

# Effingham County IT Department Staff Report on Network and Phone Service Vendors with Review of Proposals

Today our network that interconnects our sites and buildings is comprised of multiple methodologies and vendors due to the county being split between multiple providers.

I will start out with what today is our primary and lowest cost connectivity.

## Comcast

Around the 1998-1999 timeframe Comcast was expanding its service to the Effingham area.(1) During that time someone had the forethought to negotiate with Comcast to install fiber to several of our campuses and buildings providing connectivity between them.(2 - 7) 90% of this fiber is aerial. Over the years there have been changes to locations, damage to parts of the fiber plant, along with natural disasters and changes to Comcast's organization.(5) Some of the damages and changes have been covered at Comcast's cost, some have been at the county's cost, and some of the damaged fiber has not been repaired. The challenge with this fiber is that it is built alongside and in the Comcast fiber plant (4) and only monitored by the county. If the damage occurs on a standalone section near the ends we can have it repaired by one of our contractors on our timeframe and cost. If the damage occurs where it is built into the Comcast plant, we have to wait for their availability and are subject to their cost if they repair it. We saw with hurricane Matthew (8) that the power company had hundreds of crews in the area repairing lines. Comcast did not have the resources to send crews into Effingham and some lines remained down for months. With 90% of our fiber being aerial we are at high risk of a major network outage from the fiber being damaged. This damage could be from trees falling on the lines from a storm, to an auto accident taking a pole out, to malicious or terrorist acts. With the changes that have been happening organizationally within Comcast, the local management has been removed or relocated to the regional office in Atlanta. The people that brokered the purchase and install of our fiber with Comcast are all but gone now and none of the ownership and agreements were transferred to the Atlanta office. Comcast is not as willing to repair and pay for the repairs to the fiber as they once were. All but a couple of the contacts that I have with Comcast plant management team have retired or will be soon. At that point we will be forced to deal with the Atlanta representatives. The first and last meeting I had with our Atlanta representatives, I was told that Comcast wanted to charge us \$1,500 per month per site to use our fiber and that would be the cost for any additional sites or changes to the fiber (9, 10). I was told that their plant usage and terms were changing nationwide and that all local agreements, leases, and usage would be changing in the near future.

Other than our fiber network, Comcast provides several other services to the county. Connectivity to three of our remote sites is based off of regular Comcast internet connections. This connectivity was selected due to the cost and connection speed verses what the local telephone company could provide in the area. The county's primary internet service was provided by Comcast for years. This connection is still used as our secondary service due to recent changes and availability of faster internet from Planters. Our Comcast internet was maxed out at 75mbs for years as that was as much as was available in our area. We also receive television service at several sites from Comcast. One important service that we receive from Comcast is a T1/PRI circuit that provides all of our fax numbers and lines. We moved to this several years ago in an attempt to cut cost and test a new solution for

moving the majority of our phone service to a lower cost provider. This solution has worked okay for fax lines, but will not work for our main phone lines. This is due to it being run off the same plant that internet and television run on. When there is a major power outage the lines are down, which means no phone service. When service is down it can take days to resolve at times, neither of these will work for the county phone and lines.

## Windstream

Windstream is and has been our primary provider for phone lines and phone service in a majority of our locations. They have also provided us DSL internet service to several of our locations on the eastern half of the county. Windstream was our only internet provider to our main county facilities for years. When I started in 2008, we only had a 6mb connection, it was upgraded to 12mb when it became available, and then to 26mb, that was the primary internet. The remote sites were at much lower speeds, 1.5mb and 3mb. We still have sites today connecting at those speeds because that is all that is available in those areas. Windstream's DSL runs across copper lines, some of those lines are decades old. The lines are rotting from age, some predate data networks and were never designed to carry high speed data, some of the lines have been struck by lightning, run over by cars and mowers, and even cut while newer lines were buried. It is a mix of underground and aerial lines, but mostly copper. Some of their areas are being upgraded to fiber and newer equipment, but few areas take the fiber to the building. Some of our sites we know will go down leaving the site without communications. These sites go down from environmental changes, such as:

- It rained for two days, so the site will be out for four or five days until the lines dry out.
- It got below 32 degrees, so the site will be down until the lines warm up and "reconnect".
- If the temperature goes over 95 degrees for a day, the equipment providing connectivity overheats and goes offline.

