EXECUTIVE SUMMARY

Recommendation of $500,000 or Greater
19-097E – WAN Fiber Options

Introduction
Responsible: Procurement & Warehousing Services (PWS)
Information Technology (IT)

This request is to approve the recommendation to award Request for Proposal (RFP) 19-097E – WAN Fiber Options to Education Networks of America, Inc. (ENA) for a ten (10) year term commencing March 3, 2020 through March 2, 2030, with a renewal option for three (3) additional five (5) year renewal periods for Wide Area Network (WAN) services.

The spending authority being requested is $34,141,000, of which eighty (80) percent or approximately $26,007,000 will be reimbursed to The School Board of Broward County, Florida (SBBC), through the Federal E-Rate program, resulting in an anticipated net expenditure of approximately $8,134,000 over the term of the Agreement.

This Bid facilitates the conversion to a longer-term WAN. The WAN represents a critical infrastructure that enables IT to deliver data connectivity between school and departmental sites and the broader internet. RFP 19-097E will replace the Managed WAN Lit Service bid 19-051E (also known as "Short-Term WAN"), which was approved as item EE-12 on March 5, 2019 with a contract term commencing July 1, 2019 through June 30, 2022 and $10,770,385 spending authority. The Managed WAN Lit Service bid 19-051E will be terminated at the conclusion of the above project to enable the Long-Term WAN Fiber network.

It is important to note that the two (2) bids <u>will not overlap costs/payments per location</u>.

Goods/Services Description
Responsible: IT

Investments in the WAN are required to provide all district stakeholders with internet access. SBBC considers the design and implementation of its WAN to be a major part of its strategy for improving teaching, learning, and administration. Various examples on how the SBBC WAN is utilized include, providing centralized Internet access, real-time video security feeds for Broward Sheriff, on-prem hosted applications, connectivity for security operations in between all SBBC sites and access to all cloud-based applications for school and admin support for example Parent link, SAP, and StreamVu IPTV among others.

The long-term WAN was referenced in March 2019 in the WAN short-term item and was presented at the May 28, 2019, IT School Board Workshop. The goal of the long-term WAN is to enable a connection through dedicated dark fiber, enabling SBBC to scale to high speeds of bandwidth while remaining at a flat cost. This request is in line with the IT Strategic Roadmap presented in May 2018.

<u>Implementation & Current Short-Term AT&T WAN contract</u>

- Two (2) year implementation from July 2020 through September 2022.
- SBBC will have two (2) WAN service contracts active with the current AT&T Short-Term - WAN, which was approved by the School Board in March 2019.
  - SBBC bid a bridge contract since the previous one did not have any renewals.
  - Short-Term - WAN bridge contract will provide SBBC the opportunity to cutover to the Long-Term - Fiber WAN with no impact to services.
- SBBC will file for E-RATE for both short-term AT&T WAN and long term ENA WAN contracts and will only pay one (1) carrier based on what month the service goes live with ENA and is thus disconnected from AT&T, avoiding any double payments.

- A thirty (30) day notice will be provided to AT&T per site disconnect once the cutover is scheduled to ensure the disconnection of services.
- AT&T Short-Term - WAN contract has a one (1) year minimum service for a circuit that has been turned up.
  - SBBC can terminate up to thirty-seven (37) circuits freely without adhering to this requirement.
  - On January 2021, all circuits will have satisfied the one (1) year minimum service.

Procurement Method
Responsible: PWS

This RFP was competitively solicited in accordance with Purchasing Policy 3320, Part II, Rule D, and Florida Administrative Code 6A-1.012(7).

The solicitation ran from September 24, 2018 through November 13, 2018. There were six hundred and nine (609) vendors notified, twenty-one (21) vendors downloaded the RFP, six (6) bids were received before bid opening, and one (1) bid was found to be non-responsive and rejected for adding terms and conditions contrary to SBBC's. The RFP Evaluation Committee recommended the award to the highest scoring vendor.

The Affirmative Procurement Initiative defined for this RFP was "SBE participation is strongly encouraged," with a maximum of ten (10) allowable points. The following bidders were awarded ten (points): AT&T Corporation, ENA Services, LLC, and WANRack LLC.

