Comparison of Broadband Operational Cost Models for Town of Wendell

Wired West Regional Cooperative Membership vs. Independent Operation

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Introduction

This report has been prepared at the request of the Town of Wendell Broadband Committee, for the purpose of comparing different financial operations models of a municipal-owned fiber broadband network. At present, a new Wendell Fiber-to-the-Home (FTTH) network is going thru the design phase, which, upon completion, will move into the construction phase. Once fiber construction is complete and network electronics are installed, this municipal fiber network will be ready for service to the residents of Wendell, and its operation will be overseen by the Wendell Municipal Light Plant (MLP). In preparation of MLP operation, two business models being compared in this analysis: (1) Wired West (WW) regional cooperative model, and (2) Independent (Stand-alone) operations model. A description of each model will be given, along with comparison of the two.

The analysis undertaken within this report is being conducted solely for the Town of Wendell, and has only reviewed the Wired West financial comparison model with respect to how the Town of Wendell could benefit, or not. This is not intended to be a detailed study of WW or its proposed operations model, and seeks only to identify specific factors as they relate to Wendell.

Wired West – Brief History

Wired West is a regional, municipal-broadband cooperative that was formed in 2011 by 47 towns in western Massachusetts that had little to no broadband[1] Internet service available to them from any incumbent telecommunications provider. Since 2011, some of the original member towns have decided on solutions outside of WW, and as of the creation of this report, there are 21 member towns listed on the website of WW. The primary mission of Wired West is to deliver universal broadband Internet connectivity to its member towns, at data rates of up to 1Gb/s. Wired West operates under M.G.L. Chapter 164 Section 47c, a Massachusetts statute that permits the financing, construction and operation of electric and or telecommunications systems by groups of municipalities. As an organization, cooperatives have a long-established history in the American utility industry, whose key benefit is the sharing of resources, with the goal of reducing costs and providing greater efficiencies. As a broadband cooperative, Wired West proposes to administer and manage many of the functions that each individual MLP would be required to do as part of their ongoing network operations. An outline of the administration tasks will be discussed with greater detail within Expense Items A - I.

[1] The term Broadband is currently defined by the FCC as minimum download/upload speeds of 25/3 Mb/s, respectively.

WW Membership Structure and Requirements

As part of the Wired West plan, a municipality wishing to connect to the proposed WW regional network must first finance, build, and own their broadband network. Once built, each town remains responsible to fund and build out their network as needed, to meet additional subscriber growth. Criteria set forth by WW also necessitate member towns to select and install network equipment that will be compatible with, and interoperable with, the Wired West network.

The network to be built by WW will leverage municipal-owned fiber within each member town to create its regional network. The fiber must be provided at no cost to Wired West, and shall be made available to WW via an IRU (Indefeasible Right of Use) agreement between Wired West and the member town. All legal fees, surveying, and engineering work required to create the IRU shall be funded by each town, and the IRU must be constructed in such a way that allows WW the continued access and use of the fiber, even if a town chooses to withdraw from the WW coop at a later time. Once fiber has been reserved for WW, and the IRU is executed, Wired West will place their electronic network equipment within the centralized POP (point of presence) of the town network to create the connection to the WW regional network.

For formal connection to the Wired West network, each member town is required to sign an Operating Agreement with WW as referenced here from the WW website:

"In order to be part of the regional operation, towns must sign an Operating Agreement with WiredWest. The individual town MLP's have the authority to enter into contracts, but it's recommended that the Operational Agreement should also be reviewed and approved at a Town Meeting. When 20% of the premises in town are receiving Internet service, then the network is considered to be ***operational*** in that town. The contract term begins at this time."[2]

Strength of the WW model increases as additional towns elect to participate in the network. Once a town has completed construction and met or exceeded the 20% take-rate, there is also a process by which non-member towns may submit a petition to join WW. The board of Wired West will need to approve by ⅔ majority of the board. For connectivity to WW, and the planned regional network, there would likely be charges for equipment adds, and/or connection costs to each town.

Membership within the WW network stipulates that a town may not withdraw within five years after the town is operational, and a given town must provide notice one year in advance of withdrawing from the WW network. Depending on the satisfaction of provided services and proposed cost reductions, five years is a considerable time to be locked into a contract, and should be evaluated carefully, given that there is no operational history at this time, of WW performing the proposed functions.

