



EL DORADO COUNTY
BROADBAND PLANNING AND
ROADMAP

JUNE, 2018

AGENDA

- ❖ Why are Local Govt Investing in Broadband?
- ❖ Models for Gigabit Strategies
 - Strategies to Consider to Reduce Costs, Seek funding etc.
 - Capital Costs for building fiber backbone, connecting county offices and applications, anchor institutions and homes/business
- ❖ Next Steps

WHY ARE LOCAL GOVTS INVESTING IN BROADBAND?

- ❖ The Internet is Everything
- ❖ Bandwidth Demand
 - 79% of all traffic is video (86% in 2021)
 - Facebook is testing “Immersive Video”
 - Virtual Reality and Augmented Reality Applications
 - Ultra-HD video will consume 4 times more bandwidth
- ❖ Internet of Things (IoT) will be a key driver of bandwidth demand (home appliances, smart self driving cars, medical monitoring devices, smart cities, robots, artificial intelligence)
 - 1 Billion Connected Devices by 2020
 - 1 Trillion Connected Sensors by 2030

Global Internet Traffic	
1992	100 GB per DAY
1997	100 GB per HOUR
2002	100 GB per SECOND
2007	2,000 GB per SECOND
2016	26,600 GB per SECOND
2021	105,800 GB per SECOND

WHY ARE LOCAL GOVTS INVESTING IN BROADBAND?

- ❖ **Net Neutrality** Laws Overturned
- ❖ Convergence of Smart City Applications, Cellular Backhaul, Internet Consumption
- ❖ Increasing need for communities to be efficient, **sustainable** and can **generate economic prosperity and social well being.**
- ❖ Local Control of an important **driver of economic development**

In the Report

Section 1 –Introduction and Recommendations

- Initial Recommendations for Implementation Now
- Next steps for evaluating Gigabit strategies



Section 2 –WHY

- Why is this important?
- Why are Local Govts Investing Broadband and what are the benefits?
- Current Assessment and Survey Reponses, Why is the current infrastructure in El Dorado County not sufficient?



