Northwest Regional Planning Commission
Fiber Broadband Feasibility Review

Aug 27, 2021

Background:

MATRIX Design Group presented a Fiber Broadband Feasibility Study to the Northwest Regional Planning Commission (NWCUD) to serve all of the unserved and underserved premises remaining in the CUD. After careful review and as required by the Broadband Innovation Grant (BIG) Program, Rural Innovation Strategies, Inc. delivered a third party review of the MATRIX Feasibility Study.

This document provides an analysis of the strengths and weaknesses of the MATRIX Feasibility Study, and additional analysis on the NWCUD Region to provide an alternate understanding of the costs and workability associated with a network across the entire region, rather than feasibility based on an individual town-by-town basis.

Feasibility Study Strengths

One of the strengths of the MATRIX Feasibility Study is its clear exposition of the operational tasks and roles needed to build the network and provide service. Sections on basic network design are illustrative and informative, as well as the overview of broadband technologies. Lastly, though the possible funding sources section does not indicate likelihood of success, it is fairly comprehensive.

The Feasibility Study also contains a well-produced overview of the current broadband infrastructure, including price comparisons for current service providers, in the NWCUD region. Lastly, MATRIX was right to prioritize areas with the highest rate of unserved or underserved premises.

Feasibility Study Concerns

RISI and ValleyNet's major concern with the feasibility study was that it did not assess the collective viability of a network spanning the towns; it only assessed the viability of each town individually.

Communication Union Districts are a set of towns who coordinate as a single municipal entity to build communication infrastructure and aggregate scale across rural areas. However, MATRIX delivered a feasibility study that assessed fiber deployment on a town by town basis, which ignores the strategic advantage that the CUD framework was meant to provide

As a result, the feasibility study indicated that some towns - namely the biggest and densest - were feasible while others were not, and there was no calculation of the feasibility of a network as a whole.

RISI completed a separate Feasibility Model, viewing the region as a whole and utilizing current and updated cost assumptions based on data from existing local networks, other CUDs, and our own GIS analysis of available state data. This analysis considers all underserved and unserved areas in towns in the current NWCUD footprint: Alburgh, Bakersfield, Berkshire, Enosburgh, Fairfax, Fairfield, Georgia, Highgate, Isle La Motte, Montgomery, Richford, and Sheldon.

RISI's Feasibility Model - Analysis

The model assumes that the CUD has an operator willing to operate the network on a fee for service basis and that the CUD would pay that operator on a per customer per month basis. The three biggest factors the CUD will need to confirm in their planning work to know with certainty a network is viable is 1) what are the construction costs once the project is put out to bid 2) what are the ultimate grant and funding sources the CUD can access, and 3) can they find an operator partner or partners at a rate that allows the cashflow to be healthy at a reasonable cost to subscribers.

Using assumptions around construction, operation, and maintenance fees, the attached feasibility model shows a viable path for NWCUD using a combination of grants, subordinated debt, and revenue bonds. The input assumptions were based largely on historical data from similar Vermont networks with updates made where possible to reflect changing costs brought on by the pandemic and substantial subsidy in the broadband market.

The model will need to be adapted and expanded as cost assumptions change, as the CUD negotiates agreements with providers, and as the CUD's business plan gets developed; however, we believe it demonstrates a viable path for the CUD as a whole, rather than on a town by town basis.

Key Outputs of the Model

See the attached excel model for full details about key assumptions, inputs, and results.

Key results and conclusions from the model include:

- Network requires $49M worth of capital inputs, including:
    - $12M in grant allocations
    - $11.5M in Year 2 and $6M in Year 3 for subordinated debt at 8% interest
    - $10M in Year 4 and $14M in Year 5 for revenue bonds at 5.5% and 5% interest respectively
- Network has cashflow and EBITDA ratios that indicate financial sustainability, even with conservative penetration rate assumptions

See the Appendix for a summary of assumptions from the model.

Conclusion + key considerations for the Business Plan

Given the grant money and other funding sources likely available to the CUD, RISI and ValleyNet believe there is a viable path forward for the NWCUD, and that operating as a collective, rather than individual towns, is the most cost effective solution for the region.