Financial Impact
Responsible: PWS and IT

The total spending authority requested is $34,141,000 (rounded), which represents the cost of all services, equipment, and utility fees. This item will be funded by the IT operating budget.

The Federal E-Rate program is anticipated to reimburse SBBC approximately eighty (80) percent of the total costs as demonstrated below:

School Year	Yearly Pre-discount/Before E-rate	Yearly Out of pocket/After E-Rate
2020 - 2021	$3,437,362	$793,079
2021 - 2030	$3,411,450	$815,670

A summary of the spending authority request is as follows:

Year 1 (A)	$ 3,437,362
Years 2-10	$ 3,411,450
Number of years	9
Subtotal years 2-10 (B)	$ 30,703,050
Estimated forecast spend (A+B)	$ 34,140,412
Total spend authority (rounded)	**$ 34,141,000**

Negotiations with the vendor resulted in savings of approximately $1,500,000 due to a reduction in the rates.

The approval of this recommendation does not mean the authorized amount will be spent.

Exhibit 1 – WAN Comparison

Two (2) distinct options were considered to achieve the best technical solution and the least cost. **Option B (Fiber WAN Flat Cost)** is the basis of the recommendation above.

Option A – WAN LIT (Current 2019)	Option B – ENA FIBER WAN FLAT COST
Stay with "AT&T WAN LIT" model. Until a couple of years ago, this was a good option until the *Universal Service Administrative Company* (USAC) opened to schools the option to explore dedicated Fiber solutions.	Build "FIBER WAN with Flat Cost Model," which will guarantee flat cost for the next ten (10) to twenty-five (10-25) years. Financial model has ZERO ($0) upfront cost.
Pros: ▪ Category 1 all-included E-Rate eligibility ▪ Takes less than twelve (12) months to build for sites that require higher bandwidth circuits. **Cons:** ▪ Cost is directly tied to bandwidth, so it will continue to increase year-after-year as the school's demands grow. SBBC only controls costs during new contract change every five (5) years. ▪ The solution is funneled through carrier sites with shared infrastructure, which means a higher percentage of downtime due to network complexity. ▪ No ability to move to a resilient or more robust network model within the contract. ▪ Single point of failure per school due to no resiliency.	**Pros:** ▪ Category 1 all-included E-Rate eligibility ▪ Cost containment of future WAN costs. ▪ Future-ready technology for better financial solutions. ▪ Scalable at a zero ($0) monthly cost increase up to one hundred (100X) current Bandwidth speed. ▪ Significant cost savings due to flat cost. ▪ Greater resiliency network due to RING design. Today, SBBC has zero (0) resiliency. ▪ The solution is a private network dedicated solely to SBBC, facilitating a low complexity network with fewer points of failure. ▪ SBBC site will be connected to the SBBC WAN via two (2) different fiber paths, greatly increasing reliability. ▪ Flexibility to improve site resiliency. ▪ Avoid company strikes which delay resolutions. **Cons:** ▪ Takes two (2) years to implement. ▪ Dark fiber solutions require a longer-term commitment. ▪ SBBC will face penalty costs for terminating the contract early for convenience.

