use. If A-1 Crane wants to expand on a preexisting non-conforming use, they would need to go to the Planning Board for a special permit.

Mr. Freitas made a motion to set up a meeting in the next week with Mr. Carr and the appropriate Department Heads to try to resolve this matter. Mr. Silvia seconded. Vote was unanimous. (3-0)

**ENTRY POINT, LLC (CONSULTANT FOR BROADBAND STUDY): UPDATE AND DISCUSSION**

Mr. Espindola told the Board that the Broadband Study Committee (BSC) recommended to advance the Municipal Light concept project forward. Mr. Espindola said the Committee feels there is a strong interest in a town sponsored fiber network, as 643 residents responded to a recent survey that was sent out. By switching to a Municipal Fiber network this will save the residents money on their internet and cable bills. Entry Point consultant Jeff Christianson met via

Zoom to discuss the importance of fiber optics and how this will benefit the Town. (Attachment C) There are several steps the Town needs to take before this can proceed.

The BSC feel that a municipal light plant structure is the direction the town is heading and would like to draft a Request for Proposal (RFP) for a design build. The Committee has already put a master plan together. (Attached D).

Mr. Crotty explained the process that the Board of Selectmen will need to take in order to start the process of establishing a Municipal Light Plant, including the approval of the RFP by the Inspector General. (Attachment E)

Mr. Espindola made a motion to authorize Town Counsel to work with Entry Point, in drafting the proper language to send the Inspector General or to have the RFP for a design build approved and once the Board gets it back, for the Board to review and determine if they want to implement it. Mr. Silvia seconded. Vote was unanimous. (3-0)

## INTRODUCTION TO COMPLETE STREETS POLICY

Planning Director Paul Foley and Bill Scully of Green International Affiliates, a transportation civil engineering company, met with the Board to discuss the Complete Streets Program. Mr. Foley presented a brief powerpoint show on the Complete Streets. (Attachment F). Mr. Scully said the program was started by MASS DOT back in 2016 and is very beneficial to towns and cities, by creating a safer and more comfortable environment. This is the first step in a series of tiers to implement this program. The town will be eligible for up to $400,000 in grant funding.

Mr. Espindola made a motion to adopt the complete streets policy as drafted. Mr. Silvia seconded. Vote was unanimous. (3-0)

## FY22 GENERAL FUND OPERATING AND CAPITAL BUDGET

Ms. Graves reviewed the FY22 Budget with the Board and will be presenting the budget to the Finance Committee at their next meeting.

## PRELIMINARY REVIEW OF TOWN MEETING ARTICLES

Ms. Graves reviewed the preliminary list of articles for the May 1, 2021 Annual Town Meeting. Mr. Espindola requested a place holder for Broadband. Mr. Espindola made a motion to add and article for Town Meeting warrant for a Municipal Light Plant. Mr. Silvia seconded. Vote was unanimous. (3-0)

Mr. Espindola made a motion to add an article for Broadband Community Engagement for the May 1, 2021 Annual Town meeting warrant. Mr. Silvia seconded. Vote was unanimous. (3-0)

## NOTES AND ANNOUNCEMENTS

At 9:15 pm Mr. Espindola made a motion to adjourn to executive session, not to reconvene to open session to discuss:

1. Real Estate Matters: MGL Chapter 30A, Section 21(a) 6: Union Wharf
2. Strategy with Respect to Litigation: MGL Chapter 30A, Section 21(a)3:
    a. West Island Realty
    b. Casey Boat Realty, LLC

The Board tabled Executive Session item "To conduct contract negotiations with non-union personnel pursuant to M.G.L, Ch. 30a, Sec. 21 (a) (2)" to allow for more clarification at their next meeting.

Mr. Silvia seconded. Vote was unanimous. (3-0)

Roll Call vote: Mr. Espindola in favor, Mr. Silvia in favor. Mr. Freitas in favor.

Respectfully submitted,

Vicki L. Oliveira

Vicki L. Oliveira
Administrative Assistant
(Approved 02/22/2021)

Attachments:
A. Larry Fowler Aquaculture license
B. Letter from Mass Historical Commission regarding Oxford School
C. Broadband summary presentation
D. Broadband Master Plan
E. 945 CMR 3:0 Notice to Proceed to Use Design- Build Services
F. Complete Streets Presentation

Attachment A

# AQUACULTURE LICENSE

**1. PARTIES** - This license to grow shellfish by means of racks, rafts, lines, and floats in waters of the Commonwealth below the line of extreme low water is granted by the Town of Fairhaven (herein called LICENSOR) to Larry Fowler, sole proprietor, with a principal place of business at 47 Jerusalem Rd, Fairhaven, Massachusetts, 02719, (herein called LICENSEE) pursuant to General Laws, Chapter 130, section 68A.

**2. PREMISES** - Subject to the conditions in Paragraph 7 below, LICENSEE may locate rafts, lines, and floats for the purpose of growing shellfish thereon in that certain portion of the water column and the land under coastal waters situated in the coastal waters northwest of West Island and more particularly described within the following bounds marked by navigational buoys:

NE 41.36'22.33"N 70.50'46.66"W
NE 41.36'22.97"N 70.50'50.02"W
NE 41.36'19.22"N 70.50'47.57"W
NE 41.36'19.85"N 70.50'50.80"W

Containing one (2) acre of land more or less. The LICENSEE shall have exclusive use of the land above described and of the land within 100 feet of said racks, rafts, or floats for the purpose of growing shellfish thereon, subject to such public uses of said wat lands as are compatible with the aquacultural enterprise. LICENSEE shall plainly mark the boundaries of the area subject to this License with such markings as the Harbormaster shall deem sufficient. Said land under coastal waters is herein called the Premises.

**3. TERM** - The term of this license shall be for site 1 for three (3) years commencing on February 8, 2021 and ending on February 7, 2024, unless sooner terminated pursuant to any provision hereof.

**4. LICENSING FEES** - LICENSEE shall pay to LICENSOR as licensing fees for the premises one-hundred ($200.00) dollars annually per acre.

5. ESCROW - Prior to the issuance of this License the LICENSEE shall provide to the Town of Fairhaven Treasurer a Corporate Surety Bond in the amount of no less than Nineteen Thousand ($19,000.00) Dollars and which bond shall continue to be in full

force and effect for the entire term of this License and which Bond shall be in place to cover the cost of the removal of the gear used in the operation of the aquaculture farm upon the early termination or the expiration of this license or LICENSEE'S abandonment of the aquaculture farm if the said gear used in the operation of the aquaculture farm is not completely removed by LICENSEE within thirty (30) days of said early termination, expiration or abandonment of the operation. If the cost of removal of the gear used in the operation of the aquaculture farm exceeds $19,000.00, or is not otherwise paid for by Bond, then the LICENSEE agrees that it shall fully reimburse the LICENSOR for such additional cost and expense incurred by the LICENSOR to complete the removal of all said gear from the Licensed Premises. "Complete

removal" of the gear used in the operation of the aquaculture farm shall include the removal of all buoys, rope lines, equipment and debris from the bottom of the ocean upon which the farm is located and the Premises described in this License.

**5. BOND** - Prior to the issuance of this license, LICENSEE shall deposit a bond in the sum of Five Thousand and 00/100 Dollars ($5000.00) with the Town Clerk. To provide for the cost of removal of the aquaculture farm upon termination or expiration of this license or LICENSEE'S abandonment of the aquaculture farm, if the aquaculture farm is not completely removed by LICENSEE within fifteen (15) days of said termination, expiration, or abandonment. If the cost of removal of the aquaculture farm exceeds $5000.00, LICENSEE shall fully reimburse LICENSOR for such additional expense. "Complete removal" of the aquaculture farm shall include the removal of all buoys, rope lines, equipment and debris from the bottom of the ocean upon which the farm is located and the premises described in this agreement.

**6. RENEWAL** - LICENSEE may apply for renewal of this license not more than one (1) year nor less than sixty (60) days prior to the expiration of the then current term. The Board of Selectmen may renew this license for additional terms unless it determines that the LICENSEE has substantially failed to comply with the terms of this license or that continued use of the Premises under such license is contrary to the public interest. The fee for any renewal term shall be set by the Board of Selectmen, or as otherwise required by law.

**7. USE OF PREMISES** - The use of the premises shall be subject to the following conditions:

(a) LICENSEE shall provide the LICENSOR and Harbormaster with copies of said written notice to the United States Coast Guard. Unless otherwise instructed by the United States Coast Guard, LICENSEE shall mark the aquaculture farm with a minimum of a 18" by 18" by 2.5' buoy with a yellow beacon at the Southeast corner and the remaining three corners with 20" yellow corner buoys made of steel or other material acceptable to the Board of Selectmen. The flashing light on the corner buoy shall be yellow in color and shall be radar reflective quality and visible from two (2) nautical miles (360°) at night. The light shall flash every 2.5 seconds and meet or exceed all United States Coast Guard requirements. The corner buoy with flashing light shall be fully operational from May 21st to November 1st of each year. The corner buoy may be removed and replaced with winter sticks on or after November 1s each year.

*These two sites are not required to send a copy to the Coast Guard or require the use of corner lights*

(b) Unless otherwise instructed by the United States Coast Guard, LICENSEE shall install sideline buoys located around the perimeter of the aquaculture farm which will consist of buoys every fifty

(50) feet on the North and South sides. The sideline buoys will be painted white, yellow or day-glo orange in color.

(c) All lighted corner buoys and sideline buoys shall be inspected by LICENSEE to ensure that they are in good working order. Any light or buoy not in conformance with the provisions of this license shall be immediately reported to the Harbormaster with a proposed repair date. LICENSEE shall also make all lighted corner buoys and sideline buoys available for inspection by the Harbormaster. All defects and damages to the corner and sideline buoys reported to or discovered by the Harbormaster shall be repaired

Assessment of fines of up to One Hundred and 00//100 Dollars ($100.00) per citation for noted violations under the established 5(five) day rule. (see definition of 5 five day rule)

An exception to the 5 (five) day rule is a violation of the floating line provision of the contract which states any line found floating more than 100 feet (One Hundred feet) from the perimeter of the farm area is considered a violation and will be a violation if not repaired/corrected within two (2) days of notice. A citation will be issued with a fine assessed in the amount of (One Hundred and 00/110 dollars) $100.00. Thereafter every 5th day another citation will be issued for (One Hundred and 00/1100 dollars) $100.00 if the initial violation has not been brought into compliance.

Offenses that may result in an assessment of a fine include: markers found not to in their proper place; markers found to be in any position that compromises the operation of their lights and radar reflective qualities; markers that are found to be of incorrect size or color.

In addition the LICENSEE agrees to when practical notify the LICENSOR (Harbormaster's Office) of any problems with equipment found not to be in compliance, understanding that they have 5 (five) days to bring it into compliance. This period will start upon notification of the problem to the LICENSOR (Office of the Harbormaster).

**5 (five) day Rule Definition**

5 (five) day rule is a 5 (five) day period that has passed after the initial notification of a violation has been made to the LICENSEE in which time the LICENSEE shall have time to bring into compliance the violation initially reported to the LICENSEE. Initial notification to the LICENSEE shall consist of a reasonable attempt to contact by telephone to the listed business line on the letterhead of LICENSEE (Taylor Seafood)
be deemed complete with a message left on the LICENSEE'S company telephone answering machine. If telephonic communication can't be accomplished a notice sent by U.S. Mail shall be deemed sufficient with the day of notice for the 5 (five) day rule period being the postmark date. Another fine of One Hundred and 00//100 Dollars ($100.00) will be assessed on the tenth day after the initial notification of a violation has been made to the LICENSEE if the initial violation has not been brought into compliance. Fines will be assessed at that rate of One Hundred and 00/100 ($100.00) every 5th day thereafter if the initial citation issued to the LICENSEE has not been brought into compliance. The LICENSEE also understands that each citation is considered a new citation and contributes to the yearly total. The

LICENSEE assumes the responsibility to notify the LICENSOR (Office of the Harbormaster) that a violation has been corrected. If they do not do so they risk another citation being issued under the 5 day rule.

If a situation should happen that puts the LICENSEE in a position that causes the LICENSEE not to be compliance with citable violation due to catastrophic values, such as large storms that hit the area, the LICENSEE shall have an opportunity to seek a waiver from the LICENSOR (Office of the Harbormaster) to forego any assessment as fines for a period of time agreed to by the LICENSOR (Office of the Harbormaster). The LICENSOR (Office of the Harbormaster) will be the final determinate as to the validity of the requested waiver.

**Definitions:**

**Office of the Harbormaster**
The duly appointed person serving as the Harbormaster he/her Assistant and any other duly appointed agent of the Department of Natural Resources, Town of Fairhaven, MA.

**LICENSEE**
Larry Fowler
47 Jerusalem Rd.
Fairhaven, MA 02719

**LICENSEE Telephone Number for Contact**
Larry Fowler
[redacted]

**LICENSOR**
Town of Fairhaven
40 Center St. Fairhaven, MA 02719
or any Agent duly appointed by the Town

**Office of the Harbormaster Telephone Contact Numbers**
Office 508-979-4023 x124
Cell 508-962-1416

**8. COMPLIANCE WITH LAW** - The LICENSEE shall, at LICENSEE'S expense, comply with all applicable statutes, ordinances, rules, regulations, orders and requirements in effect during the term of any part of the term hereof regulating the use by LICENSEE of the Premises. LICENSEE shall not use or permit the use of the Premises in any manner that will tend to create waste or a nuisance.

**9. CONDITION OF PREMISES** - LICENSEE hereby accepts the Premises in their condition existing as of the date of execution hereof, subject to all applicable zoning, municipal, county and state laws, ordinances and regulations governing and regulating the use of the Premises and accepts this License

subject thereto and to all matters disclosed thereby. LICENSEE acknowledges that neither LICENSOR nor any of LICENSOR'S agents has made any representation or warranty as to the suitability of the Premises for the conduct of LICENSEE'S business. LICENSOR agrees not to take any actions that would directly impair the value of the License granted hereunder without actual prior notice to the LICENSEE. LICENSOR shall make available to LICENSEE any building permits, special permits, variances or other zoning applications concerning the coastal property abutting the Premises. Such notification shall be not more than then (10) days after application is filed for the same.

**10.1 LIABILITY INSURANCE** - LICENSEE shall, at LICENSEE'S expense, obtain and keep in force during the term of this License a policy of comprehensive public liability insurance insuring against any liability arising out of the ownership, use, occupancy, or maintenance of the Premises and all areas appurtenant thereof. Such insurance shall be in an amount of not less than One Hundred Thousand and 00/100 dollars for injury to or death of one person in anyone accident or occurrence and in an amount of not less than Five Hundred Thousand and 00/100 ($500,000.) dollars for injury to or death of more than one person in any one accident or occurrence. Such insurance shall further insure LICENSOR and LICENSEE against liability for property damage of at least Fifty Thousand and 00/100 ($50,000.) dollars. The limits of said insurance shall not, however, limit the liability of LICENSEE hereunder. If LICENSEE shall fail to procure and maintain such insurance LICENSOR may, but shall not be required to, procure and maintain the same, but at the expense of LICENSEE.

**10.2 INSURANCE POLICIES** - Insurance required hereunder shall be in companies rated AAA or better in Best's Insurance Guide. LICENSEE shall deliver to LICENSOR copies of policies of liability insurance required under paragraph 8.1 or certificate evidencing the existence and amounts of such insurance with loss payable clauses satisfactory to LICENSOR. No such policy shall be cancelable or subject to reduction of coverage or other modification except after ten (10) days prior written notice to LICENSOR. LICENSEE shall, within ten (10) days prior to the expiration of such policies, furnish LICENSOR with renewals or "binders" thereof.

**10.3 INDEMNITY** - LICENSEE shall indemnify and hold harmless LICENSOR from and against any and all claims arising from LICENSEE'S use of the Premises, or from the conduct of LICENSEE'S business or from any activity, work or things done, permitted or suffered by LICENSEE in or about the Premises or elsewhere and shall further indemnify and hold harmless LICENSOR from and against any and all claims arising from any breach or default in the performance of any obligation on LICENSEE'S part to be performed under the terms of this License, or arising from any negligence of the LICENSEE, or any of LICENSEE'S agents, contractors or employees, and from and against all costs, attorney's fees, expenses and liabilities incurred in the defense of any such claim or any action or proceeding brought thereon; and in case any action or proceeding be brought against LICENSOR by reason of any such claim, LICENSEE upon notice from LICENSOR shall defend the same at LICENSEE'S expense by counsel satisfactory to LICENSOR. LICENSEE, as a material part of the consideration to LICENSOR, hereby assumes all risk of damage to property or injury to persons, in, upon or about the Premises arising from any cause, and LICENSEE hereby waives all claims in respect thereof against LICENSOR

**10.4 EXEMPTION OF LICENSOR FROM LIABILITY** - LICENSEE hereby agrees that LICENSOR shall not be liable for injury to LICENSEE'S business or any loss of income there from or from damage to the goods, wares, equipment or other property of LICENSEE, LICENSEE'S employees, invites, customers, or any other person in or about the Premises, nor shall LICENSOR be liable for injury to the person of LICENSEE'S employees, agents or contractors, whether such damage or injury is caused by or results from storms or rain or from any other cause, whether the said damage or injury results from conditions arising upon the Premises or from other sources or places, and regardless of whether the cause of such damage or injury or the means of repairing the same is inaccessible to LICENSEE.