Moving forward, the priority for the NWCUD during the Business Plan Phase should be to identify an operator and terms they are willing to commit to, so the real costs of said partnership can be modeled and accounted for. This process will involve interviewing potential operators to understand their willingness to participate in an Open Access Network, which the NWCUD identified as their preferred type of network.

The NWCUD will need to continue to re-evaluate the financials and business model as more information on potential partners is collected and concrete pricing on construction, labor, and material costs are provided.

Thank you for reading this third party review of the MATRIX Feasibility Study for unserved and underserved communities within the NWCUD region. Please direct any questions you may have to Alex Kelley at RISI or Carole Monroe or ValleyNet.

Appendix

Service fees and subscriptions and operator fees are assumed to be the following:

Tiered Service and Operator Fee Assumptions					
Average Revenue Per User	**Per Month**	**Mix**	**Blended**	**Operator**	**Blended**
base	$72.00	50%	$36.00	$35.00	$17.50
tier 1	$100.00	35%	$35.00	$40.00	$14.00
tier 2	$130.00	15%	$19.50	$45.00	$6.75
phone service	$25.00	25%	$6.25	$15.00	$3.75
			$96.75		$42.00

NOTE: This revenue per user does not include business customers. Rural networks are or aren't viable based on residential customers, however, a very small portion of the overall subscriber mix will be businesses, and these businesses will pay more for service; ergo, the ARPU above may be slightly lower than what the network will ultimately see because the ARPU will only benefit from business customers.

Penetration rates are assumed to be the following:

CUSTOMER PENETRATION BEGINNING WITH EACH NEW ADDED PASSING				
Year	**1**	**2**	**3**	**4**
Cabled	11%	18%	22%	25%
Uncabled	22%	36%	44%	50%

NOTE: These penetration rates are conservative - post pandemic, assumption for uncabled areas in Vermont may be better estimated at around 60% in year 4. These assumptions can be refined and updated as the CUD plans further.

Build Sequence:

NOTE: This build sequence will change and be re-evaluated based on engineering and other factors. This is for illustrative purposes and feasibility modeling purposes only.

The model assumes 250 miles can be built per year and the entity is only building out to the un- and under-served areas, and that reaching those areas will require overbuilding 20% of the cabled areas in each town. More cabled areas can be overbuilt in time at the discretion of the CUD.

Town	Year Built
ALBURGH	1
FAIRFAX	1
FAIRFIELD	1
SHELDON	2
BERKSHIRE	2
ENOSBURGH	2
MONTGOMERY	2
ISLE LA MOTTE	2
BAKERSFIELD	3
RICHFORD	3
GEORGIA	3
HIGHGATE	3

Capex Inputs

Standard installation cost		Assumption
cost_per_install		$1,400
Pre-construction		

Other Pre-construction costs per mile		$1,350
cabled_makeready_costpermile		$14,650
uncabled_makeready_costpermile		$4,650
Total construction cost per mile (labor, materials, electronics)		
cabled_build_costpermile		$27,200
uncabled_build_costpermile		$27,200
capex contingency percentage		10.00%
Hub Cost		$ 40,000.00
Maintenance		
Electronics cost per mile (included in construction costs)		$1,000.00
Electronics depreciation fund contribution		15.00%
Hub Maintenance per year		$2,500.00
Outside plant maintenance per mile		0.40%
REVENUE FORECAST		
Monthly ARPU		$96.75
ARPU annual decrease		$0.50
Revenue from installation		$100
1st year of revenue		2023
EXPENSE FORECAST - Ongoing Network Cost Components		
Per Customer Operations Fee (blended)	per customer	$42.00

	per month	
admin/audit/legal/other	annual fixed	$ 250,000
network insurance	per mile	$30
pole rental	per pole	$10
poles per mile		$30
bad debt/ACH/cc fees	% recurring rev	3%
hub electricity/rental		$2,500
revenue reserve fund		2.00%