Board of Education
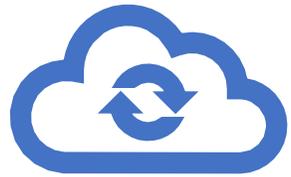
November 26, 2018
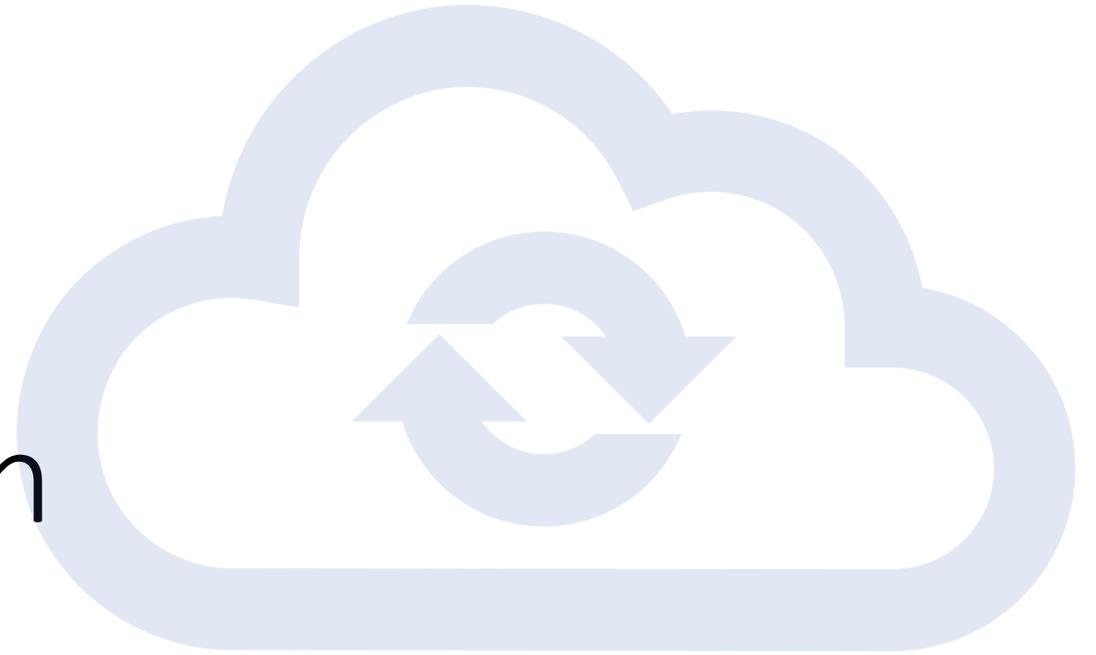
Updates

Network Infrastructure Project – Year 1

- Switch Replacements
  - Edge: 214 -> 143 switches (down 33%)
  - High capacity / survivable design
  - Remaining: Cores and configuration refinements
- Fiber Cabling Replacements
  - OM4 Fiber – high capacity over distance
  - Installed at 5 schools (based on need)

2019-20 Preliminary Technology Plan

2019-20 Learning Environment

Initiatives/Projects
- 1:1 Learning
- HDMI Capability for Projectors
- Learning Environment Support

Projected Ed Fund Costs: $480,000

1:1 Learning (K-12)
- ~1,300 Devices
- Grades: 4, 6, 9
- Lease + Purchase Mix

HDMI Capability for Projectors
- GHS, Western Ave

Learning Environment Support
- Collaborative/Shared Spaces
- Lab Needs/Changes

Beyond Devices

Infrastructure Improvements (the backbone of 1:1)

