Boulder City Council
STUDY SESSION
Televised

Tuesday
September 8, 2015
UPDATED

5:15-6 PM
Boards and Commissions Interviews
1777 West Conference Room
Moved to Monday, September 14

NEW ITEMS
5:30-5:45 PM
Living Lab Updates

5:45-6 PM
Occupancy Enforcement Discussion

6-8 PM
Review of the 2016 City Manager's Recommended Budget

8-9 PM
Emerald Ash Borer in the City of Boulder

Council Chambers
Municipal Building
1777 Broadway
Submit Comments to City Council
Email: council@bouldercolorado.gov
or
Attention: Alisa Lewis, City Clerk
PO Box 791, Boulder, CO 80306
Fax: 303-441-4478

Folsom Street Living Lab - Corridor Refinements

Based on feedback from City Council at the Aug. 25 study session, the Transportation Division is making several refinements along the Folsom Street corridor, including adjustments to the painted pavement markings, bollard placements, vegetative landscaping, and traffic signal timing. These strategic modifications will clarify and facilitate turning movements at key intersections and driveways that some users have reported to be confusing or challenging. These refinements are scheduled to begin the night of Tuesday, Sept. 8, and are expected to be substantially completed by the end of next week.

Traffic Signal Timing
After the first two weeks of observations, the city modified the timing of the traffic signal at the intersection of Folsom and Pearl streets during the p.m. peak period (3 to 7 p.m.) to shift several seconds of green lights from Pearl to Folsom streets.

Removing Vegetation
Following the Aug. 25 City Council Study Session, the city removed overgrown vegetation from the median at the Folsom and Walnut streets pedestrian crossing treatment. The vegetation at this location had blocked visibility for southbound vehicles to see bikes and pedestrians crossing from the east, which required drivers to slow down and hold up traffic behind them whenever approaching this crosswalk because they couldn't be sure if a pedestrian or cyclist was crossing. With the vegetation removed, the sight distance is improved and drivers can now pass through the crosswalk with confidence when no one is crossing the street.

Restriping the Center Left-turn Lane
Additional modifications are scheduled during the night of Tuesday, Sept. 8. These refinements include restriping several of the painted median islands to create more center left-turn space, which will make it easier for vehicles to turn into and out of driveways and alleys along the corridor without blocking the through lanes. The pavement restriping will occur:

- North of the median on the north side of the Folsom Street and Canyon Boulevard intersection;
- South of the median at the Folsom and Walnut streets intersection; and
- On both the northbound and southbound approaches to the Folsom and Pine streets intersection.

Removal of About 200 Bollards
During the night of Tuesday, Sept. 8, staff will also remove about 200 of the bollards from the protected bike lane, which is expected to produce the benefits listed below.

- It will be easier for drivers making right turns into driveways, alleys and streets to do so without blocking traffic in the through lane.
- It will be easier for drivers to back out of several residential driveways along the corridor.
- There will be more space for drivers to pull aside to the curb to allow emergency response vehicles to safely pass by.
- The bike lane will be less constrained and it will be easier for one cyclist to pass another.
- The sense of clutter along the corridor will be reduced.

CITY OF BOULDER
STUDY SESSION

MEMORANDUM

TO: Members of City Council

FROM: Jane S. Brautigam, City Manager
Bob Eichem, Chief Financial Officer
Cheryl Pattelli, Director of Finance
Peggy Bunzli, Budget Officer
Maureen Rait, Executive Director of Public Works
David Driskell, Executive Director of Community Planning and Sustainability
Heather Bailey, Executive Director of Energy Strategy and Electric Utility Development

DATE: August 28, 2015

SUBJECT: **September 8, 2015 Study Session**
Review of the 2016 City Manager's Recommended Budget

I. PURPOSE

The purpose of the Sept. 8 study session is to present the City Manager's 2016 Recommended Budget and to give the council an opportunity to review the document, ask questions of city staff, and to provide additional comments. The study session will cover economic conditions, future city revenues, budget principles, and major themes in the City Manager's 2016 Recommended Budget along with details of specific items proposed for funding in 2016.

