BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Broadband Infrastructure Deployment and to Support Service Providers in the State of California.	Rulemaking 20-09-001 (Filed August 6th, 2021)

OPENING COMMENTS OF THE NORTH BAY NORTH COAST BROADBAND CONSORTIUM ON ASSIGNED COMMISSIONER RULING SEEKING COMMENT TO COLLECT RECOMMENDATIONS FOR THE LOCATIONS FOR A STATEWIDE OPEN-ACCESS MIDDLE-MILE BROADBAND NETWORK

Calvin Sandeen
Managing Director
North Bay North Coast Broadband Consortium
141 Stony Circle, Santa Rosa, CA 95401
Tel: (707) 565 - 6418
Email: calvin.sandeen@sonoma-county.org

3 September 2021

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I. Introduction

In accordance with Rule 6.2 of the California Public Utilities Commission ("Commission") Rules of Practice and Procedure ("Rules"), the North Bay/North Coast Broadband Consortium ("NBNCBC") submits opening comments to the Order Instituting Rulemaking 20-08-001 ("Rulemaking") seeking comment to collect recommendations for the locations for a statewide open-access middle-mile broadband network.

II. Opening Comments

1. Identifying Existing Middle Mile Infrastructure:

What routes, if any, should be modified, removed from consideration, or revised? Provide an explanation for these suggestions.

Attachment 1 in the OIR lists NBNCBC's requested middle mile routes; however, the online map viewer[1] does not reflect the entirety of each route included, such as:

Mendocino County

- Highway 20 between Willits and Fort Bragg
- Highway 1 between Cleone to the Westport Union Landing State Beach

Napa County

- Highway 12 to Solano County
- Moskowite Corner to Winters via 128
- Highway 121 to Highway 12

Sonoma County

- Highway 128 between Geyserville and Calistoga
- Highway 12 West/Bodega Highway between Santa Rosa and Bodega Bay
- Highway 12 between Sonoma and Napa
- Highway 116 between Petaluma and Sonoma

We request the online map viewer reflect the entirety of each route. In addition to these routes, we request the statewide middle mile network consider major county road corridors as middle mile segments to create additional redundancy, support public safety communications, and to connect to unserved communities and anchor institutions. These routes include:

Mendocino County

- Comptche-Ukiah-Road from Mendocino (Hwy1) to Comptche (Volunteer Fire Dept, Flynn Creek RD.)
- Sherwood Road from Willits N. Main (Redwood Highway) to Brooktrails Township's Lupine Drive.

[1]https://www.arcgis.com/home/webmap/viewer.html?webmap=e17e4e1c88b04792ab0a2c50aa1a19a3&extent=-126.1445,34.5234,-113.5981,41.1113

Marin County

- Sir Francis Drake Blvd between San Rafael and Point Reyes
- Lucas Valley Road and Nicasio Valley Road between San Rafael, Nicasio, Lucas Valley- Marinwood
- Shoreline Highway between Point Reyes and Valley Ford

Napa County

- Chiles and Pope Valley Road between Highway 128 at Lake Hennessey to Howell Mountain Road
- Pope Valley Road to Aetna Springs Road
- Berryessa Knoxville Road past Lake Berryessa

Sonoma County

- Valley Ford Road/Bodega Ave between Valley Ford and Petaluma
- Stewarts Point Skaggs Springs Road between Stewarts Point and Geyserville.
- River Road between Highway 101 and Highway 1
- Westside Road/Dry Creek Road between Geyserville and River Road
- Chalk Hill Road between Windsor and Highway 128
- Markwest Springs Road/Porter Creek Road/Petrified Forest Road between Mark West and Calistoga

Are there existing middle mile routes that are open access, with sufficient capacity, and at affordable rates on the county highway routes listed in Attachment A?

