



PLANNING, DEVELOPMENT AND SUSTAINABILITY

SUSTAINABILITY

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Barriers to Broadband Investments:

At an estimated 350-500 households per square mile for this rural area, compared to urban Iowa City at an estimated 1,300 households per square mile, low population density is the largest barrier that makes it unlikely to receive Broadband service without the contribution of government funds. Broadband providers' opportunity cost of capital is more attracted to denser and higher-growth urban populations to maintain competitive rates market-wide due to higher construction costs per end-customer.

The attached supporting materials describe a model that estimates the rurality rate impact for this area, based on high level design construction costs. Providers also indicate a reluctance to surcharge rural areas due to branding and customer satisfaction impacts, leaving an investment funding source gap.

They are reluctant to have multiple retail rates (based on higher construction costs) for different geographic areas due to (1) billing complexity and (2) customers appreciating why rates are higher for their specific rural area. Rate differentials can become points of conflict and lower customer satisfaction over time, and providers see their brand as needing to retain value that could become impaired if there are rate misconceptions on pure competitiveness metrics.

CBAN Solutions Analysis of the impact of HR Green High Level Design Costs on Retail Rates:

Consultants CBAN Solutions has prepared the attached analysis of the relative financial barriers for the **Kansas Avenue Southwest Community** area. It states that "average residential retail service rates would need to be minimally 35-40% higher than those in an urban area to account for lack of population density. Connectivity for the estimated design to adjacent networks may also be a barrier."

Johnson County, Iowa Barriers to Broadband Model



CBAN Solutions has analyzed the cost information prepared by HR Green for the Johnson County Broadband Study to model the relative impacts of rural area underground fiber network construction, excluding network head-end, drops, customer premise equipment, and installation costs. The goal of the model is to isolate the impacts of low population density on retail rates of service, all other factors being relatively equal.

The relative base cost per premise, for a similar urban development, is based on average cost estimates reviewed by CBAN Solutions and its consultants for municipal utility clients having similar-sized networks in Iowa over the past year.

The modeled cost per subscriber of rural vs. urban network development is based on the HR Green study that compared high level design costs for underground construction builds in various zones. For this area, **Cabinet 1 (see map) estimate is the primary reference data set.** Overhead construction may reduce initial costs, however which would likely be offset by longer customer service drops from the ROW to the premise and increased ongoing maintenance and pole rental fees.