[2] https://wiredwest.net/project-overview/wiredwest-regional-network-management-plan/

As a component of managing some administrative tasks of the member MLP's, Wired West plans to contract with a vendor for distributing monthly customer billing, and to handle accounts receivable. The proposed billing service will work on behalf of the cooperative so that towns will not be required to do their own billing or subscriber account collections. Uniform pricing of services and all individual service charges, are intended to be the same to all customers of the coop. If a town desires different subscriber speeds, rates, or other services, they could only do so as a single voting member of the cooperative, and would need to have agreement amongst a majority of coop members.

In order to have subscribers fund debt service, depreciation reserves, and/or other network-related costs, Towns may impose a municipal fee on subscribers that will be collected through Wired West, and then reimbursed back to the town. These fees, or surcharges, would be itemized separately on the customer bill. Subscription income will be used first to pay Wired West operation and maintenance costs, and then fund operating reserves, poles-related costs, etc. Individual MLP surcharge/fees would be reimbursed secondarily. This raises concern if there were a shortfall of revenue for WW operations, could collected fees be used in the short term to fund the gap, before being redistributed back each MLP? Further clarification is warranted to verify whether funds collected on behalf of an MLP are protected throughout the cooperative agreement and bylaws.

The proposed Wired West mechanism, if they experience an operating loss, is to increase service rates, or towns could be assessed for the shortfall. This action requires a 2/3 majority of the board, according to WW[3] proposal. Each member town delegate is permitted one vote, as a board member, and member towns would likely require town meeting approval as to how they could fund payment, whether through tax increases, or increased broadband subscriber charges.

In the event of a surplus at the end of each fiscal year, Wired West plans for the Board to vote on how excess revenue shall be retained as operational reserve, and what portion will be made available for distributions back to the towns. It is stated that any given member town must have a minimum take rate of 50% to qualify to receive distributions.

[3] https://wiredwest.net/project-overview/wiredwest-regional-network-management-plan/

Wired West Expense Comparison

To assist member towns with deciding on membership in the Wired West regional network operations model, WW developed a spreadsheet modeling tool, "Per Town Stand Alone v12-1.xls", during the September timeframe of 2017. Several cost projections were updated in the later iteration "Per Town Stand Alone v16.xls", which was recently made available in April 2018. Both spreadsheets were furnished for evaluation within this report, with findings broken down below.

The Wendell MLP has been included in the modeling tool as a member of the Wired West cooperative. Much of data used within the WW tool can be found to be referenced from two main sources, MBI Last Mile Town Profiles[4], as well as literature and publications[5] made publicly available by the Leverett MLP, based upon their practical and valuable experience. Below is the original high-level network construction and cost estimate for Wendell that was used in the WW workbook, which matches information published in the 'MBI Last Mile Town Profiles'.

- Network build cost estimate
  - $1,900,000 ($730K funding available from MBI grants)
  - 209,038' aerial fiber
- Number of poles (how will the actual # affect annual fees, insurance, etc.)
  - 1150 poles
    - Presently estimated to be up to 1600 poles (per recent Wendell survey/design estimate)
  - $517K make-ready estimate

Expense Item A - Insurance:

In the v12-1 workbook, insurance is estimated by WW to be $24,700 for each town, and is derived from the published rate paid by Leverett in 2016, $23,400, in addition to a $1,300 annual membership fee in PURMA, the Public Utilities Risk Management Association. The referenced insurance policy provides coverage for Liability (general, officials, etc.) and Property/Asset Insurance, which typically has a $10K deductible. Routine network maintenance is not covered by this insurance, and must be budgeted for as a separate expense.

The v16 workbook has insurance estimated at $5K per town, which could only change due to fewer coverage options. All liability insurance costs are established for each individual town, and are dependent on cost of network fiber and electronics, in addition to the gross revenues per town. There is

[4] http://broadband.masstech.org/sites/mbi/files/documents/building-the-network/mbi-unserved-town-profiles-2016-05-17.pdf, April, 2016.
[5] https://leverettmlp.files.wordpress.com/2017/04/leverettnet-presentation_17-04-20.pdf

no known cooperative-based discount available, as the individual towns will retain ownership of the network.