II. BACKGROUND ON THE 2016 RECOMMENDED BUDGET

Capital and Operating Budget

Each year, the annual city manager's recommended budget includes two primary components: (a) the overall budget, incorporating all programs, services and capital projects for the year and (b) a capital improvement program budget. The City Manager's 2016 Recommended Budget shows the combined operating and capital plan of the city, including (i) actual expenditures and revenues for 2014, (ii) approved and revised expenditures and revenues for 2015, (iii) proposed expenditures and revenues for 2016, and (iv) projected revenues and expenditures through 2021.

The Draft 2016-2021 Capital improvement Program (CIP) was reviewed at the Aug. 11 council study

session. Material from that meeting can be found here: Draft 2015-2020 CIP Study Session Packet. A summary of that study session will be included in the consent agenda of the September 15, 2015, City Council meeting.

Financial Summary
The economic outlook for the city continues to be positive, with stable, moderate revenues projected to continue in the coming years. Boulder's fiscal health is reflected in its tax revenue collections and the community's unemployment level of 3.8 percent as of June 2015, down 0.5 percent from the previous year. Total sales and use tax collections were up 4.2 percent through June 2015, compared to collections through June 2014. Although there have been recent fluctuations in the markets, these are not necessarily indicative of any overall change in the economic picture. Staff will continue to monitor revenues closely.

The total annual budget of $327 million (excluding transfers) across all funds and areas represents a 2.5 percent increase in spending over 2015. Of this, $4.6 million, or approximately two thirds, comes from increased capital spending over 2015. Other one-time expenditures remain flat, and about one third of the increase is for ongoing expenditures. The increase in one-time capital spending reflects focused savings that have been set aside in funds such as the Utilities, Parks and Recreation and Open Space funds over several years – and includes significant leveraged funding, particularly in Transportation, as well as continued funding for ongoing flood recovery and resilience. The net ongoing increase includes important, strategic investment in the community, outlined below, but also represents cyclical decreases in some operating areas, such as fleet replacement, as well as realized savings in areas such as health care costs.

Projected 2016 General Fund expenditures of $132.2 million will increase by 2.9 percent over the 2015 Approved Budget. This represents a 4.2 percent increase in ongoing spending, with a slight reduction in one-time spending over 2015. The 2015 budget included higher one-time dollars to provide flexibility in covering unknown expenditure timelines for costs incurred for the municipalization project.

In part, the 2016 Recommended Budget, is informed by the effects of the September 2013 Flood which caused significant flooding and extensive damage to many Colorado communities. In Boulder, total damage to city infrastructure and public lands is estimated at $28 million, and private-property damage is estimated at $200 million.

While much of the recovery work has been completed, and the 2014 and 2015 budgets included considerable flood recovery and mitigation investment, the 2016 budget continues to reflect ongoing investment for recovery, mitigation and to strengthen the city's long-term resilience. In particular, flood recovery on Open Space will continue throughout 2016 and additional funding approved in the 2015 budget process is being applied to an accelerated CIP in water, wastewater and stormwater/flood management systems, which will continue in 2016 and beyond. Enhanced capital investment in these areas is expected for the foreseeable future. Additional information has been included in the Draft 2016-2021 CIP and can also be found at: Boulder Flood Info.

Strategic Planning and Prioritization
During 2013 and 2014, a cross-departmental team completed the update of the City's Comprehensive Financial Strategy (CFS). This is the evolution and next version of the original Blue Ribbon

Commission work. The conclusion from the Commission's original work was if the city continued on the same path, there would be an annual gap between revenues and expenditures of $135 million per year by 2030. In the original work, an econometric model was used that took into account the impact of an aging population, the continuation of the erosion in the type of goods that are subject to sales and use tax, and other demographic impacts expected in the next 20 years. Since that work was done, Council has implemented and adhered to some very powerful financial policies that have brought stability to the financial situation of the city. The main policy adopted has resulted in a truly balanced budget. That is, ongoing expenditures are balanced to ongoing revenues, and one-time revenues are used for one-time expenditures. By using this financial discipline on an ongoing basis, and if it is used in the future, the gap for currently provided services is gone.

The 2016 City Manager's Recommended Budget reflects continued funding in support of the current Major Update to the Boulder Valley Comprehensive Plan (BVCP). The BVCP is the overarching policy document that guides decisions related to growth and preservation of the Boulder Valley, and it informs decisions about the manner in which city services are provided. While most of the core BVCP policies have been in place since 1970, every five years the city and county update the plan to address current needs and conditions in the community. Public engagement as part of the BVCP Major Update process will provide the opportunity to better understand and address the community's vision and help shape Boulder's built environment and quality of life.

