Innovative Infrastructure Opportunities

Presented By:

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A few very brief words about me…

- ✓ ***Manager Local Government Services, HR Green,***
- ✓ ***City of Centennial, Colorado***
  - ✓ *Interim City Manager/Chief Innovation Officer/Public Works Director(8 years)*
  - ✓ *Helped lead broadband exemption - Nov '13:* ***2nd*** *major Colorado city*
- ✓ ***City of Colorado Springs***
  - ✓ *Director of Public Works and Transportation (14 years)*
  - ✓ *Airport, Traffic, Engineering, Streets, Transit and Pikes Peak Highway*
- ✓ ***Speaker –*** *national conferences on P3's, Innovation & Broadband*
- ✓ ***Member of Mayor Suthers' New 2C Oversight Committee***

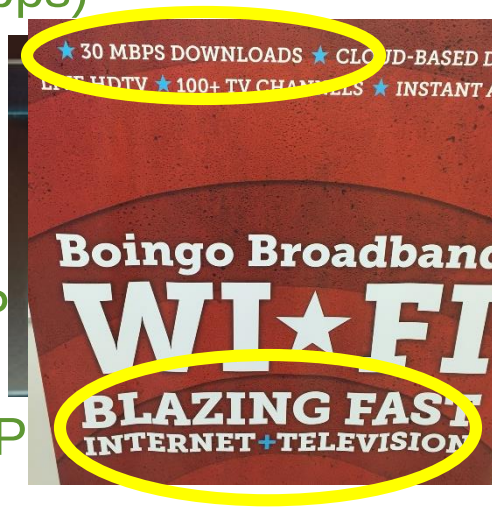
TELECOM – 101
Terminology & *TECHNOLOGY*

BITS vs BYTES

- **8 bits** = **1 byte**
- Data Storage is measured in **megabytes** (MB)
- 1024 Megabytes = 1 Gigabyte (~ 300 songs)

SPEED

- Internet speed is measured in **megabits** per second (mbps)
  - Local speeds vary:
  - Many factors can affect speed (wi-fi interference)
  - 12/20/15, 8 PM – My Speed test: **16** Down & **11** UP

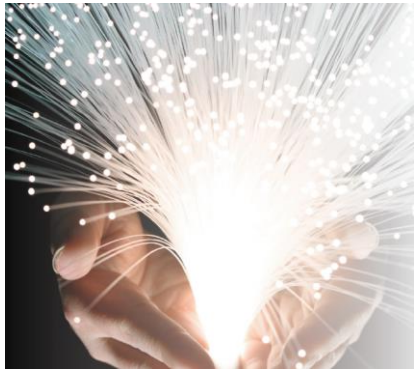


2015: FCC defined "**Broadband**" as: **25** DOWN & **3** UP

- Gigabit city: (Longmont): **1,000** DOWN and **1,000** UP
- **1,000** mbps/$50 vs ~**30** mbps/$70 (~30x speed)
- **Much of Colorado Springs now doesn't have "broadband"**