Section 3 – WHAT

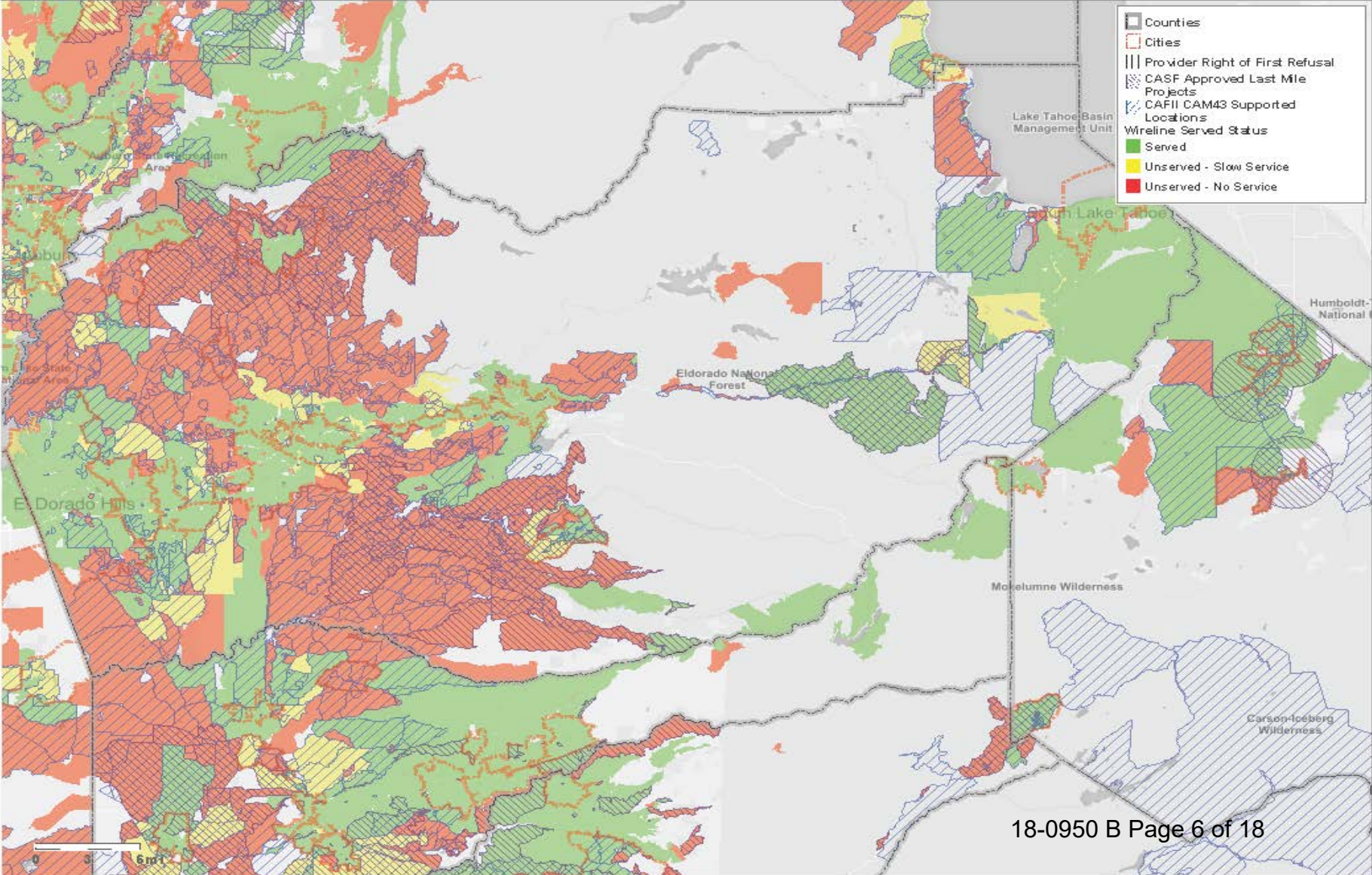
- What policies can be implemented now?
- What can be done now, regardless of the ultimate broadband strategy for Gigabit services?
- How much does this cost?
- What models and best practices have been implemented by other local governments?

CURRENT ASSESSMENT

Areas in red have no broadband service.



California Interactive Broadband Map Data as of: 12/31/2016



STRATEGIES TO IMPROVE BROADBAND

Implement Broadband Friendly Policies and Ordinances and Smart Conduit Construction to Gain Assets and Attract Partners

Connect County Government and “Smart City” Applications, Potential partnerships with Caltrans, Crown Castle and Others


Connect other Key Community Anchor Institutions

Connect Homes and Businesses with Fiber through a Public-Private Partnership or Collaboration

Further Evaluate Working with Existing Providers to Improve their Services (Comcast, AT&T, Calnet, CVIN, CENIC, Others)



IMPLEMENT BROADBAND FRIENDLY POLICIES AND ORDINANCES

- ❖ Dig Once/Shadow Conduit
 - ❖ Joint Trench/Shared Costs
 - ❖ GIS As-builts and Funding Set Aside
 - ❖ One Touch Make Ready
 - ❖ Land Use Policies, Conduit Placement
- 

DIG ONCE/SHADOW CONDUIT POLICIES

❖ Incremental Cost To Install Shadow Conduit Is \$2 - \$7 Per Foot.

❖ Cost To Install New Conduit As A Stand-alone Project Is \$25 - \$35 Per Foot.

❖ Typically, Shadow Conduit Represents 1-2% Of A Road Improvement's Total Project Budget.

