
PROJECT INFORMATION

Customer: City of Craig / Moffat County

Project Name: Moffat Craig Broadband Initiative Tactical Plan

PROJECT OVERVIEW

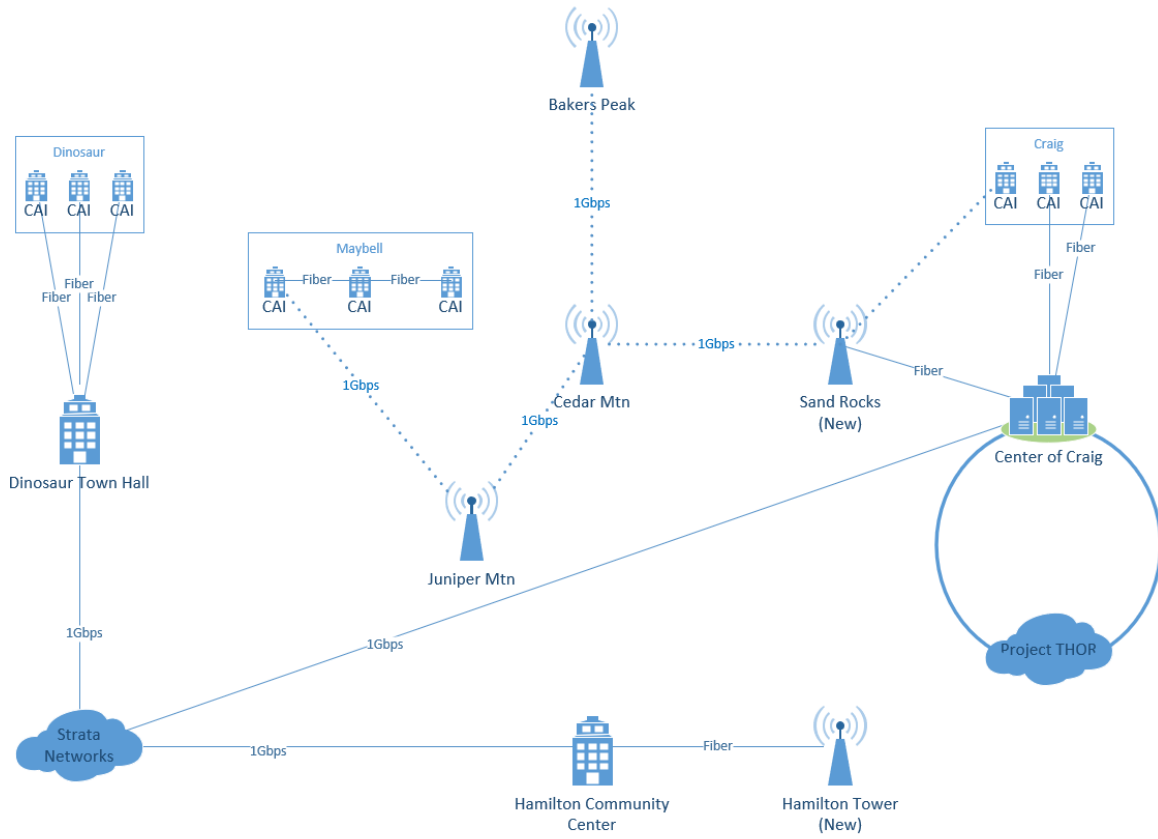
Moffat County Broadband Initiative (MCBI) has contracted with Mammoth Networks to perform a tactical plan, or “Blueprint” for a countywide broadband initiative as outlined in MCBI’s February 2018 RFP. Mammoth Networks has conducted a thorough assessment of the targeted region, and developed an implementation plan, along with cost estimates and timelines to achieve project goals. Much of the plan work was done in collaboration with the MCBI Steering Committee.

PROJECT SUMMARY

To prepare the Blueprint summarized in this report, Mammoth completed the following tasks, in coordination with MCBI’s project manager:

- Reviewed Moffat County Strategic Broadband Plan
- Worked with fiber owners to determine their interest in and terms for long-term fiber leases, both in Craig and in strategic locations elsewhere in Moffat County
- Designed and costed a cost-efficient fiber optic network design in the City of Craig, and in Dinosaur, Maybell and Hamilton to connect Community Anchor Institutions (CAI) and/or offer open access services to Internet Service Providers (ISPs)
- Consulted with existing ISPs to determine needs and interest in accessing the planned network
- Refined the list of suitable locations for towers to be used as wireless backhaul to other communities throughout the County, including physical inspection, signal modeling, and feasibility-level review of land use requirements and lease costs
- Identified new tower locations needed to reach unserved areas
- Developed a final network design and cost for the core fiber and wireless backhaul network that includes routing and switching topologies and equipment
- Developed a financial model that identifies capital and operating costs, drawing on industry and network operating experience
- Developed a timeline for implementation