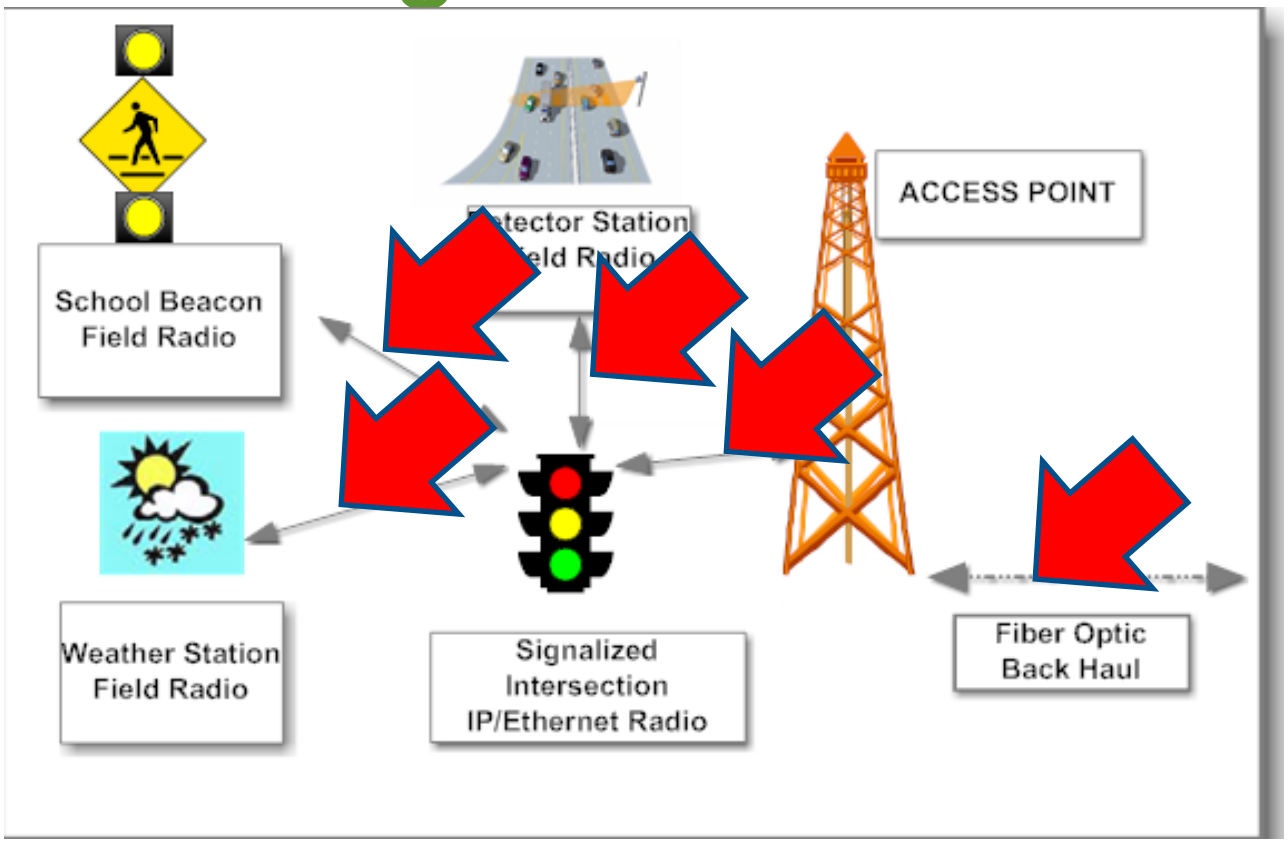
TELECOM – 101
Terminology & *TECHNOLOGY*

- Colorado Springs – **wireless**, **coax**, **copper wires** and **fiber**
- **Wireless** 1G► 2G ► 3G ► 4G ► "***L.T.E.***" (~30 mbps)
- 1 fiber strand:
  - **2003**: a few traffic signals per strand –
  - Now ~ ***5,000*** households on one strand
  - Plenty of excess capacity along major corridors



- Gigabit Cities: Provo, Austin, K.C. [**Google**] ~$60/mo
- **Longmont** (90,000) – 1st major & "fastest city": $50/mo
  - Initially struggled
  - Nov 2013: $40M bond issue
  - 10,000+ customers growing to 18,000 [~$1M per month]
  - Fastest in USA [per Ookla], **ubiquitous 1,000 Mbps**

Traffic Signals *101*



City of Centennial overview

Littleton & Highlands Ranch

- Largest city incorporation in US history
- Tech Center: More Jobs than Downtown Denver

Incorporated February 7, 2001, Pop 110,000

Typical Employee Count ~ 1,200 / Actual ~ 54

P2's (IGA's) and P3's in Centennial

- Public Works: P3
- Fire Districts
- Parks Districts
- Stormwater Districts
- Law enforcement
  - County Sheriff
- Building Inspection
- Animal Services
- Development Plan Review
  - 2008 Reverted to City Staff

