



2017 Technology Planning Guide

Budget Narrative with 2018 Forecast (revision 3.1)

For assisting libraries in the planning of 2017 budgets.

Accepted by WVLS Board of Trustees May 21, 2016

Introduction:

This year, 2016, is the second “normalized” year for Network and Enterprise Services (NES) in WVLS. Even as we work to cultivate stability in some of the most demanded services, opportunity and serendipity continue to drive us toward change. It’s basically a cliché in our era to say “technology changes”. As it does, so does the strategy to pursue, implement, and support the use of technology weave and flow in a perpetually fluid dance between needs, desires, viable solutions, and available resources. During late 2014, then through 2015 and into 2016, while striving to maintain quality in the NES platform, WVLS also formed and continues to develop a promising resource sharing partnership with Indianhead Federated Library System (IFLS).

That partnership is already allowing us to continue to increase the breadth of technology services in the NES platform. We keep pushing ourselves to move at a fast pace, to continue to grow technology services for WVLS member libraries, but we were at a point of human resources saturation nearing the end of 2014. We are again coming to a point of saturation, but have an entirely new horizon of opportunities out in front of us in our partnership with IFLS. 2016 through 2018 will be a time of much structural change behind the technology services and support scene for WVLS technology strategy, including infrastructure management and support.

One of the most exciting aspects of this is the inclusion of key portions of networking equipment into the NES model. In the past, libraries were responsible for all local equipment. This included routers, switches, and wireless access points along with computers. We’re not quite to the point where we can completely offload computer lifecycle management and acquisition across the entire system, but we’re positioning for doing just that with routers and wireless access points during 2016 and 2017, and for switches in 2017. These are key network equipment categories which are required for connecting staff computers to the WVLS WAN, in order to maintain connectivity to the ILS as well as other centrally coordinated services, and in order for staff and patron computers and resources to access the Internet.

We can all leverage a normalization of equipment types along with economies of scale to reduce the overall cost for each library of managing lifecycle plans, and financing capital replacement costs individually. With a unified product set and management tools for these classes of networking equipment, we can be more aware of the state of devices, more easily support them, and handle lifecycle maintenance almost transparently to your libraries. This gets us closer yet to cultivating and maintaining a state of “the network works, and if there’s an issue, it’s covered” for just about every aspect of the WVLS WAN other than computers themselves. And we’ll be talking to you all about addressing that too, soon enough.

There are some changes from the 2017 forecast included in last year's Budgeting Guide. The core of NES now includes the router maintenance component, which had been a separate cost column. Hence, the router maintenance column now reflects a zero cost. The libraries using Charter still have a more comprehensive security license (aptly titled 'Comprehensive Gateway Security Suite') which is a bit more expensive than the standard maintenance licenses, as those libraries' networks are directly exposed to the Internet and require additional security. This cost difference is reflected in the 2017 sheet, but has been equalized with other libraries router maintenance costs in the 2018 forecast due to planned equipment and licensing type changes.

A nominal increase from 2016 to 2017 is reflected in the computer column of the 2017 Details sheet which accounts for an update on the overall pricing of Faronics Deep Freeze Cloud and Cloud Antivirus licensing. We use 2017 as a bridge year, and 2018 as the final target to help ease the burden of the nominal cost increases over two years. With a small component of the NES based on the number of staff and patron computers in use at a library, there continues to be a potential for error. If there are any discrepancies in the actual computer count and the count used on the details sheets, please let us know so we can adjust them. The following narrative is intended to help libraries understand fixed and potential technology services costs for the 2017 fiscal year and beyond.

One of the most valuable benefits to the NES continues to be the aggregation of several services, allowing us to acquire licensing in volume at significantly lower costs. Though the Faronics licensing costs did go up, this was in part due to the fact that we had artificially low licensing costs for the past few years. Faronics did not charge for the base license cost of Deep Freeze in the past, just the annual maintenance. NES cost sharing is based on a core component similar for all libraries, and then a \$17.00 per computer variable component to equitably share costs with libraries based on quantities of "per computer" resources in use, such as Deep Freeze licensing. This composite cost which covers several services, is still less per computer than Antivirus alone was in 2009-2010.

Network and Enterprise Services (NES):

Previous guides, as well as the introduction, above, have described the evolution of NES. A library subscribes to the network, and as subscriber receives network access benefits. Some of the components are variable depending on the number of computers a library supports, but the variable component has been tied nicely to a computer count for simplicity. Please help us make sure our counts are accurate in any given year.

Here is a list of most of the NES benefits:

- Network (BCN or IPSEC) Access - required for Sierra Desktop, Managed Antivirus, Managed Deep Freeze, Managed Firewall/Network Security, Internet access (for BCN users), as well as some other “back-end” network utility stuff like DHCP and DNS.
- Internet Transit Services – Required for Internet Access by BCN users, Required for IPSEC tunnel access by Charter and/or other 3rd party ISP users.