The 2016 Recommended Budget has been developed in support of council and community priorities, incorporating council adopted master and strategic plans, under the umbrella of the Sustainability Framework, and using priority based budgeting. There are a number of opportunities for public input and feedback throughout the process, including outreach through master planning efforts, Board and Commission meetings and public hearings of the budget. This is illustrated in the graphic below.

III. 2016 RECOMMENDED BUDGET HIGHLIGHTS

2016 Recommended Budget highlights are noted in the City Manager's Budget Message, which is on p. 1 of the 2016 Recommended Budget and included as **Attachment A** to this memo. These highlights demonstrate increased and strategic investment in all outcome areas of the Sustainability Framework.

IV. ADDITIONAL ANALYSIS

Additional information and analysis relating to some specific initiatives and budget issues in the 2016 Recommended Budget is detailed below.

Funding Options for Boulder Community Hospital and Mill Levy Considerations

In 2008, City of Boulder voters eliminated restrictions on property tax revenue collections under TABOR, to be phased in over multiple years. The restrictions were fully eliminated as of the 2012 Budget. Between 2008 and 2015 valuation changes have been minimal over all, and valuation increases since all restrictions were eliminated have been under 3 percent annually. The preliminary property valuation from the County indicates a potential increase of up to 20 percent for 2016 over 2015 collections, in assessed valuation across both residential and business property in the City of Boulder. Generally, the final valuation is a lower amount than the preliminary valuation figure, once all appeals are evaluated and corresponding adjustments made.

During the July 14 City Council meeting discussions with council, on the potential purchase of the Boulder Community Hospital (BCH) site and potential financing options, staff indicated to council that options for debt service coverage would be presented to council as a part of the 2016 budget process. One option identified was to set aside property tax revenues, above a base amount for BCH debt service coverage. Another option noted was the use of General Fund revenue, which would require a budget tradeoff. Staff is recommending the use of increased property tax revenues.

The 2016 Recommended Budget includes an assumption of only a base amount of 3 percent increase in General Fund property tax revenues. The differential between that and an anticipated 15 percent increase is approximately $3 million annually, an amount sufficient to cover debt service under the current purchase and financing scenarios (see July 14 memo). Council could choose to approve the maximum allowable mill levy, with an estimated increase in property tax revenues of 15 percent, and apply 3 percent to general uses, with 12 percent available for debt service coverage. Alternatively, council could choose to approve a lower mill levy and either use other General Fund revenues or a combination of property tax and other General Fund revenues to cover debt service for the purchase of BCH. Doing so would require a reduction in other city programs included in the 2016 Recommended Budget.

Potential Municipal Electric Utility

In 2013, after unprecedented analysis and community input, City Council directed staff to move forward with legal actions and other start-up activities necessary to launch and operate an electric utility. The goal of this initiative is to provide Boulder residents, businesses and institutions with reliable energy that is increasingly clean and competitively priced. In February 2015, City Council gave direction to the city's legal team to file an application with the Colorado Public Utilities Commission (PUC) for the transfer of assets necessary for a municipal electric distribution system. The city's application seeks to acquire only the facilities necessary to serve Boulder customers, achieve the community's energy goals and meet the requirements approved by Boulder voters as part of the City Charter. As a result of the filing, the city updated the project's transition work plan schedule to

prioritize the application for a transfer of assets to the PUC, followed by a sequential process of regulatory filings and the condemnation process. While the legal process moves forward, the city continues taking steps to identify its needs related to power supply, operations and maintenance, and information technology.

2016 will focus on Colorado Public Utilities Commission (PUC) litigation work, other legal proceedings, and continued implementation of the transition work plan. This work represents a significant amount of resources for the Energy Future Project; however, no significant dollars will be spent until after a decision is made at the PUC. The PUC decision will inform next steps in the process and will ultimately determine which path the city will take in pursuing its energy future goals. The city is aware that there are further uncertainties about the outcome of regulatory and legal processes, and the proposed 2016 budget is structured in a way that addresses and minimizes risk.