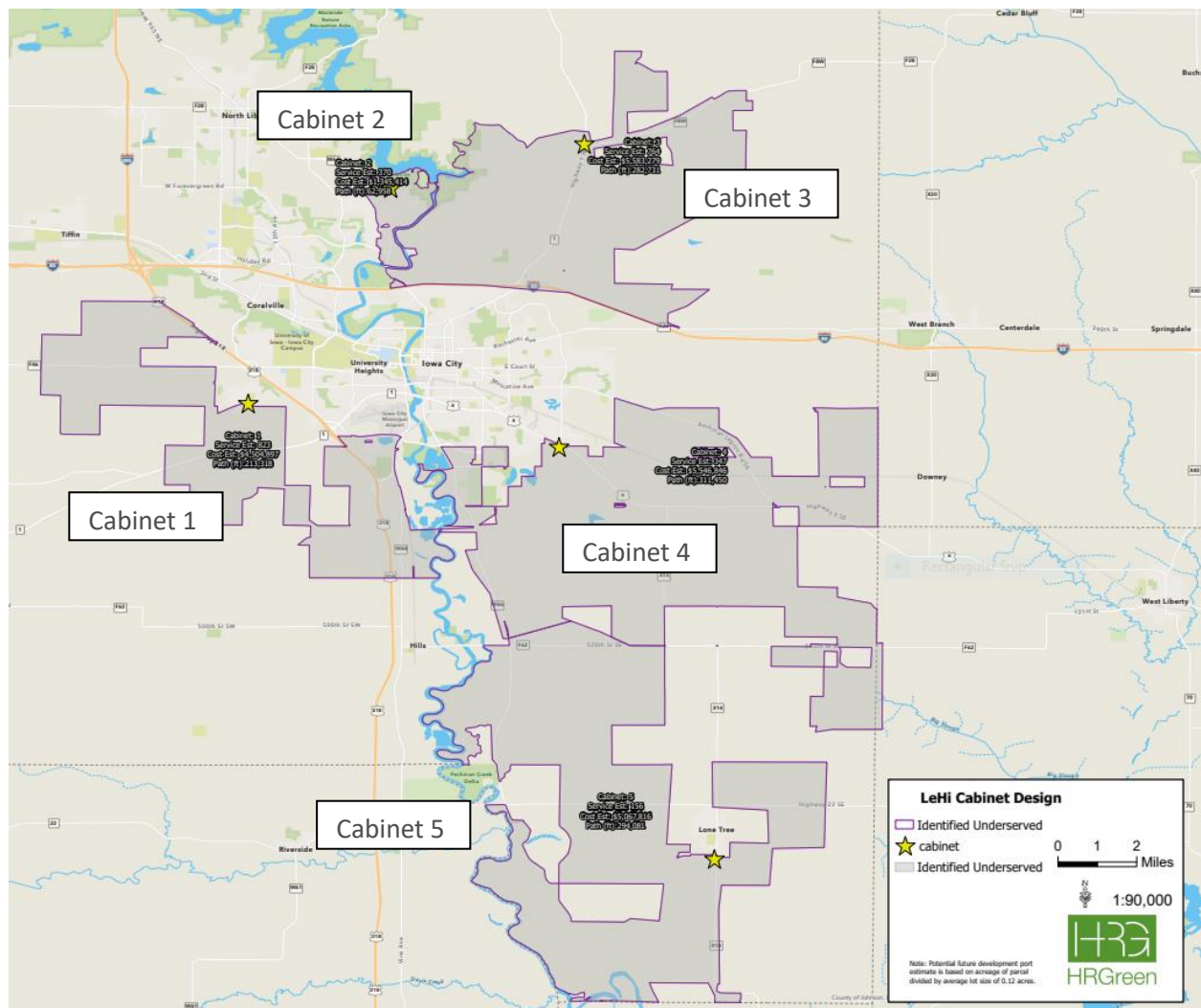
	Cabinet 1	Cabinet 2	Cabinet 3	Cabinet 4	Cabinet 5
Est. Cost	\$ 4,504,897	\$ 1,345,414	\$ 5,583,279	\$ 5,546,846	\$ 5,067,816
#Premises	823	370	764	347	156
Cost per	\$ 5,473.75	\$ 3,636.26	\$ 7,307.96	\$ 15,985.15	\$ 32,486.00

KAS analysis of HR Green study demonstrates ranges of retail rate adders at 55% take rates and 7% cost of capital with 15-year amortized debt; both are the same for both rural and urban networks. The relative rate model also assumes 35% of the base urban retail rate is allocated to the network construction costs described above.

For the **Kansas Avenue Southwest Community** area, average residential retail service rates would need to be minimally 35-40% higher than those in an urban area to account for lack of population density. Connectivity for the estimated design to adjacent networks may also be a barrier.