This is not how we want to run and operate critical service facilities such as our fire stations, waste water treatment plant, and the senior center. But this is the reality of what we have been dealing with for years now. Windstream does receive Federal Universal Service Fund (USF) funding to ensure access to affordable communications for rural and low-income consumers, which could have been used to upgrade and replace a lot of its copper plant, but chose not to in our area. These choices were not made by the local Windstream employees but by their corporate offices in Arkansas. Our local techs and representatives have always done a great job with what they have to work with and what they are allowed to do.

### Windstream Phone Service

Windstream has been a major provider of at least 90% of our phone lines and service for years. They provided lines and service prior to us getting our VOIP phone system that we have today. These older lines were part of central office exchange (Centrex System) and some are still in use in remote sites today. This older Centrex system is no longer sold and is difficult for them to maintain and get parts for. Having these types of older lines has held some of our sites up from getting upgrades due to the specific hardware requirements. These lines also make billing difficult and confusing. The newer lines and service that we receive from Windstream feed into our VOIP phone system. But we receive them

over costly T1/PRI lines. Most phone companies have phased out T1/PRI lines and are no longer taking or filling orders for them.

#### Windstream Line Changes and Billing

Annually, we will audit the phone lines by the bill to verify that changes were made correctly, lines added, cancelled, or changed. Billing and changes have been a reoccurring problem.

- We have cancelled lines just to have them turned back on or added back to the bill months later and have to put another cancellation order in.
- Changes to lines revert to what they were before randomly.
- Sometimes the numbers report on caller ID correctly and sometimes they all say Fire Department.

We know these changes are being completed correctly locally, it appears that when they revert it is happening from Windstream corporate.

#### Windstream Service Issues

Service issues have been happening for years but have been more noticeable and more frequent in the last couple of years. We will have outages that range from no phone service at all to not being able to call or receive calls from an area or other provider. Very frequently we cannot call or receive calls from cell phones (Verizon, AT&T or T-Mobile), cannot call out to long distance numbers, cannot call local numbers, cannot call Comcast phone numbers.

For most areas and departments this is a frustrating inconvenience. For some areas this could be life or death, such as when there is an emergency and people are not able to call the Sheriff's Office, EMS, or Fire.

## Planters

Planters Telephone Cooperative was formed in 1950 and purchased Effingham Telephone Company in 1951 and has been serving Effingham and Screven counties since then. As a cooperative they operate on a not for profit basis (11) so the federal funding received has been used to upgrade their plant and systems, and to keep the cost reasonable for their members.

Planters has provided phone and internet service to the western portion of the county offices and locations for years. County fire and EMS stations on the western side had copper lines and DSL service. Service interruptions from cut lines and lightning strikes would happen from time to time. Most of our lift stations had a phone line with a dial out service on them since they were put in. These phone lines had some issues with going down, being struck by lightning, etc. just like other copper lines. With upgrades to the lift station equipment a few years back those lines were no longer needed due to cellular modems built into the equipment and were cancelled. Around the same time Planters was upgrading their plant on the western side of the county to fiber. Once the sites were converted from copper to fiber the outages have almost gone away. There will be an occasional fiber cut but they will generally have it repaired within a few hours. Damage from lightning strikes almost never happens now.

Planters was not a major option for the county for a long time due to their coverage area. A few years back they started building their plant into Windstream's service area. They built a fiber network

out to support the Board of Education and all of the schools. They extended their fiber network to support the hospital and crossed highway 21 to provide connectivity to the Sheriff's Office. They have even provided service to the Clarence Morgan Complex. Around the time they were building out connectivity to the sheriff's office we started having discussions with them for connectivity to the other county facilities. At that time most facilities were still out of reach, but we provided them with a wish list of county locations. One very important connection that was needed was a secondary fiber path to the 911 center, a fiber path that was buried. After Hurricane Matthew we realized how vulnerable all of our aerial fiber was and what the recovery time would be. We could not afford to have our 911 center cut off and isolated from the rest of our network. Planters was willing to help with an underground path but did not have the fiber connectivity all the way back to us at the time. Once they had fiber connectivity through Guyton and were into the Sheriff's office they had a path to get us that underground fiber path. We looked at leasing dark fiber from them but settled on a lit service connection. The lit service connection works out better for both the county and for Planters. The county receives the connectivity needed at a lower cost and Planters is able to continue receiving Federal funding for services in its ILEC area.