Please Note: Some libraries gain access to the Internet through a BCN connection to WVLS and some libraries utilize IPSEC (VPN) tunnels over Charter Business Internet services to connect to the WVLS WAN through WiscNet Internet services. In either case, the WiscNet Internet transit service is very important for the future growth of our system's and members' network capacity. Also remember, all of the patrons who access our online catalog, our sponsored online databases and digital content such as Overdrive from their homes are either connecting to us directly, or indirectly authenticating with us through our WiscNet Internet service. Informative advocacy remains important!

- Antivirus – as many licenses as your library has computers (including servers).
- Deep Freeze – as many desktop licenses as your library has computers.
- Email accounts – unlimited, within reason. Two per staff member? Sure, why not... 2,000 for Loyal? No.
 - Libraries may also request accounts for use by seated board members.
- Microsoft Office Desktop, Online, and Mobile Licensing for Library Staff members.
- Innovative's Patron Authentication API support – for third party products like PC Timing software.
 - We are investigating available timing software options and costs, including partnership options with IFLS and/or other library system partners. In early 2016, MCPL migrated from its dated timing software platform to a product called CASSIE. Several libraries are using Time IT, which was recently sold to a smaller vendor. One library is still using PC Cop.
- SIP2, Web Access Management, Z39.50 support – for third party products, online resource vendors, etc.
- TEACH/BCN/3rd Party ISP management and support facilitation.
- WVLS Microsoft Academic Select+ Volume Licensing affiliation – save money on MS products like Office even if you don't have a Tech Soup account or can't get enough licenses through it.
- ResCarta (or similar) Digital Collections Platform Access with at least 100GB of storage.
- Business Class Webhosting Space with lots of storage space and individual accounts for your websites.

The NESS covers a lot, but you'll still need to budget for other technology related services, software, and capital. WVLS recommends that each library maintains or develops a "replacement/maintenance" fund, committing approximately 1/5th (for 5 year lifecycle) of capital replacement and software licensing costs to the fund each year until the fund has at least 80% of the total replacement cost established. **100% is better.** As most of you know, it's best to plan for a five year lifecycle, and then let equipment live a little longer, than it is to deal with forced replacement costs with no supporting budget.

Router lifecycle management and maintenance are now included in NES. There will be no need for standard NES subscribers to budget for router replacement acquisition and installation expenses. This covers vendor support, service licensing, and router replacement. Libraries no longer need to budget approximately \$2500 toward the future cost of a replacement router.

Wireless Access Point (WAP) replacements are also now included in NES. There will be no need for standard NES subscribers to budget for WAP replacement acquisition and installation expenses. This covers vendor support, service licensing, and WAP replacement. Libraries no longer need to budget approximately \$100 each toward the future cost of replacement WAPs, but may still need to account for installation costs in some cases.

Inclusion of network switches into NES is planned for 2017. If a critical need for network switch replacement occurs during the remainder of 2016 or early 2017, we will work with your library on a case by case basis to determine if we can accelerate WVLS managed switch acquisition. For now, we recommend budgeting for the replacement costs into 2017 to be safe.

Some other things which you may still need to budget for:

- Desktop/Tower computers (\$850ea or \$170ea/yr)
- Desktop Computer Displays (\$150ea or \$30-\$50/yr)
- Virtual Circ Desk Station Subscription (\$125-\$400/yr – depending on equipment needs)
- Chromebox/Chromebook for WebPAC or other use (\$200-\$400ea)
- Raspberry PI for Online Catalog or other use (\$50-\$80ea)
- Android Mini PC for Online Catalog or other use (\$60-\$150ea)
- Laptops (\$1250ea or \$250ea/yr)
- Servers (\$4500 or \$900/yr)
- Switches (\$800 - \$1400 or \$160-\$240/yr)
- Supporting equipment such as Uninterrupted Power Supplies (UPS), surge strips, network cables, etc.
- PC Timing Software (plan for at least \$150 per seat initial cost with 20% maintenance annually).
- Software licensing: PDF Editors, Marketing/Promotional Media apps, financial apps, and other software.
- PC and Network Support services (from \$50/hr via WVLS to \$100+/hr for various local vendors).

Optional Technology Services:

Virtual Desktop Station:

WVLS has developed the Virtual Desktop Station. This is a virtual computer which operates directly on the WVLS virtualization platform, and has direct 1Gbps network speed access to the Sierra ILS servers. There are several benefits to the Virtual Desktop Station over the use of a traditional PC for a similar purpose.

Lower cost is one factor. These cost about \$150 per year to operate (including electricity) and require no large, up-front capital expenditure from the library. Management overhead is much less than with a typical PC so your valuable staff time is available for other functions. They are fast. Operating at network speeds allows for Sierra usage experience similar to that of WVLS staff operating on-network in our offices. They are easy to fix. Sierra or Windows stops working? We can have the virtual machine reset or even rebuilt from scratch, often in less time than it takes to go through a single round of troubleshooting for a PC.

