

CAPITAL PLANNING ADVISORY BOARD

2022-2028 Agency Capital Plan

Staff Analysis and Comments

AGENCY: Kentucky Communications Network Authority

OVERVIEW

KRS 154.15-020 and 154.15-030, effective June 29, 2017, created the Kentucky Communications Network Authority (KCNA) within the General Government Cabinet. KCNA is administratively attached to the Office of the Governor.

The mission of KCNA is to construct and manage a Commonwealth-owned, communication infrastructure service to provide affordable broadband connectivity, foster collaboration, and promote the innovative use of digital technologies to connect the people and businesses of Kentucky to the world.

KCNA, in conjunction with its board, is responsible for the management of the Commonwealth's public-private partnership with Macquarie Capital (Macquarie). Macquarie and associated partners designed, built and will support the operation and maintenance of the KentuckyWired (KYW) network for 30 years. KYW is a Commonwealth public infrastructure project that provides broadband service using a modern, high-capacity fiber infrastructure. Its primary purpose will be to provide broadband services to the Commonwealth's agencies and its public postsecondary education institutions. It is designed to have the capacity and ability to serve other public sector organizations. The network, which is owned by the Commonwealth, as designed, has excess fiber capacity that presents wholesale opportunities to provide additional revenue to help fund the project.

The network will be comprised of more than 3,000 miles of high-speed Internet connectivity throughout Kentucky's 120 counties with completion anticipated in 2021. It includes more than 640 Executive Branch government agency locations, more than 60 Kentucky Community and Technical College System locations, all state public universities, and additional sites, such as the Center for Rural Development and the Administrative Office of the Courts. The network will travel over approximately 83,000 poles, requires 30,000-40,000 easements, and partnerships with approximately 70 telecommunications, electric and municipal utilities across the state. Upon completion, it will have 13 co-location sites, 20 telecom shelters and 19 signal regeneration (extender) sites.

The new network will allow the Commonwealth to shift resources from payments for current services to pay for the new and substantially faster state-owned network. Third party agreements bring benefit to the project and foster collaboration with the existing owners of fiber optic facilities in Kentucky.

KCNA Facilities

KCNA occupies 4,000 square feet of office space in the state-owned Mayo-Underwood Building in Frankfort. The agency does not have a separate unit to handle daily facility responsibilities, and is supported by the Finance and Administration Cabinet Department for Facilities and Support Services. There are 17 employees- 13 full-time state employees and 4 contractors. The agency also leases approximately 22,500 square feet of storage space at Bluegrass Station in Lexington, Kentucky, to store fiber and related materials.

PROPOSED PROJECTS – Funding Summary

	<u>2022-2024</u>	<u>2024-2026</u>	<u>2026-2028</u>	<u>Total</u>
General Funds	\$9,508,000	\$21,496,000	\$19,996,000	\$51,000,000

**2022-2028 CAPITAL PLAN
PLAN OVERVIEW
FORM SYP-P1**

Branch:

Cabinet/Function:

Agency/Institution:

Executive

General Government

Kentucky Communications Network Authority

The KentuckyWired Network, managed by the Kentucky Communications Network Authority, is a 3,300-mile "middle-mile backbone" of 288-strand fiber optic cabling constructed throughout the Commonwealth of Kentucky with "last-mile" access points in all 120 Kentucky counties. Kentucky is now the only state in the United States to have such a statewide fiber optic infrastructure.

Using 144 of the 288 fiber optic strands, KCNA will now bring cheaper and faster Internet service to more than 700 state government agency locations across the state, with dollars formerly spent with outside Internet providers staying within state coffers. The remaining 144 fiber optic strands will be utilized, as "excess capacity", to facilitate the last-mile broadband expansion to all areas of the state, with top priority being on servicing rural and under/unserved counties and communities. Together, this new broadband infrastructure, known as KentuckyWired, will improve available broadband service to residents and businesses in the areas of education, healthcare, economic development, public safety, and overall quality of daily life to citizens.

The KentuckyWired network will provide a decades-long fiber optic backbone infrastructure that will address the Commonwealth's needs for 30+ years and enhance Kentucky's abilities to compete both nationally and globally. Being a decades-long, essential infrastructure system requires periodic upgrades and enhancements to stay current with improved information technology advances, primarily in terms of new and improved fiber optic equipment. As such, the KCNA Six-Year Capital Plan will focus on keeping the KentuckyWired Network operating at maximum speed and efficiency while also adding additional, last-mile sites to the network to meet state government's future needs in order to provide the best service possible to all Kentucky citizens and businesses.