**11. TOTAL DESTRUCTION** - If at any time during the time hereof the Premises are totally destroyed or rendered unfit for the ongoing conduct of LICENSEE'S shellfish business from any cause whether or not covered by insurance (including any total destruction required by any authorized public authority), this License shall automatically terminate as of the date of such total destruction unless within one year thereafter LICENSEE opts to continue in full possession thereof.

**12. PERSONAL PROPERTY** - All personal property placed or moved in the Premises above described shall be at the risk of the LICENSEE or owner thereof, and LICENSOR shall not be liable for any damage to said personal property.

**13.1 DEFAULTS** - The occurrence of any one or more of the following events shall constitute a material default and breach of this License by LICENSEE.

(a) The vacating, abandonment or lack of substantial use of the Premises by LICENSEE.

(b) The failure by LICENSEE to make any payment of licensing fees or any other payment required to be made by LICENSEE hereunder, as and when due; LICENSEE hereby waives any statutory notice of default for non-payment of rent.

(c) The failure by LICENSEE to observe or perform any of the covenants, conditions or provisions of this License to be observed or performed by LICENSEE, other than described in Paragraph (b) above, where such failure shall continue for a period of thirty (30) days after written notice hereof from LICENSOR to LICENSEE: provided, however, that if the nature of LICENSEE'S default is such that more than thirty (30) days are reasonable required for its cure, then LICENSEE shall not be deemed to be in default if LICENSEE commenced such cure within said thirty (30) day period and thereafter diligently prosecutes such cure to completion.

**13.2 REMEDIES** - In the event of any such material default or breach by LICENSEE, LICENSOR may at any time thereafter, with notice and hearing revoke thi whereupon LICENSEE shall immediately surrender possession of the Premises to LICENSOR. In such event LICENSOR shall be entitled to recover from LICENSEE all damages incurred by LICENSOR by reason of LICENSEE'S default including, but not limited to, the cost of

recovering possession of the Premises. LICENSOR may pursue any other remedy now or hereafter available to LICENSOR under the laws or judicial, decisions of the Commonwealth of Massachusetts.

**13.3 DEFAULT BY LICENSOR** - LICENSOR shall not be in default unless LICENSOR fails to perform obligations required of LICENSOR within a reasonable time, but in no event late than thirty (30) days after written notice by LICENSEE TO LICENSOR, specifying wherein LICENSOR has failed to perform provided, however, that if the nature of LICENSOR'S obligation is such that more than thirty (30) days are required for performance then LICENSOR shall not be in default if LICENSOR commences performance within such thirty (30) day period and thereafter diligently prosecutes the same completion.

**14. COVENANTS AND CONDITIONS** - Each provision of this License performable by LICENSEE shall be deemed both a covenant and a condition.

**15. LICENSOR'S ACCESS** - LICENSOR'S agents shall have the right to enter the Premises at any time for any lawful purpose but not to remove or otherwise disturb the personal property of the LICENSEE located on the Premises without prior reasonable notice to the LICENSEE.

IT IS MUTUALLY UNDERSTOOD AND AGREED that the covenants and agreements herein contained shall insure to the benefit of and be equally binding upon the respective successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this License the _____ day of _____, _____.

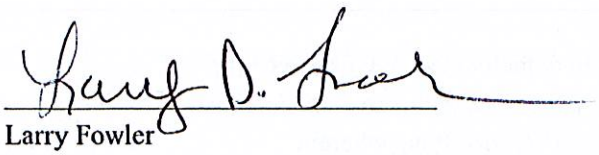
**TOWN OF FAIRHAVEN**

By its/Selectmen:

_____
Daniel Freitas, Chairman

_____
Robert Espindola

_____
Keith Silvia



Larry Fowler

Attachment B

# The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

November 28, 2017

Keith McDonald
SCG Development Partners LLC
100 Corporate Place, Suite 404
Peabody, MA 01960

RE: Massachusetts Rehabilitation Tax Credit Application; The Oxford School, 347 Main Street, Fairhaven, MA; MHC# HRC.754

Dear Mr. McDonald:

The Massachusetts Historical Commission (MHC) has reviewed your application for the Massachusetts Rehabilitation Tax Credit.

Regrettably, the MHC is unable to assign second certification (830 CMR 68.38R.1(4)(b)) and allocate credit to your project (830 CMR 63.38R.1(3)(c)) at this time because the application is incomplete and the proposed project does not meet the Secretary of the Interior's Standards for the Rehabilitation of Historic Properties (830 CMR 63.38R.1(5)(b)and(f)) as presented. Specifically, the proposal violates Standards 5, 6, and 9.

Standard 5 states the following:

> "Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved."

Standard 6 states the following:

> "Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence."

Standard 9 states the following:

> "New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment."

The project proposes removal of the 1951 addition and construction of a new addition on largely the same footprint as the historic. The MHC acknowledges receipt of the recent structural engineers report, completed by Souza, True and Partners, Inc. Structural Engineers dated August 25, 2017. The MHC finds that, as currently designed, the new addition does not meet the Standards (Standards 5 and 9) as it is not appropriately sympathetic to the Classical Revival-style Oxford School in its massing and architectural

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

features. The MHC recommends that the proponent pursue revisions to ensure the integrity of the historic Oxford School and its environment is retained following the construction of the new addition.

Specifically, the MHC advises that the connector between the Oxford School and the new addition be reduced in height to allow for more of the school's rear elevation, including the prominent second story Palladian window, to remain visible. Glazed curtain walls at a shorter connector may be an appropriate solution, given the visibility of the rear of the addition from the public way. The MHC advises that exterior materials should be attentively selected to ensure visual harmony with the Oxford School, and notes that an appropriate design will likely include masonry. The MHC also suggests that the roofline be reconsidered to lower the overall height of the structure, and that cross gables be eliminated. The incorporation of windows of a simpler configuration may also improve the addition's cohesion with the 1896/1914 structure. The applicant may consider drawing visual cues from the original 1951 building, which was largely sympathetic to the historic in its massing, height, roofline, and materials.

Finally, all materials to be used on the new building must be specified and cut sheets should be provided for exterior cladding materials. While the application states cementitious siding will be used, it does not specify a sheathing type or design. If cementitious paneling is proposed, all seams should be illustrated. Color renderings as well as architectural plan and elevation drawings must be provided. For further guidance on additions to historic buildings and meeting the Secretary of the Interior's Standards for Rehabilitation, see National Park Service *Preservation Brief 14: New Additions to Historic Buildings.*

The project continues to propose replacement windows at the upper floors of the 1896/1914 portion of the building with windows which do not meet the Secretary of the Interior's Standards (Standard 6). While the application states that the non-historic sash will be replaced with units to match configurations illustrated in historic drawings of the property, the windows illustrated do not replicate the appearance of traditional sash. The replacement windows must have more traditionally shaped rails with beveled edges. Brick mold must more closely approximate that of a typical building of this period and style. The brick mold shown in the window drawings provided in the Round 40 application appeared to meet the Standards.

The MHC also requests the following information with respect to the Part 2 you submitted:

- Updated plan drawings for the first and second floors of the 1896/1914 portion of the school. The MHC appreciates the applicant's attention to retaining historic classroom doors as well as arched entryways per the revised written description of work. Please provide updated proposed floor plans which support the revised approach.

- Clarification regarding basement windows. The written description states that aluminum units will be used at these openings, however, drawings provided illustrate fiberglass units. Further, a muntin detail for this window must be provided.

- Clarification regarding trim retention in bedrooms. It remains unclear why existing trim cannot be reinstalled in these areas as is proposed in other areas of the new residential units. In order to meet the Standards, trim should be retained to the greatest extent possible.

We encourage you to reapply in the next application cycle. Please note that the MHC will require the following updated information to supplement your application: newly completed application form cover pages for Part 1 and Part 2, updated letters of support, an updated estimated project budget which includes a new pro forma detailing overall project costs and qualified rehabilitation expenditures, and any additional information with which the existing application may be supplemented. Please be as detailed as

possible in your application about the above referenced items. The next application deadline is January 16, 2018.

Sincerely,

Brona Simon
Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission

xc: Quinn Stuart, VHB

Fairhaven
Massachusetts

# FAIRHAVEN BROADBAND MASTER PLAN SUMMARY PRESENTATION

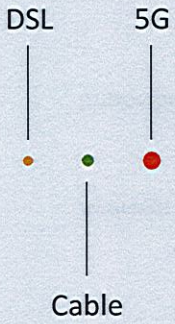
## Prepared for The Fairhaven Board of Selectmen

February 8, 2021

Attachment C

# Why Fiber?

## Current Maximum Download Speeds




**Fiber**

25 Tbps

(25,000,000 Mbps)

# Fairhaven Broadband Survey Results

| | | | |
|---|---|---|---|
| Total Responses | 643 | | |
| Support Fiber Network | | | |
| | 2 | No | 0.32% |
| | 140 | Possibly | 22.15% |
| | 490 | Yes | 77.53% |
| Internet Speed Importance | | | |
| | 8 | Not Important | 1.27% |
| | 165 | Somewhat Important | 26.15% |
| | 459 | Very Important | 72.58% |
| | 623 | Important/Very Important | 98.73% |
| Average Connection Speeds | | | |
| | 551 | Download | 151 Mbps |
| | 551 | Upload | 13 Mbps |
| Importance of Choice in ISP & Plans | | | |
| | 23 | Not Important | 3.65% |
| | 115 | Somewhat Important | 18.25% |
| | 492 | Very Important | 78.10% |
| | 607 | Important/Very Important | 96.35% |
| Rate Current ISP | | | |
| | 146 | Poor | 23.17% |
| | 236 | Fair | 37.46% |
| | 190 | Good | 30.16% |
| | 51 | Very Good | 8.10% |
| | 7 | Excellent | 1.11% |
| | 382 | Poor/Fair | 60.63% |

# Current Market Analysis – Residential Plans

xfinity
comcast

| Speed (Mbps) [Down / Up] | Introductory Pricing [contract required] | Standard Pricing [not including taxes & fees] | Data Caps |
|---|---|---|---|
| 25 / 3 | $50.00 | $55.00 | 300 GB |
| 100 / 10 | --- | $78.00 | 500 GB |
| 200 / 10 | $50.00 | $93.00 | 600 GB |
| 600 / 12 | $90.00 | $103.00 | 1,000 GB |
| 940 / 50 | $90.00 | $108.00 | 1,200 GB |
| 2,000 / 50 | $300.00 | $300.00 | 1,200 GB |

**Taxes and Fees often represent an additional (20%-30%) of Standard Pricing**
Shared Network – Speeds are "Up To" and are not guaranteed.
Speeds are not Symmetrical.
Additional Data - $10.00 per 100 GB used.
xFi Gateway Modem - $14.00 per month.
**Availability depends upon location – not available in all areas.**

verizon

| Speed (Mbps) [Down / Up] | Standard Pricing [not including taxes & fees] | Install Fee [not including taxes & fees] |
|---|---|---|
| 1.1 / .3 | $40.00 | Not Disclosed |
| 3.1 / .7 | $40.00 | Not Disclosed |

**Taxes and Fees often represent an additional (10%-15%) of Standard Pricing**
Shared Network – Speeds are "Up To" and are not guaranteed.
Speeds are not Symmetrical.
Soft Data Caps apply to all service plans.
**Availability depends upon location – not available in all areas.**

Xfinity Monthly Billings to Residents in Fairhaven –

Monthly Billing = $179.55

[Average Charges from 32 Xfinity Residential Invoices]

# Current Market Analysis – Business Plans

COMCAST BUSINESS

| Speed (Mbps) [Down / Up] | Business Pricing [not including taxes & fees] | Contract Term Required | Install Fees and Data Caps |
|---|---|---|---|
| 35 / 5 | $70.00 | 2 Years | Not Disclosed |
| 200 / 20 | $100.00 | 2 Years | Not Disclosed |
| 300 / 30 | $150.00 | 2 Years | Not Disclosed |
| 600 / 35 | $220.00 | 2 Years | Not Disclosed |

**Taxes and Fees often represent an additional (20%-30%) of Standard Pricing**
Shared Network – Speeds are "Up To" and are not guaranteed.
Speeds are not Symmetrical.
**Availability depends upon location – not available in all areas.**

verizon business

| Speed (Mbps) [Down / Up] | Standard Pricing [not including taxes & fees] | Install Fee [not including taxes & fees] |
|---|---|---|
| 1 / .3 | $50.00 | Not Disclosed |
| 1.5 / .3 | $63.00 | Not Disclosed |

**Taxes and Fees often represent an additional (10%-15%) of Standard Pricing**
Shared Network – Speeds are "Up To" and are not guaranteed.
Speeds are not Symmetrical.
**Availability depends upon location – not available in all areas.**


November 25, 2020 – **"Comcast to raise internet and TV prices nationwide next year"**
https://www.theverge.com/2020/11/25/21719695/comcast-internet-tv-cost-bill-increase-price-2021

November 25, 2020 – **"Comcast is imposing a data cap on home internet use in Massachusetts"**
https://www.boston.com/news/media/2020/11/25/comcast-data-caps-massachusetts

# Current Market Analysis – Cost per Mbps DL Speed

xfinity Comcast

| DL Speed | Cost | Mbps Cost |
|---|---|---|
| 25 | $66.00 | **$2.64** |
| 100 | $93.60 | **$0.94** |
| 200 | $111.60 | **$0.56** |
| 600 | $123.60 | **$0.21** |
| 940 | $129.60 | **$0.14** |
| 2000 | $360.00 | **$0.18** |

verizon

| DL Speed | Cost | Mbps Cost |
|---|---|---|
| 2 | $42.00 | **$21.00** |

COMCAST BUSINESS

| DL Speed | Cost | Mbps Cost |
|---|---|---|
| 35 | $84.00 | **$2.40** |
| 200 | $120.00 | **$0.60** |
| 300 | $192.00 | **$0.64** |
| 600 | $264.00 | **$0.44** |

verizon business

| DL Speed | Cost | Mbps Cost |
|---|---|---|
| 2 | $56.00 | **$28.00** |

Fairhaven Massachusetts

## Fairhaven Fiber Network

| DL Speed | Cost | Mbps Cost |
|---|---|---|
| 1000 | $55.80 | **$0.056** w/ Infrastructure |
| 1000 | $34.94 | **$0.035** w/o Infrastructure |

# Financing the Network

## The Money is Already in Fairhaven

| | |
|---|---|
| Premises (Homes / Businesses) | 6,500 |
| Average Monthly Internet Cost | $102.60 |
| Annual Internet Spend | $8,002,800 |
| 20 Year Internet Spend | $160,056,000 |

Average Residential ISP Cost in Fairhaven

Fairhaven Broadband Survey = Average Speed 151/13 Mbps = $102.60 per Month Average

Projected Network Infrastructure Total Investment = $17,001,400

# Recommendations from Broadband Committee

1. Pursue and Open Access Model
2. Pursue Opt-In (Voluntary) rather than Forced Participation
3. Pursue RFP for Design/Build
4. Pursue RFP for Open Access Partner
5. Utilize the Municipal Light Plant Structure

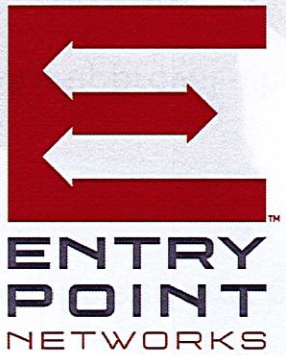
# Next Steps

1. Finalize recommendations from Fairhaven's Legal Counsel and Outside Bond Counsel regarding the proposed legal structure and supporting documents for proposed Fairhaven owned infrastructure.
2. Initiate process for Town to conduct first of two votes needed to establish Electric Light Plant structure.
3. Refine Community Engagement Plan.
4. Set Budget for Community Engagement Plan.
5. Determine if any 3rd-Party groups (outside resources) would be used for the Community Engagement Plan (Marketing, Communication, Public Relations, etc.).
6. Explore network financing options.
7. Implement Community Engagement and demand aggregation process.
8. Get approval from Board of Selectmen and State Inspector General to proceed with Design/Build process.
9. Conduct RFP to select Design (Engineering) and Build (Construction) partner(s).
10. Conduct RFP to select Network Management / Open Access platform.

