CITY OF BOULDER
CITY COUNCIL AGENDA ITEM

MEETING DATE: June 17, 2014

AGENDA TITLE: Introduction, first reading and consideration of a motion to order published by title only ordinances submitting to the registered electors of the City of Boulder at the special municipal coordinated election to be held on Tuesday, November 4, 2014, the question of affirming the city's right to provide high-speed internet services (advanced services), telecommunications services, and/or cable television services to residents, businesses, schools, libraries, nonprofit entities and other users of such services and setting forth related details.

PRESENTERS
Jane S. Brautigam, City Manager
Tom Carr, City Attorney
Bob Eichem, Chief Financial Officer
Don Ingle, Director of Information Technology

EXECUTIVE SUMMARY
Colorado Senate Bill 05-152 (also known as SB-152) was adopted to limit the ability of municipal government to engage in the provision of telecommunication services, including partnerships with private entities. This bill is codified in the Colorado Revised Statutes in §§ 29-27-101 to 304, C.R.S. Current legislative reform efforts aimed at amending SB-152 have been preempted by other telecommunications-related priorities in the Legislature.

SB-152 includes a provision allowing Colorado local government to exempt themselves from the law's provisions via a public vote. Boulder remains a community that would significantly benefit from more economical, higher-capacity telecommunication services given our tech-savvy demographic, readiness for "next gen" broadband services, and available public fiber optic infrastructure. While no definitive plans are in place to create a telecommunications utility or engage in new public-private partnerships in Boulder, the

planning and execution of new public initiatives will be unencumbered by the significant limitations in State law if an exemption measure is passed.

At the April 22, 2014 City Council Study Session, staff received authorization to draft alternative ballot language to address these legislative limitations.

STAFF RECOMMENDATION
Staff recommends council approve the placement of a measure on the November ballot reaffirming city autonomy in how it invests in community telecommunication services currently limited by Senate Bill 05-152.

Suggested Motion Language: Motion to introduce and order published by title only two alternative ordinances submitting to the registered electors of the City of Boulder at the special municipal coordinated election to be held on Tuesday, November 4, 2014, the question of affirming the city's right to provide high-speed internet services (advanced services), telecommunications services, and/or cable television services to residents, businesses, schools, libraries, nonprofit entities and other users of such services and setting forth related details.

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS

- **Economic** - Overall economic impacts on the business community that could impact city revenues; promotes a diverse and sustainable economy that supports needs of all segments of the community; may also include intergovernmental relations or issues.
- **Environmental** - Overall impacts based on environmental concerns, such as: transportation, climate, energy, greenhouse gas emissions and recycling; considers balance of renewable and non-renewable resources; may also include intergovernmental relations or issues.
- **Social** - Overall impacts on the needs of diverse communities, e.g. different ethnicities and cultures, abilities, age, income, family demographics, under-represented residents; engage broad segments of community for input; may also include intergovernmental relations or issues.

OTHER IMPACTS

- Fiscal - No budgetary impacts.
- Staff time – Much of the staff time required is within normal work-plans for the departments tasked with supporting this type of vendor project. Less than 40 hours of additional staff time outside the scope of normal business duties may be expended on this project.
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BOARD AND COMMISSION FEEDBACK
No Board and Commission feedback has been received on this matter.

PUBLIC FEEDBACK
No public feedback has been received on this matter.

BACKGROUND
In 2010, the City and a broad coalition of community members joined forces to advocate for Boulder's selection in the Google Fiber Initiative – an effort to provide competitive, high-speed broadband services to homes and business at levels beyond those of typical commercial offerings.

Though this proposed ballot measure is not offered in anticipation of a specific city-sponsored telecommunications initiative or interest in a specific public-private partnership, the background and justification provided during the Google Fiber Initiative underscores Boulder's continued opportunity to apply its unique assets in defining its digital future. Attachment A – whose structure and findings closely mirror the Google Fiber justification developed by the City in 2010 – provides key information in support of Boulder's need for greater autonomy through passage of a ballot measure reestablishing local control over public technology investment decisions.

ANALYSIS
During the 2005 legislative session, the Colorado State Legislature a state statute purporting to limit the ability of municipalities to provide telecommunication services.

The relevant language is as follows:

(1) Before a local government may engage or offer to engage in providing cable television service, telecommunications service, or advanced service, an election shall be called on whether or not the local government shall provide the proposed cable television service, telecommunications service, or advanced service.

(2) The ballot at an election conducted pursuant to this section shall pose the question as a single subject and shall include a description of the nature of the proposed service, the role that the local government will have in provision of the service, and the intended subscribers of such service. The ballot proposition shall not take effect until submitted to the electors and approved by the majority of those voting on the ballot.

C.R.S. § 29-27-201.[1]

Thus far, three Colorado cities have passed measures affirming their rights to provide certain telecommunications services. Longmont passes a measure in 2011. Centennial passed its measure in 2013. Montrose passed a measure in April of this year. The ballot language for each measure was as follows:

[1] It is not clear that this is truly a matter of statewide concern, and therefore, whether the state legislature can actually limit the ability of a home rule city to provide such services. Nevertheless, having an electoral mandate would eliminate any doubt.

Longmont
Without increasing taxes, shall the citizens of the City of Longmont, Colorado, re-establish their City's right to provide all services restricted since 2005 by Title 29, article 27 of the Colorado Revised Statutes, described as "advanced services," "telecommunications services" and "cable television services," including any new and improved high bandwidth services based on future technologies, utilizing community owned infrastructure including but not limited to the existing fiber optic network, either directly or indirectly with public or private sector partners, to potential subscribers that may include telecommunications service providers, residential or commercial users within the City and the service area of the City's electric utility enterprise?