During the three upcoming biennia (FY 2022 through FY 2028), KCNA will need to replace the equipment that manages the light that transports data across the network at ever-increasing speeds and capacities. Additionally, as government functions change to meet constituent needs, some additional construction may be needed to extend last-mile service to new or relocated government locations.

While there will be some degree of equipment upgrades required in the FY 2022-2024 biennium, the greater needs will be realized in FY 2024-26 and 26-2028.

Kentucky Communications Network Authority
Proposed Projects Involving the General Fund (cash or bonds)
(amounts in **bold** are the total budget)

2022-2024

(Projects listed by agency priority; descriptions are from the agency submission)

1 KentuckyWired Equipment Refresh 2022-2024 **\$7,508,000**

This project supports the continued operation of the KentuckyWired network. As with any telecommunications network, core equipment must be upgraded at appropriate intervals to continue to provide the flexibility, bandwidth and performance needed to provide service to the agencies served by the network. This project will spread over 3 biennial periods, and it provides for the replacement of the core optical switching, core routing, and edge routing equipment utilized by the KentuckyWired network to provide services to agencies located in all 120 counties across the state of Kentucky. (IT)

CPAB Staff Notes

- *Equipment Refresh projects are planned for 2024-26 and 2026-28 in the amount of \$18,246,000 each biennium.*
- *The KentuckyWired network consists of 33 core network node locations, 25 core equipment sites and end-user locations. The equipment at these locations must be refreshed approximately every ten years to maintain the levels of performance required across the network.*

2 KentuckyWired Network Enhancements 2022-2024 **\$2,000,000**

This project supports critical enhancements to the KentuckyWired network. As the utilization of KentuckyWired grows, there are specific network enhancements that will allow the network to handle the increased demand more effectively and efficiently. These enhancements allow the network to increase the redundancy and flexibility in key areas of the network to ensure end users receive reliable service. This project will spread over 3 biennial periods, and it provides for additional core optical switching, core routing, and fiber infrastructure utilized by the KentuckyWired network to provide services to agencies located in all 120 counties across the state of Kentucky. (IT)

CPAB Staff Notes

- *Network Enhancement projects are planned for 2024-26 (\$3,250,000) and 2026-28 (\$1,750,000).*

2024-2026

KentuckyWired Equipment Refresh	\$18,246,000
KentuckyWired Network Enhancements	3,250,000

2026-2028

KentuckyWired Equipment Refresh	\$18,246,000
KentuckyWired Network Enhancements	1,750,000

Feature Story: Kentucky Wired Opens the Digital Spigot

With \$368 million 'middle mile' done, focus shifts to the 'final mile' ISPs

Sharing the vision that broadband internet service is vital infrastructure in today's global economy, Kentucky business impresario Jim Host began work in 2004 toward making it available statewide when he was Kentucky's commerce secretary in the Fletcher administration. After a half-decade diversion to push Louisville's KFC Yum! Center into existence in late 2010, Host returned to a background role orchestrating what would become the Kentucky Wired project.

In January 2021, the public-private Kentucky Communications Network Authority completed a \$368 million project to build a 3,300-mile open-access network of 288-strand fiber-optic cable with at least one local-service-friendly node in all 120 counties. Kentucky is the first state to ensure the capability for broadband in all its rural areas.

Ongoing advances in fiber-optic use technology make it difficult to describe the data-carry capacity because it is enormous, far beyond any current uses. Japan's national research agency has demonstrated network nodes operating at petabit capacity—1 million gigabits of data per second—enough to stream high-res 8K video to 10 million users at once, an October 2019 networkworld.com article reported.

Kentucky Wired is a "middle-mile" project. Making the hundreds of thousands of last-mile connections to individual homes and businesses throughout the commonwealth in a financially feasible manner is up to local internet service providers (ISP), scores of which are now taking on the task.

The now-complete statewide system sells use of its data network to the local ISPs through Accelecom, which was known as Kentucky Open Fiber until availability of the Accelecom brand name was confirmed in December. The ISPs have the job of physically building and operating the local "final mile" systems whose equipment links homes, businesses, nonprofits and many government offices to the ultra-high-speed broadband network or backbone. And always, the data capacity or speed experience of individual users will be as good as the equipment their ISP can provide and they are willing to pay for. Sectors with the highest potential for big data use are manufacturing, banking and securities, communications and media, health care providers and government. Other sectors rated high for big data use include retail, transportation and utilities.

Broadband essential to economic development

Economic development is the top benefit that completion of the state broadband backbone will bring, said Jamie Link, executive director of Kentucky Communications Network Authority, the state agency overseeing the Kentucky Wired project.