3-Year Network Upgrade Plan

Key Outcomes

- Network Equipment Upgrade + Consolidation
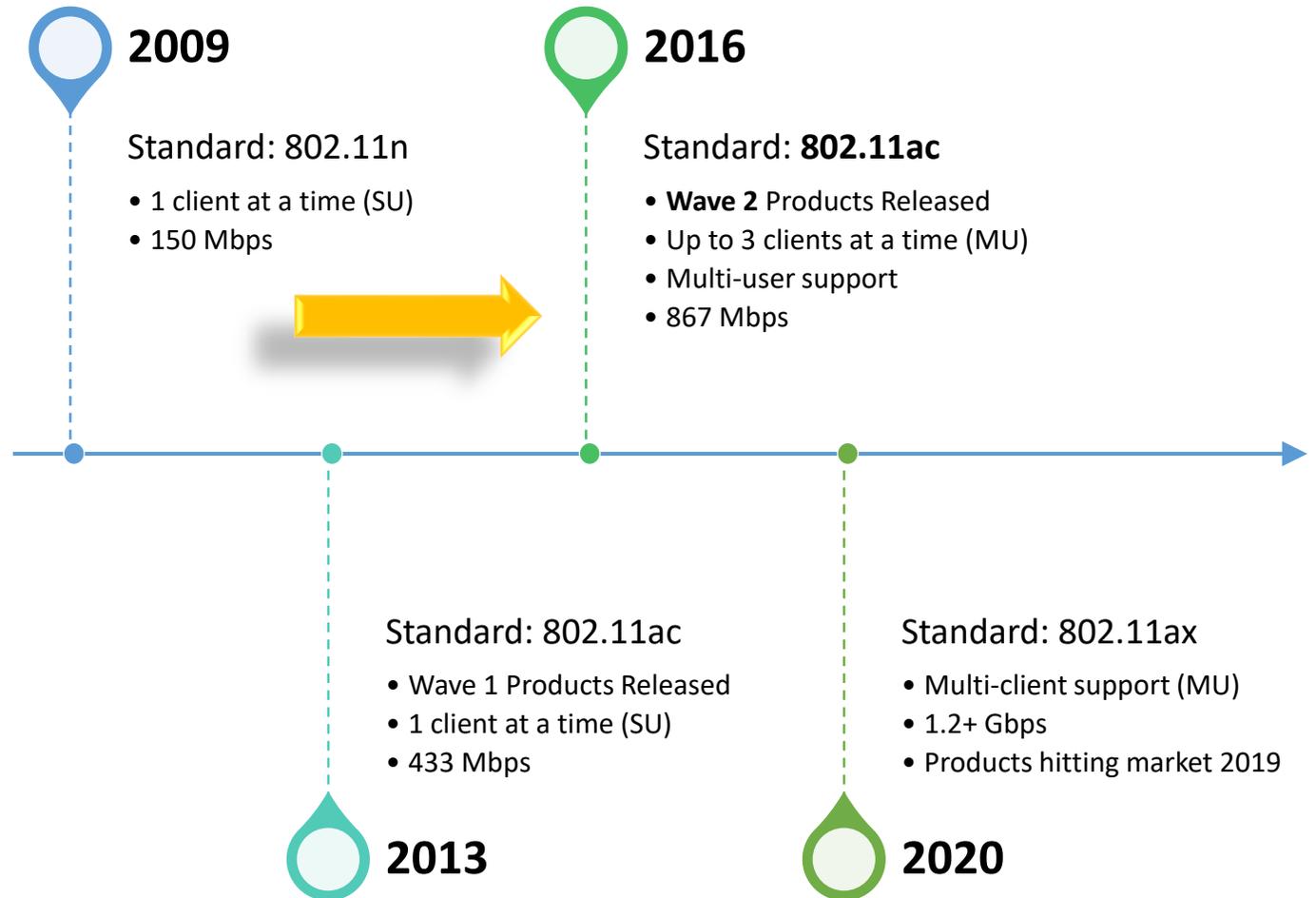- LAN/WAN Capacity Increases
- Wireless Network Capacity

Estimated Cost of 3-Year Plan

- **$1.3 million**
- *E-Rate Offset: ~$275k (max)*

*Cost TBD; **E-Rate Category 2 Expended

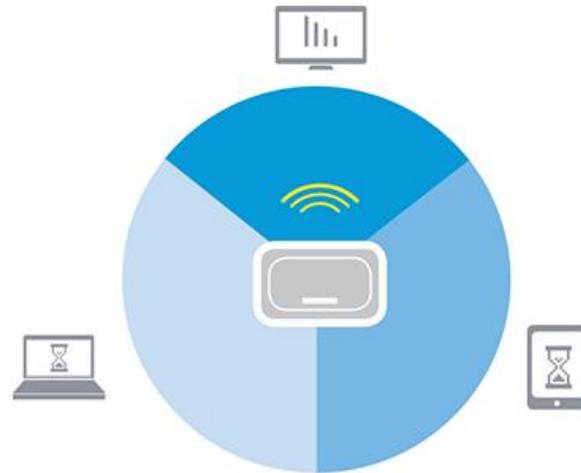| 2018-19	2019-20	2020-21
Network Equipment • All Cores • Access/PoE • Cabling	**Network Equipment** • Firewall* • Internet Bandwidth*	**Network Equipment** • N/A
Capacity • 10Gb WAN • 10Gb LAN	**Capacity** • N/A	**Capacity** • N/A
Wireless Upgrade • N/A	**Wireless Upgrade** • 5 buildings	**Wireless Upgrade** • Remaining
Est Total for Year $448k (before E-Rate) (167k) Est. E-Rate	**Est Total for Year** $410k (before E-Rate) (108k) Est. E-Rate**	**Est Total for Year** $443k (before E-Rate) (0) Est. E-Rate**

