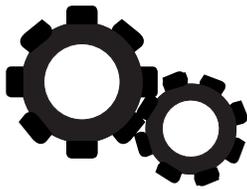




## PROJECT: CONNECT CUMBERLAND

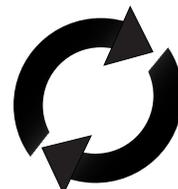
a regional initiative by Cumberland County and participating municipalities to improve access to high speed broadband



Operating  
Mechanism



Strategic Resource  
Mapping



Construction and  
Operations

This initiative will support a centralized resource for communities interested in improving their internet speed, by developing shared resources and contributing to research and construction.

Project: Connect Cumberland is designed to support broadband growth by helping participating communities to develop an Operating Mechanism that will serve as the fiscal agent to pay for major projects, and to contract with ISPs for end-user service and maintenance.

The Project will also develop a dynamic resource map of potential infrastructure projects, prioritized by need, demand, population density and available resources. In collaboration with the first component, these resources will offer a “one-stop-shop” to municipalities across Cumberland County to discover their viability for expansion, and the methods to fund and maintain a local project.

Finally, Project: Connect Cumberland will invest financially in strategic infrastructure projects that improve regional broadband expansion, through grants and county funds.



Access to high-speed broadband is a necessity for businesses and households across America. Communities with spotty coverage or slower speeds than their urban neighbors are at an immediate competitive disadvantage; they are less appealing locations to grow businesses, ensure educational opportunity, attract homeowners and professionals, and develop smart grid infrastructure.

The state defines broadband as download and upload speeds of at least 10 Megabytes per Second (MBPS). The Federal Government defines broadband as download and upload speeds of at least 25 MBPS and 3 MPBS, respectively. According to the “Broadband USA” division of the U.S. Department of Commerce (DOC), recommended download speeds for a small business are estimated to be at least 50MBPS, for services such as inventory management, operating Point-Of-Sale terminals and delivery management. The DOC’s recommended download speed for a household is at least 25MBPS, as homes rely more on the internet for completing homework, streaming entertainment, browsing the web, managing online accounts, paying bills and applying for jobs. These needs will increase dramatically in the years to come.

Outside of Greater Portland, maximum download speeds as slow as 3 megabytes per-second (MBPS) are common; higher speeds are either cost-prohibitive, or not available at all. Countywide, access to the nationally-competitive speed of at least 1 gigabit-per-second (GBPS) is almost non-existent. For instance, a 2015 study commissioned by the Lakes Region Broadband Partnership revealed that less than 18 percent of the premises in Windham offered speeds of at least 12MBPS; a speed that the Department of Commerce estimates is only HALF what is needed for a connected household.

These numbers are deeply concerning. Communities across our county are already behind, and the need for bandwidth in households and businesses is growing at exponential speed. As education platforms continue to shift into digital space, students without reliable high-speed access at home will be at a disadvantage to learn. As business operations rely more and more on cloud-based software and storage management, our downtowns will lose local businesses and be unable to support professionals working from home. And as rural hospitals close or reduce services and the population of Maine continues to age, telemedicine will shift from a curiosity to a necessity. Vulnerable populations – the elderly, children, and people on low/moderate incomes – will have the greatest need for affordable connected services, and the biggest challenges in accessing them.

Open fiber is not far out of reach. The three-ring-binder, an open source fiber network funded through the American Recovery and Reinvestment Act to create fiber access in rural Maine, runs across the southern border of the county. Several communities have attempted to solve the challenge of slow internet speeds, but only those who are in proximity to the Three Ring Binder have had success. Building out fiber is prohibitively expensive, especially for small communities with limited resources; they need to collaborate in order to afford the significant up-front costs associated with stringing fiber lines across long stretches of road to access their customer base.

What is missing is a collaborative, unified approach to connect the county’s central communities. Cumberland County recognizes our responsibility to view high-speed internet as something akin to a critical utility. The county government is *launching Project: Connect Cumberland*. This initiative will, for the first time, create the tools required for communities to form a centralized resource that would enable regional construction and maintenance of high-speed internet.