What creating a city electric utility would achieve

This project is a significant undertaking in support of Boulder's commitment to meaningful climate action and to economic vitality. A city-owned electric utility would have the authority to make decisions about the community's energy supply and new infrastructure to support distributed generation and resilience, ultimately changing the future of electric services for all Boulder's residents and businesses. A local electric utility would also provide access to the grid and economic vitality opportunities for innovative products and services.

What steps need to be taken in 2016

The original transition work plan (Plan) was developed in 2014 in anticipation of moving forward with acquiring portions of the electric system owned by Xcel through an eminent domain proceeding in Boulder District Court. The Plan serves as a working tool for the city and is designed to manage the risks of acquisition while prioritizing the fundamentals of an electric utility: safety and reliability.

Based on the city's decision to file an application with the PUC to resolve issues related to the transfer of assets from Xcel to the city, consistent with recent Boulder District Court rulings, the city has updated the transition work plan. In the original transition schedule, the regulatory filings and eminent domain proceedings were assumed to occur concurrently; since the courts have determined these filings will be sequential, the timeline had to be modified.

As a result, the timing of two critical dates, upon which many tasks are predicated, has changed as follows:

- Day One – the date on which the city takes ownership of the electric system and begins customer billing (approximately fourth quarter 2017); and,
- Day Two – completion of interconnection construction (approximately fourth quarter 2019).

In 2016, the budget will be expended to support the following key initiatives: critical transition work plan activities; legal proceedings for PUC regulatory filings and condemnation, including re-filing a petition in Boulder District Court; hiring staff positions that are key to this phase of work; and procuring external resources essential to the implementation of the transition work plan. Detailed work items for 2016 may be found in the city's updated transition work plan.

The 2016 work plan was designed with the following objectives in mind:

- Position the city to safely, reliably and effectively operate the electrical system

- Manage costs, while being mindful of the uncertainties inherent to this effort
- Minimize customer impacts and maximize customer value
- Proactively identify and mitigate risks
- Meet the community's Energy Future goals, including ensuring competitive rates, expanding the renewable power supply, significantly reducing greenhouse gas emissions, providing customers with a greater say about their energy supply, and providing local economic opportunity for new and emerging carbon reducing or energy based innovation.

Proposed sources of funding

From the beginning of this exploration, the process has included measured steps and potential off-ramps to ensure responsible use of taxpayer dollars. In 2011, the voters approved a Utility Occupation Tax (UOT) in support of this effort. This tax, set to expire in 2017, is the primary source of funding for this effort. Additional one-time funding has been allocated to the project from the General Fund. The annual budget process provides council with the opportunity to review the proposed expenditure plan associated with the Utility Occupation Tax revenues and other one-time revenues in support of key work efforts. Although multi-year in nature, specific work products and investment needs are evaluated on a year-to-year basis.

2015 Budget

In 2014, City Council approved a multi-year budget to ensure that resources were available to meet legal challenges and fluctuations in the transition work plan schedule. The budget supports achievement of project goals and necessary resources to complete the work by 2017. The approved budget includes 2015 UOT base allocation, pre-funded General Fund Reserves (that will be paid back to the GF Reserves as UOT revenue collections occur in 2016 and 2017), a one-time GF request, 2014 encumbrance carryover and 2014 ATB carryover (see table below).

2015 APPROVED ENERGY FUTURE BUDGET	
2015 Utility Occupation Tax (UOT) - Base Allocation	$2,015,710
General Fund Reserves* (to be replenished by 2016 and 2017 UOT revenue)	$4,214,648
Request from General Fund	$712,877
2015 Approved Budget	**$6,943,235**
2014 Encumbrance Carryover	$495,731
2014 ATB Carryover	$441,361
TOTAL	**$7,880,327**

*GF reserves were approved in 2015 to bridge the timing difference in cash flow of an anticipated accelerated work plan and unpredictable legal costs. As actual UOT revenue collections occur in 2016/2017, they will return to the GF reserves.

The Energy Future Project funds are allocated to support salaries and benefits, consulting and contract services, purchased services and supplies and start-up costs related to acquiring necessary assets to launch and operate an electric utility. See table below for projected uses in 2015.

