

Opportunity Outline for City of Independence

This document outlines our discussion on Friday, January 22, 2021. The purpose is for further discussion with the City Council to understand the desire to move forward with fiber deployment for advanced utility use and possible residential and business broadband.

Utility Use of Fiber

Prior to our discussion, The City of Independence Electric Utility, with good fore thought deployed fiber connecting major substations and key locations. This was essential to supporting SCADA and security needed by the Utility. FiberRise recommends such a deployment for all utilities not just for broadband deployments but also for SCADA, Grid Modernization, future requirements, and security. The Fiber backbone to substations and key locations allow for a redundant, high bandwidth solutions used for all utility applications. The backbone network does not need to have a large excess of fiber to offer advanced utility support of residential business services as capacity can easily be increased using Wave Division Multiplexing schemes. The bottom line is that current fiber that has been deployed by the utility is useful for both advanced utility applications and broadband residential/business applications.

It is the next step options for the City of Independence related to broadband that need careful considerations.

In the future, the Electric Utility may/will want to have bandwidth available beyond the substation. This could be for communication to AMI data collectors, high speed communications with relays to mitigate outages (UTC paper from South Company attached on how they do this – FiberRise engineered and deployed this solution for them), or for communications to devices such as: charging stations, private power generators, or utility security camera. This would require fiber cables going out from the substations along the primary feeder routes. Further, the large increase in devices and locations that will need high bandwidth (100M to 10G) will require lower cost electronics to make such connections financially viable. Fortunately, the same electronics used in FTTH deployments for the past 20 years are capable for these utility applications – known as GPON (gigabyte passive optical network) – allow for end point electronics to be less than \$100.00 as compared to Point-to-Point electronics that range in the thousands of dollars. GPON networks also work from “splitters” to reduce fiber counts. Using these splitters, 1 fiber typically can serve 16 locations.

The advanced use of GPON networks for the City of Independence Electric department is easy to understand and justify, it is the additional opportunity that flows from such deployments that need consideration.

Two key points to know: **First**, when fiber is deployed (either aerially or underground), adding additional fiber (if you want to offer high broadband services for residential or businesses) costs very little in terms of the overall project. Engineering and construction cost remain unchanged between a 24-fiber cable or a 144-fiber cable apart from splicing. This means when fiber is deployed for Electric Utility applications, it is very cost effective to add additional fiber for broadband (residential or business). **Second**, Distribution Power companies had deployment cost advantages that no telecom companies have. The Utilities own right of way, both aerially and underground that fiber can occupy. This is most true for aerial infrastructure as Power Companies are allowed to place fiber cable (ADSS All Dielectric Self Supporting) in the power supply space per NESC code while all telecom companies have to place in the

Comm locations (which are typically crowded and in need of make ready work). The power supply space usually requires minimal make ready work.

The conclusion is that if The City of Independence Power Utility is going to continue to deploy fiber (particularly if that fiber is going beyond the substation), then now is the time to determine if deploying additional fiber for broadband (residential or business) is warranted. A related consideration would be if the city could obtain needed fiber for its operations from a telecom carrier if they took a partnership position to partner for the deployment of a broadband network. This could entail the City owning the fiber network to a “demarcation point” where then the carrier provides the drop to the customer for service (this is the solution that The City of Huntsville, AL took, they provided some capital, got all the fiber they needed, and collected some revenue per customer).

Broadband today in the city of Independence

It is hard to understand why the City of Independence remains underserved bandwidth wise today. There are several large carriers in the area (AT&T and Google) that could offer services. It is unclear if there are right of way access restrictions are the reason why they have not built. FiberRise has conducted a feasibility study using GIS information on all the electric meters that The City of Independence has. Our determination is that the density and route miles would yield high margin rates at minimal take rates. See below:

Take Rate	Margin
60%	68.07%
55%	66.95%
50%	65.27%
45%	63.63%
40%	61.57%
35%	60.09%
30%	54.76%
25%	51.08%
20%	44.56%
15%	31.05%

As the take rate climbs, obviously the capital to build a system increases. Our models show an investment of \$66M at the lowest take rate ascending to \$92M for the highest. For all take rates the cash flow positive line would be crossed in approximately 48 months.

It is hard to pick the best take rate to expect. Because the noted carriers are close, it is expected they would/could move quickly to offer competitive service. Note, we do not expect CATV companies to mount competition related to infrastructure as their current hybrid fiber/Coax network is not capable to compete with gigabyte level service. We would expect CATV companies to dramatically drop prices for extended contracts to mitigate departing customers (we see this at our rural projects). Main line carriers

could offer broadband service in The City of Independence if they wanted to – they currently do not – It is not known if they would rush an FTTH program if a city announced a build.

5G could be a competing solution, however it does have some disadvantages (line of sight, small range, 500megabyte bandwidth, expensive handsets) compared to fiber. While 5G is enticing today, we do not know the coming services and applications that could make it undesirable for the home or business.

FiberRise can develop a complete business plan and feasibility study that the City of Independence could use to determine if building and operating a broadband network for residential and business applications is the right course. This study and planning will include all Power Utility and City application fibers.

This same study is invaluable to the city if the desire is explore partnerships with telecom companies rather than operate the business on its own. The city build model that FiberRise provides will be a lower cost solution based on right of way and existing infrastructure. The study and model will help the city understand what a win/win solution would look like (revenue share and capital expenditures). FiberRise is also capable of vetting carriers that might be interested in working with The City of Independence. This would include outlining acceptable deal structures for the city before engaging carriers.