

New Fiber Optic Broadband Network in Eastern Hot Springs Village

green, bolded, underlined terms followed by an asterisk are explained at the end of the article*

Connect2First (C2F), a wholly owned subsidiary of First Electric Cooperative, met with interested parties on Tuesday, November 9th. The meeting was held at the Coronado Community Center to discuss their new Internet service plans for HSV residents who are members of First Electric. Randy Everett, General Manager of C2F, was the primary speaker. Rick Love, Chairman of First Electric, Candace Looper (unsure of name), the C2F Sales and Marketing manager, along with Robby Theodore, C2F Outside Fiber Plant Manager added additional comments during the course of the meeting. Comments from both Randy Everett and Rick Love made it clear that they are proud to be local Arkansas companies, and members of the central Arkansas community. Mr. Love stated that as a regulated cooperative utility, First Electric is "in the service business, not the profit business." That and other comments convinced this author that First Electric's priority is to serve its members first, not maximize profits. The financial agreement between C2F and First Electric supports that same philosophy.

C2F is tasked to offer broadband Internet* access to all 100,000 First Electric members via a new end-to-end fiber optic network*. First Electric is funding the estimated \$250M infrastructure development. C2F will self-fund the operations side with no subsidy from First Electric. Once profits are realized, those funds will be returned to First Electric. C2F has applied for State and Federal grants to help fund the build, and asked that the Coop members contact their representatives to help with that endeavor. C2F **may** extend the service to non-First Electric members **if** sufficient government funding is received. There is no guarantee however that an expansion would be into Garland County HSV. This author believes that the subscription rate in Saline-HSV would influence that decision.

INFRASTRUCTURE CONSTRUCTION

Construction has begun elsewhere, and C2F stated they are serving about 1,000 structures. Construction is slated to start this month and will begin at the East Gate and proceed west to the Saline County line more or less (there are some First Electric members in Garland County). C2F could not comment on scheduling since so much depends on how much rock they encounter during the trenching and conduit installation. They are hopeful to complete this project by the end of 2024. C2F will organize the installation into areas (as many as ten) that cover all First Electric members. In each area there will be five phases of construction which are:

1. **backbone construction** – installing high-capacity fiber optic cable that interconnects the network branches
2. **local construction** – running fiber optic cable into neighborhoods
3. **splicing** – joining thousands of fibers at the network junctions
4. **testing** – all things that makes sure the network operates as intended
5. **installation** – fiber run from the street into the structure, and inside equipment connection & set-up

Since each phase requires different equipment, and crews, to complete the phase, construction in new areas will begin as phases complete in previous areas. Service is expected to be offered after phase 4 completes in their area. C2F estimates that new service installations will begin between November 2022 and May 2023.

The map on the following page shows the first two construction areas announced by C2F. The associated table indicates the construction phase for each area.

INTERNET BROADBAND SERVICE

C2F **ISP*** provides basic Internet connectivity; the hardware necessary to connect to the Internet and an **IP address***. C2F will not operate an **e-mail server*** nor will they offer an **entertainment package***. There is more product information on C2F's website, Connect2First.net/fiber, but a summary of the service is:

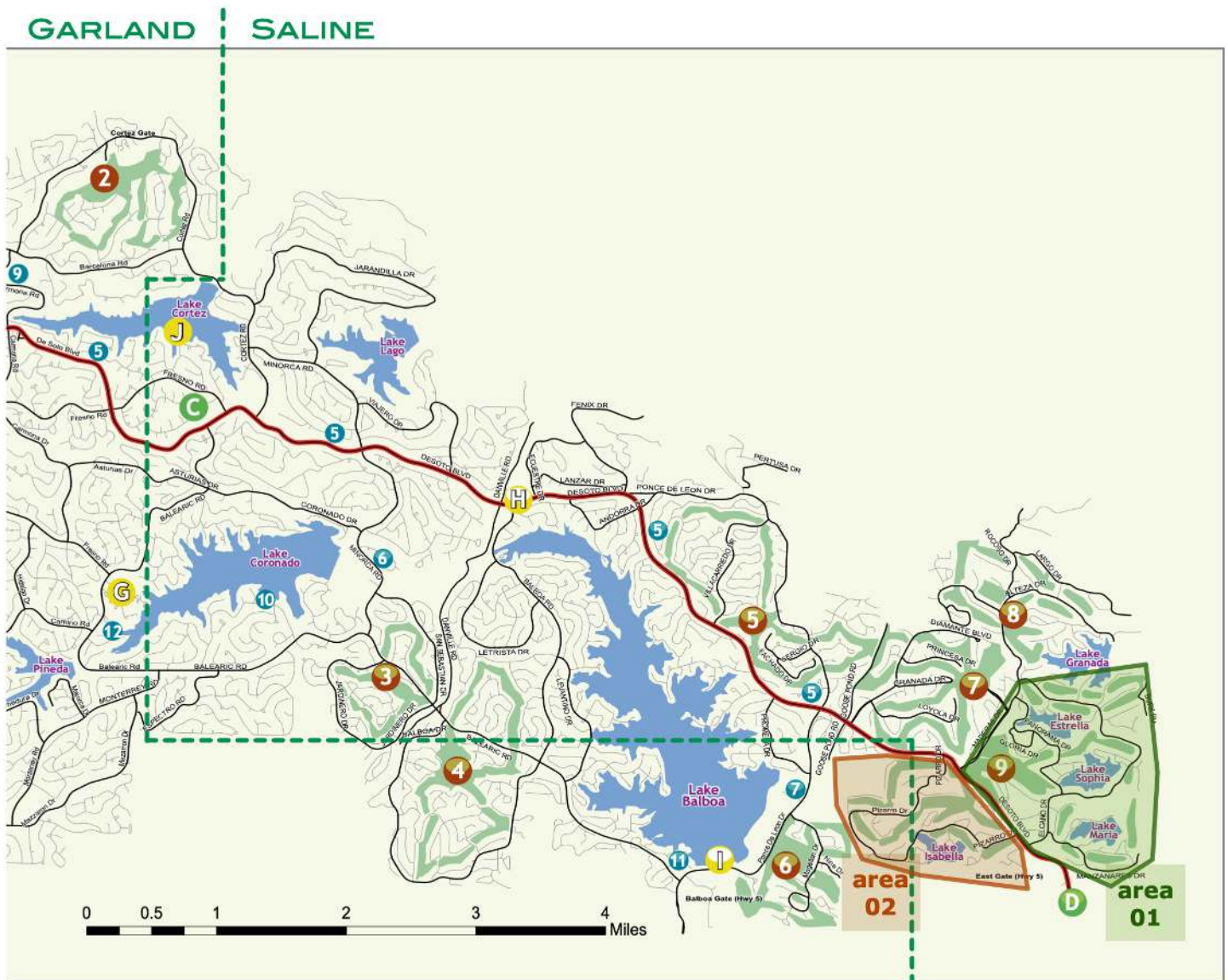
plans	bandwidth*	monthly price
Basic	200 Mbps	\$59.99
Premium	500 Mbps	\$69.99
Ultimate	1 Gbps	\$99.99

- **symmetric speeds***
- unlimited **data allowance***
- no **throttling***
- a **router*** (C2F calls it a modem) and one WiFi node are provided at no cost
- installation free with a one-year commitment, otherwise \$350
- telephone line for user support
- optional bundled **Internet phone*** for \$25/month
- optional additional WiFi nodes available for purchase
- optional **managed WiFi*** for \$7.95/month

Billing is separate from your electric bill and is paperless; electronic invoices and only electronic payment (no cash, checks or money orders) are accepted. In the presentation, C2F stated that they see no reason for the plan prices to increase over the next five years.

The router measures about 5" x 7" x 1". It has a four **RJ45* Ethernet*** ports, most certainly running gigabit Ethernet. The router does not have built-in **WiFi*** as is common in other routers. The WiFi comes as a separate small round device designed to plug directly into a 120v wall socket and connects to the router using one of the Ethernet ports. I could not discern the unit's WiFi version, but it is most likely **WiFi 5***. The WiFi node is capable of connecting to an existing WiFi network. I could not confirm if the router provides any **firewall*** protection.