During discussions with Planters about our locations and different connectivity options they explained that they had completed a fully managed fiber network for Burke County. With the complexity of our network, having network staff, and the need for flexibility we did not need a fully managed solution. With the cost of leasing dark fiber and the complexity of building virtual private networks (VPN's) across the internet we needed a different solution. Working with Planters engineers we came up with a private network running across Planters fiber network, a layer 2 LAN network. Over the past year working with Planters, we have built out a test network with six remote sites connecting back to the 911 center using this technology. These sites include fire stations and even the new admin building. We are able to provide the same services to these locations as all of our locations that are on our fiber, (data, phone, and internet). This test network has been reliable, we have experienced a couple of short outages and Planters has worked with us to help resolve them. A couple of outages were caused by misconfigurations on our side and there was a fiber cut that Planters fixed within the day. Planters has provided this test network and connectivity to the county without charge other than the basic phone or internet charges at a couple of sites. They have even covered the fiber buildout cost to some of the sites. Planters wants to be a partner with the county.

## **Smaller and One Off Connectivity and Services**

### **BellSouth / AT&T**

BellSouth once owned the coverage area to the far southwest. This area includes Faulkville and Meldrim. This area is now covered by AT&T. AT&T prices on phone service is three times that of our other service providers. AT&T's internet is DSL only and is much lower speed and higher cost than Comcast. The only other services that we receive from AT&T are 911 traffic and calls along with access to state resources that the state only provides using AT&T.

## **Verizon**

Other than the majority of the county cell phones, Verizon also provides data services. These data services work great in our mobile applications such as Ambulances, Fire vehicles, and Sheriff Deputy's cars. We also use Verizon data services as a last resort to sites where the connectivity from the local service provider is so bad and unstable that it is unusable. We have some sites that ran this way for years waiting on a better solution and one site is running this way today. There are issues with running sites this way:

- Wireless connectivity to the tower changes constantly which varies the bandwidth available to the site.
- The connectivity is engineered with multiple pieces of equipment that have a delicate balance and particular connection sequence. If a power outage occurs or a piece of equipment hangs up or fails, an IT staff person has to go to the site to reestablish the connectivity.
- The Verizon equipment is not designed to support a whole site or run 24x7. The units are battery powered and if left plugged in will damage the batteries. With the large data usage at those sites the electronics in the equipment fails or degrades in about half the normal lifespan.
- This high failure rate or needing to be reset by IT staff does not make this a permanent solution for sites, but it is a good stopgap until there is a better provider available.

## **Future of Effingham County's Network**

Where our network could be in the near future, it will still be comprised of multiple methodologies and vendors. Due to the areas being serviced by different vendors we will still rely on all of our vendors to fully cover the county locations. We do have the opportunity to move most of our locations onto a fiber network that will be more resilient, better supported and more reliable. Moving in this direction will provide some sites with much better service and speed than they have ever had. Moving forward will come with a cost.

With the changes Comcast was proposing we decided to reach out to our vendors to propose solutions that would move Effingham County forward with its network connectivity and phone service. With cost, manageability, and support in mind we knew that private fiber to all of our locations was not a valid option. Our vendors proposed a private partially managed network. Windstream offered connectivity to all of our sites using conventional connectivity solutions similar to what we are using today but at around 30mb at each site. This solution could work but would be slow and in most areas would still be utilizing copper lines and we would have the same problems that we do today. Planters has offered 1GB fiber connectivity to most of our sites. I say most of our sites because construction cost to some of the sites would be unreasonable for either party. The sites that cannot be reached affordably today are being serviced in the best and lowest cost solution available.

One major benefit with the Planters solution is that the residents along and near the fiber routes will have the opportunity to be served with faster fiber connectivity.

## Staff Review of Proposals

At our meeting with Comcast on July 23 2019 they informed us of changes and proposed charges of \$1500 per site. With Comcast proposal the thirteen primary sites that utilize the fiber today would cost the county \$19,500 per month. (10) I informed the Comcast Representative that we had just started a new budget year and that cost was not budgeted. I told them any changes would have to be presented at the next year's budget planning meeting and approved by the Board of Commissioners. That was the last meeting we had with Comcast.

Since that meeting but after we requested proposals from our other vendors we did find documentation where Effingham County purchased our current fiber solution.

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Windstream Proposal (based on Windstream proposal 1968883 using same sites as Planters Proposal)

Data Service Total 24 sites \$19681.78 per Month.

Base Sites 30Mbs Eth VLS (Layer 2) \$335 per month per site.