# Next Steps [Continued]

11. Create Design/Build Project Plan.
12. Determine whether the network will be aerial or buried.
13. Create formal design of the network.
14. Harden financial projections.
15. Advance initiative to Select Board for approval when demand aggregation (Take-Rate) makes the project feasible.
16. Formalize network financing plan.
17. Launch make-ready process for utility pole attachments (if aerial).
18. Construct network.
19. Decide whether Network Operations would be 3rd Party or a Town Department.

# Thank You



Attachment D

Fairhaven
Massachusetts

# Broadband Master Plan

Prepared for the Fairhaven Board of Selectmen

February 2021

– Prepared By –

ENTRY POINT NETWORKS

www.entpnt.com

Fairhaven
Massachusetts

# Broadband Master Plan

February 2021

## Contents

# Broadband Master Plan



## Executive Summary

*In addition to lowering costs and delivering significant improvements in network speeds, additional objectives for the network include positively impacting economic development, livability, public safety, education, healthcare, emergency communications, smart grid, efficient government services, universal access, environmental stewardship and smart Town initiatives.*

The Fairhaven Broadband Study Committee (BSC) has worked with EntryPoint Networks to develop this Broadband Master Plan to assist with a planning and decision-making process to assist the Fairhaven Select Board in determining whether it is feasible to deploy and operate broadband infrastructure for the residents, businesses and anchor institutions in the Town of Fairhaven. The information in this report will be used to assist in the planning and evaluation of feasibility for implementation of a network that can lower broadband costs and increase network value for all stakeholders in Fairhaven. Additionally, this report is designed to assist Town leaders in understanding the operational implications, important risk factors, and a realistic cost framework for developing and operating Town owned fiber optic infrastructure.

The Broadband Master Plan is a living document that will first be used to analyze feasibility. If the Select Board determines that the project has sufficient merit, the planning process will continue toward a formal RFP process for Engineering, Construction, and Network Management Tools. The specific steps to this process are covered at the end of this document in the Next Steps section.

The primary drivers for this analysis include an interest by the Board of Selectmen in lowering costs and improving network speed and reliability. In addition to lowering costs and delivering significant improvements in network speeds, additional objectives for the network include positively impact economic development, livability, public safety, education, healthcare, emergency communications, smart grid capabilities, efficient government services, universal access, environmental stewardship, and smart city applications.

This report seeks to provide the data needed for Town leaders to thoughtfully plan and implement a communications infrastructure strategy that will benefit residents, businesses, and anchor institutions for years to come. Town leaders will be able to use this document to lay the groundwork to address the challenges of a project of this size and scope. The key focus of the report is on the following primary activities:

1) Network Design & Architecture
2) Cost Analysis for Construction
3) Cost Analysis Network Operations
4) Customer Acquisition
5) Risk Management

## Strategy

Deploying a large-scale fiber optic network is a significant public works and information technology project.

**Key Strategic Ideas** guiding this Plan were established by the Broadband Study Committee and include the following:

1. **Improve Affordability** – The Town of Fairhaven seeks to promote policies and initiatives that will make internet access universally available and affordable throughout Town limits.

2. **Foster Competition & Choice** – The Town seeks to promote initiatives that will increase the number of service providers and types of services that are available to Fairhaven residents.

3. **Promote Abundant Bandwidth** – Town leaders seek for solutions that move from the current practice of treating bandwidth as a scarce commodity toward policies and programs which treat bandwidth as an abundant resource.

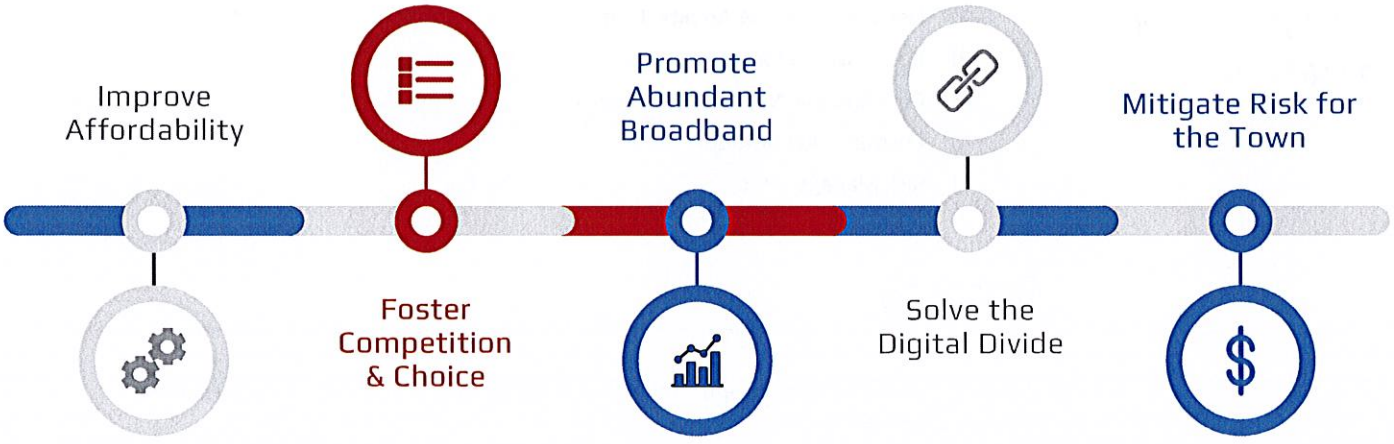
4. **Solve the Digital Divide** – Town leaders are interested in promoting access for all residents by making access affordable and by promoting ubiquitous infrastructure.

5. **Mitigate Risk for the Town, Constituents, and Partners** –Town leaders are particularly interested in implementing a business model which mitigates financial and operational risks to the Town and its partners while at the same time helping the Town achieve its other objectives.

6. **Improve Network Reliability** - Town leaders seek to promote network attributes that will increase reliability for residents, businesses, and anchor institutions within Town limits.

7. **Make Participation Voluntary** – A core component of the strategy the Town is advancing is to increase connectivity options for Fairhaven stakeholders but not compel residents or local businesses to subscribe to a particular program or initiative.

8. **Establish Local Control over Essential Infrastructure** - The economy is now an information economy and the importance of digital infrastructure continues to grow in significance. The Town of Fairhaven has an interest in ensuring that the Town has robust digital infrastructure, and it is interested in promoting initiatives which will give the town greater influence over this important infrastructure.



## SWOT Analysis

The SWOT Analysis included here is not an analysis of current offerings within Fairhaven. Rather, the analysis considers the Strengths, Weaknesses, Opportunities and Threats related to advancing the projects under consideration in this report.


| | |
|---|---|
| STRENGTHS | Support from frustrated subscribers. Operational experience with fiber optics (existing backbone). Community interest in increasing the number of choices. Potential regional interest. Consumer demand, timing following the pandemic and awareness of the importance of broadband has increased. Frustration with current systems has increased. Potential for access to stimulus spending focused on broadband. |
| WEAKNESSES | The Town is managing its own fiber network but has not done this at the scale of a Town-wide project. Some areas in the Town have ledge which may prevent a buried network. If the project is an aerial build, the Town will need to coordinate with the owners of the power utility poles. The Town has limited funds to contribute to the project. |
| OPPORTUNITIES | Better service, faster speeds, increased reliability, introduce competitive pricing, reduce costs, and increase speeds for local businesses. Impact on employment and economic growth, hotspots in strategic locations around the Town (Parks), low interest rate environment, improved property values. |
| THREATS | Community fear of government control and intervention. Resistance to change. Misinformation and propaganda. Potential for interest rates to increase. People will hear about failed projects. Undermining existing incumbents, fear of the unknown, fear of increased taxes, concern that new technologies will cause obsolescence of these technologies (5G). Risks outlined in Risk Analysis section. |

## Infrastructure

Comparison of Available Media

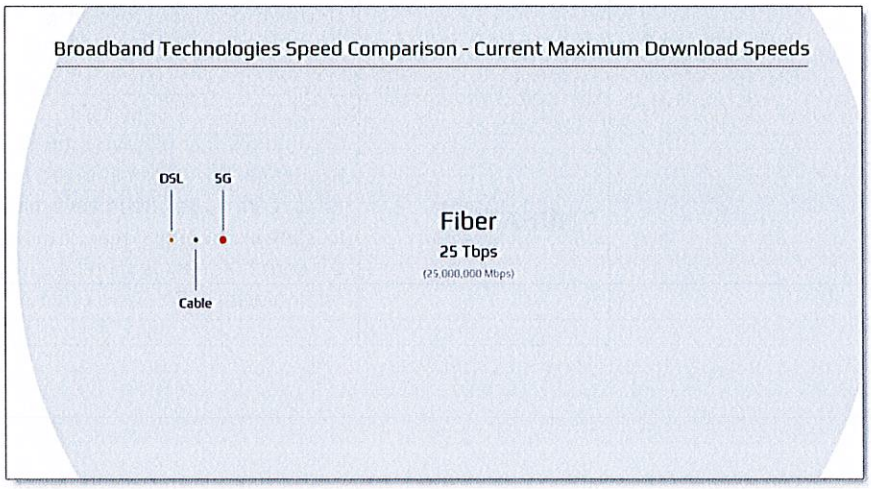
The primary media used for internet access today in the United States includes DSL, Coaxial Cable, Wireless and Fiber Optic cable.

**DSL** stands for Digital Subscriber Line and it is one of the technologies used to provide Internet connectivity to homes and businesses. DSL uses existing telephone lines and a transceiver to bring a connection into a home or business and allows the household to use the Internet and make telephone calls at the same time. Verizon is the incumbent telephone company in Fairhaven and uses DSL technology. DSL is asymmetrical (the download speed is much faster than the upload speed), is typically shared between 32 or 64 homes, and is capable of download speeds up to 100 Mbps. However, most consumers accessing the internet via DSL experience speeds between 5 – 25 Mbps.

**Coaxial Cable** uses copper cable designed with one physical channel that carries the signal surrounded by a layer of insulation and then another physical channel, both running along the same axis – hence the coaxial name. Coaxial cable is primarily used by cable TV companies to connect transmission facilities to customer homes and businesses to deliver cable T.V. and internet access. Comcast is the incumbent cable company in the Fairhaven area. Coaxial Cable is asymmetrical, is typically shared between 32 or 64 homes, and is capable of download speeds up to 940 Mbps. A limitation of coaxial cable is that the signal begins to degrade after 360 feet.

**Fiber Optic Cable** sends information down strands of glass known as optical fibers which are about the size of a human hair. These fiber optic strands are capable of transmitting 25 Tbps today and researchers have successfully demonstrated a transmission experiment over 1045 km with a data-rate of 159 Tbps *(https://phys.org/news/2018-04-fiber transmission.html)*. Fiber-optic cables carry information between two places using optical (light-based) technologies which convert electrical information from the computer into a series of light pulses. Fiber Optic Cable is capable of symmetrical speeds up to 25 Tbps and the signal can travel as far as 60 kilometers without degrading.

Because the difference in capacity between fiber optics and alternative media is so significant, fiber optics should be the foundational media for any new broadband infrastructure project when financially feasible.



**Wireless Internet** access is made possible via radio waves communicated to a person's home computer, laptop, smartphone, or similar mobile device. Wireless Internet can be accessed directly through providers like AT&T Wireless, Verizon Wireless, T-Mobile or by a wireless Internet Service provider (WISP).

**5G** is the 5th generation of technology used in cellular networks and refers to a standard for speed and connection. Because of the extensive marketing around the emergence of 5G, many people wonder whether 5G will replace fiber optic cables. In fact, 5G depends on fiber optic infrastructure. All wireless technologies work better the faster they get back to fiber optics. The graphic above is not to scale (fiber has much greater capacity than the illustration represents) but this illustrates the magnitude of the difference between the different media types. The emergence of 5G is very early but there is a potential revenue opportunity for 5G carriers to operate on Town infrastructure and contribute to the ongoing cost of network operations. Cellular networks can be symmetrical or asymmetrical and are sometimes capable of download speeds up to 2,000 Mbps

**Wi-Fi** is common in homes and commercial buildings and is a way to deliver a network connection from a network hub over a wired connection to wireless devices via a wireless access point. Most people access the internet over a wireless connection, but it is important to remember that wireless connectivity ultimately depends on a wired connection and wireless access works best the faster it gets back to a wire.

Impact of Bandwidth on Applications

| Length & Type of Media | Approx Size | 10 Mbps | 20 Mbps | 100 Mbps | 1,000 Mbps |
|---|---|---|---|---|---|
| 4-Minute Song | 4 MB | 3 sec | 1.5 sec | 0.3 sec | 0.03 sec |
| 5-Minute Song | 30 MB | 26 sec | 13 sec | 2.5 sec | 0.2 sec |
| 9-Hour Audio Book | 110 MB | 1.5 min | 46 sec | 9.2 sec | 0.9 sec |
| 45-Minute TV Show | 200 MB | 3 min | 1.5 min | 16 sec | 1.7 sec |
| 45-Minute HDTV Show | 600 MB | 8.5 min | 4 min | 50 sec | 5 sec |
| 2-Hour Movie | 1.0-1.5 GB | 21.5 min | 10.5 min | 1.5 min | 8 sec |
| 2-Hour HD Movie | 3.0-4.5 GB | 60 min | 32 min | 4.5 min | 25 sec |
| Large Archive File | 10 GB | Too Long | Slow | Better | 80 sec |

## Upload vs Download Speeds

In addition to the fact that fiber optics offer exponentially greater bandwidth than DSL and coaxial cable, fiber optic cable also offers the ability to deliver symmetrical speeds. In an asymmetrical connection, the download speeds are much faster than upload speeds.

Upload speed is the amount of data a person can ***send*** in one second and download speed is the amount of data a person can ***receive*** in one second. Upload speeds can be especially important for businesses, including home-based businesses or people who work from home. Applications that depend on good upload speeds include sending large files, cloud applications like Google Docs and Dropbox, VoIP, FaceTime, Skype, hard drive backups and In-house web hosting.

## Transmission Distance

As described above, an additional benefit of fiber optic infrastructure is that a communication signal sent over fiber does not start to degrade for 45 miles while a signal sent over coaxial cable starts to degrade after 360 feet.

## Assessment of Existing Broadband Infrastructure

**Deloitte.**

*"The United States requires between $130 and $150 billion over the next 5–7 years to adequately support broadband competition, rural coverage and wireless densification."*

*"The primary finding of the Deloitte report is that legacy infrastructure needs to be replaced with Fiber Optic cable in the near-term to meet bandwidth demands."*

A 2017 Deloitte Consulting analysis summarizes the current needs and realities for legacy broadband infrastructure in the United States this way:

"The United States requires between $130 and $150 billion over the next 5–7 years to adequately support broadband competition, rural coverage and wireless densification.

Despite the demand and potential economic benefits of fiber deployment, the United States lacks the fiber density in access networks to make the bandwidth advancements necessary to improve the pace of innovation and economic growth.

Some wireline carriers are reluctant or unable to invest in fiber for the consumer segment despite the potential benefits. Expected wireline capital expenditures range between 14–18 percent of revenue. Wireline operating expenditures can be 80 percent of revenue. Fiber deployment in access networks is only justified today if a short payback period can be guaranteed, a new footprint is being built, repairs from rebuilding after a storm or other event justifies replacement, or in subsidized geographies where Universal Service funds can be used. The largest US wireline carriers spend, on average, five to six times more on operating expenses than capital expenditures. Excessive operating expenditures caused, in part, by legacy network technology restrict carriers' ability to leverage digital technology advancements. Worse, as legacy networks continue to descale, the percentage of fixed costs overwhelms the cost structure leading to even greater margin pressure."

*Citation: https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-5GReady-the-need-for-deep-fiber-pov.pdf*

The Deloitte report is not specific to infrastructure in Fairhaven, Massachusetts, but the conclusions from the Deloitte report are generally applicable. Telco and Cable operators in U.S. cities often have fiber to an aggregation point and then legacy infrastructure from the aggregation point to the premise.

The primary finding of the Deloitte report is that legacy infrastructure needs to be replaced with Fiber Optic cable in the near-term to meet bandwidth demands. There is no indication that incumbents intend to replace legacy infrastructure with Fiber Optic infrastructure in the near term and even if they did, this upgrade would solve the base infrastructure problem but it would not solve for the lack of competition or premium pricing for Gig speeds.