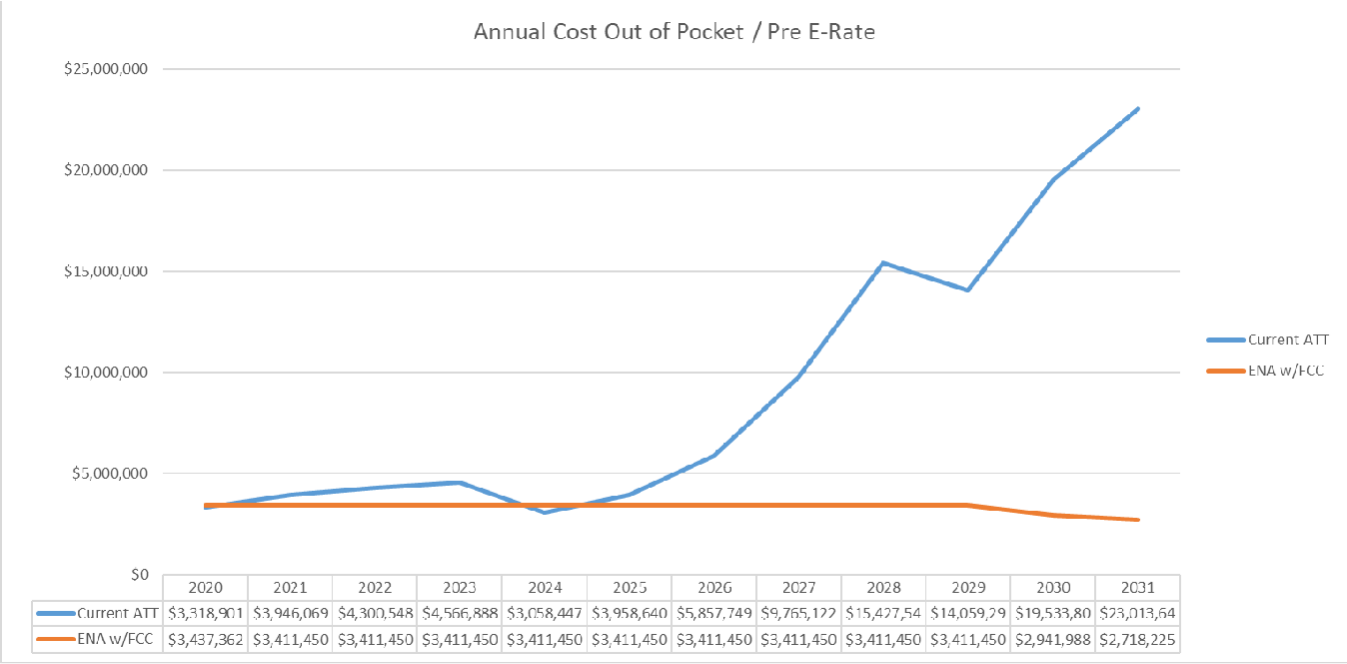
..Continued Option A–WAN Lit (Current 2019)	..Continued Option B–ENA Fiber WAN Flat Cost
Projected: SY – School Year 10-year 2020 – 2029 SY total cost/**Before E-Rate:** $68,259,203 10-year 2020 – 2029 SY Net cost/**After E-Rate:** $15,051,438	Fixed: SY- School Year 10-year 2020 – 2029 SY total cost/**Before E-Rate**: $34,140,411 10-year 2020 – 2029 SY Net cost/**After E-Rate**: $8,134,108 Renewals will be a thirty-four (34) percent cost reduction from $950 a site to $625 a site. **Potential savings with eliminated FCC Charges that will price down twelve (12) percent due to it being a network contained within SBBC.

Before eighty (80) percent E-Rate Discounts Applied

School / Fiscal Year	ATT Current	ENA Dark Fiber	Delta Savings
2020 - 2021	$3,318,901	$3,437,362	-3%
2021 - 2022	$3,946,069	$3,411,450	16%
2022 - 2023	$4,300,548	$3,411,450	26%
2023 - 2024	$4,566,888	$3,411,450	34%
2024 - 2025	$3,058,447	$3,411,450	-10%
2025 - 2026	$3,958,640	$3,411,450	16%
2026 - 2027	$5,857,749	$3,411,450	72%
2027 - 2028	$9,765,122	$3,411,450	186%
2028 - 2029	$15,427,540	$3,411,450	352%
2029 - 2030	$14,059,299	$3,411,450	312%

