

Fiber and Broadband

Council Agenda Item - April 23 2019



The purpose of this item is to consider a motion to:
Consider authorization for additional funding for high priority network laterals in addition to the dark fiber broadband backbone

Agenda

1. Staff presentation

- a) Background
- b) 2019 next steps and timeline
- c) High level backbone design (HLD)
- d) What is a lateral or connection to the backbone?
- e) Financial summary
- f) Lateral consideration (\$2.2m)

2. Council questions

3. Council deliberation and decision



Project Guiding Principles

- Citywide Access
- Equitable and Inclusive
- Future-oriented
- Competitive Marketplace
- Net Neutrality
- Open Access



Why are we doing this project?

The city's vision is to provide Boulder a **world-class community telecommunications infrastructure** for the 21st century and beyond. By building a dark fiber backbone we:

- Take our first step to create the core fiber platform that is required for future models and approaches
- Can provide fiber connectivity for city needs and for community stakeholders
- Offers opportunities for smart city applications and services, IoT, and other sensor based technologies
- Enable core infrastructure for the City, gives the City control and provides some technology future-proofing



Background

- 2018 – Q1 – Council directs Staff to conduct analysis of broadband options
- 2018 – Q2 – Council expresses interest to proceed with construction of dark fiber backbone to implement project goals and preserve the City's future to consider different broadband business models
- 2018 – Q3 – Staff release RFP for design services for city-wide backbone (13 responses)
- 2018 – Q4 – Following review, shortlisting, and interviews, Magellan are awarded design contract to start in January 2019