*Project: Connect Cumberland* will address this critical need through three cornerstones:

- 1. Operating Mechanism:** *Creating a functional, scalable, central organization to fund projects, manage resources and offer service to more communities.* Cumberland County would engage a contractor to develop an operating entity responsible for funding infrastructure and managing end-user interface, equipment repairs and upgrades. This entity would be owned and managed by the communities it serves; and scalable, so other communities can join later as broadband becomes viable to them.
- 2. Strategic Resource Mapping:** *Developing a thorough map of available resources, high-impact projects, and short and long term county targets for investment.* The county will work with a qualified contractor to produce a thorough map of Cumberland County, identifying where accessible fiber currently exists and a priority list of projects that could make gigabit-per-second speeds available to the most constituents-per-investment; the “biggest bang for our buck.” The County will turn this resource over to the Operating Mechanism, creating a full service “one-stop-shop” for municipalities across Cumberland County to discover their viability for expansion, and the methods to fund and maintain a local project.
- 3. Construction and Operations:** *Building broadband projects in conjunction with participating communities.* Through partnership with the new regional operating mechanism and using the resource map as a guide, Cumberland County will contribute toward strategic construction projects that enable connection to otherwise stranded communities. - beginning with construction of dark fiber from the southern shore of Lower Bay on Sebago Lake through North Windham, to the town center in Gray. We would commit to investments where support from the county would enable expansion beyond a community’s border - in particular, whenever fiber is being built directly off the Three-Ring Binder or another major trunk line. Cumberland County would also consider supportive funds for other investments - such as Wi-Fi hotspots - in areas where that resource would be uniquely effective, and/or where broadband is not a viable option.

While the prospect of falling further behind in connectivity is chilling, the potential that would blossom from development will immediately turn that weakness into a community strength. The Lakes Region welcomes more than 500,000 visitors annually, and community access to gigabit-speed fiber in conjunction with breathtaking vistas, boating, fishing, skiing, snowmobiling, traditional downtowns and everything else the region has to offer will make for a compelling argument to site or grow local businesses, expand access to work-from-home solutions and telemedicine, and make investments in forward-thinking smart infrastructure projects.

The Department of Commerce estimates that communities with broadband adoption rates above 80 percent have 2,000 more businesses than their counterparts. Small business owners report that using broadband increases sales and cost savings and creates jobs. Broadband enables emergency services to utilize one integrated network for coordinated responses times, improving public safety. “Going digital” can save schools as much as \$600 per student per year on materials. Telehealth reduces hospital admissions by 25 percent, and overall length of stay by 59 percent. These are permanent, transformative changes that will have an impact on the lives and wallets of everyone that these investments touch. Through Project: Connect Cumberland, the communities in Cumberland County can position themselves on the right side of the digital divide.

## PROJECT: CONNECT CUMBERLAND



### OPERATING MECHANISM

Creating a functional, scalable, central organization to fund projects, manage resources and offer service to more communities

Cumberland County would engage a contractor to propose an operating mechanism responsible for funding infrastructure and managing end-user interface, equipment repairs and upgrades. Developing that operational backbone is the most critical component in building a reliable, scalable system, and is often the first major stumbling block for communities that seek to develop broadband on their own; especially if it benefits them to collaborate with neighboring communities.

The Operating Mechanism would be a separate, permanent entity, serving as the financial and management agent for construction, contract negotiations, maintenance and upgrades. The participating communities would pay into the entity and serve as members of its board, with oversight over staffing, contracts and strategic vision.

The entity would likely be largely invisible to the end-user; a contract Internet Service Provider (ISP) would sign up new users and perform all billing and service calls. Line maintenance and upgrades would be performed through a similar agreement, either directly or through the ISP.

This entity would be scalable, so other communities can join later as broadband becomes viable. The operator would be managed and owned by the communities it serves.

#### **Questions that need to be answered include:**

- How will communities contribute to the cost of building the physical infrastructure?
- What kind of entity will serve as the fiscal agent? Will it have bonding authority?
- Will the entity be public-facing, or merely a backbone for established service providers?
- At what level will communities buy in, and what will be their ongoing commitment?
- How will systems built by this collaborative be maintained, upgraded and serviced?

#### **The goal of the project will be to identify a feasible structure for an operating entity that is:**

- Fair and agreeable for the participating communities;
- Reliable for long-term management and growth;
- Fiscally sound; and
- Scalable, to be expanded to or replicated by other municipalities in Cumberland County.

While creating such an entity is ambitious, it is not without precedent; even here in the northeast, where collaboration is uniquely challenging. Regional partnerships exist in Western Massachusetts, Central New Hampshire, and across Vermont and Upstate New York. In fact, a good example of a regional entity serving local communities already exists here in Cumberland County. Ecomaine, a Portland based regional waste-to-energy facility, is owned by 20 “Owner Communities” (almost all within Cumberland County) and serves another 51 Contract and Associate Communities stretching across the state and parts of New Hampshire.

The purpose of this broadband initiative, of course, is to serve the communities within our county border; but as the service grows, opportunities to contract services beyond Cumberland County could be a powerful generator for more local investment down the road.

# PROJECT: CONNECT CUMBERLAND



## OPERATING MECHANISM

Creating a functional, scalable, central organization to fund projects, manage resources and offer service to more communities

### Cumberland County

Fund study to determine best method of developing a permanent regional entity; deliver report to initial towns.