Centennial
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 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, nonprofit 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?

Montrose
Without increasing taxes, shall the citizens of the City of Montrose Colorado re-establish their City's right to provide all services restricted since 2005 by Title 29, article 27 of the Colorado Revised Statutes, described as "advanced services," "telecommunications services" and "cable television services," including any new and improved high bandwidth services based on future technologies, utilizing community owned infrastructure including but not limited to the existing fiber optic network, either directly or indirectly with public or private sector partners, to potential subscribers that may include telecommunications service providers, residential or commercial users within the City?

The principal difference among the three ballot measures is that Longmont and Montrose sought voter approval to provide services either directly or indirectly. Centennial's voters approved only the provision of such services through third-party contracts. Staff has prepared two proposed ordinances which are attached as exhibits. One would affirm the right of the city to provide these services either directly or indirectly and the other would require the city to contract with a third party. Staff seeks direction from council on which method council approves. Council can pass only one of the two ordinances on first reading, pass both and decide later or pass neither.

ATTACHMENTS
Attachment A – Summary and Background Information for Broadband Ballot Measure
Attachment B: Broadband Ballot Language – Direct Service Option
Attachment C: Broadband Ballot Language – Third-Party Contract Option

Summary & Background Information for Broadband Ballot

Overview Key Points:

Boulder is the ideal place for the installation of high speed broadband internet because of our tech savvy population and path-breaking businesses.

It could be central to our ongoing efforts to remain at the forefront of technological innovation and comprehensive sustainability.

It has the potential to dramatically impact how our population lives and interacts.

Our highly educated citizens already use the internet for activities ranging from world class climate research to online learning and collaboration to home entertainment.

Boulder and Broadband:

Boulder is among the smartest cities in the world. ***Our highly networked residents need high speed and will innovate.*** We want to provide an optimal environment to test bandwidth intensive "killer apps" and the next generation of products and services.

A broadband network would connect us and be used by the entire city, from tech-savvy kids to college students to world renowned research scientists.

Our businesses tell us every day not only what they could use it for, but what they need it for – now. If all storage can be in the cloud, then Boulder will move aggressively to take advantage of this.

This is Boulder:

- Approximately 97% of Boulder households have access to broadband Internet service and approximately 97% are currently subscribing
- 10% of our residents have home-based businesses
- Boulder has one of the highest concentration of software engineers in the nation
- Ranks #2 in the nation for scientists and engineers as a percent of the workforce
- A critical mass of innovators. Boulder ranks #3 nationally in the number of inventors and #5 in the number of patents issued per 1,000 residents. Computer hardware (24.1%) is the leading category of patents from Boulder.
- Home of CU's Silicon Flatirons Center - where the term "network neutrality" was coined - recognized as a national leader influencing technology policy at the FCC and beyond

The Potential Benefits

Boulder is a vision-driven, values-based community. We seek opportunities to demonstrate that environmental sustainability, economic vitality and social equity are not only compatible, but also highly interdependent and essential for long-term community success. In the use of broadband fiber we seek to support:

- **Intensified Innovation** by our local businesses and entrepreneurs who are already nationally recognized for spurring new start-ups, new ideas and new technologies and will find ways to maximize the benefit of an ultra-fast internet in ways we can't even imagine.

- **A Connected Community** where we can define new avenues for citizen engagement in local decision making, explore new frontiers for e-governance, and develop new opportunities for wired social spaces where home- and neighborhood-based entrepreneurs can meet, collaborate and evolve new forms of place-based creative networking.

- **Creative Collaboration** in new forms—between scientists and citizens, between schools and government, between neighborhoods and nonprofits—as old boundaries are blurred through a new era of connectedness.

- **Enhanced Efficiency** and related gains in quality of life, as Boulder residents and businesses are able to do more, more quickly, with less frustration, leaving more time for enjoying our great outdoors.

- **Inclusive Internet** as we work with partners like University of Colorado, Boulder Valley School District and the Boulder Community Foundation to ensure that everyone in the community is wired, connected and empowered to participate, innovate and succeed, eliminating the digital divide.

- **Cuts in Carbon** as employees are empowered by ultra-high speed connections to more effectively work from home and local businesses are better able to support far-flung clients without having to get on a plane.

- **A Learning Laboratory** that can demonstrate the real promise of ultra-high speed fiber, not just as an entertainment medium and economic development tool, but as a significant opportunity to build, test and advance the 21st century infrastructure needed to achieve the "triple bottom line" of sustainability.

Existing Infrastructure

Conduit

Since the mid-1990's, the City of Boulder has invested aggressively in the installation of a large network of telecommunications conduit. This system of 1.25-inch and 2-inch conduit was built expeditiously as unique opportunities arose to engage in partnerships

with service providers such as Level 3 and Qwest, as well as independently by the city itself in conjunction with its own transportation and utility improvement projects. The city has used many of these conduit resources to construct a state-of-the-art municipal fiber network joining more than 50 of our facilities to high-speed IT services. The city has further leveraged its conduit in various lease, sale, and trade arrangements with other governmental and private entities, allowing the city to grow its fiber optic network while developing "win/win" synergies with these third parties.