❖ Cost Savings

- Traffic and CIP Projects **Identified \$11.8M in cost savings** for fiber (\$13.9M to build new or \$2.1M to partner and place shadow conduit)
- Multi-Use project takes costs from \$9.9M to \$1.5M **resulting in cost savings of \$8.47M**

❖ Gain Assets

❖ Attract Partners

❖ Use in Construction for Network connecting Government, Anchor Institutions

❖ Possible Use in PPP or ISP venture

BACKBONE, COUNTY FACILITIES AND ANCHOR INSTITUTIONS

Middle Mile Capital Costs	
Description	Estimated Capital Costs
Backbone Build	\$ 35,734,166
County Laterals	\$ 19,196,598
County Connections	\$ 1,973,356
Water Tank Laterals	\$ 7,067,788
Water Tank Connections	\$ 279,395
Airport Lateral	\$ 2,276,990
Airport Connection	\$ 53,730
Subtotal	\$ 66,582,023
Add Ons	
Hospitals	\$ 119,566
Subtotal	\$ 119,566

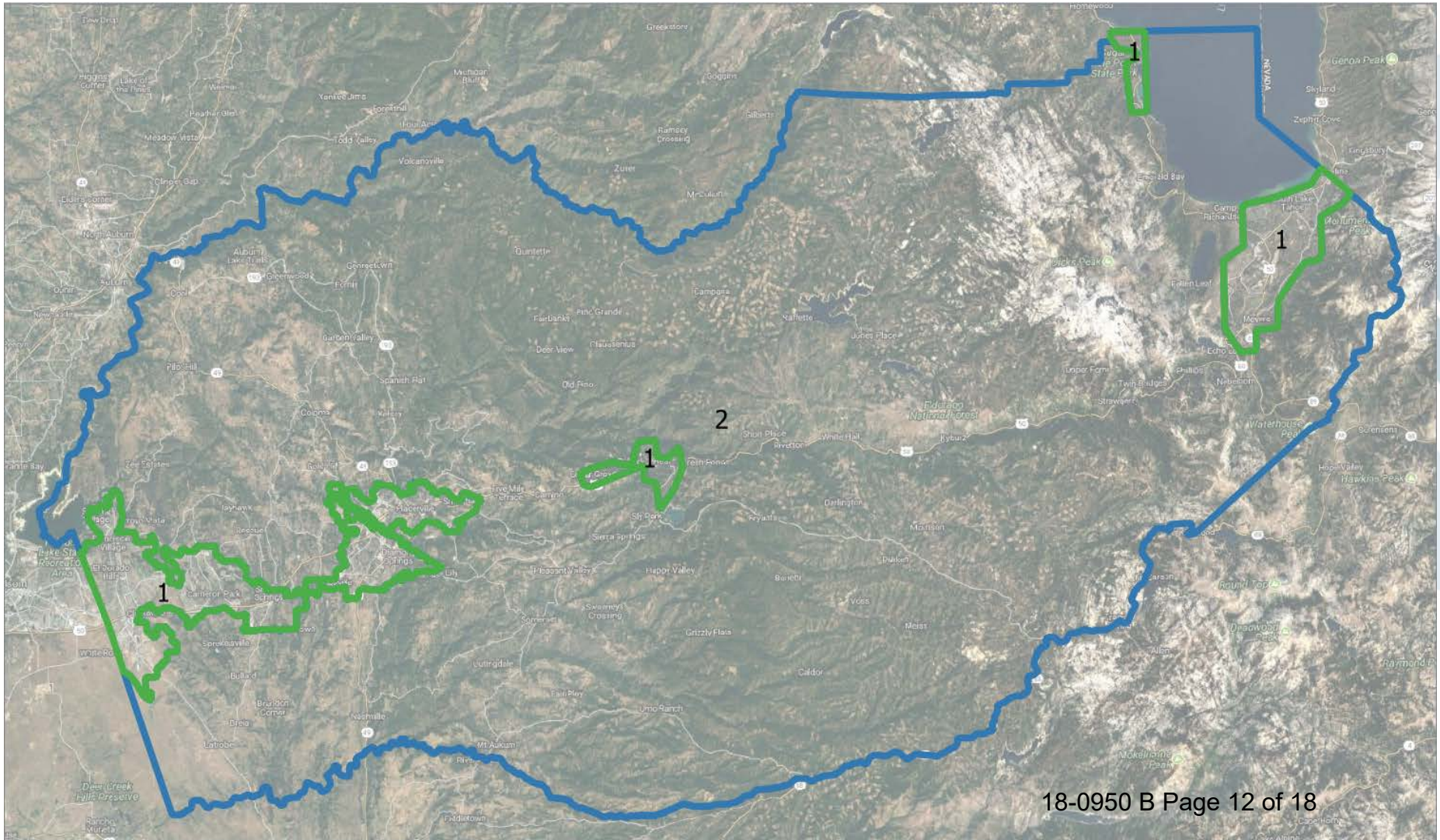
- Connect County Government Applications, Public Safety, Water Meters, Traffic Lights, Parking Meters
- Connect Key Anchor Institutions (Universities, Libraries, Hospitals)
- Caltrans Partnership may dramatically reduce the costs for the Backbone build.
- CVIN has 38.4 miles of existing fiber that could potentially be leased, resulting in approximately \$11.1 Million in cost savings toward the County Laterals.