Legacy copper and coaxial infrastructure will need to be replaced with state-of-the-art infrastructure to meet the ever-growing demands for greater bandwidth and faster speeds. An important question is whether unique value can be derived by having the Town and its residents own and control this infrastructure or whether private companies should continue to own and operate all communications infrastructure.

Ideal infrastructure includes more than just the fiber optic cables running throughout the Town. Important infrastructure considerations include the electronics at both ends of the fiber as well as systems that manage and control the network. As the Town deploys its infrastructure, the following are important considerations guiding its decision-making framework:

- **Capacity & Speed:** The demand for bandwidth and speed will continue to grow.
- **Emerging Services and Applications:** 5G, connected vehicles, edge computing, and virtual reality are all examples of emerging applications that have infrastructure dependencies. An

important consideration is how flexible the business model and technology systems are to enable whatever may come.

- **Local Control:** An advantage of a network that is locally controlled is that the network can be much more responsive to local needs and may enable innovation and adaptation for emerging opportunities.
- **Local Resilience:** Many communities are not locally resilient against attacks on internet infrastructure. It is possible to design networks in a way that provides residents and businesses with a network that is locally resilient if, for some reason, middle mile connections are severed.
- **Privacy & Security**: Subscribers are becoming increasingly sensitive to security, privacy, and confidentiality controls.
- **Risk Analysis**: Consideration of the risks for all potential network stakeholders is an essential part of the planning process.

# Market Analysis

In Fairhaven, most residents and businesses subscribe to wireline internet services from the cable operator (Xfinity Comcast) and telephone incumbent (Verizon).

## Xfinity Comcast

Xfinity advertises the following residential ISP services in Fairhaven:

| Speed (Mbps) [Down / Up] | Introductory Pricing [contract required] | Standard Pricing [not including taxes & fees] | Data Caps |
|---|---|---|---|
| 25 / 3 | $50.00 | $55.00 | 300 GB |
| 100 / 10 | --- | $78.00 | 500 GB |
| 200 / 10 | $40.00 | $93.00 | 600 GB |
| 600 / 12 | $90.00 | $103.00 | 1,000 GB |
| 940 / 50 | $90.00 | $108.00 | 1,200 GB |
| 2,000 / 50 | $300.00 | $300.00 | 1,200 GB |

**Taxes and Fees additional (20%-30%) of Standard Pricing**
Shared Network – Speeds are "Up To" not guaranteed.
Speeds are not Symmetrical
Additional Data - $10.00 per 100 GB used
xFi Gateway Modem - $14.00 per month
**Availability depends upon location – not available in all areas.**

## Verizon

Verizon advertises the following residential services in Fairhaven:

| Speed (Mbps) [Down / Up] | Standard Pricing [not including taxes & fees] | Install Fee [not including taxes & fees] |
|---|---|---|
| 1.1 / .3 | $40.00 | Not Disclosed |
| 3.1 / .7 | $40.00 | Not Disclosed |

**Taxes and Fees additional (10%-15%) of Standard Pricing**

Shared Network – Speeds are "Up To" not guaranteed.
Speeds are not Symmetrical
Soft Data Caps apply to all service plans
**Availability depends upon location – not available in all areas.**

## Comcast Business

Comcast advertises the following business ISP services in Fairhaven:

| Speed (Mbps) [Down / Up] | Business Pricing [not including taxes & fees] | Contract Term Required | Install Fees and Data Caps |
|---|---|---|---|
| 35 / 5 | $70.00 | 2 Years | Not Disclosed |
| 200 / 20 | $100.00 | 2 Years | Not Disclosed |
| 300 / 30 | $150.00 | 2 Years | Not Disclosed |
| 600 / 35 | $220.00 | 2 Years | Not Disclosed |

**Taxes and Fees additional (20%-30%) of Standard Pricing**
Shared Network – Speeds are "Up To" not guaranteed.
Speeds are not Symmetrical
**Availability depends upon location – not available in all areas.**

## Verizon Business

Verizon advertises the following business services in Fairhaven:

| Speed (Mbps) [Down / Up] | Standard Pricing [not including taxes & fees] | Install Fee [not including taxes & fees] |
|---|---|---|
| 1 / .3 | $50.00 | Not Disclosed |
| 1.5 / .3 | $63.00 | Not Disclosed |

**Taxes and Fees additional (10%-15%) of Standard Pricing**
Shared Network – Speeds are "Up To" not guaranteed.
Speeds are not Symmetrical
**Availability depends upon location – not available in all areas.**

## Average Monthly Residential Charges in Fairhaven

EntryPoint reviewed 32 Xfinity invoices provided by Fairhaven residents with the following results:

Average monthly costs of residential Xfinity services = **$157.81** per month.

Average monthly billing with Fees and Taxes added = **$179.55** per month.

# Market Analysis Conclusion

Based upon our research Xfinity/Comcast has close to a monopoly market share in Fairhaven.

# Community Engagement Plan

*The sample Community Engagement Plan that follows is built on an assumption that Fairhaven will go forward with a Town sponsored project. If the Town elects to support an alternative approach (Cooperative or public private partnership) the Community Engagement approach will change.*

## Goals & Objectives

The objective of a *Fairhaven Community Engagement Plan* is to achieve a minimum 40% take-rate for homes and businesses within Fairhaven Town limits. Additionally, a scale of 2,500 subscribers is an important target for the project to be operationally sustainable. In the financial section later in this report, the financial models are built to a target of a 60% take-rate. The modeling can easily be adjusted to match actual take-rates.

## Evaluation & Education

Document the current state of broadband and determine the level of interest among residential users and business owners.

### Community Survey

A survey for residents and business owners is in place to determine the level of interest in a municipal fiber network. It is important to drive response to the survey. Education and promotion programs should be influenced by survey engagement and response.

### Publish Educational Information

Create a website specific to the municipal fiber program. Outline the core message of broadband as a utility that will support an environment of choice and subscriber control. Use customized videos to educate online visitors on the following:

a. Functionality of the community fiber network
b. Options for services
c. Frequently Asked Questions (FAQ's)
d. Inquiry Form where community members can submit questions to the municipality

### Mapping Community Interest

Distribute an "I am interested" sign-up form with associated heat map where residential and business property owners can register as someone interested in municipal fiber.

Evaluation & Education Budget = TBD

## Marketing & Promotion

Fairhaven issues a series of Press Releases and sends out inserts in monthly utility bills promoting the municipal fiber program, driving traffic to fiber website with the goal of educating community members and generating interest and encouraging community participation in the survey.

Use all available social media platforms (Facebook, Twitter, etc.) to promote the fiber network.

## Neighborhood Entrance and Yard Signs

As construction (fiber build) begins in a neighborhood, Fairhaven will post signs at neighborhood entrances announcing the construction and letting residents know they can still sign-up to get connected while crews are in the neighborhood.

As homes are connected in the neighborhood, yard signs are placed in the yards of subscribers indicating that the home now enjoys a fiber broadband connection.

Marketing & Promotion Budget = TBD

## Grassroots Engagement

### Open House Events / Webinar Events

Fairhaven holds a series of Open Houses and/or Webinars where residents and business owners can hear an educational presentation about the fiber project, ask questions about the fiber project, become educated about the Fairhaven fiber plan, business model, etc.

Open Houses are promoted using utility bill inserts, press releases, public service announcements, local news reports, town websites, social media platforms, etc.

Open House events are intended to educate residents, promote the network, and identify Fiber Champions in the various neighborhoods (fiber zones). Fiber Champions are individuals that are committed to promoting the network within their neighborhood. Fiber Champions are also incentivized to be the first neighborhood to get connected (initial fiber zones are connected in order of take-rates – highest to lowest).

### Fiber Champions

Fiber Champions assist sales efforts within their designated neighborhood (fiber zone). They organize and lead Cottage Meetings where neighbors come together to discuss the Fairhaven fiber program. Fairhaven leaders and employees provide support to the Fiber Champions in their efforts. Fiber Champions drive conversations and contractual commitments of neighbors via the Door-to-Door Sales and Education campaign.

Grassroots Engagement Budget = TBD

## Door-to-Door Campaign

Network sales agents (typically an independent group representing the network) contact residents and business operators within the planned network footprint to answer questions about the network and ascertain the potential subscribers' intentions regarding their participation in the network. [Yes (Opt-in) or No (Opt-out)].

This direct person-to-person contact gives everyone in the community an opportunity to ask questions, clarify their understanding and express their level of interest in participating.

To maximize the effectiveness of this process, prior to canvassing a neighborhood, door hangers are distributed to every home and business informing property owners that a representative will be stopping by to explain the value proposition, answer questions and get their Opt-in / Opt-out decision.

It is important that Fairhaven support this effort through public notifications, press releases, mass emails, websites, social media sites, mobile applications, and other community outreach venues available to Fairhaven. This may include outside professional marketing and/or PR firms.

Door-to-Door Sales Effort Budget = $100 per Premise that Subscribes
[Sign-up Fee or Wrapped into the Infrastructure Installation Costs]

Please Note – The work outlined in the various Steps of this Community Engagement Plan, in whole or part, can be managed by internal Fairhaven personnel or can be outsourced to a professional marketing and promotions organization.

## Fairhaven Broadband Survey Results

*And the Survey Says...*

In May 2020, the Town deployed a website to begin the process of educating the public regarding its evaluation of the feasibility of a Town sponsored fiber optic network. The Town distributed an initial survey to Fairhaven residents assessing current sentiment regarding existing services and the level of interest in a municipal network. The survey was not developed by professional survey administrators. To date key findings from the survey, include the following:

| | | | |
|---|---|---|---|
| Total Responses | 643 | | |
| Support Fiber Network | | | |
| | 2 | No | 0.32% |
| | 140 | Possibly | 22.15% |
| | 490 | Yes | 77.53% |
| Internet Speed Importance | | | |
| | 8 | Not Important | 1.27% |
| | 165 | Somewhat Important | 26.15% |
| | 459 | Very Important | 72.58% |
| | 623 | Important/Very Important | 98.73% |
| Average Connection Speeds | | | |
| | 551 | Download | 151 Mbps |
| | 551 | Upload | 13 Mbps |
| Importance of Choice in ISP & Plans | | | |
| | 23 | Not Important | 3.65% |
| | 115 | Somewhat Important | 18.25% |
| | 492 | Very Important | 78.10% |
| | 607 | Important/Very Important | 96.35% |
| Rate Current ISP | | | |
| | 146 | Poor | 23.17% |
| | 236 | Fair | 37.46% |
| | 190 | Good | 30.16% |
| | 51 | Very Good | 8.10% |
| | 7 | Excellent | 1.11% |
| | 382 | Poor/Fair | 60.63% |

# Municipal Broadband Models Comparison

The Institute for Local Self Reliance has mapped municipal networks throughout the United States using an interactive map that can be found at the following link:

*https://muninetworks.org/communitymap*

To compare the various models that exist in the United States today, a mix of prominent municipal fiber optic projects were selected to illustrate the types of models that have been deployed. The following comparison summarizes different approaches to funding and operating municipal broadband infrastructure and services followed by a description of the advantages and disadvantages of each:

| Municipality | Population | Model Type | Electric Utility | Take-Rate | Cost of 1 Gig |
|---|---|---|---|---|---|
| Chattanooga, TN | 179,139 | Electrical Utility ISP | Yes | 60% | $68.00 |
| Lafayette, LA | 126,000 | Electrical Utility ISP | Yes | 40% | $99.95 |
| Westminster, MD | 19,000 | City Fiber, Private ISP | No | 20% | $89.99 |
| Huntsville, AL | 194,585 | Dark Fiber Open Access | Yes | Not Published | $70.00 |
| Sandy, OR | 10,000 | Municipal ISP | No | 60% | $59.95 |
| Longmont, CO | 86,000 | Electrical Utility ISP | Yes | 55% | $69.95 |
| Ammon, ID | 17,000 | Automated Open Access | No | 65% | $47.50 |
| Monmouth, OR | 15,083 | Municipal ISP | No | 80% | $129.65 |
| Lexington, KY | 321,959 | Private Partner Owned | No | Not Published | $59.95 |
| Santa Monica, CA | 110,000 | Dark Fiber Business Only | No | N/A | N/A |
| Fort Collins, CO | 165,000 | Electrical Utility ISP | Yes | Early Stage | $59.95 |
| UTOPIA | 150,000+ | Manual Open Access | No | 15% | $70.00 |

## Municipal Broadband Models Defined – Summary | Pros | Cons

### Town Owned & Operated, Single ISP

**Summary:** The Town owns and operates the network and is also the sole service provider on the network.

**Pros**: This model can be successful when incumbent operators have some combination of the following: monopoly or near monopoly status, high prices, poor infrastructure, slow speeds, a poor reputation, and widespread customer resentment.

**Cons**: A single ISP does not significantly expand choice or competition. There have been very few *Town Owned & Operated, Single ISP* deployments that have been successful. The Town is essentially replicating the incumbent model and competing against the incumbent head-to-head. This model leaves the Town vulnerable to the incumbent dropping their price to influence the municipal take-rate and destabilize the municipal network.

Examples of this model include Sandy, OR and Monmouth, OR.

## Municipal Electrical Utility Owned & Operated, Single ISP

**Summary:** The Municipal Electrical Utility owns and operates the network and is also the sole service provider on the network.

**Pros**: The most common municipal model that has been successful using a Single ISP approach has been the Electrical Utility model. A measure of this success can be attributed to the fact that the Electrical Utility has the advantage of having an established reputation in the community. Also, electrical Utilities often have financial, customer service, and engineering expertise that may be beneficial to the network and the skill set for Outside Plant personnel for a municipal network is similar in kind to the existing range of skills in an Electrical Utility. The likelihood of success increases in instances where the incumbent operator has monopoly or near monopoly status, higher than average prices, poor infrastructure, slow speeds, a poor reputation and/or widespread customer resentment.

**Cons**: A single ISP does not significantly expand choice. Expertise in network operations will need to be enhanced or developed. This model is essentially replicating the incumbent model and involves competing against the incumbent head-to-head. This model leaves the City / Electrical Utility vulnerable to the incumbent dropping their price to impact the take-rate and destabilize the network.

Examples of this model include Chattanooga, TN and Longmont, CO. Fort Collins, CO. is in the early stages of deployment and is replicating this model.

## Dark Fiber, Open Access

**Summary**: Dark Fiber Open Access is a model where the town builds infrastructure to the curb and the subscriber then selects an ISP as its provider and the ISP finishes the connection to the home with its own infrastructure and electronics.

**Pros**: Open Access increases choice for consumers. Operating a dark fiber network is less complicated than operating a lit network. The Dark Fiber model enables Public ownership of infrastructure.

**Cons**: The Dark Fiber model gives up control over last mile infrastructure, i.e., the drop from the curb to the premise. The Dark Fiber model therefore limits the usability of each strand of fiber. With an isolated dark fiber connection, it is impossible to connect to other services that may not be available through the ISP that controls the drop to the customer premise. The Dark Fiber Model may not scale easily due to difficulty in anticipating the required fiber count to meet the demand. This can create significant complications for the network operator.

An example of this model is Huntsville, AL.

## Manual Open Access

**Summary:** Manual Open Access is a model where the network is lit end to end. This means that the network operator places and controls the electronics at both ends of the network. In this model, switching service providers can be requested from a web portal and may appear to be automated but the network provisioning is not automated.

**Pros**: A manual Open Access network increases choice for consumers.

**Cons**: Operating a Manual Open Access network is more complex than operating a Single ISP network because of the requirement for human management of network tasks. Any increase in the number of service providers operating on the network adds to network complexity.

An example of this model is the UTOPIA Network. UTOPIA is the largest manual open access network in the United States with just over 20,000 premises connected. UTOPIA struggled under heavy debt obligations for 15 years but is now operating on a sustainable trajectory. In addition to UTOPIA, there are several Manual Open Access networks throughout Europe.

### Automated Open Access

**Summary:** Automated Open Access is a model where the network operator places electronics at both ends of the network and subscribers can dynamically select service providers in real-time. Software Defined Networking is used to automate various network management tasks.

**Pros**: Multiple service providers can deliver services simultaneously and independently across a single wire. When a subscriber selects a new service provider, the provisioning is done using automation and therefore happens on-demand. The automated provisioning creates a marketplace for services which includes ISP's and private networks for other services. The ability to switch service providers on demand increases choice and competition. This network model also includes the ability to provide local network resilience via local communications if connections over the middle mile are down.