Typically, the City of Boulder has installed multiple telecommunications conduits during construction projects as a means of leveraging future opportunities. Using the SmartGrid network construction project as an illustration, the City was able to sell critical conduit resources to Xcel resulting in lower costs and faster implementation of their network. Likewise, the City would be willing to negotiate the sale or lease of existing, empty conduit for the use of private telecommunications companies in the construction of a new fiber network in Boulder. And, as administering partner for the Boulder Research and Administration Network (BRAN) -- a next-generation fiber optic infrastructure serving the City of Boulder, the University of Colorado, US Department of Commerce (NOAA/NIST) and the University Corporation for Atmospheric Research (UCAR/NCAR) -- the city would lead discussions with BRAN member organizations regarding the use of its conduit. Finally, the City of Boulder has strong, long-standing relationships other area public entities such as Boulder County and the Boulder Valley School District, each of whom has worked in cooperation with the city in the recent past to exchange mutually-beneficial telecommunication resources such as conduit and actual fiber strands.

Our highly networked residents need high speed and will innovate
An overview of Boulder home uses and business uses of ultra high speed fiber

Customer Base: Boulder Home Uses

Boulder residents – highly educated and highly networked - provide a perfect location for a high-speed broadband fiber network. Boulder is a smart city, enthusiastic about next generation roll-out. Our population is rich with experimenters, tinkerers, scientists, and innovators. This is where the unexpected benefits of a high speed network would incubate and flourish.

Teleworking and home-based businesses are the norm in Boulder – over ¼ of our workers report that they work from home at least some of the time. From scientists to software engineers, our residents need an advanced, ultra-high speed network to work remotely. With internet access to 99% of our households, almost all communication about school, sports, community, and social activities is done via e-mail and web sites.

With a goal of sustainability, there is significant movement toward a paperless community. The Boulder Valley School District's "Infinite Campus" is where students receive and submit homework and parents get updates. University of Colorado at Boulder students make up nearly one-fifth of Boulder's residents – a mostly young population that conducts study and life on the Internet. Boulder has 43,490 housing units and 52% of these are multi-family (attached) dwelling units.

Testimonials

As the City of Boulder prepared its response to the Google Fiber proposal in March 2010, we heard story after story from our residents about their need and desire for an ultra-high speed network. Here's some of what they told us:

- "On my home cul-de-sac we have 8 homes. This includes (1) a senior High Performance Computing engineer (me) working on massive weather and climate programs on the largest machines in the world. I regularly log onto systems in Tennessee, California, New Mexico, New Jersey and elsewhere. I have worked with NOAA, NCAR, DOE, aerospace, and some of the HPC and HPEC vendors. For the past 12 years or so, I have largely worked from home in Boulder, (2) a senior systems engineer currently working in telecommunications, (3) a senior networking engineer working for HP (formerly with Juniper and SGI), (4) the Dean of Engineering at CU, (5) a house builder running parts of his business from home, (6) a senior software developer, (7) a Qwest engineer. My neighbor (across the fence) in the next cul-de-sac was one of those explicitly mentioned for the Nobel prize dealing with global warming. I supported this effort."

- "The Internet is part of my social life and my school life. I'm on Facebook at least once a day and I keep up with friends and family across the country. That's the way I can connect to people. For school, I access Infinite Campus where I can check my grades, turn in assignments, and e-mail questions to my teachers. It does have its slow times and glitches. I also go to my school's web site and can print out any missed assignments. We have online textbooks now so that I don't have to carry my books back and forth to school. I can access my Spanish textbook on the Internet. It does take a little while to load and if it was faster, that would be great!"

- "Boulder, CO is a hotspot for intellectuals, students, computer savvy residents, and geeks of all kind. Boulder is in the top of the half-a-dozen cities in the country which would serve as the perfect beta test for the Google 1 Gbps program. Bring it!"

- "We would look into offering streaming feeds of the events/classes we cover, and also probably propose a community-wide on-line learning program, which would make many learning opportunities available to new audiences here in Boulder. It would also become feasible to aggregate and offer distance learning opportunities in a way that can't be done with current Internet bandwidth."

Customer Base: Boulder Business Uses

Very few communities in the U.S. have the unique combination of a significant concentration of high technology companies, a major research university, and multiple federal laboratories. Boulder needs speed. Our companies need a faster Internet to keep up with their high level of work, to be more efficient, to communicate with other locations – and they are willing to pay for it.

In March 2010, our Economic Vitality Coordinator and Economic Council led a survey by e-mail and on boulderfiber.com that measured the business community's support. The response (161 respondents in 16 days) was swift and clear. *We asked: What would a 1Gbps fiber network mean to your business and employees?*

- 100% agreed that a 1Gbps network in Boulder is a good idea.
- 97% agreed that a 1Gbps network would benefit their business or organization.
- The majority said a 1Gbps connection would have a high impact on their ability to do research more efficiently (89%), provide more opportunities for teleworking (79%), improve sales (70%), engage in new types of research (69%), reduce costs (67%), serve new markets (65%), develop new products /services (62%), improve employee recruitment/retention (57%).
- 95% would sign up if it cost the same as their current service and 54% would pay up to 25% more.
- 67% had reliability problems and 39% had poor customer support from their current provider.
- 86% indicated all of their employees use the Internet at work.

Testimonials

- "Our speed decreases as the day progresses. Please help! I use web version of all my software. I would like to update client financial plans while sitting with the client, but the service is a bit too slow."

- "We create content. A big fast pipe at a reasonable rate is a HUGE benefit to us. I would happily volunteer our company, 42 Productions, to be a test case and/or spokescompany."

- "In addition to greater access to information I am really hoping to get clear video conferencing with our very large corporate customers."

- "Boulder is one of the up and coming leaders for tech startups. A really fast fiber network would foster the innovation that's part of the startup community, and would attract a lot of talented people. It would be great for the local economy, as well as those who are innovating for the national and global economies. There are

a lot of people here who think big, and want to do great stuff for the world."