GIGABIT STRATEGIES

BEST PRACTICES

- ❖ Symmetrical gigabit services
- ❖ \$60 to \$100 pricing for residential customers and
- ❖ \$500 to \$750 pricing for business customers are being offered in cities and towns across the country Options to enter into PPP, variety of models
- ❖ Models are driven mostly to mitigate debt coverage risk – driven by take rate – driven by pricing
- ❖ County involvement, capital, and ownership are negotiable

FIBER TO THE PREMISE GIGABIT BROADBAND PHASING



PHASE 1 FTTP CAPITAL COSTS

Phase 1, FTTP	Take Rate	10%	20%	30%	40%	50%	60%
Overall	Project Cost	\$ 66,223,982	\$ 73,847,565	\$ 81,471,147	\$ 89,093,158	\$ 96,716,741	\$ 104,340,323
	Cost per HHP	\$ 1,256	\$ 1,401	\$ 1,546	\$ 1,690	\$ 1,835	\$ 1,980
	Cost per HHS	\$ 12,564	\$ 7,005	\$ 5,152	\$ 4,226	\$ 3,670	\$ 3,299
	Cost per MI	\$ 92,029	\$ 102,623	\$ 113,217	\$ 123,809	\$ 134,403	\$ 144,998
Phase 1, FTTP	Take Rate	10%	20%	30%	40%	50%	60%
Engr. Labor	Project Cost	\$ 5,640,854	\$ 5,640,854	\$ 5,640,854	\$ 5,640,854	\$ 5,640,854	\$ 5,640,854
Aerial Labor	Project Cost	\$ 7,169,519	\$ 7,169,519	\$ 7,169,519	\$ 7,169,519	\$ 7,169,519	\$ 7,169,519
UG Labor	Project Cost	\$ 24,370,894	\$ 24,370,894	\$ 24,370,894	\$ 24,370,894	\$ 24,370,894	\$ 24,370,894
OSP Materials	Project Cost	15317500	15532919	15748338	15963757	16179176	16394595
Tech Services Labor	Project Cost	\$ 6,288,449	\$ 6,288,449	\$ 6,288,449	\$ 6,288,449	\$ 6,288,449	\$ 6,288,449
Totals		\$ 58,787,214	\$ 59,002,634	\$ 59,218,053	\$ 59,433,472	\$ 59,648,891	\$ 59,864,310
Customer Premise Labor and Install Materials including Splitters	Project Cost	\$ 6,981,143	\$ 13,961,146	\$ 20,941,149	\$ 27,920,911	\$ 34,900,915	\$ 41,880,918
Electronics	Project Cost	\$ 455,626	\$ 883,785	\$ 1,311,945	\$ 1,738,775	\$ 2,166,935	\$ 2,595,094
Overall	Project Cost	\$ 66,223,982	\$ 73,847,565	\$ 81,471,147	\$ 89,093,158	\$ 96,716,741	\$ 104,340,323

Phase 1 Capital Costs range from \$73 – 104M depending upon take rate or market share.