It will take years for opportunities to be realized, but Kentucky has greatly improved its position and potential in a rapidly changing digital economy. "We are the only state with a full-access network to every county," said Rob Morphonios, CEO of Kentucky Wired.

Operational changes caused by the COVID-19 pandemic highlight the need for and role of broadband internet in conducting essential functions, Link said. "Our goal by the end of 2021 is to have 700 to 800 Kentucky government entities connected to the network," Link said. Part of that goal includes providing a minimum five-fold increase in broadband speed to help them better serve state residents. The Cabinet for Health and Family Services and the Transportation Cabinet are among the early adopters.

In addition to private-sector ISPs, Kentucky's 120 county governments are prime initial targets for Accelecom to sign up, said David Flessas, CEO of the network's sales operation. "We think there is a lot of opportunity in the health care sector," Flessas said. "A big chunk of the target market will be better connectivity for cell and wireless carriers. The popularity of wireless is growing, and they need backbone access."

Accelecom/Open Fiber Kentucky's first orders began providing service in the second quarter of fiscal 2021, he said. Accelecom's goal is to have a robust and growing customer list by the end of calendar 2021. Providing broadband connectivity to Kentucky's most remote residents and businesses in rugged and sparsely populated areas remains a challenge and likely will occur first via wireless signals beamed from towers local ISPs erect on strategic ridgetops. Every such tower requires a hard fiber connection to supply a signal to perhaps 100 paying recipients. It is up each ISP decision maker or entrepreneur to determine the financial viability of each component of their local system.

Budget line today, revenue stream tomorrow

KentuckyWired's annual costs for debt service—primarily to financier Macquarie of Australia—and to maintain, administer and operate the system are \$30 million to \$32 million annually, Link said. Including other contractual obligations, its state budget line for fiscal 2021 is \$46 million, the majority of it coming from the commonwealth.

Existing agreements to provide service to state agencies plus contracts by Open Fiber/Accelecom should generate about \$11 million this year, he said. Accelecom is "just ramping up with sales and revenue to contribute," Flessas said. "It will be into (fiscal) '22 until we make a material contribution. We do anticipate being highly successful."

Physical completion of the network marks the beginning for the project's potential impact, which will take years to evolve, said Lonnie Lawson, president/CEO of the Center For Rural Development in Somerset. Lawson is credited with first suggesting a county-by-county broadband network as an economic development tool for Eastern Kentucky, a region reeling from the loss of coal revenue. As the idea received serious consideration, it came to be viewed as a goal that could serve the entire state. Seeing it now come to fruition, Lawson likes the long-term utility of the infrastructure that has been put in place. Already some 3,000 Eastern Kentucky residents are using broadband service to their home for distance-work jobs around the country, he said. "In 2030 or 2040, this technology will still be servicing the new technology that comes along," Lawson said.

Every individual job and new business that results grows the state tax base. One user is AppHarvest, whose first high-tech greenhouse creating more than 250 jobs near Morehead connects to its parent technology in the Netherlands. AppHarvest has announced at least two more large greenhouses are coming to Eastern Kentucky.

Similar to electrification in past century

Host equates today's high-speed broadband to wiring the country for electricity in the 1930s and '40s—not only in its importance to participation in the new economy but the impossibility of making it universally available without government involvement. Relying only on financially viable private utility operations without the federal Tennessee Valley Authority and Rural Electrification Authority, swaths of Kentucky would still be without electricity.

Host spent nearly two years early in the Fletcher administration working with the state's telephone companies to map out a broadband strategy and launch Connect Kentucky. More substantial work resumed when Gov. Steve Beshear and U.S. Rep. Hal Rogers launched the Saving Our Appalachia Region (SOAR) economic development initiative in 2013.

As SOAR began organizing its work groups, broadband service blanketing every corner of every county in Eastern Kentucky was envisioned as the primary goal to bring economic development to a region in need. Host said urban opponents of Kentucky Wired would be wiser to view the project not as an

expensive gift to rural residents but as the means to turn longtime consumers of government services and tax revenue into creators of revenue, wealth and income for the state.

"Kentucky has historically ranked among the bottom of the nation for broadband connectivity," said Rogers, "but Kentucky Wired will launch us to the top tier, opening the door for new industries and jobs for our people. We know that broadband cannot single-handedly solve our generational challenges in Kentucky's Appalachian region, but without broadband, we aren't even on the playing field."

With KentuckyWired 'substantially complete,' exclusive provider looks to attract customers

Ben Tobin and Emma Austin

Ky.— After years of delays, the KentuckyWired project is just about ready to deploy broadband to a larger base of customers — and a Louisville-based company led by a former telecommunications giant executive is planning to lead the charge.