- "This could be hugely helpful as we move into pilot and demonstration stages where substantial amounts of data will be collected and analyzed, and simulations run. We will also have partners all over the world, so having access to a system that let us communicate and demonstrate via video without "low tech" speed issues could be exciting as well as valuable."

- "Multiple times a week, we have local clients drive across town to drop off a CD or DVD of content (high-res photos, videos, etc.); with a 1 Gbps connection…It would make us more efficient as a web design and development firm."

- "The NOAA and NCAR community both require access to large HPC systems in Boulder and around the world. The current work horse is the Cray XT5 at Oak Ridge National Laboratory. Moving data back and forth has required installation of additional fibre links to the existing large amount in Boulder. Debugging from home on my Comcast system is really tough even with 12-15 Mbit/sec download capability. There is no way for me to begin to try to dynamically view data being produced so I can check correctness before committing 100000 cores of processing for an 8-16 hour execution."

- "I'd use a high-speed fiber network for creating massively parallel GPU (Graphic Process Unit) computing networks. With a high bandwidth fiber connection, I could transfer large segments of GRAM (Graphics RAM) data between computers with GPUs. The result would let scientists or other computing-intensive professionals work from home."

Customer Base: Boulder Small Businesses

Using the Small Business Administration (SBA) Office of Advocacy's definition of small business as an independent business having fewer than 500 employees, small businesses account for over 99% of firms in Boulder. *Even using a more "on the street" measure of fewer than 100 employees, small business represents 97% of Boulder firms. That equates to 6,800 small businesses with fewer than 500 employees and 6,670ventures with under 100 employees.*

Especially because of Boulder's vibrant entrepreneurial and creative spirit, high education level and university presence, it enjoys a wide range of small business types, industries and growth potentials. While Boulder houses all of the traditional "small business" types (including retail, restaurant, professional and other service firms,) it is also home to many more scalable small business ventures (such as energy, technology and biotech, product-based and early manufacturing ventures.) For example, the Boulder Small Business Development Center's 2009 Client of the Year was InDevR, a biotech firm which recently released a breakthrough virus counter. In contrast, the 2008 award

winner was Casttoo, an early stage personal product venture launched by a recent CU grad.

A sampling of some of Boulder's award-winning small businesses:

Albeo Technologies Inc. designs, manufactures and markets LED (light-emitting diode) lighting systems for industrial and commercial applications that improve profitability by reducing carbon emissions, energy consumption and maintenance costs.

Backcountry Access Inc. is a manufacturer that specializes in snow safety equipment and education, including avalanche beacons, avalanche airbag packs, probes, shovels and snow study tools.

Ecoproducts Inc. makes environmentally friendly food service products, including biodegradable cups, plates, cutlery, straws and food containers all made from renewable resources.

Eetrex Inc. Formed to commercialize proprietary power systems, battery management systems and power electronics components for battery electric vehicles (BEVs), hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs).

InDevR Inc. develops advanced life science instrumentation and assays for analysis of viruses and other microorganisms, using affordable, easy-to-use instrumentation and assays.

Justin's Nut Butter makes organic and natural nut butters available in convenient squeeze packs and six ounce jars.

KM-labs specializes in manufacturing low-cost, minimal maintenance ultra-fast amplifier systems as well as oscillators for applications in chemistry, biology, surgery, physics and engineering.

LogRhythm Inc. specializes in enterprise-class log and event management solutions used to empower organizations to comply with regulations, secure their networks and optimize their IT operations.

Namesté Solar works in Colorado to propagate the responsible use of solar energy and to pioneer conscientious business practices.

Precision Photonics Corp. provides high-performance laser optics and coatings to the telecommunications, defense, aerospace, biomedical and semiconductor industries.

SurveyGizmo is a sophisticated and cost-effective survey software solution for anyone to build and run online surveys.

Customer Base: Boulder Industries

Boulder's high per capita level of education and commitment to entrepreneurial healthy living has fostered formidable high tech and renewable energy industries that create the backbone of Boulder's economy. Boulder's targeted industries:

Data Storage and Software
Number of Companies 976
Number of Employees 16,066
Average Wages $104,063
Concentration (location quotient, where U.S. average is 1.0) 6.5
Example Companies: Epsilon/Abacus, Google, IBM, Intrado, LogRhythm, Rally Software, RogueWave Software, and Markit on Demand

Bioscience
Number of Companies 186
Number of Employees 8,764
Average Wages $94,055
Concentration (location quotient) 6.4
Example Companies: Agilent Technologies, Amgen, Array BioPharma, Corden Pharma, Covidien, and Somalogic

Aerospace
Number of Companies 42
Number of Employees 2,687
Average Wages $90,036
Employment Concentration (location quotient) 2.8
Example Companies: Ball Aerospace, Lockheed Martin, and Northrup Grumman
CU has a world class astrophysics department

Renewable Energy
Example Companies: Cool Energy, Entegrity Wind Systems, IntraGo Corp, Namasté Solar, Siemens, Ion Engineering and Tendril Networks

Outdoor and Natural Living
Example Companies: The Boulder Center for Sports Medicine, Boulder Running Company, Catalyst Communications, Crescent Moon, GoLite, Kelty, Mountain Sports Media, Newton Running, Prana, Rocky Mounts, SmartWool, Spyder Active Sports, and Title Nine

Natural and Organic Food, Products
Example Companies: Aurora Organic Dairy, Boulder Ice Cream, Celestial Seasonings, Cocona, Eco-Products, Justin's Nut Butter, New Hope Natural Media, Next Foods, Pangea Organics, Pharmaca Integrative Pharmacy, and Rudi's Organic Bakery