Public private partnerships may allow shared capital costs

PHASE 2 FTTP CAPITAL COSTS

Phase 2, FTTP	Take Rate	10%	20%	30%	40%	50%	60%
Overall	Project Cost	\$ 109,359,571	\$ 114,621,272	\$ 119,881,644	\$ 125,148,788	\$ 130,392,828	\$ 135,654,543
	Cost per HHP	\$ 2,976	\$ 3,119	\$ 3,262	\$ 3,405	\$ 3,548	\$ 3,691
	Cost per HHS	\$ 29,756	\$ 15,594	\$ 10,873	\$ 8,513	\$ 7,096	\$ 6,152
	Cost per MI	\$ 56,881	\$ 59,618	\$ 62,354	\$ 65,094	\$ 67,821	\$ 70,558
Phase 2, FTTP	Take Rate	10%	20%	30%	40%	50%	60%
Engr. Labor	Project Cost	\$ 8,355,963	\$ 8,355,963	\$ 8,355,963	\$ 8,355,963	\$ 8,355,963	\$ 8,355,963
Aerial Labor	Project Cost	\$ 21,819,327	\$ 21,819,327	\$ 21,819,327	\$ 21,819,327	\$ 21,819,327	\$ 21,819,327
UG Labor	Project Cost	\$ 41,820,861	\$ 41,820,861	\$ 41,820,861	\$ 41,820,861	\$ 41,820,861	\$ 41,820,861
OSP Materials	Project Cost	\$ 27,846,550	\$ 27,996,750	\$ 28,146,951	\$ 28,297,152	\$ 28,447,353	\$ 28,597,554
Tech Services Labor	Project Cost	\$ 4,386,259	\$ 4,386,259	\$ 4,386,259	\$ 4,386,259	\$ 4,386,259	\$ 4,386,259
Total		\$ 104,228,959	\$ 104,379,160	\$ 104,529,361	\$ 104,679,562	\$ 104,829,763	\$ 104,979,964
Customer Premise Labor and Install Materials including Splitters	Project Cost	\$ 4,812,094	\$ 9,621,690	\$ 14,431,286	\$ 19,242,227	\$ 24,050,442	\$ 28,860,051
Electronics	Project Cost	\$ 318,517	\$ 620,422	\$ 920,997	\$ 1,226,999	\$ 1,512,624	\$ 1,814,528
Overall	Project Cost	\$ 109,359,571	\$ 114,621,272	\$ 119,881,644	\$ 125,148,788	\$ 130,392,828	\$ 135,654,543

Phase 2 Capital Costs range from \$114 – 135M depending upon take rate or market share.

California Advanced Service Fund has identified Priority Areas within El Dorado County: Coloma, Garden Valley, Greenwood, Latrobe, Shingle Springs, Pilot Hill, Pleasant Valley, Rescue and West Shore.



MODELS TO CONSIDER FOR GIGABIT STRATEGY

Work with phone/cable company

- County may or may not invest capital to incent the providers
- Low financial risk, and no control
- Shadow Conduit, Joint Builds