	Wired West v12-1	Wired West v16	HG&E Analysis
PURMA dues	$1,300	$1,300	$1,300
General Liability ($5K ded/$500k limit)	$23,400[6]	$3,100	$3.090
Excess Liability ($10M limit)			$3,000
Public Officials Liability ($3M limit)			
Professional Liability ($5M)			
Property Insurance/Asset Insurance		$1,900[7]	$2,265
Totals	**$24,700**	**$6,300**	**$9,655**

Table 1 – Municipal network insurance comparison

Figures presented in Table (1) are taken from the two Wired West spreadsheets used in this analysis. The cost shown in v12-1 is taken from the Leverett insurance costs in 2017, whereas the v16 cost cannot be specifically derived from a known source. The HG&E researched cost is provided as an example of the minimum premium that could be expected, and comes from PURMA. It is based upon WW projected revenue for Wendell of $233K per year.

Expense Item B – Network Equipment Power:

POP (point of presence) Electricity is the power required for the building/location/room where FTTX network electronic equipment is installed and operated. The estimate show in the WW model is $6K annually, which is a based upon (2) POP sites in Leverett. It is expected that the Wendell network will have just a single POP, thereby using half the power cost, or $3K. For an exact estimate, the detailed network equipment, HVAC system, and lighting design plans are needed.

Expense Item C – Pole Licensing & Bond:

Pole license fees are billed annually by the Power Company (National Grid) and incumbent Telephone Company (Verizon). An insurance bond for pole attachments is required, and is a relatively fixed cost year over year. These bonds provide protection to the pole owners in the event that an attacher becomes insolvent, and abandons their plant on the pole line. For a pole attachment count of 500-2000, both Verizon and National Grid require a $300K surety bond, which will cost the town 1% yearly, or $3K, in addition to pole rental fees[8].

		1150 Pole count	1600 Pole count
Surety Bond Verizon	$3,000	$3,000	$3,000
Surety Bond National Grid	$3,000	$3,000	$3,000
Joint owned pole attachment fee Verizon	$7.59	$8,729	$12,144
Joint owned pole attachment fee National Grid	$6.89	$7,924	$11,024
Estimated Total		**$22,653**	**$29,168**

[6] https://leverettmlp.files.wordpress.com/2017/04/leverettnet-presentation_17-04-20.pdf

[7] Property/asset insurance is variable and will differ for each town depending on network sized and annual revenues.

[8] https://wiredwest.net/advice-for-towns/pole-attachment-agreement-process/pole-primer/

Table 2 – Pole bond and attachment fees

The three (3) annual expenses detailed within Items A, B, and C can be considered general expenses for the operation of all municipal networks, and there is no anticipated savings with regionalization versus independent operation.

Expense Item D - Accounting:

On both version v12-1 and v16 worksheets, an expense of $8,500 is estimated annually per town by Wired West under the heading 'Accounting', but also noting he inclusion of such tasks as coordinating with ISP billing, along with paying insurance and pole licensing. The town of Leverett, in their 2016 operating and maintenance budget, allocated $3,000 for Accounting, and $5000 for Bookkeeper, Manager, and Treasurer expenses. During the HG&E analysis, an annual estimate of accounting fees for Enterprise Fund is expected to be approximately $1,000, based upon research of Franklin County Regional Council of Governments (FRCOG.org). An administrative cost $5K seems reasonable for processing the expenses of an independently operated network. There is also an expectation that the MLP, as a volunteer board, would perform some of the administration.

In contrast, the Wired West comparison estimates a cost of $8,500, or $567/town, to perform these accounting functions for the 15 member towns used in their analysis. There is certainly an expectation of greater efficiency to perform these tasks within a cooperative, but $8,500 does not appear to be practical, when considering the cost of employee salary, benefits, and overhead, that will be a necessary component of a Wired West operation.