Wireless
Recent History

2009

Standard: 802.11n
- 1 client at a time (SU)
- 150 Mbps

2016

Standard: **802.11ac**
- **Wave 2** Products Released
- Up to 3 clients at a time (MU)
- Multi-user support
- 867 Mbps

Standard: 802.11ac
- Wave 1 Products Released
- 1 client at a time (SU)
- 433 Mbps

2013

Standard: 802.11ax
- Multi-client support (MU)
- 1.2+ Gbps
- Products hitting market 2019

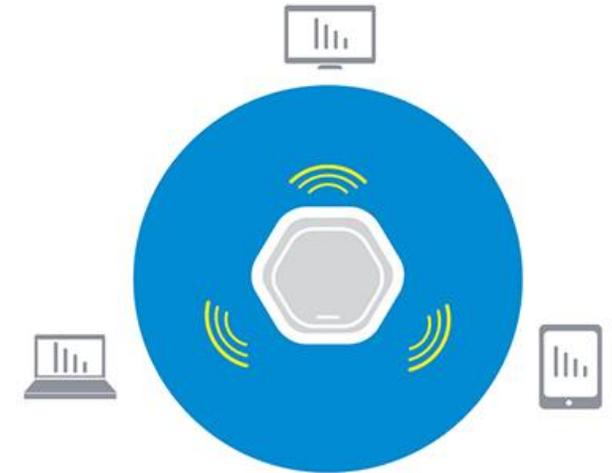**2020**

802.11n -> 802.11ac Wave 2

- **Multi-User Support** = Less waiting, more devices

- **Speed Increase** = Get more in less time

- **5GHz Frequency** = More speed, less interference

Single-User (SU) Support
(As-Is)

Multi-User (MU) Support
(To-Be)

Traditional Access Points

Linksys MU-MIMO Access Points

Image Source: OneDirect.it - https://www.onedirect.it/dual-band-access-point-linksys-lapac2600

E-Rate – Things you should know

Applicants that apply for category two funding will calculate their funding eligibility using the adjusted discount matrix. If an applicant receives support for category two services in either funding year 2015 or funding year 2016, the applicant can seek up to its budgeted amount for category two support over the course of the next four funding years, but it cannot receive any category two support over this budgeted amount.[5] For example, over a five-year period, a school or school district at the 80 percent level will be able to request up to $120 in E-rate support per student (an 80 percent discount on $150 in services) and will be required to pay 20 percent of the cost of the eligible category two services that it purchases. If 1,000 students attend that school or school district, the budget for the five-year period would equal $120,000 ($120 discount amount multiplied by 1,000 students). Further, if the school or school district were to receive no category two support in funding year 2015, and $20,000 in category two support in funding year 2016, that school or school district may, but is not required to, request up to a total of $100,000 over the next four funding years (2017 through 2020).

	The future of the Category Two Budget has not yet been decided by the FCC. Once a decision is announced we will provide additional information on our E-rate weekly News Brief.
	The Schools and Libraries Program News Brief is issued each Friday and provides timely program information such as upcoming deadlines, tips to help you through the application process, and information about upcoming funding commitment waves. You can subscribe to the Schools and Libraries Program News Brief on the following page: http://www.usac.org/sl/tools/news-briefs/Default.aspx
USAC	

2019-20 Network + Infrastructure

Initiatives/Projects
- Wireless Network Upgrade
- Firewall Licensing Renewal
- Internet Services

Projected O&M Costs: $915,000

Wireless Network Upgrade
- Phase 2 of Network Upgrade Plan
- District-Wide Replacement
- E-Rate Eligible, Category 2, Purchase
- Single Year Purchase

Firewall Licensing Renewal
- 1 or 2-year licensing only renewal
- Existing equipment meets need
- Monitoring use to determine timing

Internet Services
- Existing contracts expire 6/30/2019
- Seeking new contracts via E-Rate Cat 1
- RFP Process