Along some routes, the region has existing privately owned middle mile dark fiber routes with sufficient capacity that can integrate open access applications. Most of the existing middle mile routes in the NBNCBC region are proprietary or are designated for primary use by the entities that constructed them. NBNCBC member counties also have government owned conduit and tower assets, which can install open access equipment, cost effectively. A list of all known assets are listed below:

- The Sonoma Marin Area Rail Transportation authority (SMART) placed four 1.5" conduits for Fiber optic cable along the rail line and plan to use two for operations, with

two fiber optic cables: a 12-strand cable for signal operations in conduit #1 and a 48-strand backbone operations cable in conduit #2. In partnership with Sonic, a 432-count fiber optic cable was installed in a single conduit, with Sonic granting 60 strands to SMART and a bonus of 12 strands dedicated to the cities and counties adjacent to the railway. Sonic installed, maintains the fiber optic infrastructure, including all splicing and repair services, and empty inner duct deployed under a license agreement with SMART, running from the Sonoma County airport along 101 to Larkspur. SMART has extra, empty 1.5" innerduct in its four-innerduct fiber optic conduit system. Affordability and whether SMART or Sonic would allow use of their infrastructure are unknown.

- The County of Sonoma and its city jurisdictions own approximately 70 miles of empty conduit that each jurisdiction acquired as the result of the bankruptcy of WilTel. The assets are used in some city jurisdictions, but are primarily unused throughout the remainder of the network. The network stretches from the northern to southern borders of Sonoma County and are currently being evaluated for deployment opportunities. NBNCBC staff may be contacted for more information.
- Zayo owns middle mile infrastructure across the Golden Gate Bridge to Marin County along Highway 101 to San Rafael where it splits northeast to Nicasio and southeast along Highway 580 to the Richmond-San Rafael Bridge. Affordability, the amount of available capacity, and whether Zayo would allow usage are unknown.
- Additional short runs of fiber are located as shown in Exhibit B. Affordability, the amount of available capacity, and whether the owners would allow usage are unknown.
- Lumen (formerly Century Link) owns long haul infrastructure connecting Highway 101 and Highway 37 from the northern border of Marin County to the northeast County line. Affordability, the amount of available capacity, and whether Lumen would allow usage are unknown.
- T-Mobile owns long haul infrastructure from the Richmond-San Rafael Bridge to Fairfax, Woodacre, Nicasio, then north to the Marin County line. Affordability, the amount of available capacity, and whether T-Mobile would allow usage are unknown.

- Each county and city governments in the NBNCBC region own communications towers used for public safety purposes. Many towers do not have fiber backhaul or middle mile in the communities they are located. The state could explore collaborating with public and private tower owners to deploy an open access *wireless* middle mile network using equipment that can supply enough bandwidth and speed capacity (minimum of 100 mbps) in unserved communities that are hard to reach and high cost. Wherever wireline middle mile may be cost or time prohibitive, this could result in an expedited solution to connect homes faster. Communities could begin deploying last mile fiber to the home networks sooner from the closest wireless site, and have a wireless middle backhaul solution available to light up their last mile network while waiting for a long-term wireline middle mile solution.

In the context of these comments, what is sufficient capacity and affordable rates?

The commission should define both terms. The affordability of leasing the middle mile open access infrastructure should ensure affordability for all subscribers, especially those that are low-income. If the Commission still considers $15 an affordable cost for low-income households, the cost of leasing the open access middle mile network should allow providers to deliver services at those costs or lower. Low-income subscribers may utilize public subsidies like the Emergency Broadband Benefit to lower their service provider's costs as well, or the state could subsidize providers that serve low-income customers.

For sufficient capacity, the middle mile network should have a substantial amount of dark fiber for lease by internet service providers. Dark fiber provides the greatest amount of flexibility for ISPs to expand their capabilities in technologies and levels of services. Dark fiber should allow scalability well beyond that needed to provide 100 Mbps service levels to end users and to 1 Gbps symmetrical and above. The Commission should consider consulting with network operations specialists and use quantitative data wherever possible to make the most educated decision on the various factors that determine sufficient capacity for each community. The analysis could consider measuring sufficient capacity in terms of bandwidth, as well as the type and amount of technology deployed. Determining sufficient bandwidth should account for end

users' future needs. As bandwidth demand increases, the supply of bandwidth capacity should already be available. The type and amount of technology used should match the future projections for bandwidth demand.

For routes that are identified as being open access, with sufficient capacity, and at affordable rates, how should the Commission verify these claims (e.g., should Communications Division send a data request for service term sheets, rates, approximate dark fiber, lit fiber, and conduit capacity, etc.)? Are there any other criteria that should be used to verify these claims?