Expense Item E - Audit:

Auditing of each municipalities network will be an annual requirement, where Wired West proposes to relieve the member towns of that function, and have auditing performed centrally. The estimated cost for WW to have auditing done for all member towns is $15K, which amounts to $1000 per town. Workbook v12-1 estimates a per town audit cost of $15K, while workbook v16 uses a more conservative estimate of $7K per town. Inquiries to the auditor for Wendell yielded a lower estimated range of $3K - $5K, or approximately $4K for audit.

Expense Item F - Legal:

There is an expectation of minimal, but necessary, legal work that will be needed for an independent MLP, such as contract negotiation with service vendors, utility correspondence, and execution of IRU agreements, etc. The Wired West comparison uses a figure of $5K, or $333 per member town. For comparison purposes, an average annual cost of $3.5K for legal fees of independent operation has been estimated.

Expense Item G - Maintenance:

Annual maintenance of any outside plant network in New England can be difficult to gauge with accuracy, and estimates are most often associated to historical maintenance costs to form a basis. Much of network maintenance is unplanned, and typically results from ice and snow damage (especially aerial drop cables), motor vehicle damage, lightning strikes, electrical burns from power, rodent, i.e. squirrel damage, and falling tree limb damage. These are the most common, but certainly not an all-inclusive list. Planned network maintenance costs also exist due to road widening projects, pole replacements, and network extensions for new subscriber growth.

Maintenance costs on an FTTH network that should be expected can be broken down to the following categories:

- OSP maintenance & repair
  - Monthly emergency standby retainer ($500 – $900 monthly cost)
  - Plant damage repair
  - Network extension or road widening
- Customer premise (CPE) repair
  - Failed ONT replacement (post warranty defects)
  - Damaged ONT replacement (i.e. Lightning)
  - Subscriber damage to ONT/drop cable
- Network Operator additional expenses
  - OLT/ONT vendor annual support contract costs
  - OLT/ONT system software upgrade costs
- Miscellaneous Costs
  - Tree trimming/removal (incident-based, not regular maintenance)
  - Generator annual maintenance
  - Propane for generator

The Wired West comparison uses historical 2016 data that was shared by Leverett[9], and compiled by a Shutesbury broadband committee member. During the analysis of this data, it was discovered that some of the early 2016 OSP maintenance costs were billed by the network operator rather than the maintenance contractor. The charges should have been grouped with other OSP maintenance, and have been re-aligned in the table below for this comparison.

	Wired West v16	Percent of Totals	Independent analysis	Percent of Totals
OSP maintenance & repair	$30,673	45.66%	$43,185	65.54%
Customer premise (CPE) repair	$1,955	2.91%	$1,955	2.97%
Network Operator additional expenses	$26,947	40.12%	$8,655	19.96%
Miscellaneous Costs	$7,598	11.31%	$7,598	11.53%
Totals	$67,173*	100.00%	$65,893*	100.00%

Table 3 – 2016 Leverett Maintenance cost breakdown

*Differences in total costs arise from two spreadsheets of the Leverett maintenance breakdown, one from Wired West, and one from Shutesbury. There were spreadsheet formula errors found, which were corrected to yield the results above. Of importance with this exercise is to highlight the impact of unforeseen OSP maintenance expenses, and their contribution to an operating expense budget.

[9] Leverett OSP repair incident analysis for 2016.xlsx

When looking at the v16 comparison workbook, assumptions made by Wired West resulted in an estimated maintenance cost of $530/mile that a member town could use for budgeting their annual network maintenance. This cost was derived from $30,673, including 148 hours, of OSP work shown in the 2016 Leverett expenses. The WW labor rate of $100/hr. for technician/truck rate was applied, and then divided by the number of fiber plant miles in Leverett. OSP Material costs were not included; tree maintenance expenses encountered by Leverett were added into the calculation. The sum of which became $22K in total maintenance applied within the WW v16 comparison.

Missing in Wired West rate is maintenance charges from the network operator, such as equipment vendor annual maintenance contracts. Costs such as these, as applied, are in addition to a monthly network operator fee. There are also no expenses added for subscriber maintenance, which post warranty on the ONT equipment, may add additional expense. For comparison to the WW maintenance estimate, a flat rate of $1050/mile is being used. This is the same rate used by OTT in their response to the Shutesbury RFI, and can be considered to be a conservative number for budgeting, reducing the risk to underfunded maintenance costs. As a proposed Wired West maintenance program gains momentum, it is believed that the projected costs of $530/mile will need to increase substantially in order to meet the needs of a regional cooperative network with the number of fiber miles and geographic area being addressed.