Supply Strategic Resource map, one-stop playbook to Operating Mechanism and communities across county in order to further participation.

Contribute to strategic construction projects.

### Initial Towns

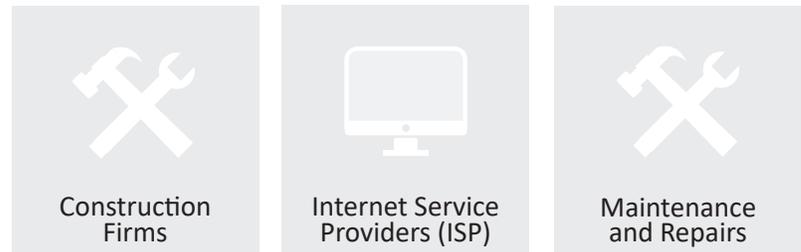


Oversight,  
Funding

### Permanent Entity



### Contractors



Public  
Interface

### End Users

Households, businesses, higher education institutes, medical facilities, etc.

# PROJECT: CONNECT CUMBERLAND



## STRATEGIC RESOURCE MAPPING

Developing a thorough map of available resources, high-impact projects, and short and long term county targets for investment

Cumberland County will engage with a qualified contractor to develop a thorough resource map of the county, identifying where accessible fiber currently exists. This resource map would not only include the Three Ring Binder, but also other fiber resources that may be ripe for partnerships - which could prevent construction costs and extensive delays due to pole attachment negotiations.

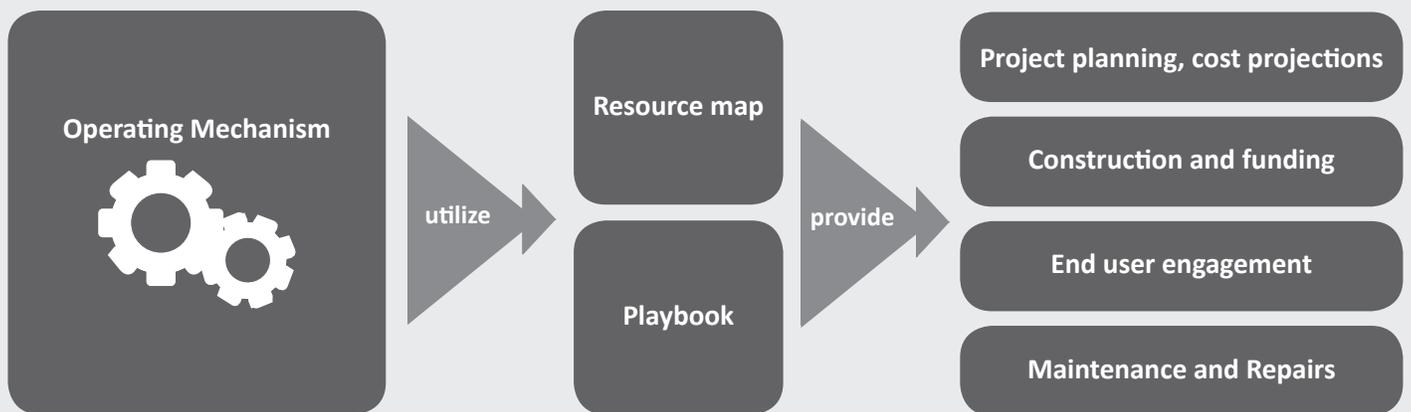
This resource list will present a dynamic schedule of potential infrastructure projects, prioritized by need, demand, population density and available resources. The list would identify an order and cost projection for projects in order of those that could make gigabit-per-second speeds available to the most constituents-per-investment; the “biggest bang for our buck.”

It would provide communities across the county with an understanding of what opportunities they might have, and what steps would need to happen - including projects completed by other communities - in order to make a project in their area feasible. Seeing this data - and creating a means to work collaboratively - will inspire more communities to join the regional compact, even potentially at the initial phase. Cumberland County could use the resource map to identify projects where extra investment would allow for increased capacity, creating the potential for buildouts to other communities as they gain interest. Any connection starting at the Three Ring Binder would be ripe for County investment to increase capacity.

The project will use these resources to develop a full service “playbook,” for all interested municipalities, that provides step-by-step instructions for identifying their own demand and available resources, how to buy into the regional compact and how to schedule and perform construction. This process will answer all of the questions that a community faces when considering broadband, including: *Do we have the resources and demand? How will we build it? How much will it cost, and how will we pay for it? How will it be maintained?*

These resources, working together, will offer a one-stop-shop for municipalities across Cumberland County to discover their viability for expansion, and the methods to fund and maintain a local project.