Exhibit 2 – Chart of Annual Costs – Ten (10) Year Forecast

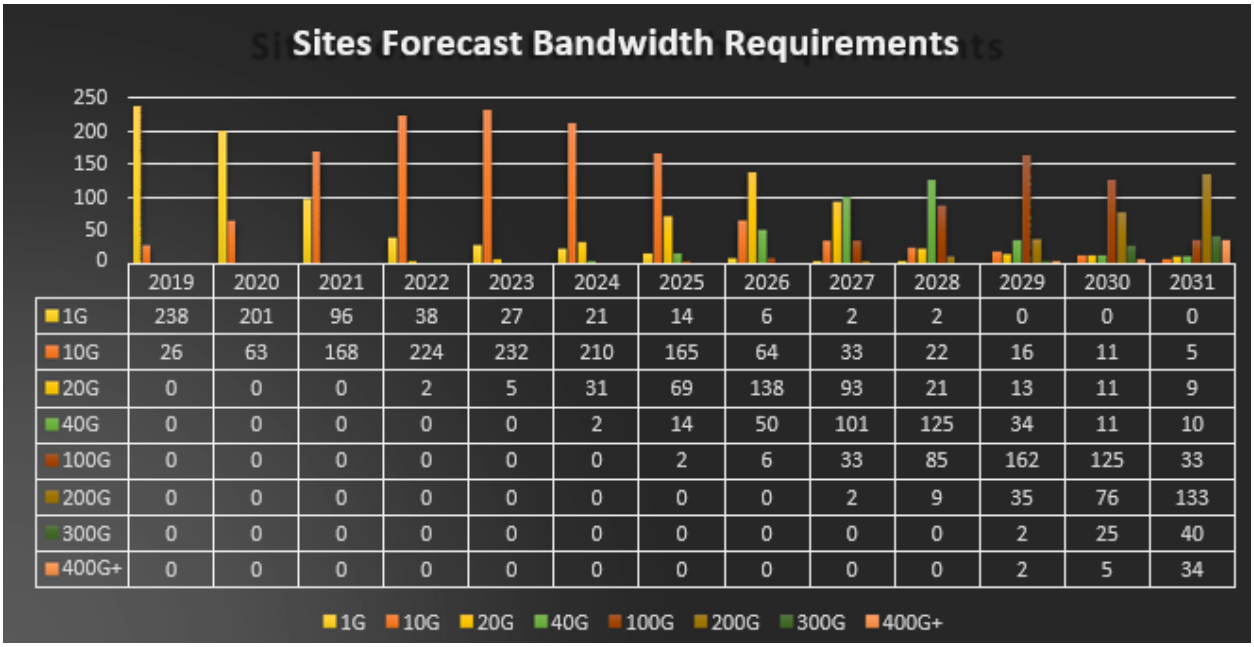
The chart below demonstrates the annual cost of each solution and comparison with SBBC's current WAN prices.



	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Current ATT	$3,318,901	$3,946,069	$4,300,548	$4,566,888	$3,058,447	$3,958,640	$5,857,749	$9,765,122	$15,427,54	$14,059,29	$19,533,80	$23,013,64
ENA w/FCC	$3,437,362	$3,411,450	$3,411,450	$3,411,450	$3,411,450	$3,411,450	$3,411,450	$3,411,450	$3,411,450	$3,411,450	$2,941,988	$2,718,225

Exhibit 3 – Ten (10) Year Bandwidth Forecast

Ten (10) year Bandwidth Forecast: Utilizing industry bandwidth forecast guidelines for K-12 industry provided by Consortium of School Networking (CoSN) and E-Rate. Below is the forecast:



	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1G	238	201	96	38	27	21	14	6	2	2	0	0	0
10G	26	63	168	224	232	210	165	64	33	22	16	11	5
20G	0	0	0	2	5	31	69	138	93	21	13	11	9
40G	0	0	0	0	0	2	14	50	101	125	34	11	10
100G	0	0	0	0	0	0	2	6	33	85	162	125	33
200G	0	0	0	0	0	0	0	0	2	9	35	76	133
300G	0	0	0	0	0	0	0	0	0	0	2	25	40
400G+	0	0	0	0	0	0	0	0	0	0	2	5	34

Exhibit 4 – Additional Frequently Asked Questions

1. What is E-Rate?

The Federal Communications Commission's E-rate program makes telecommunications and information services more affordable for schools and libraries. With funding from the Universal Service Fund, E-Rate provides discounts for telecommunications, Internet access, and internal connections to eligible schools and libraries. Eligible schools and libraries may receive discounts on telecommunications, telecommunications services, and Internet access, as well as internal connections, managed internal broadband services, and basic maintenance of internal connections.