Though they can work well for specific purposes, they are not absolutely ideal for all purposes. We are currently focusing on a specific use, Circulation desk and/or Cataloging stations. They do support Internet access and web browsing so any web based application should be available, but we do not yet have a support or licensing model for adding other tools like Microsoft Office. They are remote. While the virtual machine being on the WVLS network allows for a faster Sierra usage experience, you still have to be able to connect to the WVLS network to get access to the virtual computer. If your Internet is down, there is no desktop on which to bring up Notepad and scan in barcodes for manual entry later.

There are many cases where these make sense, and some libraries are already using them effectively. As aging circulation desk computers fail, and replacement strategies are being investigated, we encourage you to discuss the viability of a Virtual Desktop Station with us.

Low Cost, Narrow Purpose Computing:

We have worked with Raspberry PIs to develop an effective Online Catalog Station. The experiences from the libraries which experimented with these devices in a cataloging station scenario early on was mixed. There are some libraries currently using Raspberry PIs and finding success. WVLS can refer libraries to vendor sites so they may purchase Raspberry PIs directly, and we have several devices which libraries may use for experimentation or programming.

We have also developed an Android Mini PC as cataloging station solution.

Librarians can purchase any of these or similar devices at their prerogative. They typically cost between \$50 and \$100 dollars, and operate on about 1/10th the electricity as a standard PC. WVLS can offer Technical Support services, to help libraries configure and/or maintain Raspberry PIs or Android Mini PCs.

WVLS Technology Support Services:

WVLS offers PC and Network support services at \$50 per hour through December 2016. This is an optional service that stands alone. We do encourage libraries to leverage our services as a primary option when appropriate, though we do not have enough human resources for every library to use WVLS support services exclusively though, so continue to encourage cordial relationships with your local vendors, and think of ourselves as supplemental, not as a replacement.

WVLS is no longer supporting blocks. The Support Block concept works better in private sector environments, but can cause confusion and troubles with libraries trying to wrap needs into clean fiscal calendars.

For Your Budgeting Purposes:

\$50.00 WVLS hourly rate for PC and Network Services. 30 minute minimum charge with billing invoiced in 15 minute increments beyond the first 30 minutes.

Evolution of WVLS Technology Support Services:

If your library, or some group of libraries is interested in a less variable budgeting mechanism for PC and Network support, please let us know. We've heard from enough libraries now to start experimenting with a transition from case-by-case supplemental PC and local network support services model to full services model. However, we're still interested in hearing from as many of you as possible about your needs, and your desires for balancing service quality and service costs.

This is a natural direction for growth of services, as the demand for local PC and network support has been increasing to the point of saturation. WVLS will develop a fixed-budget cost sharing model around a more integral Technology Services experience. Benefits will include proactive technology planning, technology equipment lifecycle management, and general technology equipment maintenance.

The stability offered by a fixed cost model will ensure WVLS can mitigate the risk of service attenuation and implement a significantly more efficient technology support structure. This means fewer incidents of technical support need will be experienced overall, such cases will be able to be served more quickly and efficiently than our current heterogeneous topology, thus offering WVLS the opportunity to support unfettered access to technical support. The proposed model would look something like this:

- Technology Plan and Budget: Development, Implementation, and Maintenance
 - Technology Planning Assistance is already available as a (free) Library System Member Benefit. We work with libraries upon request, and find one of the biggest challenges to be the time commitment required by library staff to help inform the meaningful development of assessments and plans.
 - In a more integrated model of services, the Technology Plan Development and Maintenance would become the core part of the whole Technology Service Platform, and would involve the actual drafting of technology plans and corresponding technology-specific budget proposals, including long-range budget forecasting. These

- tools would then be available for participating libraries to leverage directly, or as guidelines for self-management of those same processes within the library.
- Leveraging the new ERate model would be more feasible for WVLS to help libraries leverage directly, through better awareness of the states of local assets, including local infrastructure conditions in each participating library.
 - PC and Network Equipment Lifecycle Management
 - In synergy with the Technology Planning and Budgeting WVLS would provide execution of the PC and Network Equipment Lifecycle Management. Proactive management of systems' lifecycles would reduce the number of reactive support incidents, especially related to much of end-of-lifecycle computers and equipment still operating across many of the libraries.
 - Capital lifecycle planning and replacement/growth budgeting significantly inform each other, both annually and over multi-year lifecycles.
 - Technology capital acquisition processes, data and/or application migration processes, and replacement processes would all become highly de-duplicated across the participating membership.
 - Proactive maintenance of technology capital health as a core service in the lifecycle management would also reduce the number of reactive support incidents, especially related to issues which are measurable and/or detectable automatically. Non-disruptive solutions would be employed in many cases to resolve issues before users even become aware of them. Disruptive solutions would be scheduled, but in many cases WVLS proactive health monitoring would lead to technology support staff notifying the library of an issue before library staff were aware of it.
 - Costs
 - The primary goal of WVLS Technology Support Services is to help libraries continue to pursue greater efficiencies within two key strategic veins:
 - Acquisition, implementation, and maintenance of technology solutions.
 - Utilization of technology solutions in serving business operations.
 - To achieve this model, WVLS recognizes that it would need to work closely with libraries to keep services within existing budgets and planned expenditures.
 - Existing operational expenditures would be worked with and system-wide efficiencies will be leveraged to help normalize multi-year planned expenditures, to help all participants achieve fully viable lifecycle plans.
 - WVLS would work closely with libraries, especially smaller libraries with less relative "wiggle room" in their budgets to maximize local funding potentials as the primary focus.