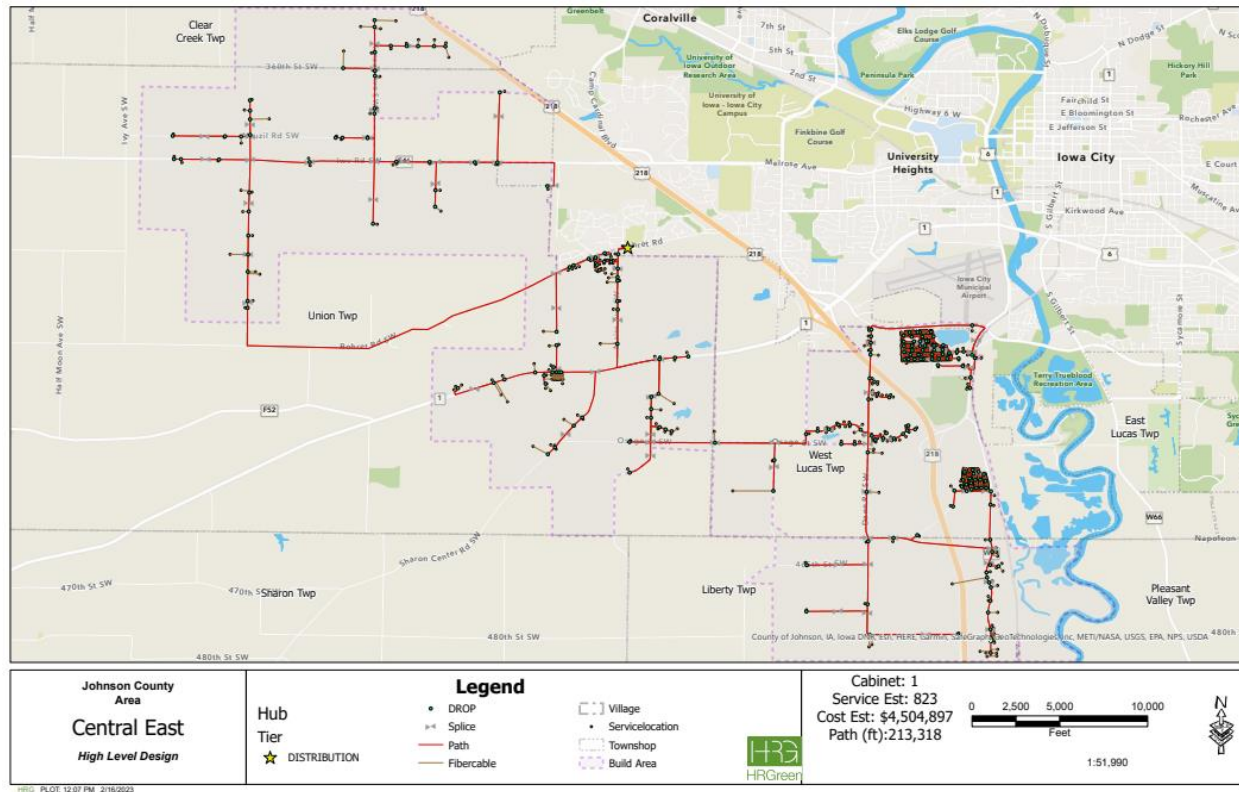
High Level Design and Costs for Gap Areas

To help County leadership have a feeling of the order of magnitude of costs for the areas that were determined to have a gap in good broadband coverage, HR Green performed a high-level design and high-level costing of these areas. High-level means that these designs and costs were derived from a desktop process as opposed to a detailed field verification. The five areas that were designed are below.



Each area is identified by a cabinet number and the detail high-level designs and high-level costs are below per cabinet.

The use of these maps and numbers are for County leadership to have a feel for what needs to be done. This can either be used in conversation with providers or for the County to consider options if no provider wants to cover these areas.