### Process for communities to engage and build broadband



## PROJECT: CONNECT CUMBERLAND



### CONSTRUCTION AND OPERATIONS

Building broadband projects in conjunction  
with participating communities

The first major construction project would be performed in conjunction with the communities that make up the Lakes Region Broadband Partnership (LRBP) - Gray, Raymond, Standish and Windham. Since May 2015, the LRBP have been meeting with stakeholders representing residents, businesses, the Sebago Lakes Region Chamber of Commerce, public schools, Saint Joseph's College, municipalities, and municipal economic development agencies and committees to better understand the current capacity of and the needs for broadband access in the four-town region.

The LRBP has produced the study "High Speed Broadband in the Lakes Region," and is completing preliminary design of 40 miles of fiber backbone with service provider access points and the review of and enhancement of Digital Inclusion services throughout the region. The Partnership is committed to expanding access from the open source "Three-Ring Binder" at the intersection of Routes 35 and 114, approximately seven miles to the intersection of Routes 302, 115 and 35 at "Boody's Corner" in North Windham.

From there, the project would extend fiber from Boody's Corner north along Route 302 to Raymond, South on Route 302 to Windham Center, and Northeast along Route 115 to the intersection of Routes 202, 115 and 100 in Gray. With access available along these major arteries, the communities can focus on building service down residential streets and to end users.

Cumberland County is proposing to contribute financially to the east-west stretch of this project, supporting construction of open-source dark fiber from the southern shore of Lower Bay on Sebago Lake to Gray.

Cumberland County Government has secured \$141,308 in Community Development Block Grant (CDBG) funds to pay for the stretch along Route 115 between Boody's Corner and Gray. The County Manager has identified roughly four miles of broadband cable available to the County from Federal Government Surplus at no cost. The County may also consider funds to increase capacity in the first stretch of the project. The balance of costs will be covered by the participating towns for the stretch between the Lower Bay to Boody's Corner, and entirely by the towns for the north-south corridor along Route 302 and to end users in each town.

This project has excellent strategic appeal for Cumberland County Government's goal to spread fiber access across the entire county. Boody's Corner is supremely positioned at the near-geographic center of the county, with major arteries running North/South and East/West. Delivering fiber to that intersection - and extending it to downtown Gray - will create the center of a countywide wheel-and-spoke broadband network, making the resource available to those neighborhoods immediately and enabling future projects to extend high-speed fiber to other communities across Cumberland County.

This construction project would fit in nicely with the region's long range planning. The town of Gray specifically has identified broadband expansion as a potential key component to the Gray Village Area Master Plan, the Route 26 Corridor Rezoning Project, the Route 26 Corridor Collaborative and the Gray Comprehensive Plan. Project-wide, Raymond lists this initiative as a valuable contributor to the Raymond Comprehensive Plan. Standish lists the Standish Corner District Village Plan, the Sebago Lake Village Plan, the Steep Falls Village Plan and the Standish Comprehensive Plan. Windham's long term planning would incorporate broadband to the Economic Development Strategic Plan, the 21st Century Downtown Plan, the Route 302 North Plan and the South Windham / Little Falls Revitalization Plan.