- During the first few years of transition, WVLS would also work closely with all libraries to supplement local funding capabilities with strategic use of LSTA Technology Block grant funds, ERate subsidies, and other outside funding opportunities. This transition strategy would be leveraged to help libraries strengthen existing lifecycle plans and to build or enhance such plans where participants feel they are non-existent or inadequate.
- While there may be some cost increases on a case by case basis, mostly related to lifecycle planning and capital equipment replacement funding per library, WVLS will strive to help libraries plan for budgets within current means to the extent possible.

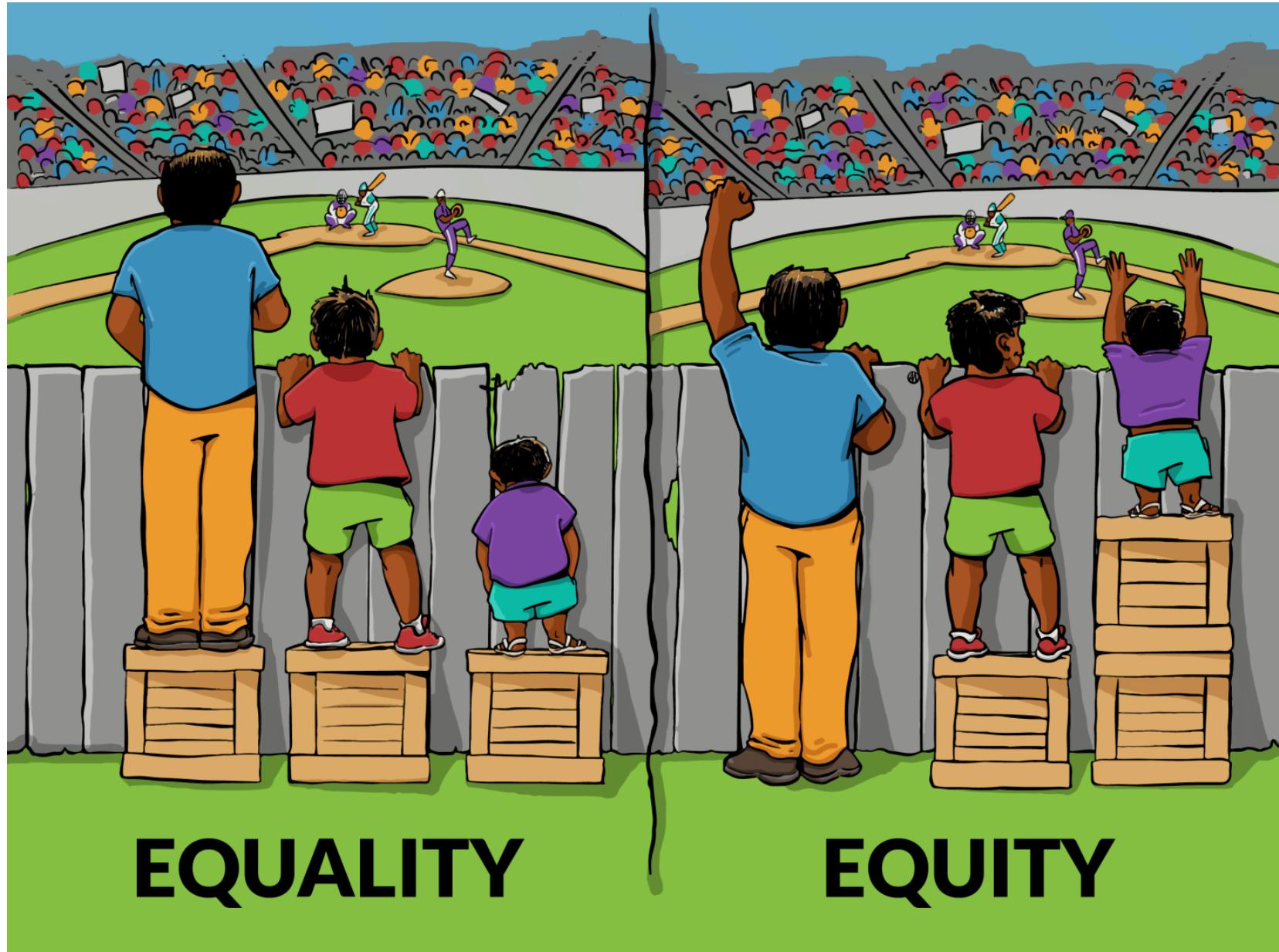
Looking forward:

Change is a thing almost tangible in human cultures. We pontificate about it endlessly, as it is foundational to the universe in which we live. We generate clichés and repeat them perpetually, exactly because it is a thing that is always with us, forever pressuring us to abandon the now in exchange for the soon to be. There are as many languages of change as there are ways of predicting the future, a limit approaching infinity. The size of change is relative to its wearer. Climate change may affect the entirety of humanity over time, but the weight of it on any one human today might be infinitesimal. Road projects in a small town in Northern Wisconsin may have little impact on humanity as a whole, but it may represent lifeblood to the machinery operator living in that community. A job that keeps a family sustained for some months or even years.

Wisconsin Libraries and Library Systems currently find themselves immersed in one microscopic conversation, utilizing one narrow dialect of one small language of change: The Public Library System Redesign (PLSR) idea. Yet for librarians in Wisconsin, library workers, library system staff, and certainly library users this may be one of the largest conversations of our careers. The PLSR idea may become an agent of change, a force of change pressuring the Wisconsin library community to move from the now to the soon to be. It is just as possible (maybe more so) that the already-established landscape of change across which the Wisconsin library community has been navigating at an accelerating rate, will push the Wisconsin library community from the now to the soon to be at a faster pace than that at which the PLSR can keep up.

WVLS is always looking toward that “soon to be.” That is true across all WVLS services. We move at varying speeds, doing our best to balance available resources and demands for service to achieve positive momentum. Some services do well with a slower change process, and some services find viability difficult without a faster change process. The WVLS Technology Service still has much room for improvement and growth. The use of technology in this system, in our neighboring systems, in our current partners and future partners all has room for improvement and growth.

WVLS will continue to work hard to provide libraries with access to ever-better technology, and ever-better services supporting and utilizing that technology. From a technology service provider perspective, we may dilute or obfuscate or remove entirely our sense of identity and “branding” of these services, in order to flatten barriers so that we may more readily form additional partnerships, stronger partnerships with other Library Systems and even other types of institutions. We will strive to achieve the goal of presenting all patrons, and all of their libraries in Wisconsin with an equitable experience.



<http://interactioninstitute.org/illustrating-equality-vs-equity/>

2017 Estimated Network and Enterprise Services Expense

Detail (subject to change)