Discounts range from twenty (20) to ninety (90) percent, with higher discounts for higher poverty and rural schools and libraries. Recipients must pay some portion of the service costs. SBBC currently receives an eighty (80) percent discount.

2. Who is USAC?

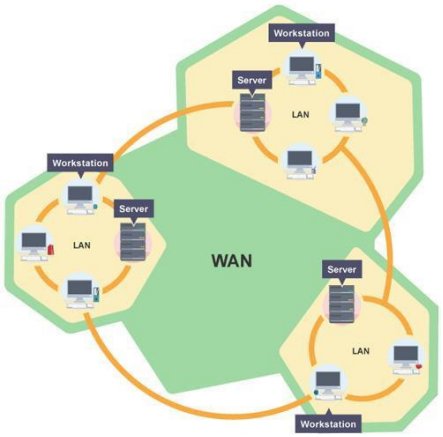
The Universal Service Administrative Company (USAC) is an independent, not-for-profit corporation designated by the FCC as the administrator of universal service.

3. What is Optic Fiber?

Fiber optics (optical fibers) are long, thin strands of very pure glass about the diameter of a human hair. They are arranged in bundles called optical cables and used to transmit light signals over long distances.

4. What is the Wide Area Network (WAN)?

SBBC's WAN interconnects instructional and support facilities and connects them to the Commodity Internet, advanced research networks, and other world-wide-web resources.



5. What is WAN's role in achieving SBBC's organization goals?

WAN plays the same role as roads and highways in product delivery business – without roads, delivery is impossible.

Therefore, WAN is an essential component for today's teaching, learning, and administration and plays a major role in basic Internet connectivity, emerging reliance on online educational tools & resources, and transforming the District to a Technology-Rich Learning Environment.

6. Why Optic Fiber for WAN Technology Service?

Long-term fiber WAN is an essential component that is built based on long-term technology such as optic fiber with the life cycle of fifty (50) or more years. Building proper long-term fiber WAN which fits an organization, will take eighteen through twenty-four (18-24) months. So, it is more appropriate to consider long-term fiber WAN as a utility with hard assets like roads, or real estate. The same long-term approach should apply to long-term fiber WAN as on other hard assets. The technology behind long-term fiber WAN Fiber Optics hasn't changed in the last twenty (20) years, and there is nothing new on the horizon for the next twenty through thirty (20-30) years. Optic Fiber first was used as a product in the sixties (60's).

7. Is WAN a "new project"?

WAN is not a "new project" since SBBC has had this service for over twenty (20) years. The only difference today is that a few years ago, the E-Rate program finally recognized the value of long-term fiber network for WAN solutions and made it Category 1 all-included E-Rate eligible. In the last twenty (20) years, SBBC only had Option A on the plate and couldn't benefit from Option B without paying full price for it.

8. What other comparable School Districts are doing for WAN Services?

Until a few years ago, when E-Rate made Option B eligible, all other districts utilized Option A for WAN services. In the last two (2) years, the majority of WAN RFPs included a Fiber WAN solution Option B with a ten (10) year contract term with renewals. K-12 industry has recognized the long-term benefits of a flat cost model with flexible bandwidths increase at no cost.

Examples of other School Districts include:

District	Students	Annual WAN Cost	10 Year Total Cost
Broward County Schools	226,424	$3,411,450 * Current - $3,308,692	$34,140,412 * Forecast - $68,002,783
Denver Public Schools	93,000	$3,183,452	$31,834,520
Metropolitan Nashville	86,000	$3,122,800	$31,228,000
***Clark County (NV)**	320,000	$5,275,029	$52,750,287
Chicago	310,000	$1,344,000 * IRU of $35,524,029	$48,964,029

9. Why now? Why is SBBC not already on the "best" WAN?

SBBC utilized WAN Lit services (Option A) over the past twenty (20) years because nothing else was available at a cost-effective price point. This is the difference today:

- Option B only became E-Rate eligible a few years ago. SBBC is now at the end of the five (5) year cycle, so this is the first opportunity to change the existing WAN model and benefit from the flat cost model.