Sales Tax Collection

Licensing

CIP Management

Water & Sewer Districts ~20

Traffic Signal Improvements

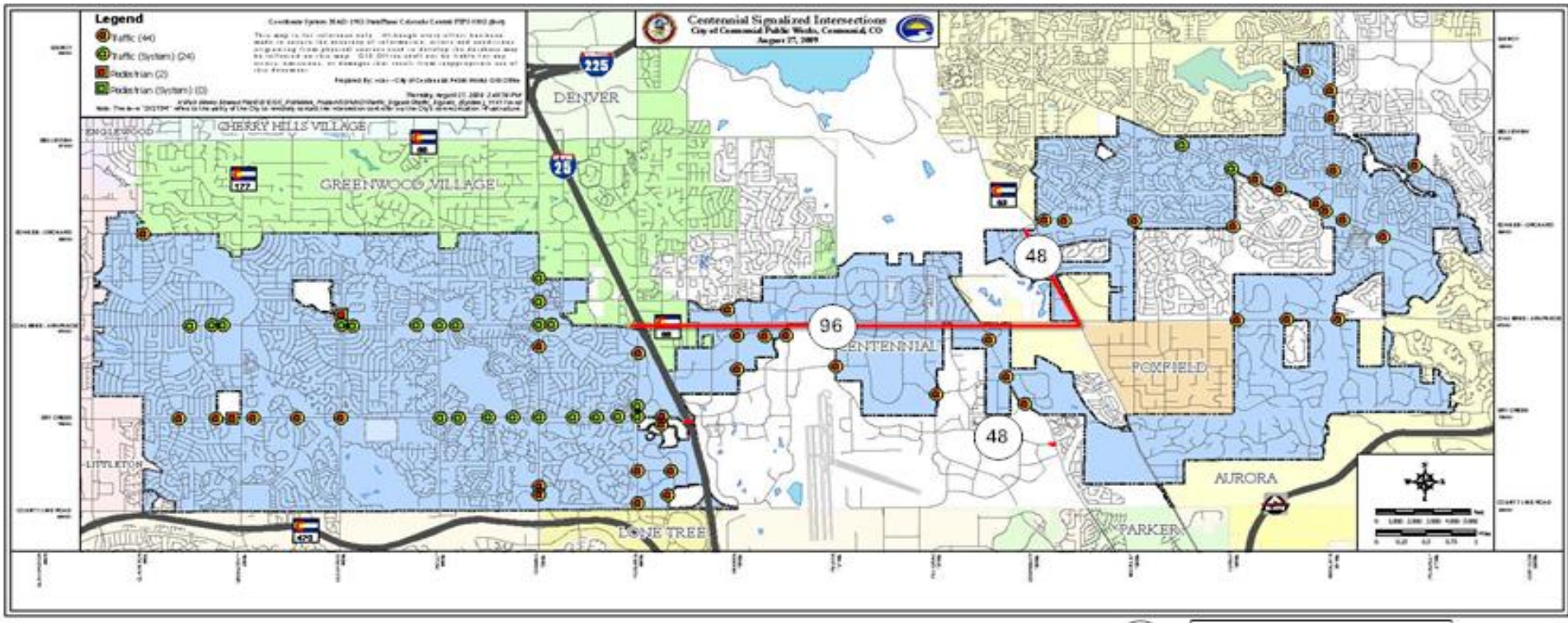
Fiber-Optic based Interconnections between 84 signals

Next: Interconnecting **Street Lights** with fiber (Vail) – With mini, pico, nano transmitters and “Li-Fi” (?)