**Cons**: The model was first implemented in late 2016. Ammon, ID is the only city that has a full implementation operating today.

Examples of this model include Ammon, Idaho and early-stage deployments in McCall, Idaho, Mountain Home, Idaho, and Elkhart County in Indiana.

Disclosure: EntryPoint Networks owns and operates a SaaS model Automated Open Access solution and is the technology solution provider in these networks.

### Private Sector Owner & Operator, Single ISP

**Summary:** A private builder designs, builds and operates a network. The private entity is also the sole ISP on the network – replicating the incumbent model.

**Pros**: A private builder and operator assumes all the risk and does the work of overseeing design, project management, construction, customer acquisition and operations. This model increases the choices available to consumers with minimal obligation or burden for the town.

**Cons**: The new operator is replicating the incumbent model. There is no local control over infrastructure and ISP choices increase by just one new provider. There is no guarantee that the operator will address the digital divide. The network can be sold to another operator.

There are many examples of over-builders but Lexington, Kentucky is a recent example.

### Private Sector Owner & Operator, Open Access

**Summary:** A private builder designs, builds and operates a network. The private entity uses an Open Access model rather than the incumbent model for service delivery.

**Pros**: A private builder and operator assumes all the risk and does the work of overseeing design, project management, construction, customer acquisition and operations. This model provides an

increase in the choices available to consumers at almost no cost to the town. Risk exposure to the town is very low. The private builder/operator builds and stabilizes the network and may give the town the option to acquire the network after an agreed upon number of years for a premium price above the actual cost to develop.

**Cons**: There is no local control over infrastructure. There is no guarantee that the operator will address digital divide issues. A private owner will be free to sell the network to a new operator that may or may not be aligned with community objectives for the network.

An example of this model is Fullerton, CA (SiFi).

### Cooperative Owned & Operated, Open Access ISP

**Summary:** A fiber-optic infrastructure cooperative owns and operates the network using an Open Access model.

**Pros**: The subscribers to the network are the owners of the infrastructure. This creates local control over infrastructure. The speed to market can be much faster than municipal ownership because the model is established up front. The model gives subscribers choice and competition among service providers which will likely lead to lower pricing in comparison to incumbent operators. Probability of success increases when incumbent operators have some combination of the following: monopoly or near monopoly status, high prices, poor infrastructure, slow speeds, a poor reputation, and widespread customer resentment.

**Cons**: It is more difficult to obtain financing because the cooperative has no assets at the beginning of the project. If financing can be obtained, the cost of money will be more expensive than a town sponsored project.

## Funding Considerations

As the Town evaluates which model is optimal for Fairhaven, the following funding issues should also be considered:

Tax Non-Participants – If Fairhaven decides to pursue a municipally controlled network, an important funding question is whether the Town should pursue a General Obligation Bond to deploy broadband infrastructure ubiquitously to every premise in the Town? Today, most Cities/Towns do not have the political will or inclination to build broadband infrastructure through a funding mechanism that taxes all residents, essentially mandating participation, regardless of whether the resident chooses to participate as a consumer of network services. A Betterment is an example of this Funding model.

Voluntary Participation – The alternative to taxing all residents is to deploy a business model that allocates network costs to voluntary participants. Allowing subscribers to voluntarily opt-in to network participation honors individual preferences for residents and businesses, eliminates Political Risk and can increase public support for the network. Allowing subscribers to voluntarily opt-in or opt-out of network participation is less efficient and more expensive than a model that mandates universal participation. Fairhaven's Broadband Study Committee is making a recommendation to the Board of Selectmen that the Town pursue a model that allows for voluntary participation. A Municipal Light Plant structure allows for voluntary participation.

# Network Design

## Switched Ethernet Network

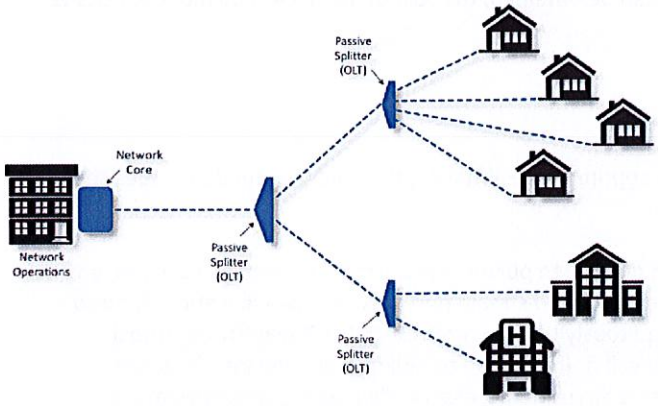
The Switched Ethernet architecture provides a dedicated connection for each customer rather than a shared connection and the customer experience is significantly better than in a shared architecture during periods of network congestion. This is due to the fact that the throughput of switch-based architecture is superior to a bus-based architecture during times of network congestion.

## Passive Optical Network (PON)

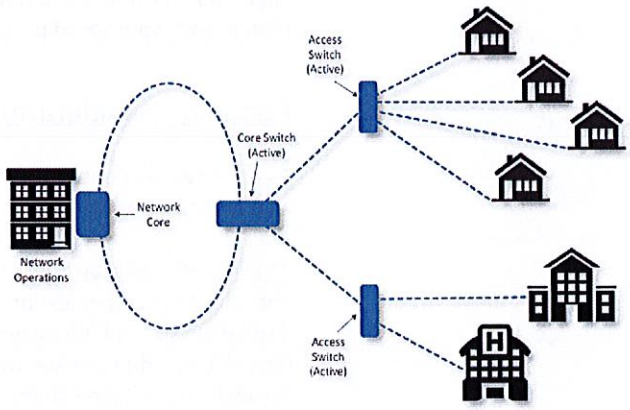
Passive Optical Networks (PON) and Coaxial (Cable) networks follow a Bus architecture.

A Bus architecture is a shared architecture. A splitter is placed in the field and a connection is often shared between 32 or 64 premises. The Bus Architecture leads to more packet collisions on the network which can result in high amounts of packet loss during congestion. Additionally, it is more difficult to isolate and troubleshoot faults in the network with a bus topology.

Passive Optical Network (PON) Design




Switched Ethernet Network Design




Proponents of PON Architecture will argue that PON is less expensive than an ethernet design. That was true historically. The illustration below shows that the variable costs of a switched ethernet deployment is now equal to PON. This change in pricing differences was driven by the fact that all Data Center deployments use Switched Ethernet architectures and the enormous growth of Data Centers over the past 20 years has driven down the cost of Ethernet electronics.

### PON - Network Access Equipment

| Description | Unit Cost | Qty | Extended Cost |
|---|---|---|---|
| Install Package | $696.50 | 1 | $696.50 |
| Splitter Shelf | $84.00 | 8 | $672.00 |
| OLT | $4,196.50 | 2 | $8,393.00 |
| 10GE SFP+ | $837.90 | 2 | $1,675.80 |
| 2x 1GE BIDI CSFP | $157.50 | 24 | $3,780.00 |
| Access Line-up | | | $15,217.30 |
| Number of Subscribers Served | | | 96 |
| Average Cost per subscriber | | | $158.51 |

### Ethernet - Network Access Equipment

| Description | Unit Cost | Qty | Extended Cost |
|---|---|---|---|
| Switch | $1,300.00 | 2 | $2,600.00 |
| SFP | $12.00 | 96 | $1,152.00 |
| Access Line-up | | | $3,752.00 |
| Number of Subscribers Served | | | 96 |
| Average Cost per subscriber | | | $39.08 |

### PON - Premise Equipment

| Description | Unit Cost | Qty | Extended Cost |
|---|---|---|---|
| Indoor ONT | $225.15 | 1 | $225.15 |
| Power supply for 700GE ONT | $12.00 | 1 | $12.00 |
| Premise Line-up | | | $237.15 |
| Number of Subscribers Served | | | 1 |
| Average Cost per subscriber | | | $237.15 |

### Ethernet - Premise Equipment

| Description | Unit Cost | Qty | Extended Cost |
|---|---|---|---|
| White Box VBG | $330.00 | 1 | $330.00 |
| 1000Base 1310nm-Tx/1550nm RX 10km | $9.00 | 1 | $9.00 |
| Premise Line-up | | | $339.00 |
| Number of Subscribers Served | | | 1 |
| Average Cost per subscriber | | | $339.00 |

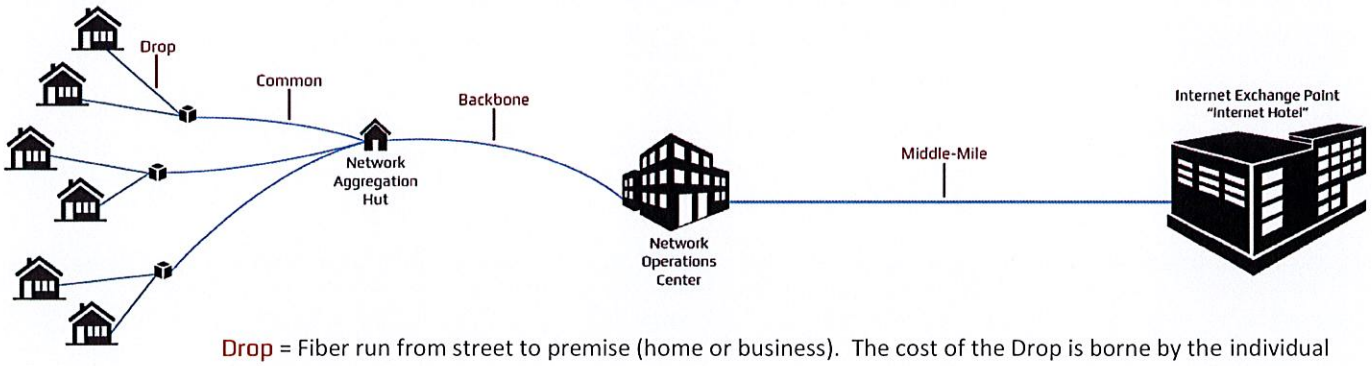
### Per Premise PON Equipment Costs

| | |
|---|---|
| Total cost per Subscriber | **$395.66** |

### Per Premise Ethernet Equipment Costs

| | |
|---|---|
| Total cost per Subscriber | **$378.08** |

## Network Segments – Definitions & Costs Allocations




Drop = Fiber run from street to premise (home or business). The cost of the Drop is borne by the individual subscriber.

Common = Fiber runs from street in front of premise to closest Aggregation Hut. The cost of the Common is borne by all subscribers on the network.

Backbone = Fiber runs from Aggregation Hut back to the Network Operations Center. The cost of the Backbone is borne by all network subscribers, with potential municipal contribution.

Middle-Mile = Third-Party fiber run from the Network Operations Center to the closest Internet Exchange Point. The cost of the Middle-Mile is included in the Monthly M&O Utility Fee and is borne by all network s

# Project Partners

## Middle Mile

"Middle-mile" is an industry term that describes the network infrastructure that connects local networks to service providers at an Internet Exchange Point. The "last mile" is the local part of a communication network which connects a service provider to a customer. Current Middle Mile options include Comcast (Current provider), Open Cape (10 Gig) and IDS (10 Gig).

Approximately 2,500 customers can be served by a 10 Gbps circuit. If the Town pursues a Town owned network, it will need to adjust Middle Mile capacity according to take rate and utilization. Peak usage is an important data point for monitoring and is used to inform capacity planning. The cost of the middle mile connection should be allocated on a per subscriber basis.

## Internet Service Providers (ISP) Partners

An Internet Service Provider gives subscribers access to the internet. The Town will need to determine what model it will follow or support before it engages one or more Internet Service providers. If the Town selects and Open Access Model, there are a number of ISP's that have expressed a verbal interest in being service providers to Fairhaven subscribers. The participation of these ISP's could be formalized through an MOU process.

# Cost Analysis & Phasing

## High Level Network Design

A high-level network design was done for a residential pilot neighborhood to build a cost model for that project. The Biarri Networks Fiber Optic Network Design Tool was used to create the design and calculate materials costs for these designs. The main cost categories for deploying and operating broadband networks are separated to optimize the costs in each of the following categories:

- Infrastructure Capital Costs *(Financed over 20 years)*
- Network Maintenance & Operations
- Services

## Network Backbone

The cost modeling that follows assumes that the fiber infrastructure that was deployed to connect Town Assets has sufficient fiber count so that it can be leveraged as part of a Fiber to the Premise backbone.

## Monthly Infrastructure Cost Modeled From 855 Premises

The first illustration of Infrastructure Capital Costs per premise assumes a 60% take-rate and a project that is 100% aerial. The data in the line items in this model comes from a combination of the Biarri Network Design tool, actual bids for materials, and network buildout experience.

The second illustration of Infrastructure Capital Costs per premise assumes a 60% take-rate and a project that is 20% aerial and 80% underground. We can adjust these variables on a neighborhood-by-neighborhood basis as needed.

The third illustration of Infrastructure Capital Costs per premise assumes a 60% take-rate and a project that is 100% underground.

Take-rate is a variable that is critical to project success because the operational sustainability of a project depends on crossing a certain take-rate threshold and take-rate has a meaningful impact on the cost per premise.

| Costs at 60% Take Rate | | | |
|---|---|---|---|
| 100% Aerial | | | |
| **Description** | Common | Drop | Total |
| Labor - Hours | 10.42 | 2.50 | 12.92 |
| Labor - Dollars | 625.00 | 150.00 | $775.00 |
| Equipment | 185.36 | 28.63 | $213.98 |
| Materials | 241.81 | 79.36 | $321.16 |
| Supplies | $93.27 | $5.63 | $98.90 |
| Restoration | $48.10 | $1.76 | $49.86 |
| Hut/Cabinet | $108.07 | $5.90 | $113.97 |
| Feeder Fiber | $36.02 | $0.99 | $37.01 |
| Engineering | $37.10 | $1.03 | $38.13 |
| Professional Services | $148.42 | $15.16 | $163.58 |
| Electronics | $166.67 | $350.00 | $516.67 |
| Subscriber Acquisition | $0.00 | $0.00 | $0.00 |
| **Total** | **$1,689.80** | **$638.45** | **$2,328.25** |
| Backbone Cost per Premise | | | $266.67 |
| **Total w/ Backbone** | | | **$2,594.92** |
| Short Term Interest | | | $93.13 |
| **Total Capitalized** | | | **$2,688.05** |

| Monthly Infrastructure Per Premise Cost | $15.06 |
|---|---|

| Costs at 60% Take Rate | | | |
|---|---|---|---|
| 80% Buried I 20% Aerial | | | |
| **Description** | Common | Drop | Total |
| Labor - Hours | 18.75 | 4.50 | 23.25 |
| Labor - Dollars | 1,125.00 | 270.00 | $1,395.00 |
| Equipment | 333.65 | 51.53 | $385.17 |
| Materials | 435.26 | 142.84 | $578.09 |
| Supplies | 93.27 | 5.63 | $98.90 |
| Restoration | 48.10 | 1.76 | $49.86 |
| Hut/Cabinet | 108.07 | 5.90 | $113.97 |
| Feeder Fiber | 36.02 | 0.99 | $37.01 |
| Engineering | 37.10 | 1.03 | $38.13 |
| Professional Services | 148.42 | 15.16 | $163.58 |
| Electronics | 166.67 | 350.00 | $516.67 |
| Subscriber Acquisition | 0.00 | 0.00 | $0.00 |
| **Total** | **$2,531.53** | **$844.83** | **$3,376.37** |
| Backbone Cost per Premise | | | $266.67 |
| **Total w/ Backbone** | | | **$3,643.03** |
| Short Term Interest | | | $135.05 |
| **Total Capitalized** | | | **$3,778.09** |

| Monthly Infrastructure Per Premise Cost | $21.16 |
|---|---|

| Costs at 60% Take Rate | | | |
|---|---|---|---|
| 100% Buried | | | |
| Description | Common | Drop | Total |
| Labor - Hours | $20.83 | $5.00 | $25.83 |
| Labor - Dollars | $1,250.00 | $300.00 | $1,550.00 |
| Equipment | $370.72 | $57.25 | $427.97 |
| Materials | $483.62 | $158.71 | $642.33 |
| Supplies | $93.27 | $5.63 | $98.90 |
| Restoration | $48.10 | $1.76 | $49.86 |
| Hut/Cabinet | $108.07 | $5.90 | $113.97 |
| Feeder Fiber | $36.02 | $0.99 | $37.01 |
| Engineering | $37.10 | $1.03 | $38.13 |
| Professional Services | $148.42 | $15.16 | $163.58 |
| Electronics | $166.67 | $350.00 | $516.67 |
| Subscriber Acquisition | $0.00 | $0.00 | $0.00 |
| **Total** | **$2,741.97** | **$896.43** | **$3,638.40** |
| Backbone Cost per Premise | | | $266.67 |
| **Total w/ Backbone** | | | **$3,905.06** |
| Short Term Interest | | | $145.54 |
| **Total Capitalized** | | | **$4,050.60** |

| Monthly Infrastructure Per Premise Cost | $22.69 |
|---|---|

## Why Take-Rate is Important

The following table illustrates the impact of take-rate on total cost per premise with a rate of 60% as neutral on impact.