WVLS Member Libraries	PCs ²			Virtual Desktops	+ Router Maint	2017 BCN / TEACH ⁴		2017 Network Expenses	2016 Network Expenses	Ave. % Change	
		Base	+ PC ²			2017 NESS	TEACH ⁴			Change from 2016	Change Per Site
Abbotsford Public Library	17	\$ 1,050.00	\$ 289.00		\$ -	\$ 1,339.00	\$ 1,200.00	\$ 2,539.00	\$ 2,465.00	\$ 74.00	3.0%
Antigo Public Library	45	\$ 3,600.00	\$ 765.00	\$ 160.00	\$ -	\$ 4,525.00	\$ 3,600.00	\$ 8,125.00	\$ 7,730.00	\$ 395.00	1.3%
Colby Public Library	11	\$ 1,050.00	\$ 187.00		\$ -	\$ 1,237.00	\$ 1,200.00	\$ 2,437.00	\$ 2,375.00	\$ 62.00	2.6%
Crandon Public Library	10	\$ 1,050.00	\$ 170.00		\$ -	\$ 1,220.00	\$ 1,200.00	\$ 2,420.00	\$ 2,360.00	\$ 60.00	2.5%
Dorchester Public Library	8	\$ 1,050.00	\$ 136.00		\$ -	\$ 1,186.00	\$ 1,200.00	\$ 2,386.00	\$ 2,330.00	\$ 56.00	2.4%
Edith Evans Memorial Library (Laona)	9	\$ 1,050.00	\$ 153.00		\$ -	\$ 1,203.00	\$ 1,200.00	\$ 2,403.00	\$ 2,345.00	\$ 58.00	2.5%
Edward U. Demmer Memorial Library (Three Lakes)	14	\$ 1,050.00	\$ 238.00		\$ -	\$ 1,288.00	\$ 1,200.00	\$ 2,488.00	\$ 2,420.00	\$ 68.00	2.8%
Frances L. Simek Memorial Library (Medford)	22	\$ 1,220.00	\$ 374.00		\$ -	\$ 1,594.00	\$ -	\$ 1,594.00	\$ 1,505.00	\$ 89.00	5.9%
Granton Community Library	6	\$ 1,050.00	\$ 102.00		\$ -	\$ 1,152.00	\$ -	\$ 1,152.00	\$ 1,100.00	\$ 52.00	4.7%
Greenwood Public Library	8	\$ 1,050.00	\$ 136.00		\$ -	\$ 1,186.00	\$ 1,200.00	\$ 2,386.00	\$ 2,330.00	\$ 56.00	2.4%
Jean M. Thomsen Memorial Library (Stetsonville)	11	\$ 1,050.00	\$ 187.00		\$ -	\$ 1,237.00	\$ 1,200.00	\$ 2,437.00	\$ 2,375.00	\$ 62.00	2.6%
Loyal Public Library	9	\$ 1,050.00	\$ 153.00		\$ -	\$ 1,203.00	\$ 1,200.00	\$ 2,403.00	\$ 2,345.00	\$ 58.00	2.5%
Minocqua Public Library	32	\$ 1,050.00	\$ 544.00		\$ -	\$ 1,594.00	\$ 3,000.00	\$ 4,594.00	\$ 1,655.00	\$ 2,939.00	177.6%
Neillsville Public Library	12	\$ 1,220.00	\$ 204.00		\$ -	\$ 1,424.00	\$ 1,200.00	\$ 2,624.00	\$ 2,555.00	\$ 69.00	2.7%
Owen Public Library	5	\$ 1,050.00	\$ 85.00	\$ 160.00	\$ -	\$ 1,295.00	\$ 1,200.00	\$ 2,495.00	\$ 2,285.00	\$ 210.00	9.2%
Rhinelander District Library	42	\$ 1,220.00	\$ 714.00		\$ -	\$ 1,934.00	\$ -	\$ 1,934.00	\$ 1,805.00	\$ 129.00	7.1%
Rib Lake Public Library	12	\$ 1,050.00	\$ 204.00		\$ -	\$ 1,254.00	\$ 1,200.00	\$ 2,454.00	\$ 2,390.00	\$ 64.00	2.7%
T.B. Scott Free Library (Merrill)	44	\$ 1,050.00	\$ 748.00		\$ -	\$ 1,798.00	\$ 3,000.00	\$ 4,798.00	\$ 4,670.00	\$ 128.00	2.7%
Thorp Public Library	9	\$ 1,050.00	\$ 153.00		\$ -	\$ 1,203.00	\$ 1,200.00	\$ 2,403.00	\$ 2,345.00	\$ 58.00	2.5%
Tomahawk Public Library	15	\$ 1,220.00	\$ 255.00	\$ 430.00	\$ -	\$ 1,905.00	\$ -	\$ 1,905.00	\$ 1,300.00	\$ 605.00	46.5%
Wabeno ¹	7	\$ 1,050.00	\$ 119.00		\$ -	\$ 1,169.00	\$ -	\$ 1,169.00	\$ 1,115.00	\$ 54.00	4.8%
Westboro Public Library	8	\$ 1,050.00	\$ 136.00		\$ -	\$ 1,186.00	\$ 1,200.00	\$ 2,386.00	\$ 2,330.00	\$ 56.00	2.4%
Western Taylor County Public Library	7	\$ 1,050.00	\$ 119.00		\$ -	\$ 1,169.00	\$ 1,200.00	\$ 2,369.00	\$ 2,345.00	\$ 24.00	1.0%
Withee Public Library	7	\$ 1,050.00	\$ 119.00		\$ -	\$ 1,169.00	\$ 1,200.00	\$ 2,369.00	\$ 2,315.00	\$ 54.00	2.3%
Wisconsin Valley Library Service	25	\$ 1,050.00	\$ 425.00		N/A	\$ 1,475.00					
SubTotal	388	\$ 28,430.00	\$ 6,596.00		\$ -	\$ 35,776.00					
Marathon County Public Library ⁵		145 (est)				\$ 7,500.00	(port rate)	\$ 7,500.00	\$ 6,500.00	\$ 1,000.00	1.7%
Total	513	\$ 28,430.00	\$ 6,596.00		\$ -	\$ 43,276.00					

2017 Estimated Network and Enterprise Services Expense

Detail (subject to change)

¹ Wabeno does not currently have network access and does not currently receive NESS benefits so is not considered in the totals.

² Traditional staff or patron computers only. Does not include thin clients, lightweight computing devices (eg Chromebox or Android Mini PC).

³ Router maintenance has been moved into the base cost of NESS, which now includes capital replacement.

⁴ Based on current usage status. BCN / TEACH lines are billed to WVLS and passed through to the library. If your library is no longer using a BCN data line (ie. Migrated to Charter) then please remember to budget appropriately for your data line.

⁵ MCPL receives a single, discounted port rate for all branches as it self-manages its own WAN interconnections. Shared license costs are built in (also discounted due to lower relative usage).

NOTE: It is recommended that libraries budget for approximately 1/5th of the replacement cost of capital equipment (PCs, routers, switches, etc.) each year until a fund has been established which can cover the cost of at least 80% of all equipment. To help save money, replacements can be pushed beyond five years.