2010 City / CDOT Fiber Optic "IGA"

- City paid to upgrade 1 – 24 CDOT fiber cable to 2 – 96 fibers, sharing 50/50

City of Centennial
IGA Conduit and Fiber

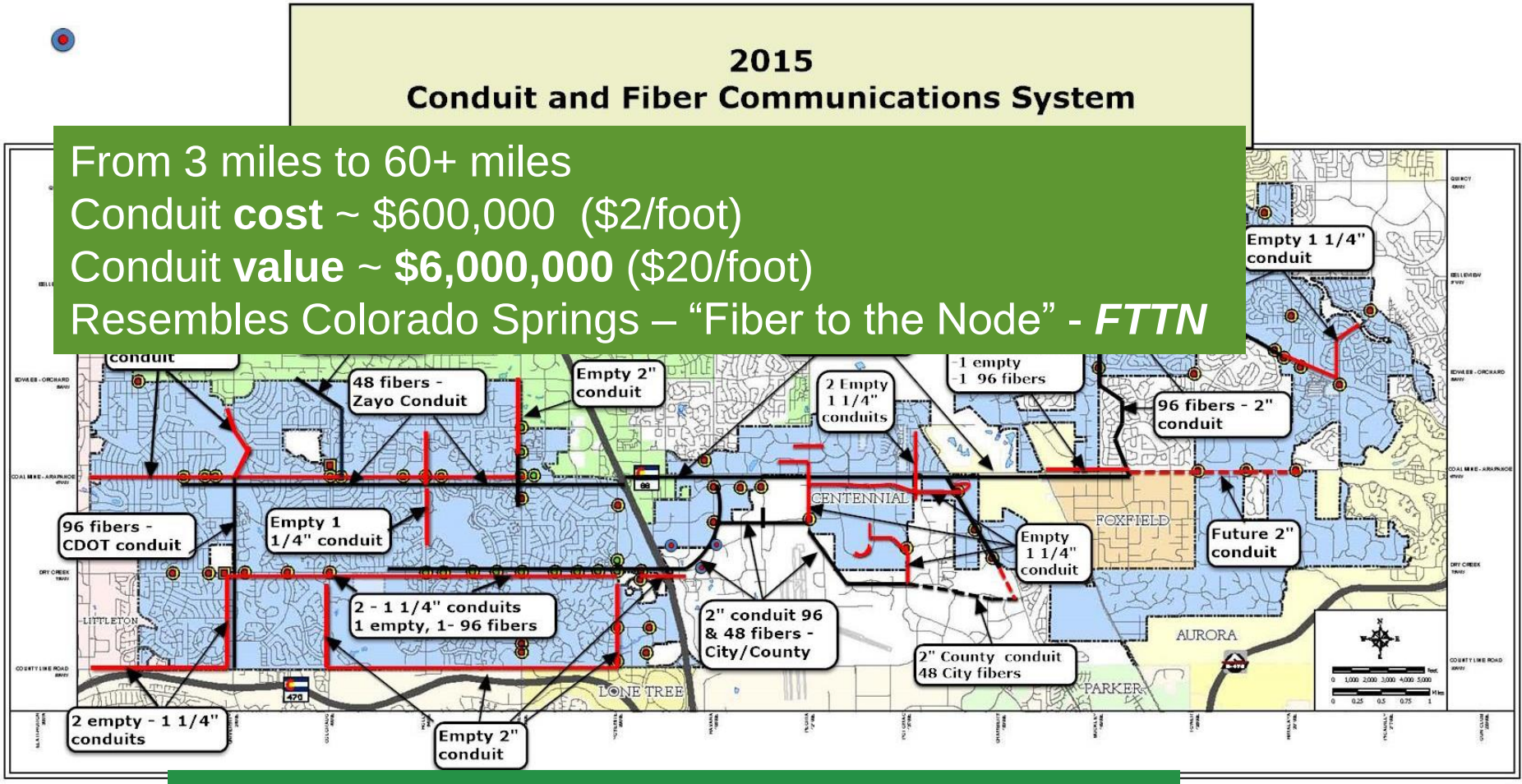


Conduit and Fiber

48 Fiber Count

Fiber Optic Map – 4 years later

From 3 miles to 60+ miles
Conduit **cost** ~ $600,000 ($2/foot)
Conduit **value** ~ **$6,000,000** ($20/foot)
Resembles Colorado Springs – “Fiber to the Node” - ***FTTN***



RESULT: the network is now within ½ mile of more than 21,000 households and 3,250 businesses

How Centennial did it…

RESULTS:

- ✓ Fewer street cutting permits
- ✓ Reduced potholes
- ✓ Less Construction and Traffic Congestion
- ✓ Sharing of infrastructure – "P3's"
- ✓ Private Sector Investment – very robust
- ✓ Incumbents continue to improve service

Pro-Fiber Policies

- Public-Private/Partnerships
- Joint- Build
- Piggyback
- Dig-once policies
- Reduced open trenching
- Co-locations
- Incentives, fee reductions, individual agreements
- US DOT/CDOT grants