I asked Mr. Theodore the Outside Fiber Plant Manager about installation at each structure. He replied that cable will be routed to structures in conduit buried 12". Installers will not be using back hoes, but equipment that slices into the ground and inserts the conduit as it moves along. This equipment is specifically designed to minimize the disruption or damage to existing landscaping. Installers are not required to route the cable to any particular location on you house (such as near the main circuit breaker box). He promised



area	backbone	local	splicing	testing	installation
01	Nov '21				
02	Nov '21				
03					
04					
05					
06					
07					
08					
09					
10					

estimated
finish
2024

that installers would work with the homeowners to determine the most desirable and feasible cable routing, entry point, and router location in the house. He explained that installation would occur in two steps. First, extending fiber optic cable from a street termination point into the house and to the router location. Second a specialist will connect the cable to the router, install the WiFi node, install any additionally purchased equipment (Internet phone or extra WiFi nodes), and test the internet connection.

Given what they do, installers should be able to explain the extent of the WiFi network bundled with your service. Ask about the range of the WiFi for a streaming TV and for WiFi calling. (The WiFi calling distance will be greater than streaming.)

It is not clear to what extent the set-up specialists will assist residents; rename or change passwords on the new WiFi network, add a guest network, bring their equipment up on the new WiFi network, or link the WiFi node to an existing WiFi network.

CONCLUSION

The Connect2First prices for fiber optic broadband are the lowest I can remember seeing, and there is no debate that fiber is the highest quality and most reliable Internet service available to residential customers worldwide. I think that First Electric members are very fortunate to have an opportunity to subscribe to such a service. When I think about all the places in First Electric's coverage area that C2F could have begun installing their network, I can think of no reason why they should start out here at the periphery of the territory. I suspect some credit should go to the GAC and POA for promoting the needs of Hot Springs Village residents to the county and state governments and businesses.

As you can see, the Network Build Status Map and table above are sparse at this point. If there is sufficient reader interest, I will republish this report with the latest construction progress and service and equipment details as the information comes available.

GLOSSARY

bandwidth

description: The capacity of a signal to transmit data in broadband services measured in millions of bits per second (Mbps). Marketing literature usually calls this "speed" because some (not all) computer processes run more quickly with higher bandwidth, however it is more accurate to think of bandwidth as the amount of data delivered per unit time.

implication: The common notion that more bandwidth is better because it will make everything run faster is far more false than true. At the speeds of the C2F service almost all users will be unable to perceive the speed increase. Even extremely large file downloads will complete quickly. For instance, a 1 GB file will theoretically download in 40 seconds on the Basic Plan, and 5 seconds on the Ultra Plan. With the right information, it is a simple exercise to calculate a household's bandwidth requirement, but the short answer is over 99% of households with one or two occupants will not see a performance improvement between the C2F Basic Plan and the other pricier plans.

broadband and high-speed Internet

description: These are marketing terms that came into use during the first decade of the 21st century. Residential broadband services vary greatly in bandwidth, usually between 5 Mbps and 1,000 Mbps (1 Gbps).

communications (or network) protocol

description: A set of rules that determine how data is transmitted in telecommunications and computer networks.

data allowance

description: The bytes of data allowed by your broadband (or cellular) subscription.

implication: Exceeding your data allowance incurs penalties such as additional fees, throttled bandwidth, or service suspension.

download speed

description: The bandwidth of data moving from the Internet into a subscriber's router.

e-mail server

description: Hardware and software located at the ISP acting as a virtual post office, storing incoming mail for distribution to local users and sending outgoing messages.

implication: With C2F service, users will need to procure an e-mail address from another source. Free services are available. Twelve are described in this [HubSpot blog](#) post.

end-to-end fiber optic network

description: The Internet packets travel exclusively over fiber optic from router to ISP. (Today, an Internet transmission may travel over several different media; co-ax, twisted pair, radio, microwave, and fiber optic can all be involved.)

entertainment package

description: A large collection of broadcast TV channels and movie streaming services assembled into one product and sold as a subscription to customers. This is typically how cable and satellite companies package their video services.

implication: Users with an ISP-provided entertainment package, that change to C2F for broadband services will need to switch to **streaming*** for their entertainment. See these resources: Google "how to set up streaming", and read the [PC Magazine article](#).