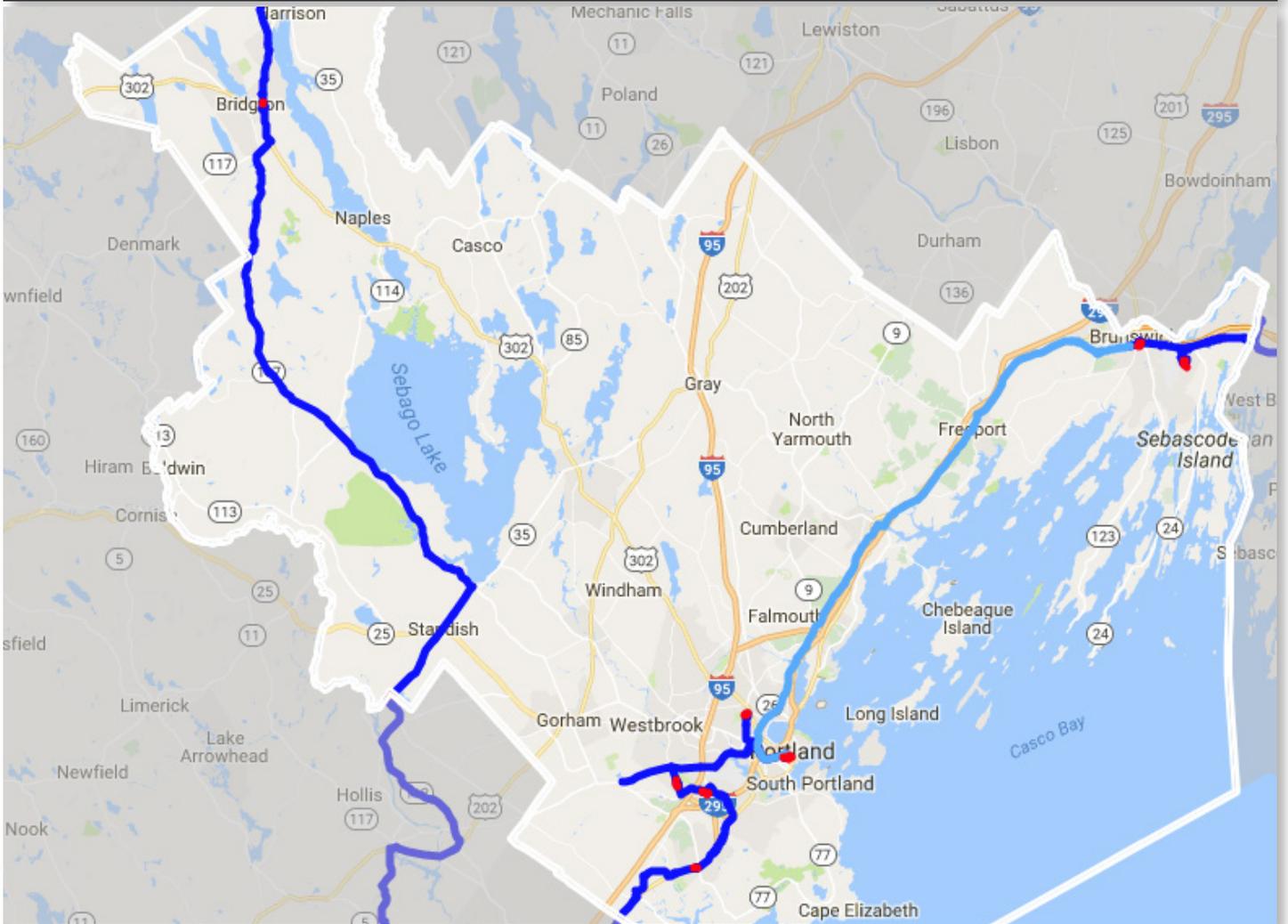
## PROJECT: CONNECT CUMBERLAND



### CONSTRUCTION AND OPERATIONS

Building broadband projects in conjunction with participating communities

MAP #1 - Current position of the "Three Ring Binder" in Cumberland County.



The Three Ring Binder currently enters Cumberland County from Bonny Eagle High School, along Route 35 to the southern shore of Lower Bay at the intersections of Routes 35 and 114. From there, it runs northwest along Route 114 to Route 107, connecting with Routes 302/117/37 in Bridgton; then it continues North, to Oxford County.

The Three Ring Binder also runs along Route 1 up the coast, entering the county in Scarborough and exiting in Bath. There is also a leg of the Binder that crosses through South Portland, past the Maine Mall area and up to Route 22 where it runs into the Portland peninsula.

Ultimately, the Three Ring Binder hugs the Western, Southern and Eastern borders of Cumberland County, leaving inland communities without access. This positioning is ideal, however, to fill in as a spoke and wheel model.