Boulder is an ideal laboratory for policy and technology research
A summary of Boulder's industries, the University of Colorado, and federal laboratories

The University of Colorado at Boulder and Boulder's Federal Laboratories

Boulder is an ideal laboratory for policy and technology research. Seven federal laboratories and a major research university fuel opportunities to test high level communication and collaboration in areas such as weather modeling, climate analysis, and renewable energy. A unique concentration of high technology companies will test and fully use the network. *Boulder is a natural site for innovative uses of real time sharing of data, video, and cloud computing tools.*

Our universities and laboratories will work with us to identify novel home, business, and research uses for the network. Moreover, once valuable uses are identified, CU's Silicon Flatirons Center and Interdisciplinary Telecommunications Program (described below) provide a terrific platform for highlighting the network's success and identifying lessons for policymakers at the Federal Communication Commission and elsewhere.

The **University of Colorado at Boulder**, the flagship university of the State of Colorado, is a dynamic community of scholars and learners situated on one of the most spectacular college campuses in the country. As one of 34 U.S. public institutions belonging to the prestigious Association of American Universities (AAU) – and the only member in the Rocky Mountain region – CU has a proud tradition of academic excellence, with five Nobel laureates and more than 50 members of prestigious academic academies.

CU's commitment to groundbreaking research and fostering entrepreneurial environments, that center on the importance of education and communication, align perfectly with the benefits of a high-speed broadband network. CU-Boulder has blossomed in size and quality since opening its doors in 1877 – attracting superb faculty, staff, and students and building strong programs in the sciences, engineering, business, law, arts, humanities, education, music, and many other disciplines. Today, CU strives to position itself as the standard for the great comprehensive public research universities of the new century, while continuing to serve the people of Colorado and to engage with the world through excellence in our teaching, research, creative work, and service.

Five graduate specialty programs are in the Top 10 nationally (April 2010: *U.S. News and World Report) – all significant users of computing power*

- Atomic/molecular/optical physics (*No. 1* with MIT)
- Quantum physics
- Environmental sciences
- Environmental law
- Physical chemistry

The Silicon Flatirons Center for Law, Technology, and Entrepreneurship, where the term "network neutrality" was coined, is recognized as a thought leader influencing technology policy at the FCC and beyond. Founded by CU Law School Dean Phil Weiser, and led by former FCC Chief Technologist Dale Hatfield, Silicon Flatirons regularly attracts federal policymakers and telecom industry leaders to Boulder. More broadly, CU's Interdisciplinary Telecom Program, the oldest such program in the nation, would pursue leading edge technical research. ITP's excellent faculty is underscored by Professor Doug Sicker's recent appointment as FCC Chief Engineer. In short, CU's extensive technical and policy work around telecommunications provide a platform with national visibility and credibility.

Boulder's numerous federally funded laboratories have made it a hot spot for some of the world's top research in the areas of climate, weather, astrophysical, geophysical, measurement, and renewable energies. The local business and research community formed an organization named CO-LABS, focused on helping all of the federally funded laboratories in Colorado work efficiently with local government and private industry to foster the best possible research environment. CO-LABS has been successful in providing data on the laboratories, their research and economic impact, to the state-wide community. It also works to integrate the labs' research into both the private and public sectors, helping to make Boulder one of the most innovative and entrepreneurial business environments in the world.

Please see Exhibit D for more information about the University of Colorado and Boulder's federal laboratories.

Exhibit A: Community Support

In ultra-connected Boulder, Google's fiber initiative in 2010 created a literal "buzz" within minutes of the official announcement. By late morning, City officials began receiving citizen emails expressing the desire – and expectation – that the City begin developing an immediate plan to bring this unique resource to the community. A group of local citizens, academics and nationally-known entrepreneurs spontaneously organized. Their first meeting – held in a conference room at the offices of venture capitalist Brad Feld – included an invitation to city and county officials to join the quest. Within days, a boulderfiber.com web site went live through the volunteer design and hosting services of local citizens and business leaders. City officials were invited to attend the February meeting of the Boulder-Denver New Tech Meetup and were greeted by the enthusiastic, vocal support of 300 members generating ideas for how they would use "a gig." Requests for support letters were met with enthusiastic responses from nationally-known business, academic and even federal officials in Boulder. By March 26, the City of Boulder may have been the primary author and coordinator of the Google submittal, but the community's ideas, vision and enthusiasm showed Boulder at its finest – entrepreneurial, visionary, iconoclastic and unified.

Our entire community is highly enthusiastic about what ultra high speed fiber can do for their home life and their businesses. Many indicators reflect deep and broad support.

- Support letters: Key stakeholders throughout Boulder endorse it, including CU, the entrepreneurial community, the Boulder Chamber, and a diverse array of others (see highlights of "testimonials" below)

- Web site: Boulderfiber.com is the on-line nerve center for Boulder's effort and reflects widespread resident support. As of 3/26/10, when the RFI Response was submitted: 15,840 page views and 2,817 Google Map registrants ("votes")
- Business survey: Our survey underscores Boulder's business community's hunger for Google's deployment
- Social Media: Facebook pages (e.g. "Bring Boulder Fiber to Boulder") with 1,851 fans; Twitter followers (194)
- Media: Numerous articles and other media interviews supported the effort

Testimonials

Boulder is a hub for innovation, full of knowledge workers. And we hope and expect that the next generation will follow in our footsteps. Our school district recently completed a 70 mile fiber optic network connecting all their buildings, providing increased capacity and access speed to schools. Boulder commits to the future these students will create and we hope Google will too!