Ethernet

description: The most prevalent **communications protocol*** for **LANs***. It is used in commercial and residential wired and wireless (WiFi) computer networks. Gigabit Ethernet (or 1000BASE-T) is a specific implementation of this technology and runs on Cat 5e twisted pair cabling. Introduced in 1999 with a nominal bandwidth of 1 Gbps, it is the most common version of Ethernet running on wired LANs in residences and small businesses.

fiber optic cable (a.k.a. optic cable or optical fiber cable)

description: A network cable containing from one to hundreds of flexible glass fibers that transmit information via laser or LED light pulses.

implication: Fiber optic is a more reliable Internet cabling, because it is immune to radio frequency interference (RFI). Fiber optic is a more secure Internet cabling, because it

does not emit a radio frequency signal that can be intercepted with eavesdropping equipment. Other Internet risks such as phishing, cyber-attacks, and malware are unaffected by over fiber optic.

firewall

description: Provides protection against outside cyber attackers by shielding your computer or network from malicious or unnecessary network traffic or **malware***.

Internet phone

description: A wireless telephone that places calls via WiFi instead of land lines.

implication: A smartphone with WiFi Calling switched on makes an Internet phone completely redundant.

IP address

description: A unique address that identifies every destination on the Internet.

ISP

description: An Internet Service Provider is any organization that provides services for accessing, using, or participating in the Internet.

LAN

description: A local area network is a computer network that interconnects devices within a limited area, usually one or a few adjacent buildings.

malware

description: An umbrella term for any type of software designed to harm or exploit any programmable device, service, or network. Categories of malware are viruses, scareware, spyware, ransomware, worms, trojans, and others.

managed WiFi

description: A remote support service that has access to a WiFi network for the purposes of troubleshooting and optimizing the network.

RJ45

description: The most common connector form used in LAN equipment connection. It looks very much like a modular phone jack, but is slightly larger.

router

description: In the Internet environment, routers connect two dissimilar packet-switched networks. Beyond they have different capabilities and functionality depending on the specifics of the networks being joined. Residential routers can provide modem, firewall, local addressing, LAN hub, WiFi node services depending on the model.

streaming

description: Viewing entertainment audio and video by subscribing to various Internet-based media providers. In this arrangement, streaming controllers (e.g., Roku, Fire TV Stick, Apple TV..) replace the cable or satellite receivers.

implication: Users with an ISP-provided entertainment package, that change to C2F for broadband services will need to switch to **streaming*** for their entertainment. See these resources: Google "how to set up streaming", and read the [PC Magazine article](#).

symmetric speeds

description: The same bandwidth for both the upload and download traffic.

throttling

description: A reduction in bandwidth below the subscription target rate.

implication: Throttling may be imposed on a user by the ISP for data consumption in excess of the subscription allowance. It also happens automatically and to all on-line users when a congested network lacks the capacity to meet the demand.

upload speed

description: The bandwidth of data moving from a subscriber's router into the Internet.

WiFi

description: A family of radio signal, short range, network protocols, the most common version are LANs using Ethernet protocol. WiFi nodes (radio transceivers) together with WiFi-capable hardware (smartphones, tablets, laptop computers, desktop computers, smart home devices) form a self-configuring computer network.

WiFi 5

description: The fifth significant revision to the WiFi standard, also known by its standard name, IEEE 802.11ac. WiFi was first released in 1999. The WiFi 5 revision was finalized in 2014, and remains the most used version today. (The most current, and most expensive, version is WiFi 6 and WiFi 6e.) Each new version of WiFi introduced an increase in bandwidth, but citing a specification for WiFi bandwidth is problematic, since WiFi communicates via radio signal. Inside structures are many things that attenuate or shield radio signals; drywall, doors, carpeting, furniture, plumbing, electrical conduit, appliances... WiFi bandwidth and range greatly depend upon the number and placement of the WiFi nodes and the contents of the structure it is in.