

CONNECTMAINE

Designation of Broadband Service

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Staff Recommendations

Authority Members

Nick Battista, Chair
Jasmine Bishop
Fred Brittain
Susan Corbett
Heather Johnson
Jeff Letourneau
Liz Wyman

Summary

The staff recommendation is based on Common Applications and Network Service as defined in the ConnectMaine rule. Staff considered the capability for a family of four to use those applications to work, learn and access services online, without trouble. The recommendation is also based on what private investment is occurring across Maine and the country, having considered the “state of the market” in accordance with the rule.

To that end, staff recommends a designation of broadband service that is at least 100/100mbps with a latency no more than 20ms, made possible by a XGS-PON at a minimum; and recommends a separate designation of unserved based on slower speeds than 50/10mbps.

The construct between broadband service and unserved is a critical element. At least annually, the ConnectMaine Authority is required to determine the minimum performance criteria for broadband service in accordance with its statute.¹ Designation of unserved areas includes but isn’t limited to consideration of the designation of broadband service. Importantly, the designation of unserved areas is separate from the designation of broadband service.

Reviewing the greatest relative improvement from current service is a critical element of the broadband infrastructure grants program design. ConnectMaine has and will continue to ensure that projects in unserved areas remain priority for grants, so worse networks get better. We feel it is critical to be clear and transparent about what we consider to be the priority for grants; because of that, staff recommends using 50/10mbps to designate unserved areas.

How we operationalize this is troublesome because of the federal standard for broadband, a minimum of 25/3mbps. Recognizing there is a variety of implementation issues with changing the speeds by which broadband service and unserved areas are designated, working through these issues will take the next few months. ConnectMaine recognizes that the datasets available aren’t great for identifying areas by a service level of 50/10mbps, but changing these speeds now allows these challenges to start being addressed.

The recommendation of 100/100mbps for the designation of broadband service ensures that the broadband infrastructure is capable of 100/100mbps service being delivered and helps ensure the infrastructure is scalable overtime, by only having to switch out the electronics. Deploying taxpayer funds necessitates setting strong standards.

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Process

ConnectMaine staff chose these levels of service based on consideration of many factors, including: common use applications for households with multiple devices, what level of service is needed for a family of four who are all working and learning from home; what private investment is occurring currently in the marketplace in Maine and nationally, and what level of service is being built across the country with private, federal and state dollars; the technology used for the majority of ConnectMaine projects in the past 5 years; a forward look at demands based on the life span of infrastructure, how taxpayer funds should build networks that make use seamless from the network perspective; and conversations with communities and providers across Maine.

After research, staff developed a recommendation that emphasizes the importance of building this infrastructure so that it will meet the demands of the users for 20 or more years without being rebuilt, other than switching out electronics that support the network. Those recommendations include ensuring that areas of the state with the poorest broadband service will be prioritized for state investment, as well as helping drive private investment to improve service overall in better-served parts of the state.

Timeline

The pandemic has illuminated the urgency and severity of Maine's broadband needs. Demand is high for grant funds, and significant federal funds are available to be leveraged at both the state and local levels. These are some of reasons for designating broadband service and unserved areas ahead of the next round of infrastructure grants. The timelines of designating broadband service and then unserved areas, the following opportunity to review unserved areas, and then infrastructure grants, are all intertwined.

To align these timelines, the staff recommends the following:

1. Vote on the designation of broadband service at the April meeting
2. Solicit public input on the designation of broadband service during the 30-day comment period required by statute
3. Vote to confirm the designation of broadband service at the May meeting
4. Further engage the board and public in identifying unserved areas in June & July
5. Vote on the designation of unserved areas at the July meeting
6. Solicit public input on the designation of unserved areas during the 30-day comment period required by statute
7. Also announce an Opportunity to Review Unserved Areas at the July meeting, using the same process approved in January
8. Determine performance criteria for projects using grant funds, June-August
9. Comment periods close before the September meeting
10. Open application window for broadband infrastructure grants at the September meeting

The timelines of designating broadband service and then unserved areas, the following opportunity to review unserved areas, and then infrastructure grants, are all intertwined. If votes on designations occur sooner, then ultimately opening an application window could occur sooner. If any votes are delayed, that could delay the timeline for the next round of grants, while forgoing the opportunity to review unserved areas could shorten it.