- **Susan Graf, President & CEO, Boulder Chamber**

Boulder is an ideal test-bed for your project for many reasons, among them the presence of the flagship campus of the University of Colorado. The University is located in the heart of Boulder and enrolls over 30,000 students. We are a strong research institution, with an equally strong technology transfer program. ... CU-Boulder is a strong supporter of bringing Google's proposed 1 Gbps fiber-to-the-home network to Boulder, Colorado. Here in Boulder, the proposed network will be put to a large number of interesting and likely very unique and unforeseen, uses.

- **Philip P. DiStefano, Chancellor, University of Colorado - Boulder**

The Boulder Valley School District fully endorses the construction of a Google sponsored citywide fiber deployment within our boundaries and is excited about the opportunities that such a project would offer to our students.

- **Christopher King, Ph.D., Superintendent, Boulder Valley School District**

Boulder is extremely well positioned to test this home to metro to regional network hierarchy. There are highly skilled network engineering and management staff at all the BRAN and the FRGP/UPoP/BPoP organizations to assist in this endeavor. UCAR would be excited to participate in such a test bed.

- **Marla J. Meehl, Manager of Network Engineering and Telecommunications, University Corporation for Atmospheric Research (UCAR)**

A high bandwidth network would of course provide all kinds of opportunities for entrepreneurs to try new advanced applications in a realistic and highly supported mentorship environment. We are exceptionally well positioned to facilitate coordination and sharing of ideas among users and innovators along the Front Range's (the area ranging from Boulder to Denver) burgeoning high technology entrepreneurial community.

– **David G. Cohen, Founder and CEO, TechStars**

With the largest concentration of NOAA researchers, the biggest online NOAA data archive, and several state-of-the-art supercomputers, NOAA-Boulder is critically dependent on fast networking capabilities, both internally and externally. Whether delivering environmental data and information to the general public, collaborating with scientific colleagues at NCAR, NIST, and CU, or providing back-up hosting for stressed NOAA web sites during weather emergencies (such as land-falling hurricanes), NOAA-Boulder makes heavy use of every ounce of available bandwidth. Anything that would increase that bandwidth on local or regional scales would be of great benefit.

– **Don Mock, Deputy Director for Administration, NOAA Earth System Research Lab**

The Boulder community is known the world over for its progressive and cutting-edge innovations...And to that end; the Boulder Community is united in the effort to bring this technology to Boulder. Our City Government, Business Community and individual citizens through social networking groups have made their opinion clear – Boulder is the natural place for progress. We invite you to join our community.

- **Jared Polis, US Representative 2nd District of Colorado**

Exhibit D: The University of Colorado at Boulder and Boulder's Federal Laboratories

The University of Colorado at Boulder, also known as CU, is Colorado's flagship university. The University of Colorado at Boulder is the city's largest employer and CU students make up nearly one-fifth of the city's residents. CU Boulder is a world-class research institution with a number of nationally ranked programs and home to five Nobel Laureates. In the past five years, 833 patents have been filed and 51 start-up companies have been formed through CU's Technology Transfer Office. CU's long history of high academic standards and ground breaking research have helped make Boulder the innovative high-tech business environment that it is today.

CU-Boulder Research Highlights

- Over $350 million in sponsored research funding during fiscal year 2012-13

- More NASA research funding during the past three years than any other university
- More than 100 research centers, institutes, and laboratories
- One of 34 US public universities invited to join the Association of American Universities
- 4 National Medal of Science winners
- 19 members of the American Academy of Arts and Sciences
- 5 members of the National Academy of Education
- 13 members of the National Academy of Engineering
- 20 members of the National Academy of Sciences
- 98 Fulbright scholars
- 10 Packard Fellows
- 7 MacArthur Fellows
- 5 Nobel Laureates

Silicon Flatirons Center

Silicon Flatirons Center for Law, Technology, and Entrepreneurship brings to campus individuals from legal, technical, regulatory and business backgrounds to discuss issues facing the telecommunications and information technology communities. Silicon Flatirons pursues three basic goals:

1. **To elevate the debate around technology policy issues;** Entrepreneurs are constantly developing new businesses and regulators are ever seeking to adapt to a dynamic marketplace marked by fast-moving technologies. Silicon Flatirons provides a forum for entrepreneurs, lawyers, industry professionals and policymakers to discuss the changing technologies as well as the new business models and the relevant legal issues associated with them

2. **To facilitate networking, the development of "human capital" and the promotion of entrepreneurship in the Colorado technology community**; A core ambition of Silicon Flatiron is to develop programs on cutting edge topics that both inform our audience and expose them to new ideas. Each year, Silicon Flatirons hosts nine seminars and an annual symposium. We regularly draw over 200 people to each event, split evenly between students and professionals from the technology community. The academic environment and our strong participation from local industry facilitate a healthy balance between examining theoretical perspectives and real world insights. Notably, the Center provides a forum for analyzing the continually changing dynamics in the telecommunications and information technology marketplace and regulatory environment. In so doing, it continues to inspire and prepare students to participate in our emerging information economy and society.

   Another principal ambition of the Center is to catalyze entrepreneurship in the region. Through the Center's myriad programs, including our support for the Entrepreneurial Law Clinic, a campus-wide business plan competition, the

New Technology Meetup, the Entrepreneurs Unplugged series, and the Crash Course for Entrepreneurs series, the Center establishes venues that addresses the development of skills necessary for building or counseling successful entrepreneurial ventures and creates networking opportunities to bridge the University and local communities. Through our conferences and roundtables, we are also committed to advancing scholarship of entrepreneurship.