Projected Cost Summary

Fund	Projected Capital Need
Ed	$480,000
O&M	$915,000 (*Wireless Network + Firewall Licensing*)
Potential Offsets	$(200,000) (*Technology Service Fee*) $(118,800) (*Max remaining E-Rate Category 2*)
Total/Net Amounts	**$1,395,000 (*Total, before offsets*)** $1,195,000 (*after Technology Service Fee*) $1,078,200 (*after E-Rate Category 2*)

Trends

Capital Spending Over Time
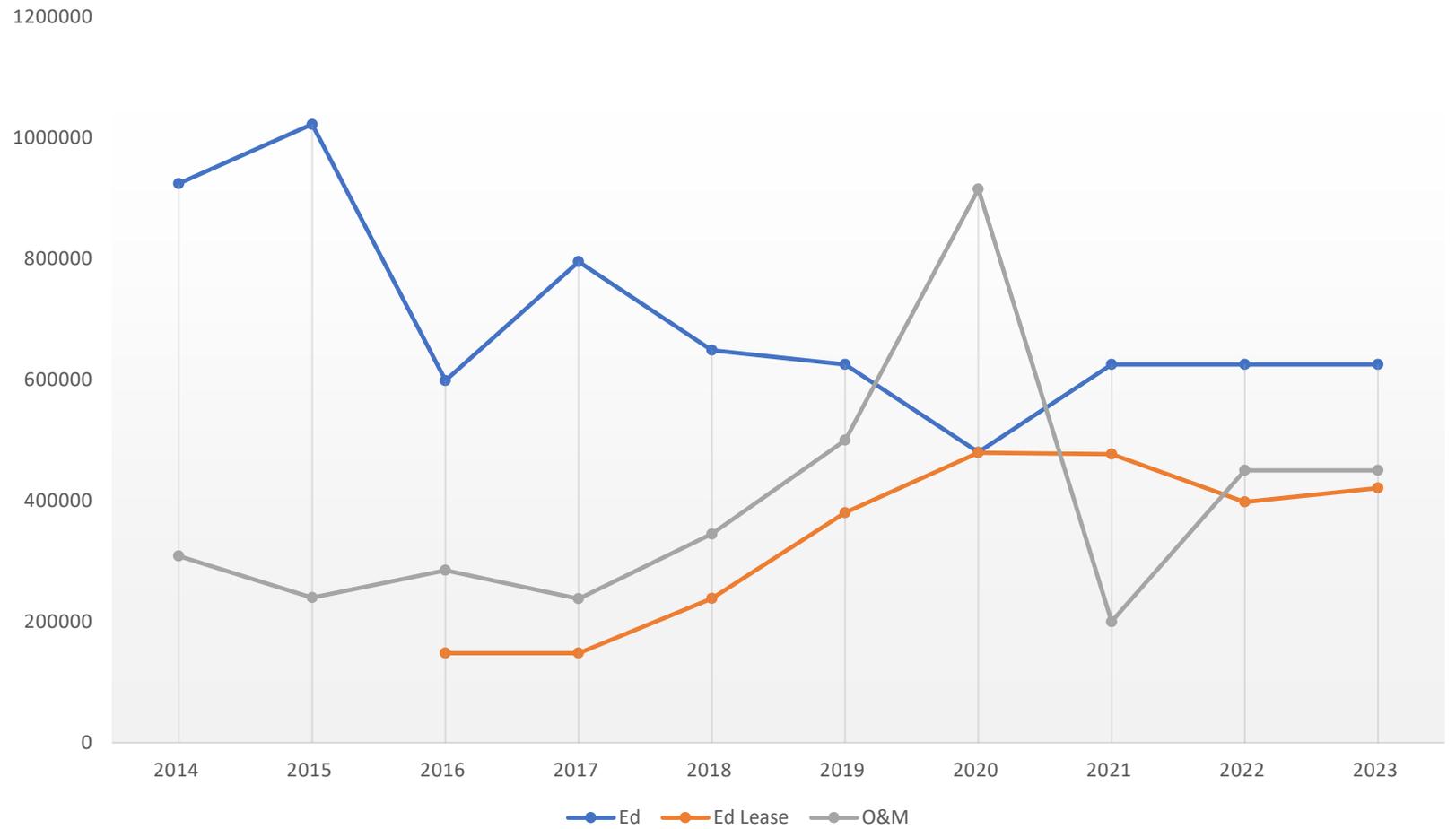
Next Steps

✓ Approval of the 2019-20 Preliminary Technology Plan

✉ E-Rate RFP/bid process

Refine estimates/need for learning & teaching needs