As portrayed, the amount and cost of maintenance on an OSP fiber network can fluctuate widely year over year, and represents the greatest variable to annual expense projections. General liability insurance is designed to help protect the municipal network from expenses due to catastrophic events, typically exceeding $10K per incident. Repairs that can be expected with a higher frequency will often fall below $10K, and tend be most common. When choosing a maintenance contractor, cost alone should not be used to determine the award, and the same stringent criteria should be used when evaluating each potential vendor. A general list of criteria to consider:

- Response time to arrive on site
    - Single outage vs. multiple subscribers
    - Where is contractor's base of operations
- Mean time to repair (MTTR)
    - Averaged monthly
    - Penalties for poor performance
    - Telecom industry-standard measurement
- Monthly standby retainer for emergency repairs
- Fixed cost/mile versus Time & Materials

The table below breaks down some of the know proposals for network maintenance of FTTH networks in the Western Massachusetts area. Costs were taken from responses to the Shutesbury RFI, as well as information from Wired West.

	Wired West (v16)[10] (Westfield Gas & Electric)	Otelco[11] OTT Communications	Westfield[12] Gas & Electric	Crocker[13] Communications	Average
Local Garaging Location	Westfield	Granby, MA	Westfield	Holyoke	
Maintenance Flat Rate (fiber plant mile)	$530	$1,050	N/A	N/A	α
Fiber Tech/Truck per hour	$100	$80	$150	$98	$109
Construction Crew/Truck per hour	$100	$80	$200	$201.25	$160
Dispatch to subscriber premise	$0 (incl. in NO fee)	$0 (incl. in NO fee)	N/A	$0 (incl. in NO fee)	β

Table 4 - Network Maintenance Cost Proposals

Expense Item H – ISP & Network Operator Costs

The ISP cost per subscriber is compared within the Wired West model using published costs from OTT and Wired West (using Westfield G&E for ISP and NO). The OTT cost of $27.95/subscriber includes 1G internet, and a $7/subscriber fee for network operations. By contrast, the Wired West proposal uses an ISP/NO fee of $29.47/subscriber for an unspecified speed. It can be assumed that this wholesale pricing by WW would be for the 1G speed, which could then be rate-limited for subscribers wanting the 25M pricing.

One important distinction with the Wired West ISP fees comes from the Westfield G&E RFI response submitted to Shutesbury, which shows a sliding scale ISP/NO fee structure, which is dependent on the number of active subscribers to the WW regional network. The $29.47 fee shown in the v16 comparison worksheet is for a subscriber count of 5,000 to 9,999. During the initial months or years of subscriber growth on the proposed Wired West network, it may be concluded that the ISP/NO fees could

[10] Per Town Stand Alone v16.xls

[11] https://docs.google.com/viewerng/viewer?url=https://wiredwest.net/2015s2/wp-content/uploads/2018/01/Shutesbury-Proposal-Final_OTT.pdf&hl=en

[12] https://docs.google.com/viewerng/viewer?url=https://wiredwest.net/2015s2/wp-content/uploads/2018/01/WGE-RFI-Response-9.1.17.pdf&hl=en

[13] https://docs.google.com/viewerng/viewer?url=https://wiredwest.net/2015s2/wp-content/uploads/2018/01/Shutesbury-RFI-Crocker-Final-Response-083117.pdf&hl=en

be higher, as shown in the table below. By contrast, there is not a sliding price structure published in the OTT response to Shutesbury RFI.