Broadband Restrictions "101"

- Nearly 20 states restrict local governments from providing broadband
- In Colorado – **SB-152** prohibits local governments from providing cable television service, telecommunications service, or advanced service
- Example: wi-fi in parks, libraries, public places not permitted
- Partnerships with private sector: highly restricted
- **Cities can re-establish the right taken away by SB-152**
- Exemptions obtained –
  - **2011**: 1st Major City: **Longmont (Gov't model)**
  - **2013**: 2nd Major City: **Centennial (P3 model)**
  - Nov **2**, 2015: **~13** cities & counties
  - Nov **3**, 2015: **~ 60** cities, counties & districts (100%)
  - **Sam Mamet**: ***"Broadband is Colorado's new marijuana"***

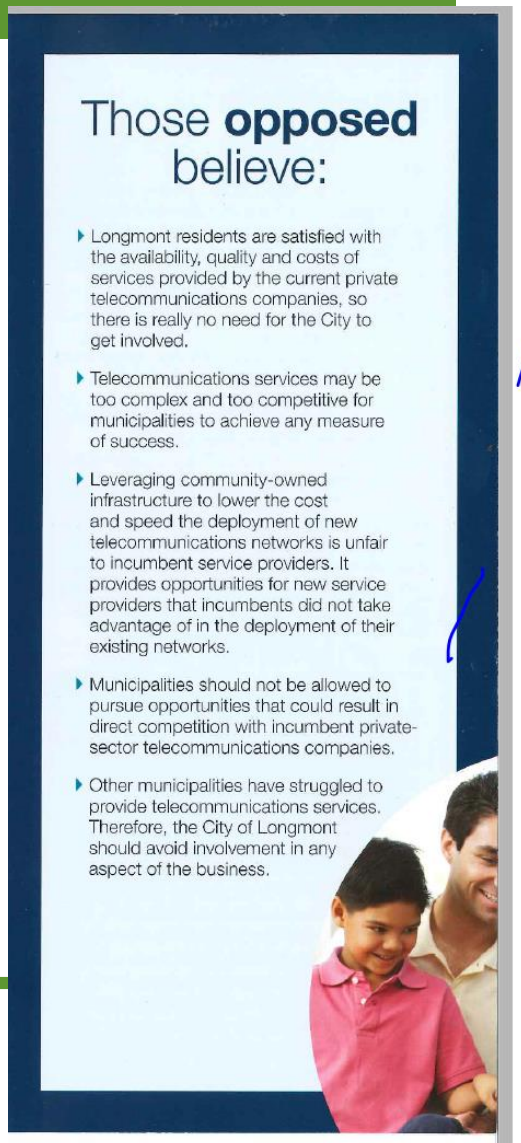
    "…State Law is unlikely to change"

Ballot item in Longmont: 2011

Opponents argued…

1. No governmental involvement is necessary
2. Residents are satisfied
3. Telecom services are too complex for cities…
   - Service has never been faster or less expensive
   - Major financial investments already underway
4. Unfair for government to compete
5. Risk of failure