2015 PROJECTED USES (ENERGY FUTURE BUDGET)	
Staffing	**$891,900**
Consulting and Contract Services - Transition Plan	$921,500
Consulting and Contract Services - Legal and Regulatory	$1,207,282
Consulting and Contract Services	**$2,128,782**
Systems	**$290,000**
Capital	**$0**
Purchased Services and Supplies	**$216,252**
Contingency	**$343,998**
Subtotal	**$3,870,932**
Future Planned Expenditures	**$4,009,395**
TOTAL	**$7,880,327**

The 2015 fund balance (projected at $4 million) will carry over to 2016, and is the primary source of funding for the project in 2016 and beyond.

In addition to the 2015 approved budget, council approved a $1 million contingency, out of the City Manager fund, to help supplement the Energy Future budget for additional unplanned expenses. Part of the contingency fund will help supplement projected staff salaries ($277,276) in 2015 (see table below). As part of the 2016 budget process, staff will recommend approval of $277,276 to replenish funds used out of the $1 million contingency in 2015.

2015 PROJECTED USES ($1M CM CONTINGENCY)	
Staffing	
Project Manager (1.0 FTE)*	Beginning March 2015
Energy Strategy Coordinator (1.0 FTE)**	Beginning May 2015
Energy Sustainability Coordinator (0.5 FTE)**	Beginning May 2015
Temporary Electrical Engineer (1.0 FTE)	Beginning June 2015
Energy Financial and Regulatory Analyst (1.0 FTE)	Beginning 3rd Qtr. 2015
Energy Resource Specialist (1.0 FTE)	Beginning 3rd Qtr. 2015
TOTAL	**$277,276**

*Only a portion ($10K) of this position will be funded out of the $1M Contingency in 2015; this amount is over what was budgeted for this position in 2015.
**These FTEs were previously funded by the CAP Tax. Staff will request to fund these positions out of the $1M CM contingency in 2015 and 2016.

2016 Budget and Beyond

The 2016 budget will continue to support personnel and operating expenses for the implementation of the transition work plan. Funds were appropriated in 2015 for a multi-year project budget, and the unspent amounts of the 2015 budget are the primary sources of funding for the project in 2016 and beyond. Additional funding has been identified for key staffing positions in 2016, to be funded out of the $1 million General Fund contingency.

To be conservative we have front loaded the expenditures in 2016. Since we do not know the timing of many of the costs that will be incurred, this provides maximum flexibility. Any appropriation not spent

in 2016 will roll over into 2017. What exactly will be needed in 2017, will become clearer in the next year and will be addressed during the 2017 budget process.

In 2016, the Energy Strategy and Electric Utility Development project will request funding for:

1. Approval of existing 6.5 FTE positions in 2016. The funding for these positions is covered in the project budget (UOT), and no additional funding is being requested at this time.
2. Approval of 1.25 new FTE positions in 2016. The funding for these positions is covered in the existing project budget, and no additional funding is being requested at this time.
3. Approval of 4.5 FTE in 2016, to be funded out of $1 million Contingency (GF).
4. Approval to replenish the Contingency (GF) in the amount of $277,726 for 2015 personnel costs, to bring the Contingency (GF) beginning balance to $1 million in 2016.

The new FTEs expected for 2016 includes the hire of positions essential to the implementation of the transition work plan, specifically:

- 1.0 FTE – Customer Experience Manager (key accounts/customer relations) who will develop key accounts for customer service strategies.
- 0.25 FTE - Customer Information System Technician who will support implementation of the customer information service systems.
- 1.0 FTE - Energy Financial and Regulatory Analyst who will provide technical assistance and analysis on complex modeling to support the city's energy strategy, including financial and energy resource feasibility modeling.
- 1.0 FTE - Energy Resource Specialist who will provide technical assistance and analysis on local energy generation initiatives and support in Boulder's overall energy resource development.
- 1.0 FTE - Electrical Engineer who will conduct research, develop and implement electric utility related plans, policies, procedures, codes, standards and systems for power generation, transmission, distribution, monitoring, control, metering and energy efficiency. This position will also conduct research on existing electric utility infrastructure and systems.

Projected uses for the 2016 Energy Future budget and $1 million CM Contingency budgets are summarized in the tables below.