Sheriff's Office Total \$4912.68 per month

Internet \$659.58 per month

SDWAN \$1197.10 per month

VLS \$3000.00 per month

Static IP - 32 total \$56.00 per month

MACC Total \$7399.10 per month

Internet 500Mbs \$1900.00 per month

Internet 1Gbs \$1246.00 per month

SDWAN \$1197.10 per month

VLS \$3000.00 per month

Static IP - 32 total \$56.00 per month

VOICE Service Total \$2642.68 per month

@Sheriff's Office \$1246.00 per month

20 X 3 TN \$6.00 per month

@Admin Office \$1330.68 per month

20 X 30 TN \$60.00 per month

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Windstream Grand Total Voice and Data \$22,324.46 per month (12, 13 ,14)

## Planters Proposal

Data Total 24 sites	\$8350 per month	
Base Sites 1Gbs (Layer 2)	\$300 per month per site.	
Sheriff's Office	Total \$800 per month	
Internet 1Gbs Symmetrical	\$500 per month	
MACC	Total \$950 per month	
Internet 1Gbs Symmetrical w Static IPs	\$650 per month	
VOICE Service Total	\$2605 per month	
@MACC		
30 Seats	\$750 per month	
SIP FEE	\$15 per month	
570 phone Numbers	\$1140 per month (450 quoted at \$2 each for \$900 per month)	
20 POTs phone lines	\$700 per month (0 quoted at \$35 each per month)	
Planters Grand Total Voice and Data	\$10955 per month	(15, 16)

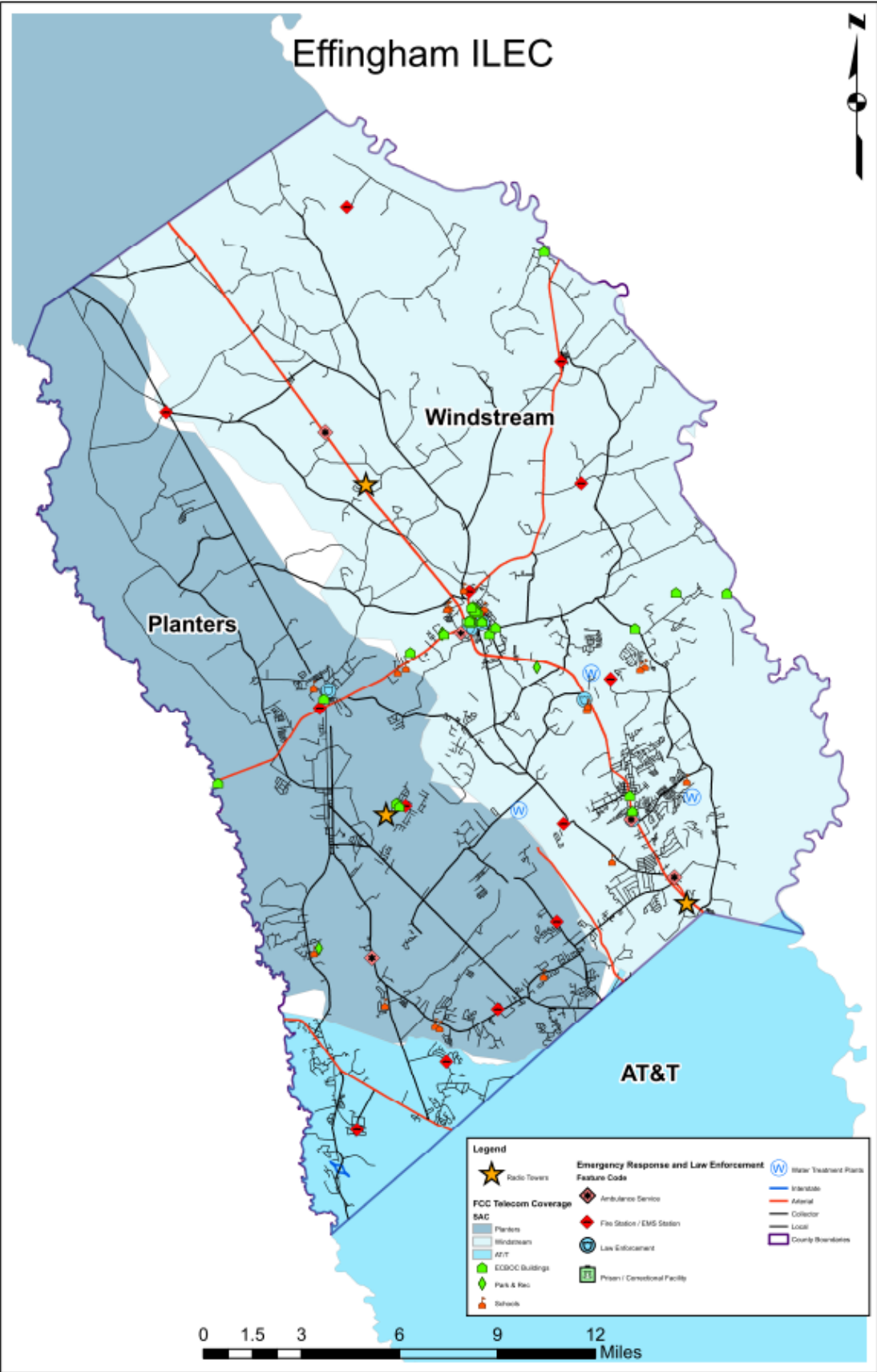
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With the services that will be provided, service history with the vendors, and the monthly reoccurring cost, staff recommends proceeding with the Planters proposal.