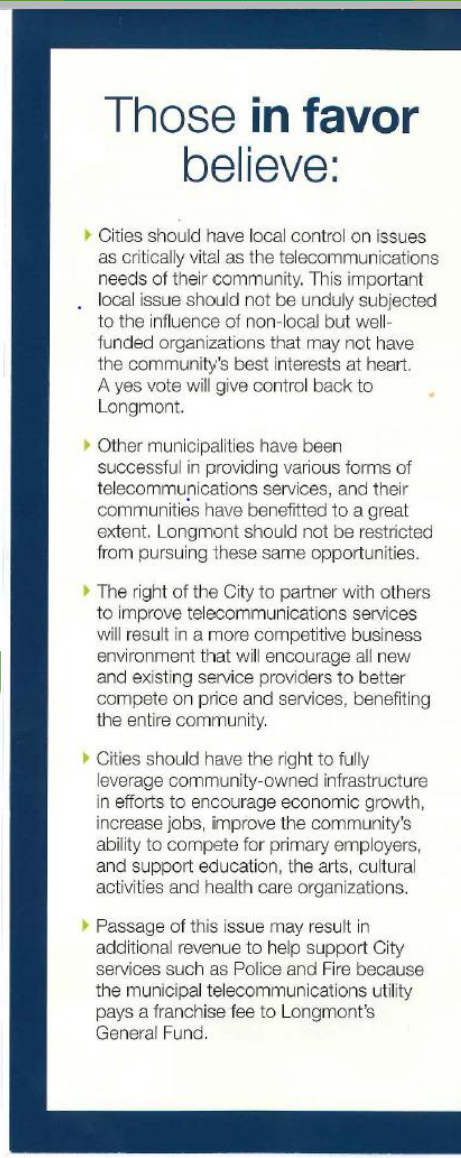
CITY MAILER



Ballot item in Longmont: 2011 Supporters argued…

1. Broadband is a matter of "Local control"
2. Many successful examples
3. Increased competition will result
4. Leveraging existing assets will encourage economic growth, job creation, competing for primary employers
5. Will support police and fire with revenues

CITY MAILER



Those **in favor** believe:

- Cities should have local control on issues as critically vital as the telecommunications needs of their community. This important local issue should not be unduly subjected to the influence of non-local but well-funded organizations that may not have the community's best interests at heart. A yes vote will give control back to Longmont.
- Other municipalities have been successful in providing various forms of telecommunications services, and their communities have benefitted to a great extent. Longmont should not be restricted from pursuing these same opportunities.
- The right of the City to partner with others to improve telecommunications services will result in a more competitive business environment that will encourage all new and existing service providers to better compete on price and services, benefiting the entire community.
- Cities should have the right to fully leverage community-owned infrastructure in efforts to encourage economic growth, increase jobs, improve the community's ability to compete for primary employers, and support education, the arts, cultural activities and health care organizations.
- Passage of this issue may result in additional revenue to help support City services such as Police and Fire because the municipal telecommunications utility pays a franchise fee to Longmont's General Fund.

Competing Private Sector Advocates Argue…

City of Greeley, CO

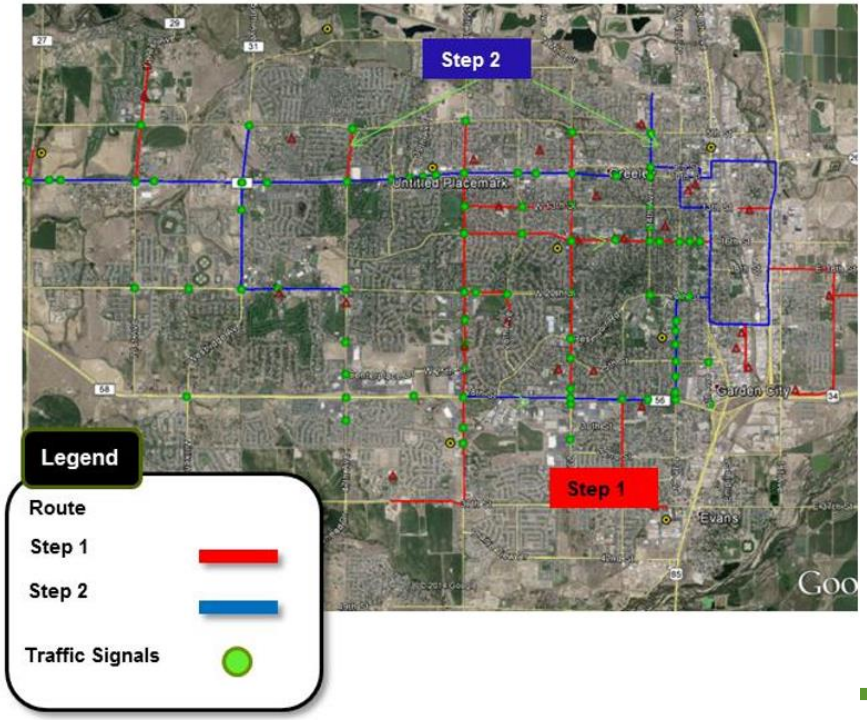
Solution:

- Zayo constructs ~18 miles of new network in City of Greeley with conduit and fiber for both City and Zayo use
- City of Greeley provides Zayo rights to existing City of Greeley conduit system (~18 miles)
- Combined network covering over 36 miles

Benefits to City of Greeley:

- City able to monetize existing infrastructure
- Reduced construction and ROW disruption to City of Greeley residents and traffic
- Improved safety for City of Greeley Emergency Response Services and traffic control
- City of Greeley reduced its anticipated costs for traffic control program

City of Greeley/Zayo Network



zayo

HRGreen

Centennial's "Model" Exemption – Nov 2013

- **Requested authority to provide internet indirectly… and in through partnerships with private businesses**
- **Ballot Language developed with private sector input -**

Shall the City of Centennial, without increasing taxes, and to **restore local authority that was denied to all local governments by the state legislature**, and to foster a more competitive marketplace, be authorized to **indirectly provide** high-speed internet (advanced services), telecommunications services, and/or cable television services to residents, businesses, schools, libraries, non-profit entities and other users of such services, **through competitive and non-exclusive partnerships with private businesses,** as expressly permitted by Article 29, Title 27 of the Colorado Revised Statutes?

- **Passed by 3:1 in November 2013**
- **Virtually no opposition**

Colorado Broadband Status ~ 60 and growing

Pre-Nov 2015 Exemptions

1. *Longmont (2011)*
2. ***Centennial (2013)***
3. *Boulder*
4. *Cherry Hills Village*
5. *Montrose*
6. *Estes Park*
7. *Grand Junction*
8. *Red Cliff*
9. *Wray*
10. *Yuma*
11. *Rio Blanco County*
12. *Yuma County*
13. *San Miguel County*
14. *Glenwood (grandfathered)*
15. *Vail (P3's).*

Nov 3 2015 Counties

1. *Archuleta*
2. *Clear Creek*
3. *Custer*
4. *Eagle*
5. *Garfield*
6. *Gilpen*
7. *Huerfano*
8. *Jackson*
9. *Lake*
10. *LaPlata*
11. *Moffat*
12. *Park*
13. *Pitkin*
14. *Routt*
15. *San Juan*
16. *Summit*
17. *Washington*

Nov 3, 2015 Cities

1. *Alma,*
2. *Bayfield,*
3. *Brighton,*
4. *Cedaredge,*
5. *Craig,*
6. *Crawford,*
7. *Crested Butte,*
8. *Delta,*
9. *Durango,*
10. *Fairplay,*
11. *Fort Collins,*
12. *Fraser,*
13. *Gunnison*
14. *Hayden,*
15. *Hotchkiss,*
16. *Ignacio,*
17. *Loveland,*
18. *Oak Creek,*
19. *Ophir - Ouray,*
20. *Paonia,*
21. *Ridgway,*
22. *Steamboat Springs,*
23. *Telluride,*
24. *Thornton,*
25. *Winter Park,*
26. *Yampa.*

+ 3 School Districts

Virtually no opposition since 2013

Muni–Broadband: Struggles & Successes

Institute for Local Self Reliance (ILSR)

*Chattanooga has transformed… to a haven for entrepreneurial culture… experienced **explosive** economic development leading to thousands of new jobs, substantial public savings due to the network's smart grid capabilities, and new educational opportunities for students and workforce developmen, EPB, 10/15/15*

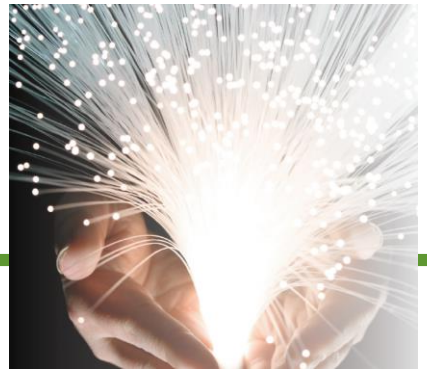
***This is more important than widening I-25**, Walt Lyons, Ft Collins*

Memphis, Lompoc, Groton, Burlington, VT

- ***Longmont struggled initially –***
  - ***Very successful – 60+% "take rate"***
- ***Risk is inherent***
- ***No two cities alike***
- ***Success not guaranteed***