The Commission should contact the owners and operators directly to obtain information, then consult with the regional broadband consortia for local knowledge to verify their claims.

2. Priority Areas: Federal funding must be encumbered and spent in a limited time period. Additionally, unserved and underserved areas of the state are in substantial need of broadband infrastructure investment.

Is it reasonable to assume counties with a disproportionately high number of unserved households (e.g., 50% or more unserved at 100 Mbps download) are areas with insufficient middle-mile network access?

It is not reasonable to assume this claim throughout all of the NBNCBC region. For example, in Mendocino County, the vast majority of land mass, and majority of households, are unserved at 100 Mbps download speeds precisely because the lack of an accessible middle-mile network limits consumers to DSL or Satellite internet connections. In the other member counties, such as Sonoma and Marin, unserved communities are affected by inaccurate broadband availability data.

Provider reported data collected through the Federal Communication Commission's Form 477[2] does not accurately depict availability throughout the NBNCBC region, primarily due to the use of census blocks as a geographic measurement. As a result, broadband availability throughout the NBNCBC region is usually inflated. Providers may only serve a small percentage of the

[2] https://www.fcc.gov/economics-analytics/industry-analysis-division/form-477-resources

census block using their middle mile infrastructure, while making it cost prohibitive for others to serve the remainder of unserved households.

We suggest the Commission consider granular broadband availability data at the household level as a metric to analyze sufficient middle mile availability. Another method to measure is to determine the amount of middle-mile network access made available to commercial providers, public entities, and public/private partnerships for the provision of last-mile of internet services capable of providing 100 mbps.

The Commission should also define "insufficient middle-mile network access". In the context of performance quality, affordability, accessibility, and reliability, some unserved communities may have existing middle mile infrastructure that unfortunately do not meet all of those standards, which we consider insufficient and a restriction to last mile deployment.

What other indicators, if any, should the Commission use to identify priority statewide open-access middle-mile broadband network locations (i.e., built expeditiously, areas with no known middle-mile network access, regions underserved by middle-mile networks, regions without sufficient capacity to meet future middle-mile needs)?

Priority should be given to locations:

- where local governments have broadband plans that can easily translate into shovel ready projects that require additional middle-mile infrastructure.
- that enable last-mile connections to residences currently unserved by 25 mbps downstream and 3 mbps upstream.
- With existing telecommunications assets that can accommodate open access infrastructure.

3. Assessing the Affordability of Middle Mile Infrastructure: A key consideration is determining the cost of various middle mile services. Through identifying the costs of these services in California, as well as across the country and globe the

Commission can identify a threshold whereby services can be considered reasonably affordable.

What are existing providers paying or charging for middle mile services?

Prices for middle mile services can fluctuate depending on several factors, such as what services are included (e.g. managed vs. unmanaged uplink services), interconnection costs, circuit capacity, etc. Prices may also fluctuate depending on which branch of the middle mile company providers are working with (e.g. wholesale vs. retail). With wholesale rates, some companies NBNCBC has worked with have been quoted approximately $3,000 for a 10 gigabit circuit and have claimed that bandwidth has been getting increasingly cheaper. NBNCBC has also discovered the retail costs of middle mile services to be significantly more expensive. We have also seen infrastructure owners charge per mile or foot, as well as per subscriber. An open access provider we have consulted with charges a wholesale fee of $15/subscriber to internet service providers to lease capacity from their open access network, which seems like a reasonable cost metric that ensures affordability to retail providers and end users.

Are there other factors or sources of information the Commission should consider for determining whether these services are affordable?

The Commission should define "affordable middle mile service" as it affects the cost of last mile provision of services. Research in Marin County found that service levels, (e.g. speed, reliability, etc.) do not correlate to cost. The highest cost internet service with the lowest bandwidth offerings in Marin is where infrastructure is lacking due to difficulty building and connecting to the greater internet. This issue disproportionally affects several of our most diverse and socio-economically challenged communities located in those areas. Broadband adoption is of equal importance to broadband availability when it comes to economic development; hence, costs and subsidies should be structured to accommodate internet affordability in at least 98% of households.

Is it reasonable for the costs of these services to change depending on the location where the service is provided (i.e., rural vs urban)?