| Take-Rate | Cost/Sub | Subscribers | Difference | vs. 60% Take-Rate |
|---|---|---|---|---|
| 5.00% | $31,223.23 | 375 | - | ($27,846.87) |
| 10.00% | $16,034.03 | 750 | $15,189.20 | ($12,657.67) |
| 15.00% | $10,970.97 | 1,125 | $5,063.07 | ($7,594.60) |
| 20.00% | $8,439.43 | 1,500 | $2,531.53 | ($5,063.07) |
| 25.00% | $6,920.51 | 1,875 | $1,518.92 | ($3,544.15) |
| 30.00% | $5,907.90 | 2,250 | $1,012.61 | ($2,531.53) |
| 35.00% | $5,184.61 | 2,625 | $723.30 | ($1,808.24) |
| 40.00% | $4,642.13 | 3,000 | $542.47 | ($1,265.77) |
| 45.00% | $4,220.21 | 3,375 | $421.92 | ($843.84) |
| 50.00% | $3,882.67 | 3,750 | $337.54 | ($506.31) |
| 55.00% | $3,606.51 | 4,125 | $276.17 | ($230.14) |
| 60.00% | $3,376.37 | 4,500 | $230.14 | $0.00 |
| 65.00% | $3,181.63 | 4,875 | $194.73 | $194.73 |
| 70.00% | $3,014.72 | 5,250 | $166.91 | $361.65 |
| 75.00% | $2,870.06 | 5,625 | $144.66 | $506.31 |
| 80.00% | $2,743.48 | 6,000 | $126.58 | $632.88 |
| 85.00% | $2,631.80 | 6,375 | $111.69 | $744.57 |
| 90.00% | $2,532.52 | 6,750 | $99.28 | $843.84 |
| 95.00% | $2,443.70 | 7,125 | $88.83 | $932.67 |
| 100.00% | $2,363.75 | 7,500 | $79.94 | $1,012.61 |

## Full Town-Wide Deployment Infrastructure Network Operations

The following Table summarizes the anticipated cost structure for Network Maintenance and Operations. This schedule produces a monthly M&O fee for the Broadband Utility at $24.65 per month. The Town would need to subsidize network operations until enough scale is established to achieve sustainability.

| Residential M&O | Subscriber | Monthly | Annual | Percentage |
|---|---|---|---|---|
| **Costs/Accruals/Reserves** | **$24.65** | **$110,925** | **$1,331,100** | **100.00%** |
| Power | $1.41 | $6,345 | $76,140 | 5.72% |
| Co-Lo Fees | $0.35 | $1,575 | $18,900 | 1.42% |
| Labor | $8.00 | $36,000 | $432,000 | 32.45% |
| Office | $0.58 | $2,610 | $31,320 | 2.35% |
| Vehicles | $0.73 | $3,285 | $39,420 | 2.96% |
| Tools | $0.21 | $945 | $11,340 | 0.85% |
| Equipment | $1.18 | $5,310 | $63,720 | 4.79% |
| Supplies | $0.12 | $540 | $6,480 | 0.49% |
| Dig-line | $0.19 | $855 | $10,260 | 0.77% |
| Maintenance | $1.18 | $5,310 | $63,720 | 4.79% |
| Call Center | $0.36 | $1,620 | $19,440 | 1.46% |
| Network Operations Monitoring | $0.36 | $1,620 | $19,440 | 1.46% |
| Equipment Refresh (Reserves) | $4.00 | $18,000 | $216,000 | 16.23% |
| Licenses Fees (SaaS, Etc.) | $2.00 | $9,000 | $108,000 | 8.11% |
| Rentals | $0.50 | $2,250 | $27,000 | 2.03% |
| Business Insurance | $0.00 | $0 | $0 | 0.00% |
| Bad Debt | $0.46 | $2,070 | $24,840 | 1.87% |
| Equipment Replacement | $0.02 | $90 | $1,080 | 0.08% |
| Taxes and Fees (Property) | $0.00 | $0 | $0 | 0.00% |
| Middle Mile | $2.00 | $9,000 | $108,000 | 8.11% |
| Reserves | $1.00 | $4,500 | $54,000 | 4.06% |
| **Total** | **$24.65** | **$110,925** | **$1,331,100** | **100.00%** |

## Network Management & Operations Cost Structure

The numbers and categories in this model are derived from many years of experience with actual costs for Broadband projects. Labor costs are modeled to reflect Massachusetts wages.

## Staffing Modeling for Internal Network Operations

The following Table models the cost structure for the positions needed for the Town of Fairhaven to operate the network as a Department within the Town structure. The model is conservative in the staffing estimates needed to operate the network in a sustainable manner. The model does not include resources for construction. Assuming the Town builds the entire network over a 12-month period, the Town will need to subsidize this department for less than 6 months. After that, the investment will be paid back by operational surpluses as subscribers grow beyond the target of 3,500 subscribers. The work that will be done by a Fiber Network Department includes network monitoring, network management, outside plant repairs, & new customer installations.

The Town has the option of operating the network with internal staffing resources or an outsource network operations partner. The following staffing model provides anticipated fully

burdened salary information, years to profitability, and the revenues and expenses from the operation.

## Staffing Projections

| Position | Fully Compensated Hourly Rate | Fully Compensated Monthly Cost | Fully Compensated Annual Cost |
|---|---|---|---|
| Manager | $48 | $8,251 | $99,008 |
| Network Admin | $38 | $6,607 | $79,290 |
| I.T. Technician | $30 | $5,266 | $63,190 |
| Outside Manager | $28 | $4,767 | $57,200 |
| Outside Plant Tech | $22 | $3,779 | $45,344 |

## Subscriptions & Staffing Projections

| Subscribers | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|
| New Subscribers | 4,500 | - | - | - |
| # of Subscriber at Year End | 4,500 | 4,500 | 4,500 | 4,500 |
| Labor Allocation | $8.00 | $8.00 | $8.00 | $8.00 |
| Cash Flow from Labor | $216,000 | $432,000 | $432,000 | $432,000 |

| Staffing Projections | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|
| Manager | 0.3 | 0.5 | 0.5 | 0.5 |
| Network Admin | 0.5 | 1.0 | 1.0 | 1.0 |
| IT Technician | 1.0 | 1.0 | 1.0 | 1.0 |
| Outside Plant Manager | 0.5 | 1.0 | 1.0 | 1.0 |
| Outside Plant Laborer | 1.25 | 4.0 | 4.0 | 4.0 |

| Position | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|
| Manager | $24,752 | $49,504 | $49,504 | $49,504 |
| Network Admin | $39,645 | $79,290 | $79,290 | $79,290 |
| IT Technician | $63,190 | $63,190 | $63,190 | $63,190 |
| Outside Plant Manager | $28,600 | $57,200 | $57,200 | $57,200 |
| Outside Plant Laborer | $56,680 | $181,376 | $181,376 | $181,376 |
| Total | $212,867 | $430,560 | $430,560 | $430,560 |
| Net | $3,133 | $1,440 | $1,440 | $1,440 |

## Project Pro-Forma

### Financial Pro-Forma of Full Project Costs - 1 Year Build - Ethernet Architecture

| | |
|---|---|
| Projected Backbone | Included |
| Projected Cost Per Premise (Common and Drop) [1] | $3,778.09 |
| Estimated Subscribers | 4,500 |
| Total Cost (Common & Drop) | $17,001,399.12 |
| Professional Services | Included |
| Total Projected Project Costs | $17,001,399.12 |

[1] *Assumes 80% Buried / 20% Aerial, 60% take rate & short-term interest rate of 8% and long-term bond rate of 3% for 20 Years.*

## Projected Subscription Cost

| Projected Residential Services Monthly Costs | 100% Aerial |
|---|---|
| Infrastructure | $15.06 |
| Maintenance and Operations | $24.65 |
| ISP Services (Dedicated 1 GB Symmetrical) | $9.99 |
| Monthly Total | **$49.70** |

| Projected Residential Services Monthly Costs | 80% / 20% Split |
|---|---|
| Infrastructure | $21.16 |
| Maintenance and Operations | $24.65 |
| ISP Services (Dedicated 1 GB Symmetrical) | $9.99 |
| Monthly Total | **$55.80** |

| Projected Residential Services Monthly Costs | 100% Buried |
|---|---|
| Infrastructure | $22.69 |
| Maintenance and Operations | $24.65 |
| ISP Services (Dedicated 1 GB Symmetrical) | $9.99 |
| Monthly Total | **$57.33** |

*Note: The Residential $9.99 monthly ISP fee listed above is based upon current pricing from the list of ISPs interested in providing services.*

## Projected Income & Cash Flow

| Timeline | Year 1 | Year 2 | Year 3 | Year 4 + |
|---|---|---|---|---|
| **Subscribers** | | | | |
| New Subscribers | 4,500 | 0 | 0 | 0 |
| # of Subscriber at year end | 4,500 | 4,500 | 4,500 | 4,500 |
| **Income Statement (Revenue)** | | | | |
| Infrastructure Fees | $571,380.54 | $1,142,761.07 | $1,142,761.07 | $1,142,761.07 |
| Maintenance and Operations | $665,550.00 | $1,331,100.00 | $1,331,100.00 | $1,331,100.00 |
| Total Revenue | $1,236,930.54 | $2,473,861.07 | $2,473,861.07 | $2,473,861.07 |
| **Operating Costs (Expenses)** | | | | |
| Maintenance and Operations | -$530,550.00 | -$1,061,100.00 | -$1,061,100.00 | -$1,061,100.00 |
| M&O Labor Difference | $3,132.80 | $1,440.00 | $1,440.00 | $1,440.00 |
| Equipment Refresh/Replacement | $0.00 | -$13,500.00 | -$25,650.00 | -$48,870.00 |
| Interest Reserve | -$655,746.12 | $0.00 | $0.00 | $0.00 |
| Debt Service Reserve | -$571,380.54 | $0.00 | $0.00 | $0.00 |
| M&O Reserve | -$135,000.00 | -$256,500.00 | -$244,350.00 | -$221,130.00 |
| Total Expenses | -$1,889,543.86 | -$1,329,660.00 | -$1,329,660.00 | -$1,329,660.00 |
| Net (Revenue vs Expenses) | -$652,613.32 | $1,144,201.07 | $1,144,201.07 | $1,144,201.07 |
| **Loan Payment** | | | | |
| Backbone | $0.00 | $83,885.20 | $83,885.20 | $83,885.20 |
| Build Out | $0.00 | $1,062,102.22 | $1,062,102.22 | $1,062,102.22 |
| Total Loan Payments | $0.00 | $1,145,987.43 | $1,145,987.43 | $1,145,987.43 |
| Net | -$652,613.32 | -$1,786.35 | -$1,786.35 | -$1,786.35 |
| **Cash Flow** | | | | |
| Capital Expenditures | -$16,393,653.00 | $0.00 | $0.00 | $0.00 |
| Net Money Borrowed | $16,393,653.00 | $607,746.12 | $0.00 | $0.00 |
| Net | $0.00 | $607,746.12 | $0.00 | $0.00 |
| Revenue | $1,236,930.54 | $2,473,861.07 | $2,473,861.07 | $2,473,861.07 |
| Cash Expenses | -$527,417.20 | -$1,059,660.00 | -$1,059,660.00 | -$1,059,660.00 |
| Loan Payments | $0.00 | -$1,145,987.43 | -$1,145,987.43 | -$1,145,987.43 |
| Net Cash | $709,513.34 | $268,213.65 | $268,213.65 | $268,213.65 |
| Accrued Interest | -$655,746.12 | $0.00 | $0.00 | $0.00 |
| Unrestricted Cash | -$652,613.32 | $619,459.77 | $23,863.65 | $47,083.65 |
| **Reserves** | | | | |
| Interest Reserve | $655,746.12 | $0.00 | $0.00 | $0.00 |
| Debt Service | $571,380.54 | $0.00 | $0.00 | $0.00 |
| Maintenance and Operations | $135,000.00 | $256,500.00 | $244,350.00 | $221,130.00 |
| Total Reserve | $1,362,126.66 | $256,500.00 | $244,350.00 | $221,130.00 |
| **Total Cash** | **$709,513.34** | **$875,959.77** | **$268,213.65** | **$268,213.65** |

## Projected Capital Expenditures & Funding

| Timeline | Year 1 | Year 2 | Year 3 | Year 4 + | Total |
|---|---|---|---|---|---|
| **Capital Costs** | | | | | |
| Backbone | $1,200,000.00 | $0.00 | $0.00 | $0.00 | $1,200,000.00 |
| Subscriber Drops | $3,801,753.00 | $0.00 | $0.00 | $0.00 | $3,801,753.00 |
| Subscriber Common | $11,391,900.00 | $0.00 | $0.00 | $0.00 | $11,391,900.00 |
| Interest Reserve (Drops) | $607,746.12 | $0.00 | $0.00 | $0.00 | $607,746.12 |
| Interest Reserve (Backbone) | $48,000.00 | $0.00 | $0.00 | $0.00 | $48,000.00 |
| Total | $17,049,399.12 | $0.00 | $0.00 | $0.00 | $17,049,399.12 |
| **Short Term Financing (Build Out)** | | | | | |
| New Backbone | $1,200,000.00 | $0.00 | $0.00 | $0.00 | **$1,200,000.00** |
| Retired | | -$1,200,000.00 | $0.00 | $0.00 | **-$1,200,000.00** |
| Total | $1,200,000.00 | -$1,200,000.00 | $0.00 | $0.00 | **$0.00** |
| New Build | $15,193,653.00 | $0.00 | $0.00 | | **$15,193,653.00** |
| Retired | $0.00 | -$15,193,653.00 | $0.00 | $0.00 | **-$15,193,653.00** |
| Total | $15,193,653.00 | -$15,193,653.00 | $0.00 | $0.00 | **$0.00** |
| **Long Term Funding** | | | | | |
| New Backbone | | $1,248,000.00 | $0.00 | $0.00 | **$1,248,000.00** |
| New Build | | $15,801,399.12 | $0.00 | $0.00 | **$15,801,399.12** |

## Financial Modeling Validation

For this report, EntryPoint retained Comm-Tract to review the financial projections provided in this report. Comm-Tract has been providing network infrastructure services to the Town of Fairhaven and is familiar with both existing infrastructure and the Town's geography.

Comm-Tract based its analysis on the following demographic information for the Town of Fairhaven:

- 16,045 Residents
- 6,392 Households
- 7,266 Housing Unites
- Unknown Number of Businesses
- 586.1 Residents per Sq/Mile
- 14.1 Sq/Mile
- Approximately 105 miles of roads that need to have fiber installed to cover the FTTH footprint

Comm-Tract's financial projections were within 5% of the EntryPoint projections. The two main variables that are not known at this time and can have a material impact on project costs are 1) Take-rate and 2) The Cost of Make-Ready to access the utility poles.

The network design process should include an analysis of whether the Town's existing fiber network can be leveraged for the Fiber-To-The-Premise backbone.

## Legal Structure & Financing Considerations

The legal structure for financing is organized around the following assumptions:

1. Nobody will be forced to participate as a subscriber to the network. Rather, subscription will be on a voluntary, opt-in basis.
2. Taxes will not be increased to finance the network.
3. The ongoing operation of the network must be self-sustaining and not dependent on any kind of subsidy from the town.
4. The Town may contribute to get the network started but will be paid back over time.

Voluntary Participation – The alternative to taxing all residents is to deploy a business model that allocates network costs to voluntary participants. Allowing subscribers to voluntarily opt-in to network participation honors individual preferences for residents and businesses, eliminates Political Risk and can increase public support for the network. Allowing subscribers to voluntarily opt-in or opt-out of network participation is less efficient and more expensive than a model that mandates universal participation. Further, voluntary participation may exacerbate the digital divide.

Ongoing Operations - The Town views its roles as enabling the development and implementation of the network and then may choose to operate the network on behalf of Fairhaven residents. However, the network must become self-sustaining during the first 2 years of operations.