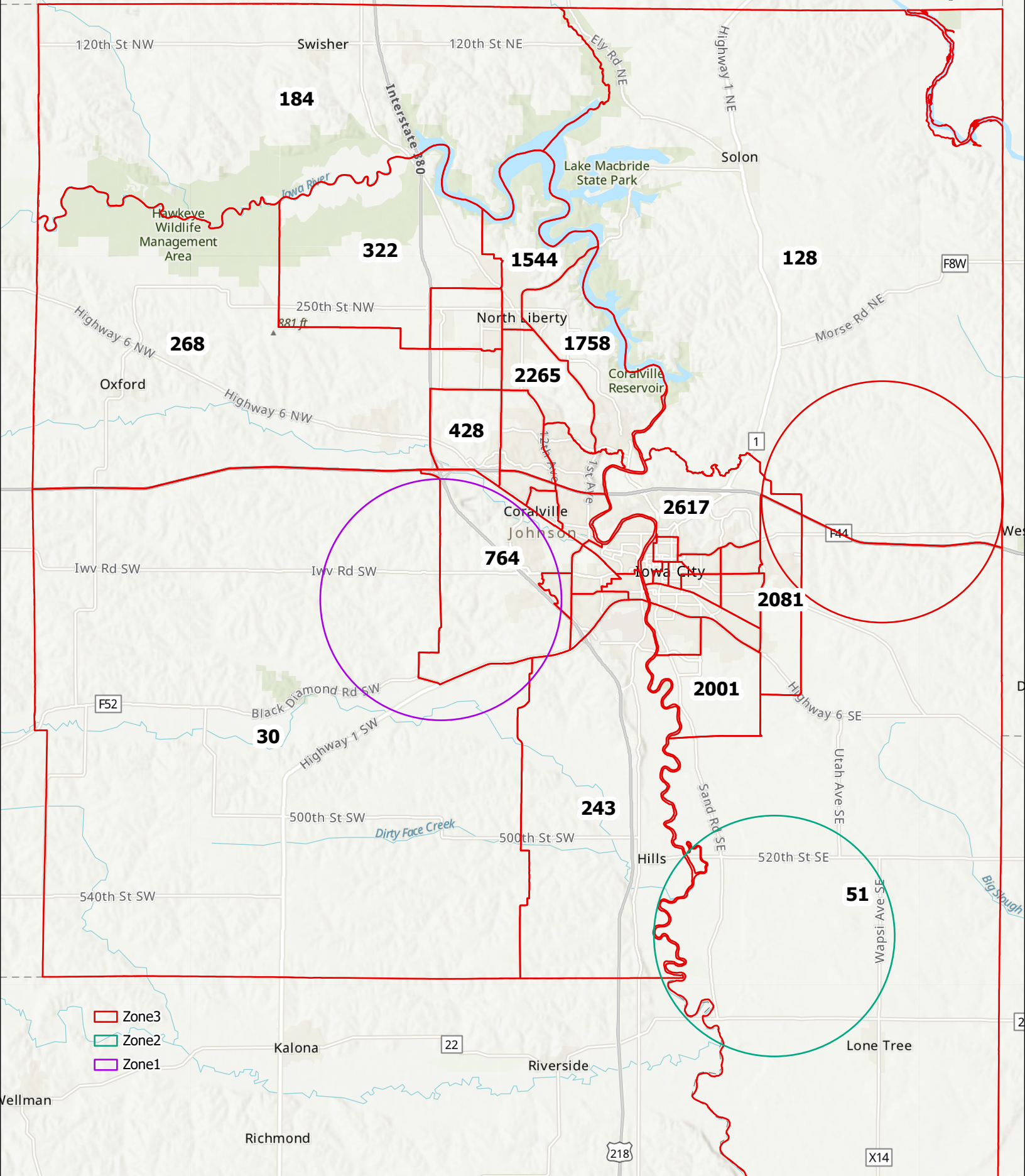
Approximate high-level costs to build out fiber (all built underground) are:

Engineering TOTAL:	\$ 661,286.50
FIBER MATERIALS TOTAL:	\$ 349,986.47
FIBER BLOWING AND INSTALLATION TOTAL:	\$ 178,587.57
FIBER SPLICING AND TESTING TOTAL:	\$ 346,039.00
BURIED Construction MATERIALS- Estimate Total:	\$ 744,302.57
BURIED TOTAL:	\$ 2,224,694.74
Activation TOTAL:	\$ -
Cabinet TOTAL	\$ 4,504,896.85

These costs are for underground construction (which is the more expensive). And, labor and material are dramatically changing on a rapid basis, so costs would need to be verified regularly. But, this does provide an approximate understanding of the cost to build this area.

These costs do not include equipment to run the network, shelter for equipment, contingency, etc. (which are all based on the provider's circumstances). These high-level costs are for construction of the outside plant.

Rurality Measure Broadband HH's/sq Mile



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Data from 2020 Census Data at Tract Level
For Johnson County, Iowa.