NETWORK DIAGRAM



DETAILED FINANCIAL MODEL

To assist MCBI with planning for network implementation, including grant applications, Mammoth prepared a detailed financial model in cooperation with the MCBI Steering Committee. The complete model is provided as an Excel (.xlsx) workbook. A summary is provided below using assumptions based on information received throughout the Blueprint process. The Financial model is an interactive worksheet that allows for variables to be modified based on additional information and assumptions.

MCBI - NETWORK OWNER COST MODEL SUMMARY

	2019	2020	2021	2022	2023
BEGINNING BALANCE	\$250,000	\$9,765	\$24,438	\$54,788	\$75,949
OWNER REVENUE					
DOLA Grant Revenue (Expected)	\$2,047,604				
EDA Grant Revenue (Expected)	\$1,800,727				
CAI Revenue	\$120,125	\$243,900	\$268,500	\$268,500	\$268,500
Wholesale Revenue	\$32,528	\$68,184	\$68,184	\$68,184	\$68,184
TOTAL OWNER REVENUE	\$4,000,984	\$312,084	\$336,684	\$336,684	\$336,684
OWNER EXPENSES					
Infrastructure Build Capital Expenses	\$3,869,412	\$15,000	\$15,450	\$15,914	\$16,391
Other Capital Expenses	\$225,796				
Operating Expenses	\$146,012	\$282,411	\$290,883	\$299,610	\$308,598
TOTAL OWNER EXPENSES	\$4,241,219	\$297,411	\$306,333	\$315,523	\$324,989
ENDING BALANCE	\$9,765	\$24,438	\$54,788	\$75,949	\$87,644

The model above assumes initial funding of \$250,000 to cover shortages in the expected grant funding for capital expenditures.

The costs for the infrastructure build portions of this project are outlined below:

MCBI Capital Costs Summary

Infrastructure Builds

Location	Infrastructure Expenses			Total
	Equipment	Tower	Fiber	
Location	Core Equip	Tower Cost	Fiber	Total Cost
Craig	\$230,755.58	\$4,000.00	\$2,445,953.21	\$2,680,708.79
Dinosaur	\$9,958.20	\$0.00	\$143,859.94	\$153,818.14
Maybell	\$32,049.85	\$2,500.00	\$113,620.53	\$148,170.38
Hamilton	\$9,618.20	\$240,000.00	\$141,141.00	\$390,759.20
Sand Rocks	\$34,555.02	\$255,000.00	\$0.00	\$289,555.02
Cedar Mountain	\$32,539.61	\$51,000.00	\$0.00	\$83,539.61
Juniper Mountain	\$32,200.02	\$51,000.00	\$0.00	\$83,200.02
Bakers Peak	\$31,660.44	\$8,000.00	\$0.00	\$39,660.44
	\$413,336.92	\$611,500.00	\$2,844,574.67	
Total Build Cost for entire solution		\$3,869,412		

A detailed cost breakdown for these capital costs is provided in a separate workbook.

BID-READY PLANS

Bid-ready design documents have been prepared for the following project components