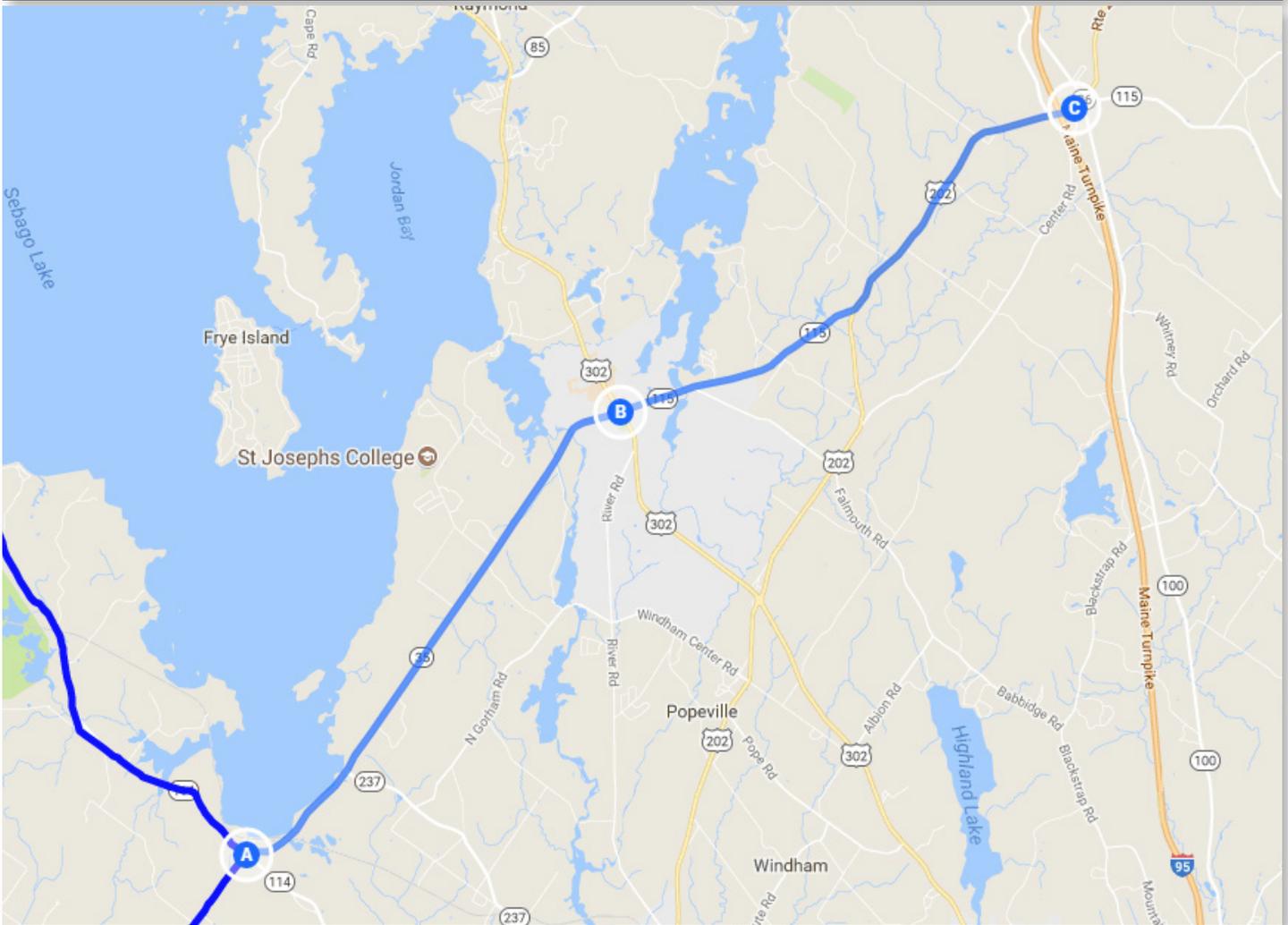
# PROJECT: CONNECT CUMBERLAND



## CONSTRUCTION AND OPERATIONS

Building broadband projects in conjunction with participating communities

MAP #2 - Phase One of the Lakes Region Broadband Partnership Project.



Map 2 is a close-up of the stretch of fiber that Cumberland County would contribute toward through CDBG funds if available, and some county funds in conjunction with the partner communities. Point “A” represents the spot where the project will access the Three Ring Binder and build a line to “Point B” at the intersection at Boody’s Corner. Axiom Technologies estimates this stretch would cost roughly \$330,000 to build.

The fiber would then run from Point B at Boody’s Corner along Route 115 to Point C in downtown Gray. This is the stretch that should qualify for CDBG funds; Axiom estimates it would cost an estimated \$370,291. We have applied for the full cost of this leg through CDBG, but may not be awarded the full amount depending on available funds.