Total Internet Subscriber Count	Internet Cost	Phone Cost
0 to 249	$40.00	$12.95
250 to 499	$36.44	$12.37
500 to 999	$36.24	$12.33
1,000 to 2,499	$35.86	$12.26
2,500 to 5,000	$34.69	$12.03
5,000 to 9,999	$29.47	$11.10
10,000 to 14,999	$26.88	$10.60
15,000 to 19,999	$25.24	$10.10
20,000 or more	$22.65	$9.60

Expense Item I – Network Backhaul Cost:

As opposed to residents subscribing to an Internet service directly from an incumbent phone or cable companies, municipalities building their own network will require a high bandwidth connection from their POP location to their wholesale ISP. The MBI middle-mile network provides an efficient conduit to connect from a municipal FTTH network to an ISP's gateway. In addition to wholesale Internet bandwidth fees from an ISP, using the MBI network for backhaul will incur an additional fee, which is shown in the Wired West v16 comparison to be $14,400 annually, or $1200/month. This rate is the wholesale rate for 1G Ethernet backhaul across the MBI network, and may differ from the cost charged by an ISP. For comparison purposes, a 500M rate is used, which may be adequate for the 63% subscriber rate forecast in Wendell.

For the Wired West backhaul cost, there are no details given, other than a 60% savings to member towns. The WW regional cooperative network proposes to have two backhaul links to larger ISP networks[14], thus creating a savings to member towns. Upon start-up of a members' FTTH network, the backhaul connection is proposed to be paid by Wired West, after the first three months of operation. Prior to that, each member town must pay during the first three months of service to WW. Fiber connections within the WW regional network will rely on using the member towns' spare fiber, for connectivity to adjacent towns, and WW will install and maintain network equipment for hand-off to each FTTH OLT.

At a high level, the Wired West regional network could certainly work as planned, but without knowing specifics regarding WW equipment costs, proposed architecture, and network maintenance

[14] https://wiredwest.net/project-overview/linking-networks-form-regional-network/

costs, it is difficult to determine whether a 60% cost savings would be realized. Network equipment lifecycle costs would also need to be considered, given a 5-7 year expectation of manufacturer support with most devices.

Expense Item J – Telephone Cost:

The telephone costs per subscriber is provided within the Wired West v16 comparison model, using figures derived from both the OTT and Westfield G&E responses to the Shutesbury RFI. The costs are $14/month and $12.03/month respectively, for OTT and Westfield G&E. When taking into account the sliding cost scale being used, the cost of phone from WW/Westfield will be 7.5-14% lower per subscriber. For independent comparison, and average of both OTT and WW costs was used, amounting to $13.

Conclusion

Planning, financing, building, and operation of a FTTH network is a tremendous undertaking for any municipality, especially smaller towns with a more limited tax base, and fewer governmental resources to rely upon. Despite the huge challenge, several towns in Western and Central Massachusetts, including Wendell, have decided to pursue this task. Following the lead of Leverett, as the first municipal FTTH network activated in Massachusetts, Wendell has an important choice in how they want to have their network operated, and fortunately, there is more than one choice that can be evaluated.

The Wired West organization has performed beneficial work in gathering an abundance of information that towns choosing to build and operate their own network can use to assist them with many of the decisions they will encounter. The primary mission of WW has changed over recent years, but it remains committed to delivering a regional cooperative network that aims to provide the best value to its members. Analysis of both the v12-1 and v16 workbooks produced by WW, shows that there is continued refinement of projected costs. Some of the changes are documented, while other changes between the two versions do not reference the sourcing method. To this point, before committing to regional network membership, it would be advisable to request specific costing analysis from Wired West, including RFI responses, to qualify the validity of network operational cost estimates. This is necessary due to a lack of available performance history, and unknown experience.

The partnership of Westfield G&E with Wired West adds considerable qualification and experience to many of the operations components. Areas where it appears that WW will contract with other entities are Accounting, Auditing, and Legal. The largest cost difference of all expense items is with Maintenance, and the cost estimate by Wired West, even shared across all member towns, may be too low to cover maintenance events for the regional area. Over time, as operator of a regional cooperative network, Wired West could offer a better value to all member towns, as opposed to operating their network independently. This will ultimately be an individual decision for the Town of Wendell, after weighing the various factors that are important to the Town and MLP.