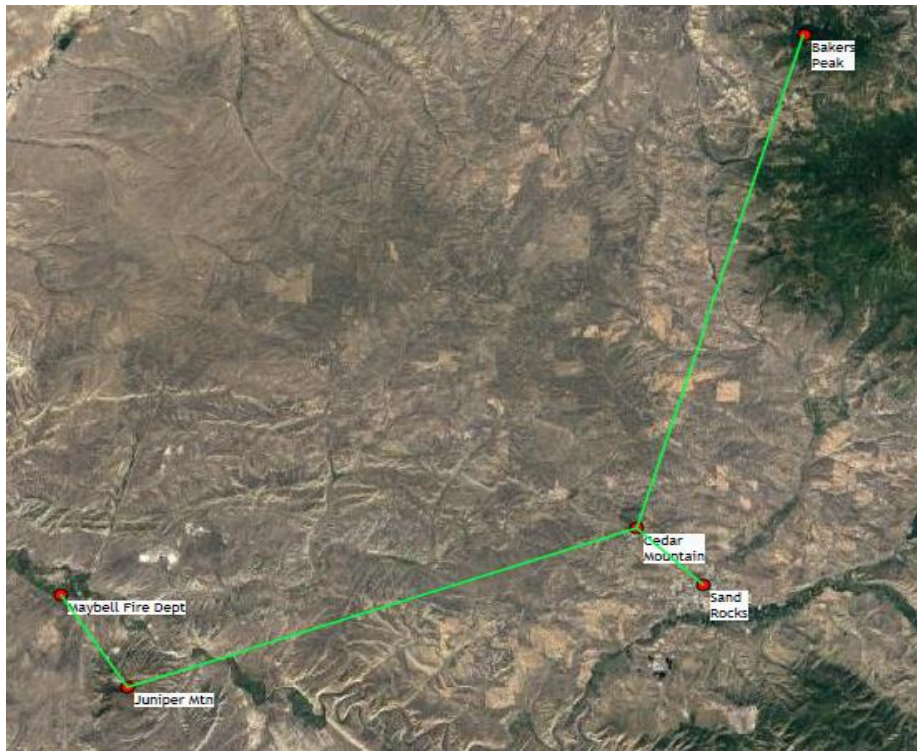
1. Craig Fiber Build
2. Maybell Fiber Build
3. Dinosaur Fiber Build
4. Hamilton Fiber Build
5. Microwave Backhaul Network

Each of these designs will be provided as a separate file containing pertinent info for publishing an RFP. Mammoth will provide blank bid sheets for each project component; Fiber Build, Tower Build, & Equipment. It is our anticipation that each of these will require procurement through RFP process.

Mammoth will also include our Inside Plant Standards, as well as Outside Plant Standards, for construction.

TOWER LOCATIONS AND SPECIFICATIONS

The wireless portion of the project includes several licensed microwave links across the county. Overall design of the proposed microwave solution is shown below.



A detail for each site is provided in a separate file "MCBI Towers.pdf"

BACKHAUL COSTS

The project is expected to utilize the Northwest Colorado Council of Governments' (NWCCOG) Project THOR regional transport network for Middle Mile backhaul. Project THOR will provide the project with low cost, resilient access to bandwidth at a Meet Me Center (MMC) in Craig. The entire project is being implemented on a parallel track to MCBI, and is expected to be operational in 2019. Should THOR not develop as planned, Mammoth can provide alternate pricing for Middle Mile connectivity.



Project THOR Middle Mile Network

Pricing for Middle Mile access is incorporated into the complete Financial Model that is provided along with this Blueprint. A summary of the costs are included in the detailed financial model.

PROJECT TIMELINE

July 10 – Craig City Council workshop presentation with Mammoth Networks regarding MCBI and Project THOR. Voting approvals to be completed during regular meeting on the same day.

July 17 – Moffat County Local Marketing District voting approvals to be completed.

July 24 – Voting approvals at Moffat County Commission and Craig City Council meetings.

August 1 – Colorado Department of Local Affairs (DOLA) grant deadline.

End of August – U.S. Economic Development Administration (EDA) draft grant proposal submitted for review and feedback.

Mid-September – EDA grant proposal submitted.

End of October – EDA grant application submitted.

First week of November – DOLA grant hearings.

Last week of November – DOLA grant decision and letter of intent to fund (if successful).

First/second week of December – EDA grant decision pending letter of intent from DOLA for match funds.

January/February – Executed contracts with DOLA and EDA.

Mid-February – Request for Proposals (RFP) for construction.

Mid-March – Decision on construction vendor(s).

May – Construction begins.

July – Construction complete, ready for services.

SUMMARY

Based on our research and modeling, we conclude that project viability depends on support from Community Anchor Institutions, as well as wholesale accounts. Assumptions were used in presenting the model, but actual take rates and ISP commitments will be crucial to the long-term project success.

Also, initial grant funding will need to be supplemented with funds to fill the shortfall from the EDA grant program not supplementing Drop Fiber connections.

NON-DISCLOSURE

Mammoth is providing the deliverables to MCBI with MCBI's understanding that the information and work is Mammoth's Creative Property and MCBI may not share the information beyond MCBI except in static (PDF) format. At no time may MCBI share editable spreadsheets to anyone who is not an employee nor to any entity other than MCBI stakeholders as the spreadsheet contains significant creative property reserved by Mammoth.

It is Mammoth's recommendation that financial details supporting this summary report remain confidential until the project construction has been completed. Information and construction estimates contained in this Blueprint may alter bidders responses to any subsequent RFPs if they are able to access estimates provided throughout the document.