Wholesale or Public Private Partnership

- # of Financing Options
- Share in Capital Costs
- Share in the Revenue

Retail, County as the ISP

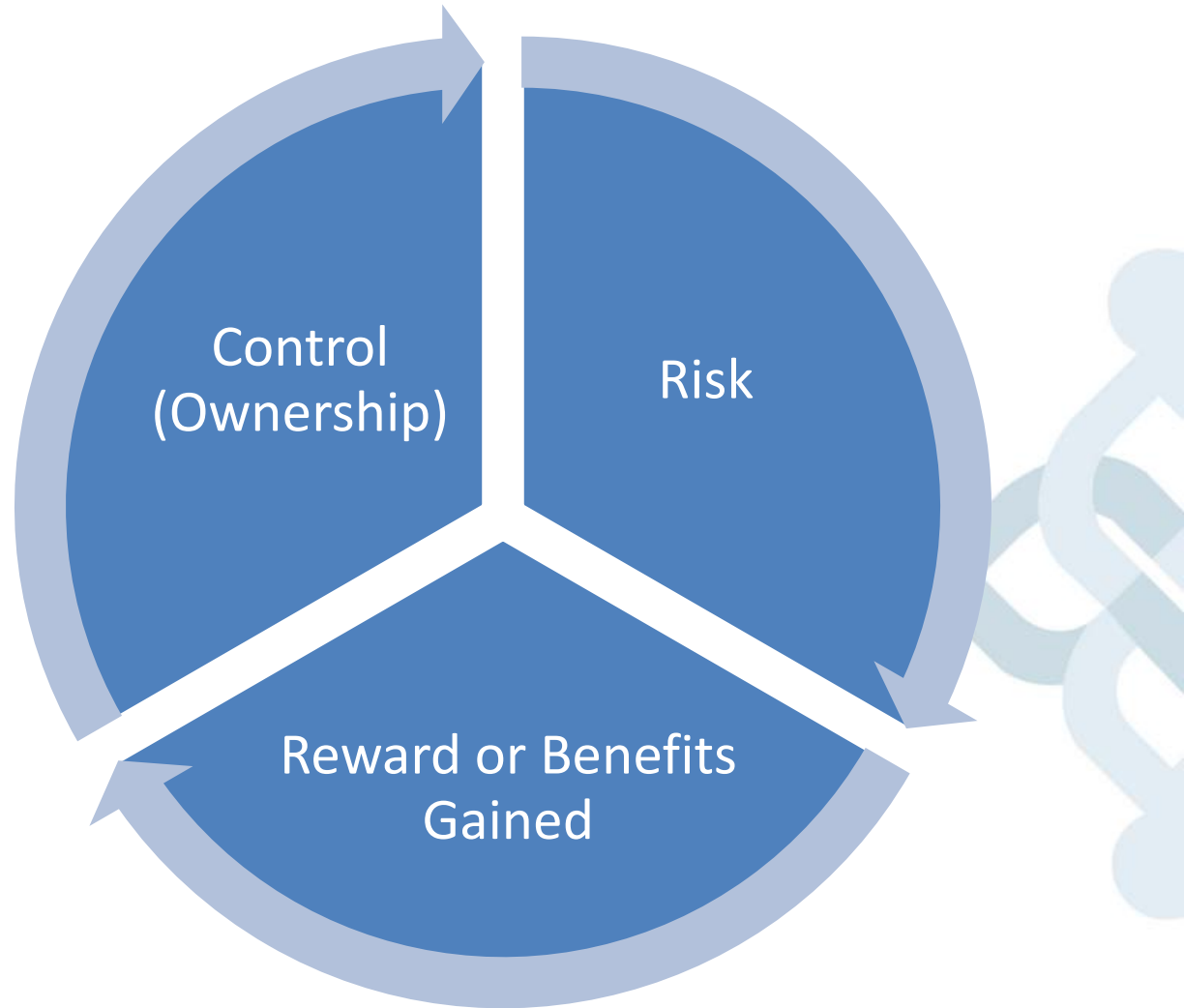
- County invests in Fiber to the Premise
- Provides Internet Services Directly

Financial, operational and political risk increases with each “step up”

Control also increases with each “step up”

When evaluating Public Private Partnerships, the Tension between Control, Risk and Reward must be weighed against the County's Goals.

- Control is required to ensure end results
- Ownership is required to ensure Control
- Risk increases as ownership increases



PPP's result in shared capital costs and shared revenue

WHAT'S NEXT

- ❖ Companion Report will Address “How” to Implement these Strategies
 - Financial Models
 - Approaches to Financing, Grant Funding and other mechanisms
 - Partnerships to Share Capital Costs, Who, What and How
 - Companion report will wrap up the scope of work and broadband roadmap



QUESTIONS?

THANK YOU