Revised Comparison - Wired West vs. Wendell Stand- Alone v16.xlsm						
		Basis*	Description WireWest Savings	Wendell	Total	
	In / Out Switch			1		
	Parameters					
	Total # Prem			436	**17,832**	
	MOU Prems			436	**7,637**	
	Seasonal subset			17	**4,891**	
	Months Seasonal Take	7		7		
	Adj Premises			429	**15,794**	
	Pre-Signup Rate			48%		
	Pre-Signup Premises			211	**6,617**	
	Assumed Take Rate Adder	15%		63%		
	Connected Premises			276	**4,427**	57.96%
	Effective Paying Premises			272	**4,022**	
	Phone Take Rate	35%		35%		
	1 Gb Take Rate	35%		35%		
Expense Item	**Expenses ($x1000/yr)**					**WW Savings**
A	Insurance	$5.0	K/town/yr	$5.00	**$70**	
	Purma Dues	$1.3	K/town/yr	$1.30		
				$9.66		
B	POP Electricity	$6.0	K/town/yr	$6.00	**$84**	
				$3.00		
C	Pole Lic	$14.98	/pole/yr	$17.23	**$284**	
	Pole bond	$6.00	K/town/yr	$6.00		
	Independent Pole Bond/License estimate			$22.65		
D	Accounting, etc	$8.5	K/town/yr	$8.50	**$119**	
	Accounting, etc WW	$8.5		$0.61	**$9**	**$111**
	Independent Accounting estimate			$6.00		
E	Audit	$7.0	K/town/yr	$7.00	**$98**	
	Audit WW	$15.0		$1.07	**$15**	**$83**
	Independent Audit estimate			$4.00		
F	Legal	$5.0	K/town	$5.00	**$70**	
	Legal WW	$5.0		$0.36	**$5**	**$65**
	Independent Legal estimate			$3.50		
G	Maint OTT	$1,226	/mile	$48.54	**$833**	
	Maint WW	$530	/mile	$27.34	**$462**	**$371**
	Independent Maint estimate	$1,050		$47.93		

		Basis*	Description WireWest Savings	Wendell	Total	
	ISP + NetOp OTT	$27.95	/cst/mnth	$91.21	**$1,349**	
H	ISP + NetOp WW	$29.47	/cst/mnth	$96.17	**$1,422**	**-$73**
	Independent ISP + NetOp estimate	$27.95	/cst/mnth	$91.21		
	Back-haul	$14.40	see below	$14.40	**$229**	
I	Back-haul WW		60%	$6.54	**$92**	**$137**
	Back-haul - 500M	$10.8		$10.80		
	Telephone OTT	$14.00	/cst/mnth	$15.99	**$236**	
J	Telephone WW	$12.03	/cst/mnth	$13.74	**$203**	**$33**
	Independent Phone estimate (averaged)	$13.00	/cst/mnth	$14.85		
	Total Expenses - Alone			**$226.16**	$3,274	
	Total Expenses - in WW			**$181.35**	$2,630	
	Total Expenses - Independent Analysis			**$213.59**		
	Difference Stand Alone - WW			**$44.81**	**$727**	**$727**
	Difference Stand Alone - Independent			**$32.24**		
	Total Town Expense in WW			$165	**$2,525**	
	Total WW Expense (Accounting + Audit + Legal + Backhaul)			$9	**$120**	**$2,645**
	Revenue ($x1000/yr)					
	Internet (1 Gbps)	$75.00	/cust/mnth	$86	**$1,267**	
	Internet (25 Mbps)	$59.00	/cust/mnth	$125	**$1,851**	
	Phone	$19.00	/cust/mnth	$22	**$321**	
	Gross Income			**$233**	**$3,439**	**$3,439**
	Gross Income Percent			**6.8%**	**100%**	
	Excess Revenue Stand Alone			**$6**	**$60**	
	Excess Revenue - Independent Analysis			**$19**		
	Legal, Accounting, Audit, and Backhaul are shared Wiredwest Services not attributable to a town's net					
	Gross income - Total Town Expense in WW			$67	**$914**	
	towns less zero don't share			$67	**$914**	
	TOWN SHARE PERCENT			7.3%	**100%**	
	WW Revenue Share For Profitable Towns Only			**$58.22**	**$794**	
	Monthly tax for $300,000 house			$11.20		
	Information					
	Aerial Footg			209,038	**8,043,281**	
	Aerial Miles			40	**1,523**	
	# poles			1,150	**42,220**	
	Poles per Paying Prem			4.2		
	Miles per Paying Prem			0.15		
	Total Valuation			$ 92,796,248		