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Background

ConnectMaine raised the designation of broadband service to 25/3Mbps in 2018, increasing the number of locations in unserved areas to about 11% of the state, estimated to be 85,000 locations. In early 2020, ConnectMaine maintained the designation of broadband service as the availability of 25/3Mbps or faster speeds. The statute and ruleⁱⁱ require ConnectMaine to consider market conditions and minimum performance criteria needed for common applications and network services.

At the March meeting, ConnectMaine expressed interest in a process for designating broadband service which includes

- having a more robust conversation about this and engaging the public,
- illustrating the relationship to unserved areas and the build standard, and
- researching or observing the federal and other state standards for broadband.

Past practice has been to use the designation of broadband service as the sole criterion for the designation of unserved areas; however, the ConnectMaine rule doesn't limit consideration to only the designation of broadband service. Because of this practice, ConnectMaine then established a build standard for broadband as part of the performance criteria for projects using grant funds.

Designation of unserved areas includes but isn't limited to consideration of the designation of broadband service. ConnectMaine may consider the extent to which service meets the criteria governing Common Applications and Network Service.

ConnectMaine recognizes the state's broadband vision and goals, which are articulated in its statute, rule and state action plan. ConnectMaine encourages communication among stakeholders, and seeks public engagement and research opportunities, to improve our understanding of broadband availability and needs in the state.

Research

Based on research and conversations thus far, and for the purpose of providing direction for additional conversations, staff recommends the following be considered for minimum performance criteria for broadband service in accordance with the rule:

- The state of the market includes the increasingly common industry standard of XGS-PON—10 Gigabit Symmetrical Passive Optical Network.
 - While all applicants haven't provided network capacity or backhaul information, those that have are upgrading 1G to 5G or even installing 10G; even our cable companies, in expanding broadband using DOCSIS 3.1 (Data Over Cable Service Interface Specifications) have taken the opportunity to upgrade both download and upload. Although the build standard for broadband using state funds has been a minimal service offering of 10/10Mbps, most providers have offered 100/20, 100/50 or even 100/100Mbps as base service offerings.

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- Nationally, few cable companies have bothered to upgrade the upload portion of the network when they upgraded to DOCSIS 3.1. Cable companies that stuck to the older DOCSIS 3.0 technology won't have the capacity to provide these higher upload speeds. AT&T and other companies are increasingly announcing and implementing plans to replace networks with fiber, due to customer demands for faster speeds. AT&T will deploy fiber-to-the-premise to an additional three million locations across more than 90 metro areas in 2021 and will continue its aggressive fiber push in 2022 by adding four million more locations. Verizon has moved to fiber to provide symmetrical service or to allow for 5G expansion. It expects to offer up to 1G/1G peak speeds to 250 million Americans by 2024 by spending an extra \$10 billion on its network over the course of those three years. Conexon, a fiber builder for electrical co-ops, is only building fiber and has just announced a significant investment in very rural areas, including a massive investment in rural Georgia. Conexon only builds and invests in fiber networks with electrical co-ops and invests in some very rural (low density) areas. They have been using federal funds to build out fiber for several years
- From research within and beyond the state of Maine, staff determines that the minimum sustained bandwidth for both upstream and downstream transmission in Common Applications and Network Service is more commonly greater than required for 10/10mpbs service. While the priority of expansion is greater in urban areas, the need and demand for faster speeds aren't unique to urban areas.
 - Historically: When the FCC set the federal definition of broadband at 25/3mbps, it was almost entirely based on a thought experiment. It'd be harder today to conduct even the same thought experiment, let alone actually measure usage, and near impossible to estimate the future needs that have grown exponentially. Some families now have adults that work remotely from home. Even before the pandemic, there were people in a lot of homes that were pursuing education and training online. Many basic functions that used to reside on our computers have migrated to the cloud. In fact, cable companies have been increasing download speeds exponentially as well. **Of the Rural Digital Opportunity Fund awarded projects, 85% are for gigabit service.** By looking at the behavior of the cable companies, using 25/3mbps as a definition of broadband is badly obsolete. It's expected that NTIA programs will require construction of networks that can deliver 100/20mbps service.
 - Other states have also been updating their broadband standards: South Dakota uses 100/10mpbs as a baseline but encourages up to 1G symmetrical service upon completion of funded projects. New York uses 100/100mbps as its standard for broadband. MN's goal is 100/20 by 2026; WA, 150/150 by 2028; and IL, 100/100 by 2028. NC's goal is that 50% of state will have fiber by 2021. VT has pending legislation to fund Communication Utility Districts for 100/100 service.
 - Within the past year, private investment in Maine has been announced by Charter, Consolidated, UniTel, Premium Choice, GWI, Pioneer, FirstLight and TDS, all of which building fiber networks capable of delivering 100/100mbps service. Since 2016, the vast majority of applications to ConnectMaine have been for fiber networks. While some of these projects are not currently configured for symmetrical service because of their electronics, most could with a switch out of those electronics, be able to provide symmetrical service. Consolidated and Pioneer, two of Maine's RDOF winners in the Gig tier, will be building gigabit symmetrical service to those very rural areas of the state over the next 6 years.