Broadband Alternatives

- *Models vary widely –*
  - *Outsourced 100% - only encouraging private competition (Centennial's possible model)*
  - *In-sourced 100%: Longmont ($40M debt, $1M/mo revenue)*
  - *P3's – financing, O&M*
  - *Traffic Signal backbone: leasing excess strands (72/96)*
  - *Serving only Anchor institutions (Santa Monica)*
  - *Muni-backbone "middle mile," last mile, wholesale, retail*
  - *Leasing only excess capacity or conduit space*
  - *Conduit pull rights, cables, street lights (Vail)*
  - *Fiber to the Node, Premises, House (FTTN, FTTP, FTTH)*
  - *Mix & Match: Hybrids of all*



Colorado Springs Fiber Opportunities

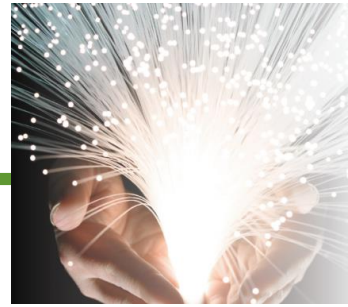
Colorado Springs:

- ~600 traffic signals, many fiber interconnected
- ~ 30,000 street lights
- 1500+ miles of streets
- 300-500 miles of fiber est. owned by City & CSU
- Largely developed independently/redundancies
- Street cuts prevalent

The Way Ahead: Colorado Springs

Short Term – Update City-only Fiber Asset Management

- Identify all fiber-related **assets**:
  - GIS layers, records, conduits, strands, agreements, splice points, vaults, etc.
- Estimate **excess capacity and capabilities**
- Explore telecom cost reductions by **interconnecting city facilities**
- Develop **partnering** agreements with CSU, other governments
- Create strategic **plan** & agree on courses of action
- Explore benefits of street cut / pavement degradation fee exemptions



The Way Ahead: Colorado Springs

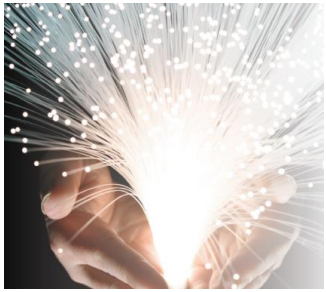
Mid-Term – Exploring Opportunities

- **Develop:**
  - Pro-fiber policies
  - Co-location, Public-Private Partnerships
  - Joint-Build, Piggyback, Dig-once policies
  - Co-location incentives/requirements/ordinances
  - Fee reductions, individual agreements
  - PPACG / US DOT/CDOT grants to support fiber construction

- **Review** Fiber Program Management

- **Appoint**: cross-functional staff "Fiber team" –
  - Public Works, Streets, Traffic, Engineering, IT, CSU (?)

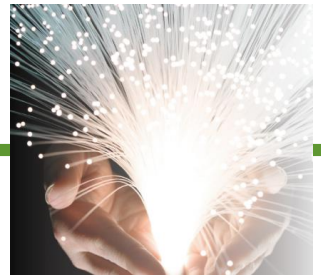
- **Analyze** Street Cut Permit System – Fiber Potential
  - Review/Update Fees (~$1M/year: 2003)
  - Street Degradation Fees – 2C efforts (~$1M/year:2003)



The Way Ahead: Colorado Springs

Longer Term: <u>Policy Questions – *Can Colorado Springs*</u>:

- Facilitate private sector competition and consumer choice by exploring making some City assets available to private sector?
- Encourage internet-based economic development, job creation, new business start-ups and entrepreneurs to locate and remain in Colorado Springs?
- Encourage the private sector to invest in new communications networks in Colorado Springs and to offer enhanced services for business development and job creation?
- Encourage new private sector providers to offer and deliver world-class connectivity services throughout the community?
- Enhance the quality of life in the community by facilitating Internet access in and around public places?
- Monetize access to Colorado Springs connectivity assets?
- Consider SB-152 Exemption, Analysis of Alternatives, gig-city pros & cons



QUESTIONS FROM THE AUDIENCE

Ask away…

More info:

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