## Legal Authority

Both Town Counsel and Bond Counsel for the Town of Fairhaven prepared legal summaries describing the Town's authority to build, own, and operate broadband infrastructure under Massachusetts State law. The Town's Bond Counsel confirmed the findings of the Town Counsel that the Town has the authority to own and operate the proposed infrastructure.

Both legal memos point to establishing a Municipal Light Plant as the structure under which the Town has the authority to finance, build and operate the proposed infrastructure.

## Financing Considerations

Because project feasibility is ultimately a function of getting people to sign up and remain loyal to the network, there needs to be a value proposition that mobilizes customers to subscribe. For that to happen, subscribers need a compelling solution and the network needs to create cash flow predictability and bankable contracts to attract financing for the project. NetEquity in San Francisco visualizes these dependencies in this way:

NetEquity

NetEquity Stack

| | | |
|---|---|---|
| People | are hungry for | Services |
| Services | are hungry for | Infrastructure |
| Infrastructure | is hungry for | Capital |
| Capital | is hungry for | Cash Flow Predictability |
| Cash Flow Predictability | is hungry for | Bankable Contracts |
| Bankable Contacts | result from | Aligned Incentives |
| Aligned Incentives | requires | Trust |
| Trust | comes from | Having the Same Vision |

*Isfandiyar (Asfi) Shaheen developed the **NetEquity Stack** above. Mr. Shaheen is a Global Broadband Infrastructure Thought Leader based in San Francisco. He is working to provide fiber optic connectivity to unconnected countries around the world.*

10

*Risk Factors > Likelihood Impact Mitigation*

# Risk Analysis

The following is an analysis of the main risk factors facing the Town of Fairhaven as it pursues its fiber-to-the-premise deployment. Nine Risk Factors are analyzed:

1. Subscriber Churn Risk
2. Take-Rate Risk
3. Project Execution Risk
4. Equipment and Technology Risk
5. Community Engagement Risk
6. Cost Modeling Risk
7. Timeline Risk
8. Regulatory Risk
9. Middle Mile Risk
10. Pole Attachments & Make Ready

## Subscriber Churn

Subscriber Churn is the risk that customers sign up and then do not remain subscribers to the network.

**Likelihood**: Today customers are primarily driven by cost, speed, and customer service. Churn is possible and is a consequence of the customers pursuing an option to get better value from an alternative solution. The likelihood of churn is high if a new market solution simply replicates the incumbent model. The likelihood of churn goes down under a Business Model where 1) the customer is financially responsible for the drop to their property and 2) where the value proposition is strong enough to make the customer voluntarily committed to the network.

**Impact**: The impact of churn on the network is potentially catastrophic if it reaches a level where the capital and operational cost of the abandoned infrastructure cannot reasonably be shared by remaining subscribers.

**Mitigation**: Churn can be mitigated by implementing a business model that makes customers voluntarily committed to the network and by assigning financial responsibility to customers for their lateral connection.

## Take-Rate Risk

Take-rate risk is the risk that the Town builds out the network and ends up with a take-rate that is lower than expected.

**Likelihood**: Take-rate risk is possible and is a function of the value proposition of the network and how well that value proposition gets communicated and managed before construction starts. High take-rates lead to lower network costs for subscribers. This creates a virtuous cycle where lower costs lead to higher take rates. The reverse is also true.

**Impact**: The worst-case scenario is one where lower take rates lead to higher costs and churn which create a death spiral that negatively compounds until the network is not sustainable.

**Mitigation**: Manage demand aggregation before construction begins and give consumers a value proposition that makes them voluntarily committed to the network infrastructure.

## Project Execution Risk

Project Execution includes strategy, planning, project management and fulfillment of the project plan and operational execution.

**Likelihood**: Project execution failure is possible and is a function of the effectiveness of project planning, management, controls, and execution.

**Impact:** The severity of impact is in proportion to the effectiveness of project management and execution. A worst-case scenario is one where project execution affects the value proposition, which in turn affects take-rate and churn.

**Mitigation**: Hire or partner with skilled project managers and key strategic partners. Create alignment among key team members on the project plan and operational plan. Develop project controls that are monitored and reported to senior leadership monthly.

## Equipment & Technology Risk

Equipment & Technology Risk includes both software and hardware solutions and is the risk that equipment failure rates are higher than expected, major software bugs are unresolved, operational reliability is lower than expected, and/or that the technology lifecycle leads to faster obsolescence than is expected.

**Likelihood**: Solutions with short deployment histories, unreliable references, unclear quality control and test procedures, weak professional teams, and poorly architected scalability abstractions present increased equipment and technology risk.

**Impact**: The impact of this risk category is moderate because it is possible to vet both software and hardware systems to assess this risk. The base technology of the network will be fiber optic cable and that has sufficient history to present a minor risk to the project. Remaining risks include electronics and software systems.

**Mitigation**: Implement thorough due diligence processes with trained professionals to scrutinize references, architecture, software abstractions, quality control systems and the professional histories of vendors being considered.

## Community Engagement

Community Engagement is the marketing, education and communication processes and strategies used to inform residents and businesses about the value proposition offered by the network.

**Likelihood**: Community Engagement risk is possible but nonetheless a risk that can be managed and monitored. Poor planning, management and execution increases the level of risk. Community engagement can be handled by internal Town staff, but risk increases if staff member resources are inadequate for a project of this size. There is an abundant supply of marketing professionals available to assist with community engagement processes.

**Impact**: Community engagement is a key driver of project success due to the relationship between community engagement and take-rate.

**Mitigation**: Leverage the skills of competent marketing professionals and provide sufficient resources to make it easy for every resident to learn the basic value proposition for the network in comparison to alternatives through a variety of marketing, education and communication strategies.

## Cost Modeling Risk

Cost Modeling Risk is the risk that cost modeling significantly underestimates actual design, construction, and/or operational costs.

**Likelihood**: There is enough industry data to reasonably validate cost estimates.

**Impact**: Cost overruns can have a moderate to disastrous impact on network sustainability.

**Mitigation**: Validate financial assumptions against industry assumptions, market conditions, and account for local economic variables. The clearest way to mitigate this risk is to conduct an RFP process for network engineering and construction.

## Timeline Risk

EntryPoint consulted with Comm-Tract, the construction firm that built the fiber network connecting Town assets. They indicated that they believe a Town-wide network can be constructed in less than 10 months. The benefits of building the network in an accelerated pace (less than 1 year) include the following:

1) Each phase requires legal, financing and accounting transaction costs. Building the network with fewer phases will lower the overall transaction costs for the project.
2) Building at a faster pace will result in an accelerated period to breakeven.
3) Interest Rates are at an unprecedented low currently and building over an extended period may expose later project years to some interest rate risk.

**Likelihood**: Costs are certain to be higher for an extended buildout period. However, there may be execution risks for accelerating the buildout, depending on the experience and capacity of the construction partner, and these trade-offs need to be weighed by Town leaders.

**Impact**: Costs will be incrementally higher for an extended build-out schedule and M&O will have a longer ramp to sustainability.

**Mitigation**: The Town can control the buildout schedule following a cost / benefit analysis of the options. An important consideration is alignment with construction partners. If the Town is going to outsource construction, it should consult with potential construction partners about the alternative construction schedules to make sure that the Town's strategy is amenable to key construction partners.

## Regulatory Risk

Regulatory Risk is the risk that State or Federal regulations become an impediment or barrier to the Town successfully building or operating a municipal network. Legal counsel has provided a memo to the Town addressing legal authority under Massachusetts State Law.

**Likelihood**: Historically, incumbent operators have taken legal action to stop a municipality from building a competing network.

**Impact**: If a claim were to be brought against Fairhaven, the likely process is that it could take an extensive amount of time and some cost to contest the claim.

**Mitigation**: According to outside counsel Massachusetts State Law provides explicit authority for the Town to own and operate a fiber network under multiple legal avenues.

## Middle Mile Risks

Middle Mile risks include the following:

1) Lack of redundant options on divergent paths,
2) Pricing risk, and
3) The risk of being stranded or isolated without a viable path to an internet exchange point.

**Likelihood**: The closest internet exchange points are in Boston and Providence. Fairhaven does have divergent middle mile path options to Boston via middle-mile providers already identified.

The risk of getting isolated or cut off from internet access is possible but has a low likelihood of occurring.

**Impact**: The most likely risk is pricing risk since Middle Mile costs in Massachusetts are incrementally higher than other markets in the Country. But this is not a significant barrier to moving forward. The impact of this risk might represent a monthly cost increase to subscribers of $1.00 - $2.00.

**Mitigation**: The way the Town can mitigate and possibly eliminate Middle Mile Risk is by working with multiple Middle Mile carriers establishing connections into Boston and Providence.

## Pole Attachment & Make Ready Risk

This is the risk that pole owners cause unexpected and significant impact on costs or timeline due to delays in make ready and pole attachment work.

**Likelihood**: Because Fairhaven does not own the utility poles within town limits, this risk is a potential problem and will have to be actively managed.

**Impact**: Make Ready work for Pole Attachment can have a meaningful impact on costs and on the timeline if the pole owners drag their feet or want the town to replace old poles.

**Mitigation**: The town can mitigate this risk by leveraging its existing fiber network as a backbone, put infrastructure underground where possible, and by assigning a project manager to apply continuous pressure to the pole owners to not unnecessarily delay make ready work.

## Next Steps

1. Finalize recommendations from Fairhaven's Legal Counsel and Outside Bond Counsel regarding the proposed legal structure and supporting documents for proposed Fairhaven owned infrastructure.
2. Initiate process for Town to conduct first of two votes needed to establish Electric Light Plant structure.
3. Refine Community Engagement Plan.
4. Set Budget for Community Engagement Plan.
5. Determine if any 3rd-Party groups (outside resources) would be used for the Community Engagement Plan (Marketing, Communication, Public Relations, etc.).
6. Explore network financing options.
7. Implement Community Engagement and demand aggregation process.
8. Get approval from Board of Selectmen and State Inspector General to proceed with Design/Build process.
9. Conduct RFP to select Design (Engineering) and Build (Construction) partner(s).
10. Conduct RFP to select Network Management / Open Access platform.
11. Create Design/Build Project Plan.
12. Determine whether the network will be aerial or buried.
13. Create formal design of the network.
14. Harden financial projections.
15. Advance initiative to Select Board for approval when demand aggregation (Take-Rate) makes the project feasible.
16. Formalize network financing plan.
17. Launch make-ready process for utility pole attachments (if aerial).
18. Construct network.
19. Decide whether Network Operations would be 3rd Party or a Town Department.

Attachment E

# 945 CMR 3.00: NOTICE TO PROCEED TO USE DESIGN BUILD FOR PUBLIC WORKS CONSTRUCTION CONTRACTS PURSUANT TO M.G.L. c. 149A, §§ 15 THROUGH 21

Section



## 3.01: Purpose

The purpose of 945 CMR 3.00 is to establish standardized policies and procedures for obtaining a Notice to Proceed to use the design build delivery method on public works projects.

## 3.02: Scope and Applicability

945 CMR 3.00 applies to awarding authorities who request from the Office of the Inspector General a Notice to Proceed to use the Design Build delivery method for specific projects for the construction, reconstruction, alteration, remodeling or repair of a public works project by an awarding authority and estimated by the awarding authority to cost $5 million or more.

## 3.03: Definitions

The following terms used in 945 CMR 3.00 have the meanings given in 945 CMR 3.03, unless the context clearly requires another meaning.

Application to Proceed, the notification and information submitted to the Office of the Inspector General in order to receive a Notice to Proceed to use the design build delivery method.

Awarding Authority, as defined by M.G.L. c. 149A, § 15, except exempt agencies as defined by M.G.L. c. 149A, § 16(d).

Notice to Proceed, the written approval issued by the Inspector General based on the Procedures and a review of information submitted in the application to proceed that an awarding authority has met the requirements as prescribed by the Inspector General and may proceed to use the design build delivery method for a specific public works project.

Inspector General, or Office of the Inspector General, independent state agency.

Procedures, the written requirements as may be prescribed by the Inspector General, including standards, policies, and procedures for receiving a Notice to Proceed to use the design build delivery method.

Written Determination, a written determination by an awarding authority that the awarding authority has determined that the use of design build is appropriate for the public works project and the reasons for the determination.

## 3.04: Application to Proceed

(1) Submission of Application to Proceed. An awarding authority requesting to receive a Notice to Proceed to use the Design Build delivery method for a public works project that has an estimated construction value of $5 million or more must submit a detailed application to proceed.

3.04: continued

(2) Content of Application. The application to proceed will require the awarding authority to submit a written determination that the awarding authority has determined that the use of design build is appropriate for the public works project and the reasons for the determination. In addition, the awarding authority will be required to provide information regarding:

(a) the public works project;

(b) the estimated construction cost;

(c) the awarding authority's authorization to enter into a contract for a design build;

(d) the awarding authority's capacity, plan and procedures to effectively procure and manage a design build entity for the specific project;

(e) the design professional retained to provide technical assistance and consulting services; and

(f) the awarding authority's procedures to ensure fairness in competition, evaluation, selection, and reporting.

Other information may be requested in accordance with the Procedures to assist the Office of the Inspector General in making a determination as to whether an awarding authority will receive a Notice to Proceed.

(3) Form of Submission. An awarding authority must submit the information required by the application to proceed in accordance with the Procedures prescribed by and available from the Office of the Inspector General.

(4) Public Record. All information furnished in any application to proceed is a public record. The Notice to Proceed or Denial of Notice to Proceed is a public record. The Inspector General's records related to a specific application are not a public record until the Notice to Proceed or Denial of Notice to Proceed is issued.

3.05: Procedures

(1) Establishment of Procedures. The Office of the Inspector General shall establish Procedures that specify the requirements and conditions that an awarding authority must meet to be issued a Notice to Proceed.

Content of Procedures. The Procedures shall include the standards as prescribed by the Inspector General that an awarding authority must meet to obtain a notice to proceed, the policies that the Office of the Inspector General will use in a review of the application to proceed, and the specific procedures that an awarding authority must follow to obtain a notice to proceed.

(2) General Information. The Procedures shall include general information on the design build delivery method of public construction.

3.06: Review of Application to Proceed

(1) Initial Review. Upon receipt of an application to proceed, the Office of the Inspector General will review the application to proceed and other information submitted, and will inform the applicant in writing within 15 working days whether the application is complete.

(2) Review. The Office of the Inspector General will render a decision regarding using design build within 60 days from the date the complete application is submitted to the Office.

3.07: Notice to Proceed

(1) Issuance of Notice to Proceed. The Inspector General shall issue a Notice to Proceed to use design build to an awarding authority once the awarding authority has met the requirements as prescribed by the Inspector General. At a minimum, the awarding authority will be required to demonstrate that it has the authority and capacity to proceed; that it has a plan and procedures to effectively procure and manage the project; that it has retained a qualified designer; and, that it has procedures to ensure fairness in competition, evaluation, selection, and reporting.

3.07: continued

(2) After receiving a notice to proceed, an awarding authority may use design build for the specific public works project. The awarding authority shall procure a design build firm in a manner consistent with M.G.L. c. 149A, §§ 17 through 20 and 945 CMR 3.00.

3.08: Denial of Notice to Proceed

(1) If an awarding authority fails to meet the requirements prescribed by the Inspector General, the Inspector General shall decline to issue a Notice to Proceed. If the Inspector General declines to issue a Notice to Proceed, the Office of the Inspector General shall provide in writing to the awarding authority the reason(s) for the decision.

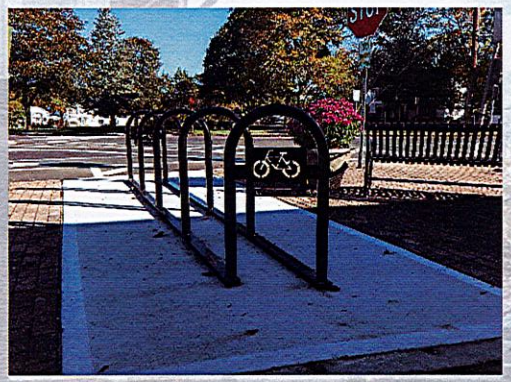
(2) An awarding authority not receiving a Notice to Proceed may resubmit a detailed application upon correcting or responding to the reason(s) provided to the awarding authority by the Office of the Inspector General. The Office of the Inspector General shall review the resubmitted application in accordance with the Procedures. If the awarding authority meets the requirements and conditions, the Office shall issue a Notice to Proceed.

(3) The Inspector General shall decline to issue a Notice to Proceed to an awarding authority that has failed to provide complete and accurate answers to all questions in the application to proceed and all other information and documentation required by the Office of the Inspector General. Providing false or misleading information or failure to provide all required information will be considered grounds for denial.