Accelecom, the new trade name for OpenFiber Kentucky, will be the "exclusive wholesale partner" of the commonwealth in managing half of the KentuckyWired network's 288 strands of fiber available for commercial use, CEO David Flessas said.

KentuckyWired is the state's \$1.5 billion plan to bring internet access to underserved areas by stringing more than 3,000 miles of fiber-optic cable in every county. Construction began in 2015. After many delays, Flessas said KentuckyWired is "substantially complete," as the fiber construction has been finished and the network services close to 140 state government offices.

Jamie Link, the executive director of the Kentucky Communications Network Authority, the state agency that oversees KentuckyWired, said Friday the "middle-mile construction is scheduled to be complete within the next three months, providing a fully functional statewide network."

Flessas said Accelecom has already received business interest, and he hopes the company's first customers will be in service in the calendar year's second quarter. And with Kentucky ranking in the bottom 10 for broadband access — more than 20% of households lack a subscription for high-speed internet, according to census figures — Flessas said there is an opportunity to serve underserved communities while also growing his business.

"If we're not growing exponentially in a year from now, we're doing something wrong," said Flessas, who previously served as a senior vice president at Time Warner Cable.

What does Accelecom plan to do with KentuckyWired?

KentuckyWired is as a "middle-mile" network, meaning it serves as a connecting point to the wider internet from which internet service providers, or ISPs, can build out and provide the final connection, or "last mile," to homes and businesses.

Accelecom, Flessas said, will provide direct service for "enterprise customers," or bigger entities, like city and county governments, local school systems and health care systems. However, Flessas said the company, owned by Australian investment bank Macquarie Capital, does not "intend, at this point, to become a last-mile ISP."

That very topic had been a point of contention in Frankfort last year, as state legislators and lobbyists raised concerns that the then-OpenFiber Kentucky would undercut rural broadband providers and "cherry-pick" existing customers.

Flessas said Accelecom is looking to have a "suite of ISP partners" that can build out that last-mile connection to residences, particularly in low-density and topographically challenging areas where companies might have decided the cost of deploying broadband would outweigh the benefits.

"We will facilitate and enable (ISPs) to drive their service deeper into the community and perhaps provide faster speeds," Flessas said. "... There are many areas of the state where it hasn't been economical to provide service in the past, and Accelecom will facilitate ISPs, particularly wireless ISPs, to provide service in those areas."

How does Accelecom interact with the state?

In a press release, Accelecom noted that a portion of revenue generated from its customers will go to the commonwealth to help pay back the investment into the KentuckyWired project.

When asked about how much that entailed, Flessas said it is a "sliding scale" and that the company has a revenue sharing agreement with the commonwealth. "We don't have firm customer commitments yet, so it's too early to predict when that revenue will start flowing," Flessas said. "But we hope that, at some point in the future, we'll make a material contribution to the commonwealth."

Link said the "revenue share from Accelecom's business activities will be dedicated to help fund the KentuckyWired project going forward." For fiscal year 2021, the state budget line for the Kentucky Communication Network Authority is a little more than \$46 million. Link told The Lane Report in January that service agreements for state agencies and contracts with OpenFiber Kentucky/Accelecom should generate about \$11 million this year.

Broadband deployment, like what Accelecom is focusing on, has been a priority for Gov. Andy Beshear's administration. During his State of the Commonwealth address in January, Beshear noted his proposed budget for the upcoming fiscal year included \$50 million to expand last-mile broadband access.

"The budget includes a first-time \$50 million public investment in expanding broadband to provide affordable internet connectivity to unserved and underserved areas of the state where the marketplace has determined to not be cost-effective," a 2021-2022 budget document states.

Though last-mile access is a critical part of the future of KentuckyWired, Beshear did not explicitly mention any connection between his proposal and the project, which was first announced by the administration of his father, former Gov. Steve Beshear.

During a Jan. 8 presentation to state House and Senate appropriations and revenue committees, State Budget Director John Hicks said the \$50 million proposal "has nothing to do with KentuckyWired, at all." Rather, Hicks said the money is meant to be part of a broadband deployment fund and referenced legislation passed in the 2020 legislative session and signed into law by Gov. Andy Beshear that created a framework for funding of broadband deployment grants.

Flessas said he could not speak directly to the \$50 million proposal, but said "a lot of times, those funds are targeted for last-mile access."

"But the last mile needs to be connected to the middle mile," Flessas said. "And that's why we hope to partner with those folks as those funds become available so that the last-mile penetration can be connected to the Accelecom/KentuckyWired super highway."