No, broadband for all must include affordability for all. Otherwise, it leaves the door open for continued redlining based on profitability. Significant variation in cost between rural and urban areas is not reasonable and would be reduced if middle mile infrastructure is owned and operated as a public utility by an entity that does not need to make a profit. State funded open access broadband should seek to create a 'level playing field' and resist market-driven pricing.

4. **Leasing Existing Infrastructure: Indefeasible Rights of Use (IRUs) are long term leases (generally 20 to 30 years) for unrestricted, legal capacity on a communications network for a specified period of time.1 These contracts generally obligate the purchaser to pay a portion of the operating costs, and the costs of maintaining the infrastructure.**

If there is existing open access communications infrastructure with sufficient capacity to meet the state's needs, should the state purchase IRUs from that network?

If there is existing open access communications infrastructure and if the state purchases IRUs from the existing open access communications infrastructure, the state should analyze the pros and cons of doing so. The existing networks may not be sufficient to purchase IRUs (e.g. high quality, affordable, reliable, and accessible). Because of SB 156 and the availability of major middle mile funding, the state has advantage and the opportunity to create competition among existing infrastructure owners. The state should engage the owners of existing infrastructure in each project area in order to negotiate and identify the best option of either purchasing IRUs or deploying new open access infrastructure.

5. **Interconnection: The statewide network will need to connect with other networks in order to deliver services.**

At what points should the statewide network interconnect (e.g., to other networks, servers, etc.)?

We proposes, at a minimum, the statewide network interconnect at the following locations:

- Government facilities
- Anchor institutions
- County and city data centers
- Wireless sites
- Major roadways and intersections
- Unserved and underserved areas
- Other regional and municipal networks

6. Network Route Capacity: The state will need to determine the amount of capacity to build into the network to meet existing and future demand.

How many strands of fiber should the network deploy for each route?

Our region has consulted with several industry professional who have all suggested deploying a higher count fiber cable along all middle mile routes wherever possible as the cost differential between low count and higher count fiber cable is minimal. In most cases, one thousand strands of fiber should be a standard for middle mile deployment along major corridors, which we agree with. However, some communities may not require this much capacity, even with future bandwidth projections, where a smaller count cable may be justified. In this case, the minimum fiber count should be enough to meet total peak bandwidth needs (e.g. population x per user peak bandwidth), plus an estimated growth factor.

The state should also consider additional equipment and labor costs associated with higher fiber counts (e.g. splicing, transportation, etc.), which could add up incrementally on a larger scale. The state should work proactively with engineers and assess fiber counts appropriately on a case-by-case basis while accounting for economic viability, coordinating with local planning, predicting future bandwidth needs, and maximizing middle mile funding among as many regions as it can.

Are there other requirements or standards the Commission needs to consider to determine sufficient capacity?

The Commission should consider network architecture as a factor in determining sufficient capacity.[3] Network architectures can be designed differently for each community using different methods, which may affect cost and future scalability. In addition, the Commission should consider network technology. As the state's middle mile plans gradually become shovel ready, fiber optic technology may improve. The Commission should analyze the newest fiber optic technologies used by other providers in the nation and in other countries prior to deployment in order to make the most educated decisions when designing and engineering a network that can supply the state's demand as long as possible.

Should the network also deploy additional conduit within each route for potential future expansion?

Yes, whenever possible, in coordination with last mile planning.

Should these factors change based on the population density and distance from the core network?

No, since these investments must be long-term, i.e. 20 to 30 years, and population density, location and types of businesses and industries, and other factors change over time. Capacity decisions must be data-driven, taking into consideration past shifts, present conditions, and future projections. The resiliency of the network and long-term benefit of the capital investment should anticipate exponential growth. Additional conduit should be included at the least.

III. Conclusion

In conclusion, NBNCBC commends the Commission for seeking comment to collect recommendations for the locations for a statewide open-access middle-mile broadband network.

[3] https://foa.org/tech/ref/appln/FTTH-design.html

Thank you for the opportunity to provide comments and the Commission's continuous efforts to close the Digital Divide.

Respectfully submitted,

/s/ Calvin Sandeen

Calvin Sandeen
Managing Director
North Bay North Coast Broadband Consortium
141 Stony Circle, Santa Rosa, CA 95401
Tel: (707) 565 - 6418
Email: calvin.sandeen@sonoma-county.org

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