During 2016 WVLS is preparing to incorporate routers, switches, and wireless access points into NES during the 2017 and 2018 years. \$2500 was the 5 year replacement cost for your library's router, but that has now been incorporated into NES at a reduced rate. \$800 for each 48 port switch and \$600 for each 24 port switch were the 5 year replacement costs to budget for switches, though that is planned for incorporation into NES in 2018 (so please consult with WLVS prior to any switch replacement/addition purchases). WVLS is also incorporating the former \$150 per Wireless Access Point (typically 2-4 per library ... 5-7 for larger libraries) costs into NES, your library will no longer need to budget for these separately. Any reserve budgets that were being built up by your library for future capital replacement of these devices could be reappropriated to the nominal increase in NES and to other capital replacement purposes, such as computers. We continue to recommend budgeting \$900 per desktop computer; \$1300 per laptop; and \$3500 per physical server.

2018 Estimated Network and Enterprise Services Expense

Detail (subject to change)

WVLS Member Libraries	PCs ²	Virtual			+Integrated Services	2016 NESS	2017 BCN / TEACH ⁴	2018 Network Expenses	2017 Network Expenses	Change from 2017	Ave. % Change Per Site
		Base	+ PC ²	Desktops							
Abbotsford Public Library	17	\$ 1,200.00	\$ 340.00		\$ 1,500.00	\$ 3,040.00	\$ 1,200.00	\$ 4,240.00	\$ 2,539.00	\$ 1,701.00	67.0%
Antigo Public Library	45	\$ 4,300.00	\$ 900.00	\$ 160.00	\$ 2,500.00	\$ 7,860.00	\$ 3,600.00	\$ 11,460.00	\$ 8,125.00	\$ 3,335.00	10.3%
Colby Public Library	11	\$ 1,200.00	\$ 220.00		\$ 1,500.00	\$ 2,920.00	\$ 1,200.00	\$ 4,120.00	\$ 2,437.00	\$ 1,683.00	69.1%
Crandon Public Library	10	\$ 1,200.00	\$ 200.00		\$ 1,500.00	\$ 2,900.00	\$ 1,200.00	\$ 4,100.00	\$ 2,420.00	\$ 1,680.00	69.4%
Dorchester Public Library	8	\$ 1,200.00	\$ 160.00		\$ 500.00	\$ 1,860.00	\$ 1,200.00	\$ 3,060.00	\$ 2,386.00	\$ 674.00	28.2%
Edith Evans Memorial Library (Laona)	9	\$ 1,200.00	\$ 180.00		\$ 500.00	\$ 1,880.00	\$ 1,200.00	\$ 3,080.00	\$ 2,403.00	\$ 677.00	28.2%
Edward U. Demmer Memorial Library (Three Lakes)	14	\$ 1,200.00	\$ 280.00		\$ 1,500.00	\$ 2,980.00	\$ 1,200.00	\$ 4,180.00	\$ 2,488.00	\$ 1,692.00	68.0%
Frances L. Simek Memorial Library (Medford)	22	\$ 1,400.00	\$ 440.00		\$ 1,500.00	\$ 3,340.00	\$ -	\$ 3,340.00	\$ 1,594.00	\$ 1,746.00	109.5%
Granton Community Library	6	\$ 1,200.00	\$ 120.00		\$ 500.00	\$ 1,820.00	\$ -	\$ 1,820.00	\$ 1,152.00	\$ 668.00	58.0%
Greenwood Public Library	8	\$ 1,200.00	\$ 160.00		\$ 500.00	\$ 1,860.00	\$ 1,200.00	\$ 3,060.00	\$ 2,386.00	\$ 674.00	28.2%
Jean M. Thomsen Memorial Library (Stetsonville)	11	\$ 1,200.00	\$ 220.00		\$ 1,500.00	\$ 2,920.00	\$ 1,200.00	\$ 4,120.00	\$ 2,437.00	\$ 1,683.00	69.1%
Loyal Public Library	9	\$ 1,200.00	\$ 180.00		\$ 500.00	\$ 1,880.00	\$ 1,200.00	\$ 3,080.00	\$ 2,403.00	\$ 677.00	28.2%
Minocqua Public Library	32	\$ 1,400.00	\$ 640.00		\$ 2,500.00	\$ 4,540.00	\$ 3,000.00	\$ 7,540.00	\$ 4,594.00	\$ 2,946.00	64.1%
Neillsville Public Library	12	\$ 1,200.00	\$ 240.00		\$ 1,500.00	\$ 2,940.00	\$ 1,200.00	\$ 4,140.00	\$ 2,624.00	\$ 1,516.00	57.8%
Owen Public Library	5	\$ 1,200.00	\$ 100.00	\$ 160.00	\$ 500.00	\$ 1,960.00	\$ 1,200.00	\$ 3,160.00	\$ 2,495.00	\$ 665.00	26.7%
Rhinelander District Library	42	\$ 1,400.00	\$ 840.00		\$ 2,500.00	\$ 4,740.00	\$ -	\$ 4,740.00	\$ 1,934.00	\$ 2,806.00	145.1%
Rib Lake Public Library	12	\$ 1,200.00	\$ 240.00		\$ 1,500.00	\$ 2,940.00	\$ 1,200.00	\$ 4,140.00	\$ 2,454.00	\$ 1,686.00	68.7%
T.B. Scott Free Library (Merrill)	44	\$ 1,400.00	\$ 880.00		\$ 2,500.00	\$ 4,780.00	\$ 3,000.00	\$ 7,780.00	\$ 4,798.00	\$ 2,982.00	62.2%
Thorp Public Library	9	\$ 1,200.00	\$ 180.00		\$ 500.00	\$ 1,880.00	\$ 1,200.00	\$ 3,080.00	\$ 2,403.00	\$ 677.00	28.2%
Tomahawk Public Library	15	\$ 1,400.00	\$ 300.00	\$ 430.00	\$ 1,500.00	\$ 3,630.00	\$ -	\$ 3,630.00	\$ 1,905.00	\$ 1,725.00	90.6%
Wabeno¹	7	\$ 1,200.00	\$ 140.00		\$ 500.00	\$ 1,840.00	\$ -	\$ 1,840.00	\$ 1,169.00	\$ 671.00	57.4%
Westboro Public Library	8	\$ 1,200.00	\$ 160.00		\$ 500.00	\$ 1,860.00	\$ 1,200.00	\$ 3,060.00	\$ 2,386.00	\$ 674.00	28.2%
Western Taylor County Public Library	9	\$ 1,200.00	\$ 180.00		\$ 500.00	\$ 1,880.00	\$ 1,200.00	\$ 3,080.00	\$ 2,369.00	\$ 711.00	30.0%
Withee Public Library	7	\$ 1,200.00	\$ 140.00		\$ 500.00	\$ 1,840.00	\$ 1,200.00	\$ 3,040.00	\$ 2,369.00	\$ 671.00	28.3%
Wisconsin Valley Library Service	25	\$ 1,200.00	\$ 500.00		N/A	\$ 1,700.00					
SubTotal	390	\$ 32,900.00	\$ 7,800.00		\$ 28,500.00	\$ 69,950.00					
Marathon County Public Library ⁵	145 (est)				\$ 7,800.00	(port rate)	\$ 7,800.00	\$ 7,500.00	\$ 300.00	0.4%	
Total	515	\$ 32,900.00	\$ 7,800.00		\$ 28,500.00	\$ 77,750.00					