REGULATORY AUTHORITY

945 CMR 3.00: M.G.L. c. 149A, § 16.

# Proposed Complete Streets Policy & The MassDOT Program

**Board of Selectmen**
**Town of Fairhaven**
**February 8, 2021**

GREEN INTERNATIONAL AFFILIATES, INC.

Attachment F

# Presentation Outline

- The MassDOT Program Overview
- The Complete Streets Policy

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# The MassDOT CS Program

- Tier 1 - Complete Streets Policy –
  - Adopted by Board of Selectmen
- Tier 2 – Complete Streets Prioritization Plan
- Tier 3 – Project Implementation –
  - Enables town to obtain up to $400,000 per year for eligible Tier 2 Plan projects

- www.masscompletestreets.com

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# Complete Streets Policy – Why?

- Changes the practice and thought process of how transportation projects and actions are approached.
- Commitment by the municipality on giving the practice of Complete Streets a consistent level of importance.
- Ensure the entire ***right of way*** is planned designed and constructed in a way that would accommodate all users.
- To gradually create a network of ***complete streets*** within the community and connecting to others.

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# The Fairhaven Complete Streets Policy

## The Major Components

- Vision & Purpose
- Core Commitment
- Exceptions
- Best Practices
- Performance measures
- Implementation

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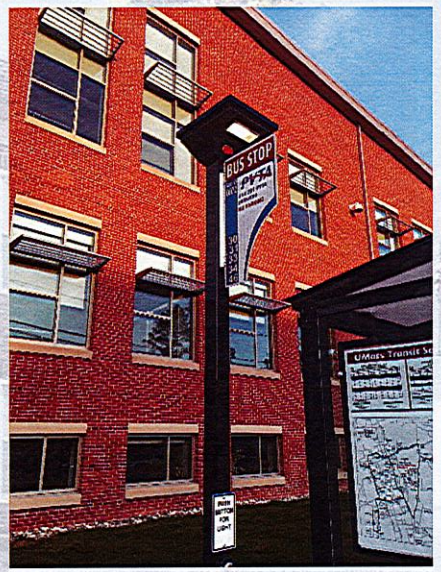
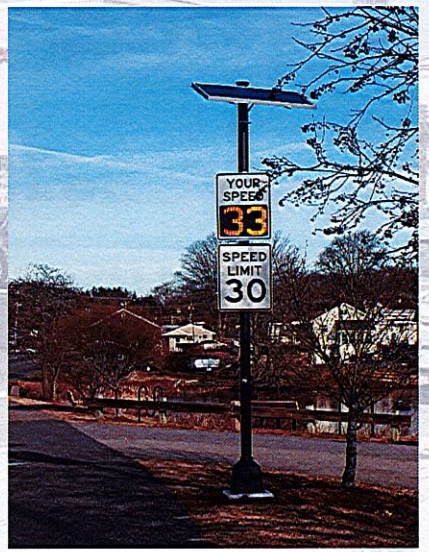
# Questions?








GREEN INTERNATIONAL AFFILIATES, INC.

**TOWN OF FAIRHAVEN**
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**COMPLETE STREETS POLICY**
APPROVED ~~January~~ February , 2021

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## 1. Vision and Purpose

The Town's vision is to integrate a Complete Streets approach into its transportation practices, polices and decision-making and create a community with a connected network of transportation infrastructure that promotes health and well-being, encourages economic viability, facilitates social equity and supports environmental sustainability.

This policy is to be inclusive of all users regardless of age or ability such as children, seniors and those with disabilities, neighborhoods with vulnerable populations and all modes of transportation including: motorists, cyclists, emergency responders, school buses, freight and commercial vehicles, and pedestrians, including those with disabilities who may rely on mobility devices such as wheelchairs.

The purpose of the policy is to set forth procedures and to formalize the planning, design, operation, and maintenance of our roads and related rights-of-way to create a connected network of infrastructure which will accommodate to the extent feasible and practical, every mode of travel that is consistent with and supportive of the community.

## 2. Core Commitment

A Complete Street is a public right of way intended to be designed and shared by numerous users and modes of transportation to the extent practical including, but not limited to, pedestrians, cyclists, emergency responders, commercial vehicle operators, public transit and school buses, and motorists. Complete Streets are also intended to provide safe travel networks for all users of all ages and abilities.

- The Town recognizes that Complete Streets design principles may be achieved through single components incorporated into a particular roadway project, or through smaller improvements or maintenance activities over time. Examples of improvements that contribute to Complete Streets elements include but are not limited to street and sidewalk lighting, sidewalk improvements, accessibility improvements, including compliance with the latest standards of the Americans with Disabilities Act (ADA), crosswalks, pavement markings, landscaping, and roadway improvements.

- The Town will, to the maximum extent feasible, design, construct, maintain, and operate all roads to provide for an inclusive and integrated network of facilities for people of all ages and abilities.

- The Town, where practicable, will work to integrate Complete Streets principles and design elements into all publicly and privately funded roadway projects, including new road

construction, reconstruction, resurfacing, and rehabilitation or maintenance projects. This includes road design projects and transportation infrastructure requiring funding or approval by the Town of Fairhaven, as well as projects funded by the state and federal government.

- Special attention should be given to efforts which enhance the overall transportation system and its connectivity. Specifically, priority should be given to corridors providing primary access to one of more significant destinations such as schools public transportation, recreation areas, and retail plazas.

All *private developments* and related road design elements or corresponding road-related elements, including but not limited to connections to the town's transportation network, shall also comply with Complete Street principles and this policy, and should demonstrate compliance to the extent feasible and practical during the local review and approval process.

State-owned roadways and associated projects should also comply with this Complete Streets Policy to the extent feasible and practical, including proposed improvements and maintenance projects of such roadways within Town boundaries.

Additionally, efforts shall be made to integrate and connect the Town's residents to its extensive trail network throughout the community and region via Complete Streets improvements.

If a representative of the Town participates in a meeting involving the design and planning of programs, transportation projects, or private development projects not under the Town's jurisdiction, the representative shall advocate and encourage that the project be carried out in accordance with the principles of this Complete Streets Policy.

**3. Exceptions**

The Town's goal is to apply Complete Streets practices and policies, as appropriate and practical, to all transportation projects and private development projects that affect the Town's roadways' rights-of-way. It is recognized, however, that incorporation of Complete Streets elements into a project may not always be feasible or practical. Consequently, exceptions may be required under the following circumstances:

1. The project involves a roadway where specific users, i.e. cyclists and/or pedestrians, are prohibited by law. For these cases, an effort will be made for accommodations elsewhere.
2. Where such facilities or actions would constitute a threat to public safety.
3. Implementation costs or the effects on private property or requirements to purchase additional right of way to establish accommodations are excessively disproportionate to the need or number of users.
4. Projects on designated scenic roads, rural roads or private roads where certain actions may not be practical or feasible due to such items as ownership and environmental impacts.
5. Where the implementation would contradict other Town policies and regulations.

A project that involves emergency repairs or ordinary maintenance activities designed to keep streets in serviceable condition, such as roadway mowing, street sweeping, minor roadway repairs and normal re-paving, pothole filling, public infrastructure, and utilities repair, and takes place within the existing public street right-of way will be exempt from this policy not needing any special review

or approvals. Repair and maintenance projects as defined by Massachusetts Department of Transportation (MassDOT) Engineering Directive E-14-006 "Design Criteria for MassDOT Highway Division Projects" may be used by the Town as guidance to determine those project types to be exempt from this policy.

If the responsible agency or department believes a project is exempt from this policy, a request will be submitted to the approving Board or Department as part of the local approving process with supporting documentation and justification as deemed appropriate. The authorizing Board or Department may ask the designated Complete Streets Committee (as defined below in Section 6) for an advisory opinion and/or recommendation. After considering the proposed exemption and supporting documentation including the Complete Streets Committee's opinion, the Board (or Department) would formalize a decision on the exemption.

**4. Best Practices**

The Town of Fairhaven Complete Streets Policy is focused on developing a connected, integrated network that safely accommodates all users (pedestrians, cyclists, and motorists) and also fits with the character of the community. Complete Streets will be integrated into policies, planning, and design of all types of public and private projects, including new construction, reconstruction, rehabilitation, repair, and maintenance of all road and redevelopment projects.

Implementation of the Town of Fairhaven Complete Streets Policy will be carried out cooperatively within all departments in the Town, with multi-jurisdictional cooperation, to the greatest extent possible, among private developers, abutting communities and state, regional, and federal agencies. It is anticipated that the Town's governing Board will designate a committee (the COMMITTEE) with broad background and expertise that will, as part of its responsibilities, oversee implementing the Policy and Plan.

Complete Streets principles include the development and implementation of projects in a context-sensitive manner in which project implementation is sensitive to the needs of the users; is compatible with the community's physical, economic, and social settings; and integrates the community's goals, objectives, and values. The context-sensitive approach to process and design includes a range of goals by considering stakeholder and community values on a level plane with the project need. The success of the Complete Streets Policy lies with the project development process that includes:

1. Consideration of the land use and transportation context.
2. Identifying any gaps or deficiencies in the network for various users.
3. Completing an evaluation of the tradeoffs to balance the needs of all users of all abilities.

The Town of Fairhaven recognizes that Complete Streets objectives may be achieved through single elements incorporated into a particular project or incrementally through a series of smaller improvements or maintenance activities over time.

The latest design guidance, standards, practices, and recommendations available can be used in the implementation of Complete Streets and include, but not limited to:

- The Massachusetts of Department of Transportation, *Project Development and Design Guidebook and current Engineering Directives*, 2006 (or later version)
- Massachusetts Department of Transportation Engineering Directive E-14-006, *Design*

*Criteria for MassDOT Highway Division Projects*, 2014

- Massachusetts Department of Transportation, *Separated Bike Path Guidelines*, 2015 (or later version)
- Massachusetts Department of Transportation, *Municipal Resources Guide for Walkability*, 2019 (or later version)
- American Association of State Highway Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 2018 (or latest version)
- American Association of State Highway Transportation Officials (AASHTO), *Guide for the Development of Bicycle Facilities*, 4th Edition, 2012 (or later version)
- Institute of Transportation Engineers (ITE), *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach, An ITE Recommended Practice*, 2010
- Institute of Transportation Engineers (ITE), *Neighborhood Street Design Guidelines, A Recommended Practice*, 2011
- National Association of City Transportation Officials (NACTO), *Urban Street Design Guide*, 2013 (or later version)
- National Association of City Transportation Officials (NACTO), *Urban Street Bikeway Design Guide*, 2014 (or later version)
- National Association of City Transportation Officials (NACTO), *Urban Street Transit Design* Guide, 2015 (or later version)
- National Association of City Transportation Officials (NACTO), *Don't Give Up at the Intersection*, 2019 (or later version)
- National Association of City Transportation Officials (NACTO), *Designing for All Ages & Abilities,* 2017 (or later version)
- Federal Highway Administration (FHWA), *Small Towns and Rural Multimodal Networks*, Washington, D.C., December 2016 (or later version)
- American Association of Retired Persons (AARP) Public Policy Institute, *Planning Complete Streets for an Aging America*, 2012 (or later version)
- Active Transportation Alliance, *Complete Streets, Complete Networks: A Manual for the Design of Active Transportation*, 2012 (or later version)
- United States Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices (MUTCD)*, 2009 (or later version)
- The Architectural Access Board (AAB) 521 CMR Rules and Regulations,
- Town of Fairhaven design standards, guidelines and practices pertaining to streets and roads, driveway access, signage and other related items, and
- Documents and plans created by or for the Town of Fairhaven, such items, if available, as bicycle and pedestrian network plans, transportation master plan, land use plans, open space and recreation plans, capital improvement plans

In addition to the above, other sources of information and resources available to provide guidance in implementing the Complete Streets Policy include, but are not limited to, the following organizations:

- Institute of Transportation Engineers (ITE)
- American Planning Association (APA)
- American Society of Civil Engineers (ASCE)
- National Complete Streets Coalition (NCSC)
- Smart Growth America (SGA)
- National Safe Routes to School (SRTS)
- Pedestrian and Bicycle Information Center (PBIC)

- American Public Health Association (APHA)
- Center of Disease Control (CDC)

When accomplishing this Complete Streets Policy, the Town will use the above manuals, guidelines, and standards, as appropriate, but should not be prevented from considering new or non-traditional planning & design possibilities that will increase the level of safety of all users of any age or ability.

**5. Performance Measures**

The Town shall utilize performance measures to track the progress, effectiveness, and success of this Complete Streets Policy. Performance shall be measured on an annual basis by the designated COMMITTEE that will work with appropriate Town departments and other resources to gather and summarize this information. The possible initial measures to be used by the town are:

- Increase in linear feet of new pedestrian accommodations (sidewalks, trails, etc.) and the number of cyclist improvements (shared lane markings, bike lanes, etc.)
- Number of Americans with Disabilities Act (ADA) accommodations (i.e. curb ramps) installed or built
- Secure bicycle parking spaces added
- Number of pedestrian/cyclist related crashes
- Miles of on-road bike lanes (separated or not) built or marked
- Number of segments of roadways improved which connect to existing trails

Performance measures will be reviewed at least annually by the COMMITTEE and appropriate adjustments made by the COMMITTEE in order to best measure program toward achieving Complete Streets.

**6. Implementation**

As stated in Section 4, to oversee implementation of the Complete Streets Policy and Plan, the Board of Selectmen shall appoint an existing committee to assume the responsibilities. The COMMITTEE may be comprised of officials from various town departments or other representatives determined by the Board of Selectmen.

The designated COMMITTEE would provide general oversight to ensure compliance with this Complete Streets Policy and monitoring the implementation of the Prioritization Plan.

Periodically, the COMMITTEE will meet to review the Plan implementation progress as well as updating the Plan with new projects or new priorities. As part of the monitoring process, the COMMITTEE may also inquire as to the progress various departments are making relative to updating or modifying the various town documents including zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals in order to integrate, accommodate, and balance all transportation needs in Fairhaven and be consistent with the Policy.

The Town shall make Complete Streets practices a routine part of everyday operations, shall approach every transportation project and program as an opportunity to improve roads and the transportation network for all users, and shall work in coordination with other departments,

agencies and jurisdictions to achieve Complete Streets.

The responsible Town boards and department will, as appropriate, review and either revise or develop proposed revisions to all appropriate planning documents (comprehensive plans, open space and recreation plans, etc.), zoning and subdivision bylaws, laws, procedures, rules, regulations, guidelines, programs, and templates to integrate the Complete Streets Policy and its principles in all project review processes.

As new land development projects are proposed and undergo review by the appropriate permitting boards, the project proponent should be made aware by the appropriate department or Board of the Complete Streets Policy and Prioritization Plan and the proposal can be checked for compatibility with the Policy and Plan. If mitigation is required of the project proponent, the actions should also be consistent and possibly build off the Policy and Plan.

The Town intends to develop and maintain a comprehensive inventory of pedestrian and bicycle facility infrastructure that will prioritize projects to eliminate gaps in the sidewalk and bikeway network, and provide opportunities for expansion.

As part of the budgeting process for projects in the Capital Improvement Plan, the Town may periodically reevaluate the decision making process and ranking system related to Complete Streets to include prioritization criteria that will give extra weight to projects that enhance access or mobility for those on foot or riding bicycles.

As new Town transportation related projects are proposed, the COMMITTEE may be asked by the project proponent (or responsible department) to review proposal in relation to the being consistent with the Complete Streets Policy and provide confirmation or input.

If changes, updates, or additions to the Complete Streets Prioritization Plan are proposed, the COMMITTEE will discuss the potential inclusion into the Plan and potential changes in priorities of current or new projects. The key factors in relation to setting priorities may include but not be limited to:

- Ownership (local vs. state owned facility),
- Location (near schools or public recreation areas),
- Potential high pedestrian & bicycle demand areas
- Project readiness (engineering/permits)
- Impacts & complexity of action
- Costs
- Consistency with Local Plans
- Livability
- Safety and Security
- ADA accessibility/compliance
- Mobility & connectivity
- Public health outcomes

To the extent practical, the Town will encourage appropriate staff and decision makers to attend workshops and other training opportunities so that everyone working on the implementation of the policy understands the concepts of Complete Streets principles and implementation practices.

The Town will utilize inter-department coordination to promote the most responsible and efficient

use of resources for activities within the public way.

The Town will seek out appropriate sources of funding and grants for continued implementation of the Complete Streets Policy and Plan.

**FAIRHAVEN BOARD OF SELECTMEN**

APPROVED:

_____, Chair

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_____

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_____

Date: _____