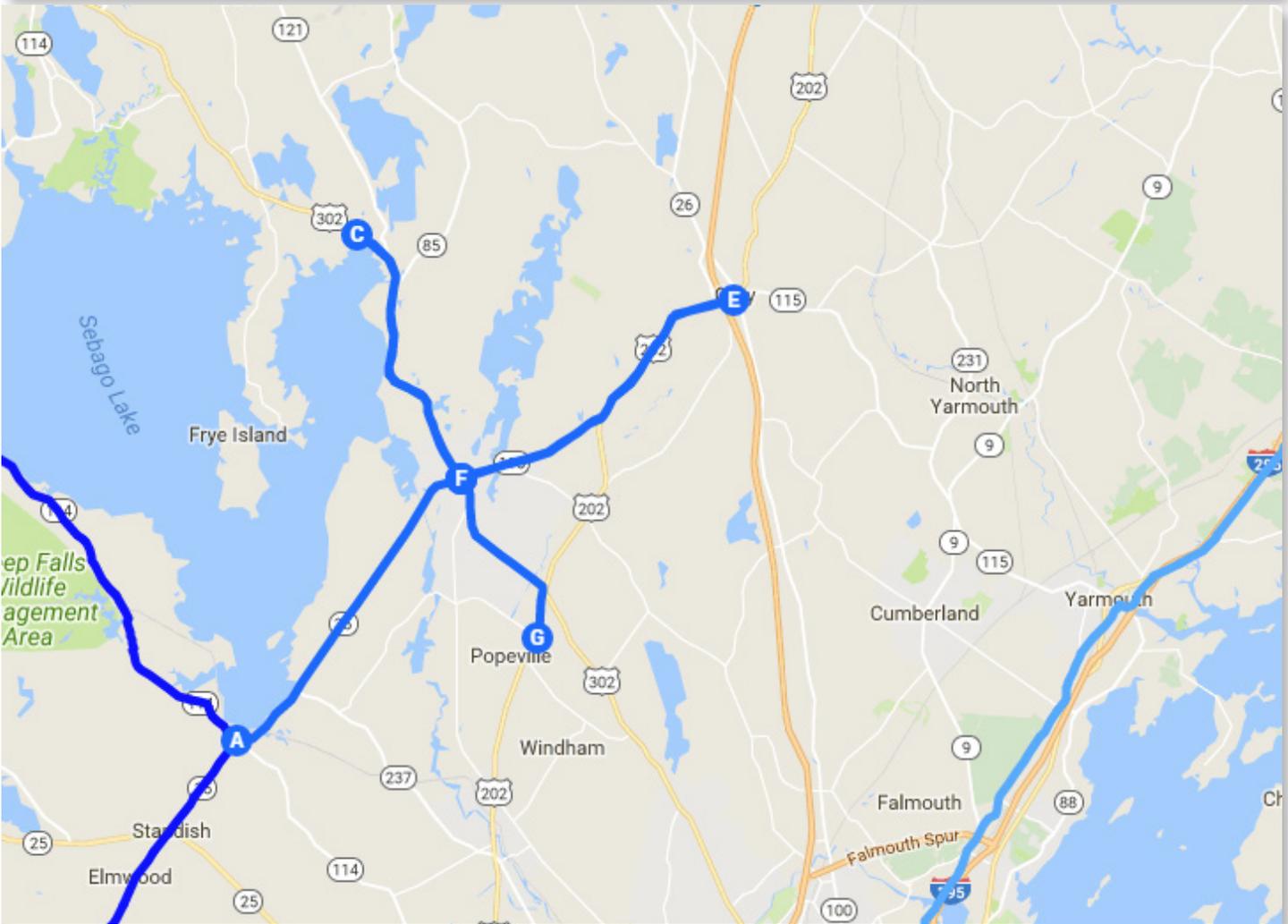
# PROJECT: CONNECT CUMBERLAND



## CONSTRUCTION AND OPERATIONS

Building broadband projects in conjunction with participating communities

MAP #3 - Completed arteries of the Lakes Region Broadband Partnership project.



Map 3 shows the completed major construction of the entire LRBP project; the Northeast Line from the Three Ring Binder to Gray, and the North-South line along Route 302 from Raymond to Windham Center.

The county's funds and CDBG funds would reduce the cost of the two arteries by at least 25%, and the municipalities would establish a cost-sharing agreement under a successful Regional Operating Mechanism, to be developed during the first phase of *Project: Connect Cumberland*.