- SBBC bandwidth utilization will only reach required higher speeds based on forecasts, which allows the time today to plan and have it in place in the next two (2) years. So, now is the perfect time to take advantage of the Option B WAN model, since it will take two (2) years to transition.

- Broward County did not have cost-effective dark fiber options until now. Consolidation of Optic Fiber companies has helped drive costs for this design to a reasonably competitive level.

10. What is SBBC losing in Approach A? What is the full list of benefits for Approach B vs. A?

- Option A delivers similar WAN services as Option B. From a technology standpoint, SBBC will lose the ability to move to a resilient network traffic model and will lose network reliability due to network complexity in Option A.

- The response time to increase bandwidth demands to individual sites is extended to longer periods of time from six (6) months to a year with Option A, while in Option B will be able to provide extra bandwidth to sites within a few weeks. This translates to periods of time with low performance, degraded video streams, cloud-based, and security services.

- The primary loss in Option A vs. B is the inability to flat out WAN cost over the next ten through twenty (10-20) years. Without going with Option B, SBBC will never achieve a flat cost model, which means that every year, the cost of WAN services will increase.

11. Why ten (10) years? Is SBBC locked for ten (10) years? How long can SBBC use it after ten the (10) years are over?

As mentioned earlier, it is more appropriate to consider long-term fiber WAN as hard assets like roads, commodities, or real estate. The same long-term approaches should apply to long-term fiber WAN as on other hard assets. The technology behind Fiber WAN has not changed in the last twenty (20) years, and there is nothing new on the technology horizon for the next decade. Based on the analysis of other district's RFPs, ten (10) years is a minimal period of terms for Optical Fiber. SBBC has the ability to cancel this contract during any year. SBBC is forecasting that if this WAN is built, SBBC will satisfy its network demands for ten (10) years without additional monthly increases.

12. Why decide now? What will happen if SBBC doesn't move forward with the option B option today?

This is a "plan ahead" situation, where managing SBBC cost while supporting the District's growth. This year is the proper time to consider going with Option B because long-term fiber WAN solution will take twenty-four (24) months to build, and by the time SBBC is done, the District will fully benefit from a flat cost model and a scalable network for whatever the District demands. Since this program with USAC E-Rate has only been in place for several years, the District wants to take advantage of it before it changes and is unable to apply for it.

13. Where else can SBBC save in this contract?

No additional savings are available with Option A, while in Option B, SBBC may consider eliminating the managed services component by bringing these support services in-house at some point in the future. Option B is based on ten (10) years terms for fiber, but managed services can be reviewed every five (5) years to leverage internal network staff to support equipment if viable at the time of analysis.

14. Any additional cost associated with this contract?

Presented cost numbers are all-inclusive for all options. Technology Support Department (TSSC) has dedicated position District WAN Coordinator which is the primary point of contact for WAN network deployments. SBBC has equipment that can support up to forty (40) Gbps but can cover up to over one hundred (100) Gbps if needed with a small investment per site for equipment, which is currently refreshed using E-Rate Category 2 funding.

15. Why is SBBCs bandwidth growing? What is driving bandwidth growth? What is the bandwidth forecast?

Since 2013, SBBC has grown forty-eight (48x) on its WAN circuit size. SBBC's bandwidth is growing due to many different reasons. Although current reasons are listed below, many future initiatives and efforts, especially in the Security area, will require additional WAN bandwidth.

- The number of devices on SBBC's network continues to grow as SBBC moves towards a 1:1 model for educational goals, adding support for bringing your own device (BYOD) and guest devices, adding additional security devices.
- The utilization of cloud storage is increasing.
- Bringing data closer to the customer for data analytics is a technology strategy in the near horizon.
- Existing applications are becoming more intense on data exchange. Many applications natively start sync data with a cloud.
- The industry is moving to the Hybrid model (System in the Cloud, high access data back at SBBC datacenter to enable secure/enhanced data retrieval)
- Educational video content, as well as video surveillance content, is moving from standard to high definition, which requires four through five (4-5) times more bandwidth.
- Other security entities need access to SBBC's security surveillance video content.
- Security updates are occurring more often, becoming larger and are needed for more devices.