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- The maximum monthly throughput on a flat rate service offering should be sufficient to meet the demands for Common Applications and Network Service.
 - The average household has 12 connected devices now, and that is expected to grow to 20 by 2025. This will increase the demand for the quality and quantity of service to locations.ⁱⁱⁱ
 - By the end of 2020, the monthly usage of an average household was 482 gigabytes or nearly 4,000G of data, about 8G per waking hour. That amount has increased 224% over only three years.
- Besides capacity, speeds and bandwidth, other performance criteria necessary for the use of common broadband applications and network services include latency—the lower the better—and affordability—price of service offerings.
 - While many factors affect latency, fiber-based internet service rarely results in latency greater than 10ms, and cable-based internet service may struggle to stay below 20ms.
 - While all applicants haven't provided pricing data of services offered, those that have helped ConnectMaine choose target prices, around \$65 per month, for current infrastructure grant applications, which will help ConnectMaine collect more data on broadband affordability.

Actions

Vote to approve the designation of broadband service as at least 100/100mbps.

Vote to approve the use of 50/10mbps for the designation of unserved areas.

Direct staff to host at least one public forum during the required 30-day comment period.

ConnectMaine anticipates a vote at the May meeting to confirm these designations.

ⁱ Statute:

§9204-A. Duties of authority:

1. Establish criteria defining unserved and underserved areas. The authority, by rule adopted pursuant to section 9205, subsection 3, shall establish criteria to define unserved and underserved areas with respect to broadband service. Criteria established by the authority to define unserved and underserved areas must include the percentage of households with access to broadband service within a municipality or other appropriate geographic area. The authority shall use these criteria to determine those areas of the State that are unserved or underserved.

ⁱⁱ Rule:

5.) Designation of Broadband Service and eligible areas

A. Broadband Service. At least annually, and subject to a thirty (30) day comment period, the Authority must determine the minimum performance criteria for broadband service, for the purposes of this Chapter. The Authority must base its criteria on the state of the market as well as the performance necessary to meet the current broadband needs of common applications and network services in use in the State.

1. Criteria Governing Performance. To determine minimum performance criteria, the Authority may consider:
 - a. Minimum sustained bandwidth for both upstream and downstream transmission in Common Applications and Network Service;
 - b. Maximum monthly throughput on a flat rate service offering; and
 - c. Any other performance criteria necessary for the use of common broadband applications and network services.

ⁱⁱⁱ https://www.wfmz.com/news/pr_newswire/pr_newswire_business/parks-associates-us-households-will-have-an-average-of-20-connected-devices-by-2025/article_6e4fb246-e853-5746-b0bc-464b745caabe.html