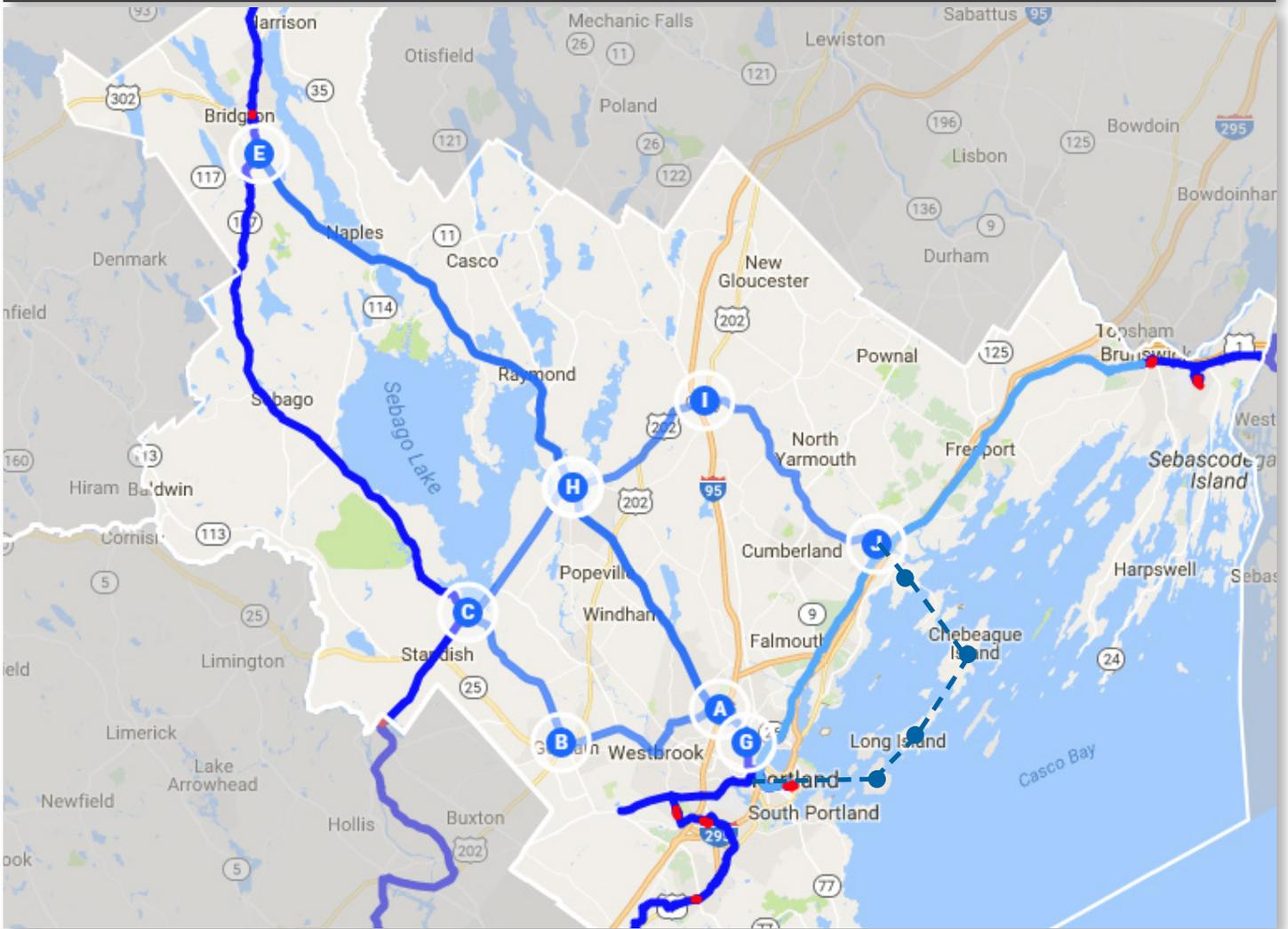
# PROJECT: CONNECT CUMBERLAND



## CONSTRUCTION AND OPERATIONS

Building broadband projects in conjunction with participating communities

### MAP #4 - Potential for future phases.



This map represents just how powerful that connecting fiber through Boody's Corner in North Windham would be in making broadband a possibility for other towns and cities in Cumberland County. The intersection is the near-geographic center of the county, serving as the center of the wheel and spoke model imagined by the state when it created the Three Ring Binder.

The line on Route 302 could easily be extended south into Westbrook and North through Casco and Naples, and reconnect with the Three Ring Binder in Bridgton. From Gray, fiber could be routed through North Yarmouth and Cumberland to reconnect with the Three Ring Binder in Yarmouth. A second entry point from the East could make expansion to Gorham a more viable opportunity.

All of these loops that connect stretches of fiber back to the Three Ring Binder create resiliency in the case of line damage or failure, supporting reliability for the entire region.

## PROJECT: CONNECT CUMBERLAND



### TIMELINE

#### 2018

- Apply for CDBG planning grants to develop operating mechanism, strategic map.
- Apply for CDBG funds to build fiber from North Windham to Downtown Gray.
- Hire a contractor(s) to develop operating mechanism and strategic map.
- Present to other towns in county to gauge larger initial support.
- Begin work of creating operating mechanism with report.
- Begin planning for Lakes Region Broadband Partnership project.
- Research potential downtown Wi-Fi projects.



#### 2019

- Support LRBP communities in finalizing a permanent operating mechanism.
- Construction of major arteries on LRBP project; communities will build out to end users on their own schedule.
- Continue to engage other communities to plan for future partnerships.
- Begin thorough outreach to other communities to determine the best strategic future projects.
- Plan up to three downtown Wi-Fi projects depending on opportunity and local interest.



#### 2020 and beyond

- Full planning for organization, strategic resources and toolkit is complete.
- Organizing entity is working, ready to be scaled for future projects.
- Complete LRBP project.
- Begin planning for next construction projects.
  - Potential Phase Two sites include Westbrook, Casco, Naples, North Yarmouth, Cumberland, New Gloucester, Pownal, Gorham
  - Expanded service offerings in Bridgton, Brunswick, Cape Elizabeth, Falmouth, Freeport, Harrison, Portland, Scarborough, Sebago, South Portland.