2018 Estimated Network and Enterprise Services Expense

Detail (subject to change)

¹ Wabeno does not currently have network access and does not currently receive NESS benefits so is not considered in the totals.

² Traditional staff or patron computers only. Does not include thin clients, lightweight computing devices (eg Chromebox or Android Mini PC).

³ This is a new column. Integrated services will be highly variable, and almost entirely specific to each participating library. To begin thinking about what this might mean for your library, consider collecting all of the planned and approximate technology expenditures for an average year in your library. Approximately 1/7 - 1/5 of the replacement cost of your library's technology-related capital may be a good starting target. This is not an additive cost to existing budgets, but an accounting of technology-related expenditures we might bundle together.

⁴ Based on current usage status. BCN / TEACH lines are billed to WVLS and passed through to the library. If your library is no longer using a BCN data line (ie. Migrated to Charter) then please remember to budget appropriately for your data line.

⁵ MCPL receives a single, discounted port rate for all branches as it self-manages its own WAN interconnections. Shared license costs are built in (also discounted due to lower relative usage).

NOTE: It is recommended that libraries budget for approximately 1/5th of the replacement cost of capital equipment (PCs, routers, switches, etc.) each year until a fund has been established which can cover the cost of at least 80% of all equipment. To help save money, replacements can be pushed beyond five years.

During 2016 WVLS is preparing to incorporate routers, switches, and wireless access points into NES during the 2017 and 2018 years. \$2500 was the 5 year replacement cost for your library's router, but that has now been incorporated into NES at a reduced rate. \$800 for each 48 port switch and \$600 for each 24 port switch were the 5 year replacement costs to budget for switches, though that is planned for incorporation into NES in 2018 (so please consult with WLVS prior to any switch replacement/addition purchases). WVLS is also incorporating the former \$150 per Wireless Access Point (typically 2-4 per library ... 5-7 for larger libraries) costs into NES, your library will no longer need to budget for these separately. Any reserve budgets that were being built up by your library for future capital replacement of these devices could be reappropriated to the nominal increase in NES and to other capital replacement purposes, such as computers. We continue to recommend budgeting \$900 per desktop computer; \$1300 per laptop; and \$3500 per physical server.