3. **To inspire student interest in technology law and entrepreneurship;** Across the University of Colorado, Silicon Flatirons looks to develop student interest and involvement in the technology sector. Students from the Law School, the Interdisciplinary Telecommunications Program, Computer Science, Journalism, the Business School, ATLAS, and other departments have attended our events. Silicon Flatirons has also matched up students from these areas with outside professional mentors. Similarly, Silicon Flatirons continues to work on developing internship opportunities for students interested in these areas. Student writing in this area also has blossomed, with a number of excellent papers submitted to the Silicon Flatirons Paper Competition.

Federal Laboratories in Boulder

Boulder's numerous federally funded laboratories have made it a hot spot for some of the world's top research in the areas of; climate, weather, astrophysical, geophysical, measurement, and renewable energies. Boulder-based laboratories include:

- **The National Center for Atmospheric Research (NCAR).** NCAR is composed of several different laboratories including; Computational and Information Systems, Earth Observing, Earth and Sun Systems, and Research Applications Laboratory. The National Center for Atmospheric Research conducts research in the following areas: Climate Earth's past climate, greenhouse effect and global warming, Earth's future, El Niño and La Niña, drought, and wildfires. Meteorology/Weather Short-term forecasts, weather forecasting and predictability, weather's effect on climate, training meteorologists, severe storms, and physical processes. Societal Impacts Effects of weather and climate on society, capacity building, and national security. Pollution and Air Chemistry Air pollution, chemistry of our atmosphere, tracking plumes, and ozone. The Whole Earth System Oceans effects on climate and weather, the effects of land use on climate, and weather, cryosphere/ice and the water cycle. Sun and Space Weather Solar furnace, suns effect on weather and climate, the solar observatory, and space weather.
- **The University Corporation for Atmospheric Research (UCAR).** In partnership with the National Science Foundation (NSF), they established the National Center for Atmospheric Research (NCAR). Since its inception, UCAR has managed NCAR, on behalf of NSF, to address pressing scientific and societal needs involving the atmosphere and its interactions with the oceans, land, and

Sun. UCAR's has been pivotal in connecting the top academic researchers from all over the world.

- **Institute for Telecommunications Sciences (ITS).** National Telecommunications and Information Administration (NTIA), part of the U.S. Department of Commerce, has been the President's principal adviser on telecommunications and information policy issues. Located in Boulder, the Institute for Telecommunication Sciences (ITS) is the research and engineering laboratory of the NTIA. ITS promotes advanced telecommunications and information infrastructure development in the United States, enhancing domestic competition, improving U.S. telecommunications trade opportunities, and promoting more efficient and effective use of the radio spectrum.
- **National Oceanic and Atmospheric Administration (NOAA).** NOAA's products and services range from daily weather forecasts, severe storm warnings, and climate monitoring to fisheries management, coastal restoration, and marine commerce support. Specific areas of focus are climate; oceans, great lakes, and coasts; and weather and air quality.

Boulder Lab Facilities:

- Earth Systems Research Laboratory (ESRL) http://www.esrl.noaa.gov/ In October 2005, six NOAA research organizations were consolidated into one unit, the Earth Systems Research Laboratory (ESRL). Its mission is to observe and understand the Earth system and to develop products through a commitment to research that will advance NOAA's environmental information and services on global-to-local scales. ESRL is organized into four divisions - Global Monitoring, Physical Sciences, Chemical Sciences, and Global Systems. The work of these divisions focuses on understanding climate processes and trends, providing climate information related to water management decisions, improving weather prediction, understanding the recovery of the stratospheric ozone layer, and developing air quality forecast models. ESRL is headquartered in Boulder with subordinate labs located throughout the state. The Surface Radiation Measurement Network, Forecast Verification, and Operational Systems for Weather Forecasting operate out of Boulder.
- Space Weather Prediction Center (SWPC) http://www.swpc.noaa.gov/ This facility reports both to NOAA and the National Weather Service, with the responsibility to monitor and forecast the weather above our atmosphere. Solar storm activities can affect people and equipment working in the space environment, such as satellite systems that can be damaged or destroyed if caught unprepared for a solar storm. SWPC also issues public notifications of extreme cases where some storms can affect communication and navigation equipment on the earth's surface. The SWPC is located with the National Weather Service in the NOAA complex in Boulder.
- National Environmental Satellite, Data, and Information Service (NESDIS) is responsible for monitoring and supporting all of NOAA's

highly specialized and technological equipment and machinery, including 16 satellites currently in orbit.
    - Three divisions are located in Colorado: (1) the NOAA Library and Information Services, providing scientific, technical, and legislative information that focuses mainly on marine and coastal geographic information; (2) the National Geophysical Data Center, http://www.ngdc.noaa.gov/html, specializing in geophysical data describing solid earth, marine, solar-terrestrial environments and earth observations from space; (3) the National Climatic Data Center, http://www.ncdc.noaa.gov/oa/ncdc.html, devoted to paleoclimatic data that assists NOAA in understanding climate variability and change.
    - National Weather Service (NWS) http://www.crh.noaa.gov/bou/ The National Weather Service forecasts the U.S. weather and issues weather-related warnings and watches and (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas. Operated by NOAA, the NWS operates several Weather Forecast Offices across Colorado and around the nation.
- **National Institute of Standards and Technology (NIST).** NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. With a staff of about 350 scientists, engineers, technicians, and support personnel, plus approximately 100 visiting researchers annually, the NIST Boulder Laboratories conduct research in a wide range of areas. NIST also conducts "work for others" testing and consultation. Many of its scientists have joint appointments with Colorado research universities.
- **JILA.** JILA was founded in 1962 as a joint institute of the University of Colorado and NIST. Originally, the name stood for the Joint Institute for Laboratory Astrophysics. In 1994, members voted to keep the name but discontinue use of the meaning as it did not adequately describe the scope of science conducted at the institute. JILA serves as a research platform for some of the top physicists and scientific researchers in the world, including several Nobel Laureates. Located on the CU campus, the institute includes graduate and postgraduate students, faculty, and alumni who work in some of the most challenging and fundamental areas recognized by science. Research at the facility falls into seven categories: astrophysics, atomic and molecular physics, biophysics, chemical physics, nanoscience, optical physics, and precision measurement.
- **Cooperative Institute for Research in Environmental Sciences (CIRES).** The Cooperative Institute for Research in Environmental Sciences (CIRES) is a cooperative institute between NOAA and the University of Colorado that was founded in 1967. The Institute conducts research in Earth system science, which includes environmental chemistry and biology, atmospheric and climate dynamics, cryosphere (areas of snow and ice) and polar processes, and the solar-terrestrial environment. Research topics range from glacial melting and rising sea levels to hurricane forecasting.