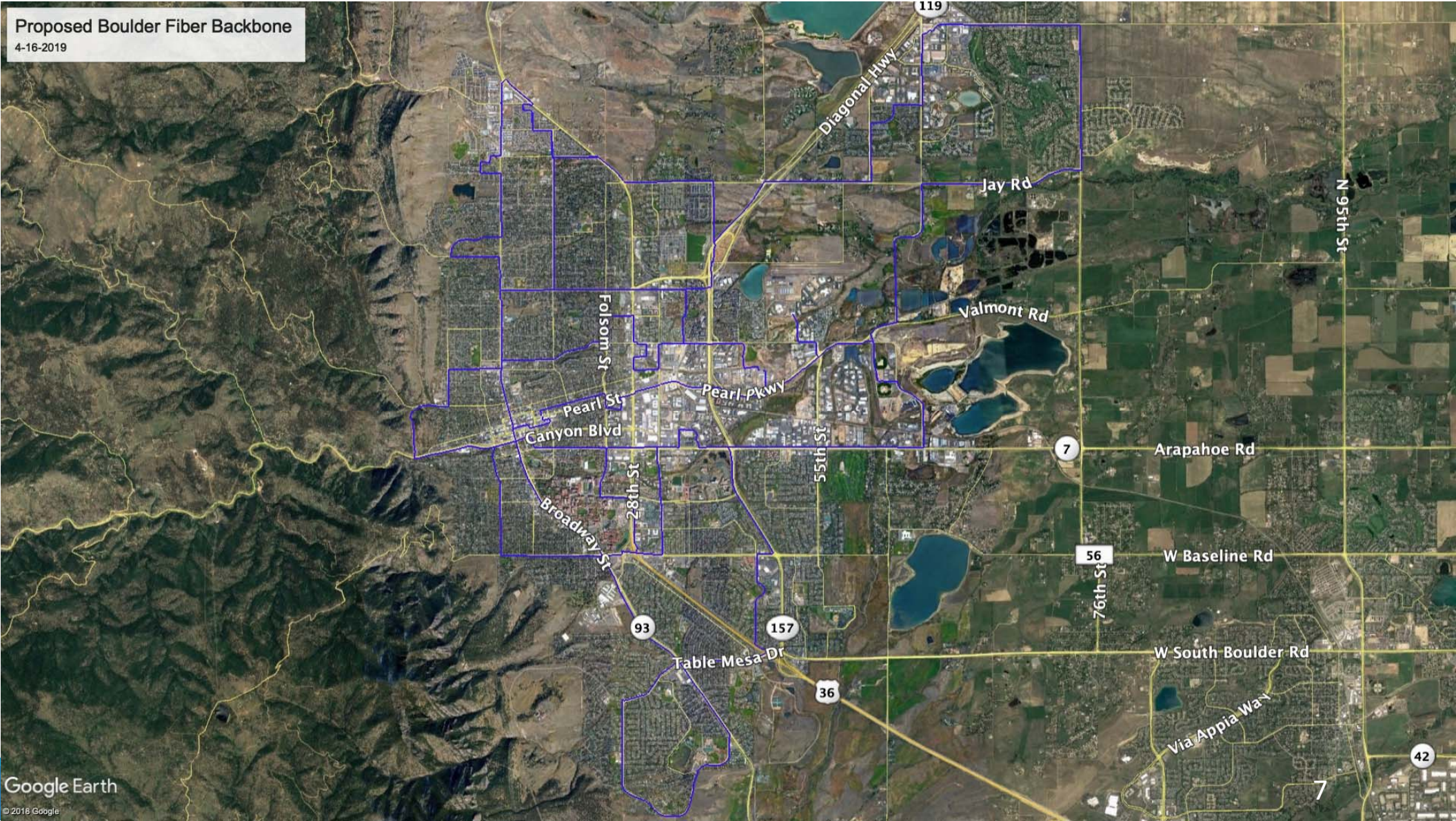


2019 – Timeline and Next Steps

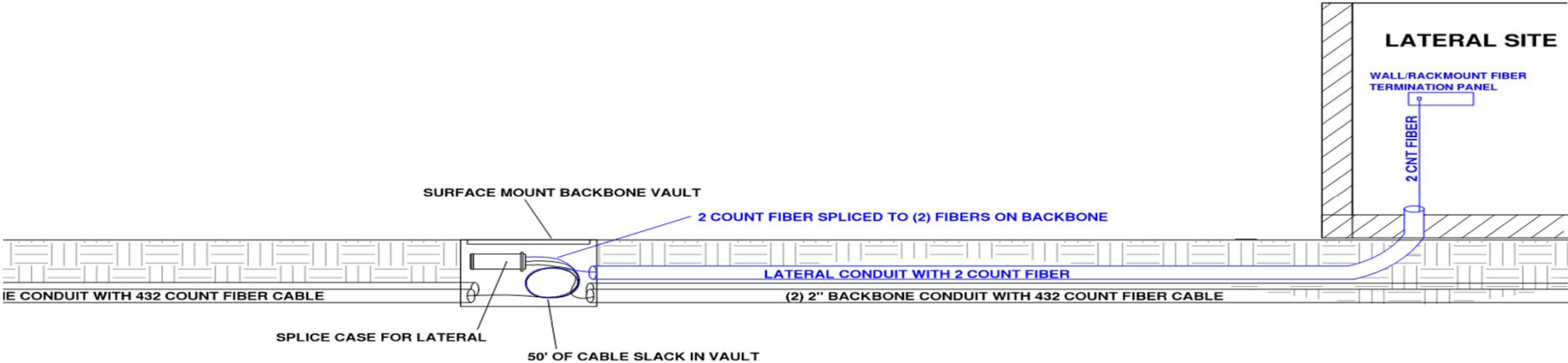
ACTIVITY	TIMEFRAME	NOTES
Departmental and stakeholder outreach and data collection	January and February Revisited during March with current HLD	complete
Existing city owned conduit proofing and validation (contractor)	April and early May	Work began April
Fielding services and applicable surveys on backbone routes (Magellan)	April and May	Work to begin April 16th
Backbone Design Optimization	February – mid June	Initial design complete. Further review after conduit inspection and fielding
Additional design – extensions and FTTP	June	High level review of needed fiber extensions and supports for FTTP
Preliminary backbone design complete	June end	
Final design & construction prints	July end	
Construction documents and RFP for build	July end	
Issue COPs	July/August	
Selection of build contractor	August end	
Contracts and build schedule	September end	
Potentially ready to build Q4	Oct-Dec 2019	
Develop desired City approach for broadband and smart city uses	Q2/Q3 - 2019	
Partnership outreach and potential partner selection	Q3/Q4 - 2019	



Proposed Boulder Fiber Backbone
4-16-2019



What is a Fiber Lateral?



Backbone financial summary

A. Reuse existing city assets

Primary Backbone	
Backbone	\$17,551,551.56
Proof Existing	\$131,343.75
Existing Conduit Savings	-\$1,135,424.87
CU add	\$167,739.27
Critical Backbone Network Hub Sites	\$147,411.06
Total Backbone Cost Estimate	\$16,862,620.77

B. No assets available for reuse

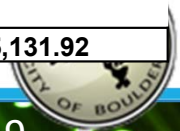
Primary Backbone	
Backbone	\$17,551,551.56
Proof Existing	\$174,746.97
Existing Conduit Savings	\$0.00
CU add	\$167,739.27
Critical Backbone Network Hub Sites	\$147,411.06
Total Backbone Cost Estimate	\$18,041,448.86