## Background Information and Coverage areas in Effingham County

In the early 1980s, the U.S. government forced AT&T to break up into seven smaller local phone companies. And in 1996, the FCC forced these seven local phone companies, known as the Baby Bells, to open up their networks to outside competition. Since then hundreds of telecommunications companies have been formed, and between mergers and buyouts Local Exchange Carrier (**LEC**) areas have changed. Two important regulatory terms that affect us are, Incumbent Local Exchange Carriers (**ILEC**) and Competitive Local Exchange Carriers (**CLEC**). In Effingham County we have three ILECs with their respective areas, AT&T, Planters, and Windstream. ILECs have a defined operating footprint or coverage area that they provide services to. They have regulated rates for services in their coverage area that are defined and regulated by the FCC and the GA Public Service Commission. These ILECs receive funding to provide services at competitive rates for the local residents and businesses along with improving their infrastructure. The funding sources are not limited to but include the State of Georgia's Universal Access Fund (UAF) to assure reasonable access to services in high cost areas, along with the FCC's Universal Service Fund (USF) which is comprised of four programs designed to ensure access to affordable communications for schools, libraries, health care providers, and rural and low-income consumers. CLECs operate within another ILECs area as a competitor but do not receive any funding for that area other than what is charged to the customer.

Please see the Effingham ILEC map included that was generated by our GIS Department using FCC data.





References:

- (1) 4-4-2000 Comcast Resolution.pdf Effingham County Minute Book Pages
  - a. April 4 2000 Minute Book Pages
    - i. P178 South Effingham Cable Franchise Transfer to Comcast (9)
      1. References P210
    - ii. P210 – 211 Resolution Effingham County Consenting to change of Control of Cable Franchise
  - b. June 20, 2000 Minute Book Pages
    - i. P338 Computer Network / Software for One Stop Shop (11)
      1. Proposal & Cost of Fiber install by Comcast for the County
- (2) County-Memo-Pricing-6-15-00.pdf Lamar Crosby Memo to Commissioners
- (3) County-Memo-Pricing-9-20-00.pdf John Karrh Interoffice Memo to Lamar Crosby
- (4) County-Memo-Pricing-10-2-00.pdf Lamar Crosby Memo to Commissioners
- (5) Comcast-Communications and pricing Fax's between the County and Comcast about fiber
- (6) AllTel-Quote.pdf 1999 Competitive bid from AllTel Communications
- (7) Infinity-Quote.pdf 1999 Competitive bid from Infinity Inc.
- (8) Comcast Storm Restoration Update.pdf Email From Comcast on Restoration Efforts
- (9) 7-18-19-Comcast-Email Email confirming Meeting on 7-23-19
- (10)7-23-19-Meeting-W-ComCast-New-Pricing Meeting Notes with Comcast 7-23-19
- (11) Planters bylaws-1.pdf Page 16 ARTICLE VII NON-PROFIT OPERATION
- (12)Windstream Switched Ethernet- 1968883.pdf Windstream Layer -2 Proposal
- (13)Windstream SD WAN- 1958481.pdf Windstream SDWAN Layer -3 Proposal
- (14)Windstream Email Jan 2020.pdf Windstream email on Layer 2 and 3 with speed options
- (15)Planters Contract (SITES 1-24).pdf Planters Data and Internet Contract for 24 sites
- (16)Planters Contract (Phone Services).pdf Planters Phone Services Contract.pdf