- **National Ecological Observatory Network (NEON).** NEON is fairly new to Boulder. It will collect data across the United States on the impacts of climate change, land use change and invasive species on natural resources and biodiversity. NEON is a project of the U.S. National Science Foundation, with many other U.S. agencies and NGOs cooperating. NEON will be the first observatory network of its kind designed to detect and enable forecasting of ecological change at continental scales over multiple decades. The data NEON collects will be freely and openly available to all users.
- **Renewable and Sustainable Energy Institute (RASEI). RASEI,** an interdisciplinary joint research effort between the University of Colorado at Boulder and the National Renewable Energy Laboratory (NREL), is advancing solutions for producing energy economically from low carbon sources, decreasing reliance on foreign oil, reducing greenhouse gas emissions, and using energy more efficiently to meet the global energy challenge. RASEI's efforts focus on interdisciplinary energy research, training the next generation of energy professionals, and the development of market-ready leading-edge technologies.

ORDINANCE NO. ____

AN ORDINANCE SUBMITTING TO THE REGISTERED ELECTORS OF THE CITY OF BOULDER AT THE SPECIAL MUNICIPAL COORDINATED ELECTION TO BE HELD ON TUESDAY, NOVEMBER 4, 2014, THE QUESTION OF AFFIRMING THE CITY'S RIGHT TO PROVIDE HIGH-SPEED INTERNET SERVICES (ADVANCED SERVICES), TELECOMMUNICATIONS SERVICES, AND/OR CABLE TELEVISION SERVICES TO RESIDENTS, BUSINESSES, SCHOOLS, LIBRARIES, NONPROFIT ENTITIES AND OTHER USERS OF SUCH SERVICES, EITHER DIRECTLY OR INDIRECTLY WITH PUBLIC OR PRIVATE SECTOR PARTNERS AS EXPRESSLY PERMITTED BY ARTICLE 27, TITLE 29, OF THE COLORADO REVISED STATUTES, WITHOUT LIMITING ITS HOME RULE AUTHORITY AND SETTING FORTH RELATED DETAILS.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BOULDER, COLORADO:

Section 1. A special municipal coordinated election will be held in the City of Boulder, County of Boulder and State of Colorado, on Tuesday, November 4, 2014, between the hours of 7:00 a.m. and 7:00 p.m.

Section 2. At that election, there shall be submitted to the electors of the City of Boulder entitled by law to vote the question of re-establishing the city's right to provide high-speed internet services (advanced services), telecommunications services or cable television services as stated below.

Section 3. The official ballot shall contain the following ballot title, which shall also be the designation and submission clause for the question:

Ballot Question NO. ___

Affirming the City's Right to Provide Telecommunication Services

Shall the City of Boulder be authorized to provide high-speed Internet services (advanced services), telecommunications services, and/or cable television services to residents, businesses, schools, libraries, nonprofit entities and other users of such services, either directly or indirectly with public or private sector partners, as expressly permitted by §§ 29-27-101 to 304, "Competition in Utility and Entertainment Services," of the Colorado Revised Statutes, without limiting its home rule authority?

For the Measure____ Against the Measure____

Section 4. If a majority of all the votes cast at the election on the question submitted shall be for the question, the question shall be deemed to have passed and shall be effective upon passage.

Section 5. The election shall be conducted under the provisions of the Colorado Constitution, the Charter and ordinances of the City, the Boulder Revised Code, 1981 and this ordinance, and all contrary provisions of the statutes of the State of Colorado are hereby superseded.

Section 6. The officers of the City are authorized to take all action necessary or appropriate to effectuate the provisions of this ordinance and to contract with the county clerk to conduct the election for the City.

Section 7. If any section, paragraph, clause, or provision of this ordinance shall for any reason be held to be invalid or unenforceable, such decision shall not affect any of the remaining provisions of this ordinance.

Section 8. This ordinance is necessary to protect the public peace, health and property of the residents of the City, and covers matters of local concern.

Section 9. The City Council deems it appropriate that this ordinance be published by title only and orders that copies of this ordinance be made available in the office of the city clerk for public inspection and acquisition.

INTRODUCED, READ ON FIRST READING, AND ORDERED PUBLISHED BY TITLE ONLY this 17th day of June, 2014.

_____
Mayor

Attest:

_____
City Clerk

READ ON SECOND READING, PASSED, ADOPTED, AND ORDERED PUBLISHED BY TITLE ONLY this _____ day of _____ 2014.

_____
Mayor

Attest:

_____
City Clerk