Laterals By Stakeholder	
1. Transportation Laterals - Signals	\$1,162,288.05
2. Known Community Access Gap Areas	\$234,903.40
3. RTD	\$53,448.86
4. Parks & Rec/OSMP	\$216,121.30
5. Public Safety Tower Operations	\$542,196.29
6. Library	\$14,725.16
Total Laterals	\$2,223,683.06

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1. Transportation Laterals - Signals	\$1,162,288.05
2. Known Community Access Gap Areas	\$234,903.40
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6. Library	\$14,725.16
Total Laterals	\$2,223,683.06

Total Estimate w/ Options	\$19,086,303.83
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Total Estimate w/ Options	\$20,265,131.92
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Backbone financials—Core Backbone Costs

All New Backbone Build

Description	Ft	Total	Notes
2019 Design and Project Management Costs		\$1,400,000.00	
Backbone - All New	286,310.00	\$16,151,551.56	assumes all new build out (2) 2" duct, handholes & 432 fiber cable backbone
		\$17,551,551.56	

Proofing Existing Conduit

Description	Ft	Total	Notes
Phase 1 Verify & document use of existing conduit West of Broadway	53,350.00	\$0.00	Phase 1 already under contract and budgeted for
Phase 2 Verify & document use of existing conduit East of Broadway	161,444.00	\$131,343.75	Phase 2 depends on outcome of Phase 1
		\$131,343.75	

Use of Existing Conduit Assumptions

Description	Ft	Total savings	Notes
Savings if existing conduit is used - On Broadway & everything West of Broadway	26,675.00	\$680,212.50	
Savings if existing conduit is used - East of Broadway	80,722.00	\$455,212.37	
		\$1,135,424.87	

CU - Fiber Diversity

Description	Ft	Total	Notes
Composite price per ft Add for CU New Build	3160	\$128,679.27	Adding in specific route options for CU
Composite price per ft to add additional conduit in sections for CU	9300	\$39,060.00	
		\$167,739.27	

Critical Backbone Network Hub Sites

Description	Ft	Total	Notes
Public safety: 1805 33rd st	370	\$15,066.88	Required with backbone
Boulder County Communications Center (EOC): 3280 Airport Road	3250	\$132,344.18	Required with backbone
		\$147,411.06	



Backbone financials—Lateral Costs

Transportation Laterals - Signals (Not including beacons)

Description	Ft	Total
Average 75' lateral to signal equipment cabinets	75.00	\$1,162,288.05

Known Community Access Gap Areas

Description	Ft	Total
Arapahoe East: 4610 Arapahoe	225	\$6,013.00
Hayden Place: 3405 Hayden Pl	161	\$4,302.63
Iris Hawthorn: 1650 Iris Ave	48	\$1,282.77
Madison: 1130 35th St	1685	\$45,030.67
Sanitas Place: 3640 Broadway	360	\$38,420.79
Tantra Lake: 1000 Moorhead Cir	2459	\$65,715.37
WestView: 4600 Broadway St	30	\$3,201.73
Woodlands: 2685 A Mapleton Ave	746	\$19,936.43
Vista Village - 5000 Butte St	1950	\$51,000.00

RTD

Description	Ft	Total
RTD Lateral 1400 walnut	200	\$5,344.89
RTD 1707 Exposition	150	\$4,008.66
RTD 30th & Pearl	150	\$4,008.66
RTD 2855 63rd St	1500	\$40,086.65

Parks & Rec/OSMP

Description	Ft	Total
Chautaqua Ranger Cottage	900	\$96,051.99
Stazio Fields	100	\$2,672.44
Foothills Community Center	800	\$85,379.54
Foothills Nature Ctr	300	\$32,017.33
Scott's Pool Lateral	300	\$0.00

Public Safety Tower Operations

Description	Ft	Total
Gunbarrel Tower	6500	\$173,708.80
Boulder Rifle Club/Foothills North Tower Site	4746	\$126,834.15
Chautaqua Tower	1170	\$124,867.58
Arapahoe Tower	4100	\$109,570.16
New Firestation #3	270	\$7,215.60

Library

Description	Ft	Total
NoBo Library - New site	551	\$14,725.16



Options/Questions/Discussion

1. **Option 1** - continue with current plan to build only a dark fiber backbone city.
2. **Option 2** - in addition to Option 1, approve additional investment to provide fiber connectivity by also investing in lateral connections.
 - If option 2 is selected, staff need guidance from council as to the priority of investments (e.g. which laterals or policy areas should staff prioritize?) in order to remain within the possible available funding for the project.



Proposed Motion Language

- Motion to authorize additional funding for high priority network laterals in addition to dark fiber broadband backbone.