2016 PROJECTED SOURCES AND USES - ENERGY FUTURE BUDGET	
Projected Beginning Balance (from 2015 Carryover)	**$4,009,395**
Staffing	**$1,107,323**
Consulting and Contract Services - Transition Plan	$965,500
Consulting and Contract Services - Legal and Regulatory	$1,350,000
Consulting and Contract Services	**$2,315,500**
Systems	**$280,000**
Capital	**$33,063**
Purchased Services and Supplies	**$216,252**
Subtotal	**$3,952,138**
Future Planned Expenditures	**$57,257**
TOTAL	**$7,880,327**

2016 PROJECTED USES ($1M CM CONTINGENCY)	
Staffing	
Energy Strategy Coordinator (1.0 FTE)*	
Energy Sustainability Coordinator (0.5 FTE)*	
Electrical Engineer (1.0 FTE)	
Energy Financial and Regulatory Analyst (1.0 FTE)	
Energy Resource Specialist (1.0 FTE)	
TOTAL	**$477,639**

*These FTEs were previously funded by the CAP Tax. Staff will request to fund these positions out of the $1M CM contingency in 2015 and 2016.

Efforts being taken to minimize risk

Expenditures will continue to be monitored, with much of the spending anticipated in support of litigation throughout 2016. If work efforts do not progress as planned or a decision is made not to proceed with municipalization, some savings may be realized. If work progresses more quickly than currently anticipated, the 2016 Recommended Budget includes contingency funding, which has been set aside and not allocated to the project.

In addition to adopting an approach that allows for flexibility in hiring and expenditure of resources, any long-term investments in equipment and facilities that can be delayed without harming the eventual project outcome have been pushed out.

Lastly, as has been true in previous years, the city will continue its longstanding practice of cross-departmental cooperation for high-profile and high-impact projects.

The city staff's goal is to integrate the electric utility in a manner that draws on existing organizational functions (such as finance and accounting, IT, facilities, human resources, billing, and legal) and leverages resources as efficiently as possible for a coordinated approach to delivering energy services. There is an additional benefit to this: even if the city is unable to move forward with creating a local electric utility, work done and funds expended toward the transition plan will improve the delivery of services across already existing city departments and programs, benefiting the Boulder community.

Conclusion

The funding requested in 2016 is in accordance with the steps that are necessary to meet the community's energy future goals while also managing unknown outcomes related to the acquisition and transition processes. As has occurred over the past several years, the city is committed to providing frequent updates to the community and City Council and working to engage the wide range of customers who would be served by the creation of a local electric utility. Additional information about this effort is available at BoulderEnergyFuture.com.

Utility Occupation Tax

In 2010, City of Boulder voters passed a new utility occupation tax on public utility companies that deliver energy to customers in the form of electricity and gas. This tax was intended to replace revenues previously collected from a franchise fee, collected from Xcel, and used by the city to fund core General Fund programs, including police, fire, library, park maintenance, planning and human services. The tax began on Jan. 1, 2011 and was set to expire on Dec. 31, 2015. Xcel has passed the cost of the tax onto Boulder ratepayers just as it did with the previous franchise fee.

In 2011, council asked voters to approve an extension of the existing General Fund occupation tax, along with an additional $1.9 million in new occupation taxes, through Dec. 31, 2017. The additional $1.9 million in occupation taxes would be used to fund preliminary costs associated exploring the creation of a municipal electric utility and acquisition of the electric distribution system. This portion of the occupation tax used for exploring clean energy options is a separate tax from the General Fund portion of the utility occupation tax used to fund general programs of the city.

As part of the annual budget and ballot processes, and to ensure prudent long-term fiscal planning, staff analyzes the budgetary impacts of any tax or revenue streams that are expiring in the near term and beyond. For planning purposes, staff considers near term to be the current year plus five additional years.

At the April 14 study session, staff recommended council consider placing a five-year renewal of the utility occupation tax on the ballot for the General Fund portion only. Council will be determining whether to place this item on the 2015 ballot at its Sept. 1 meeting.

The General Fund portion of the utility occupation tax is expected to generate $4.3 million in revenue in 2015. If renewal of the tax was not approved by the voters, $4.3 million of services would need to be reduced or eliminated from the General Fund, beginning in 2018. Since such an outcome would be extremely disruptive for those who receive services funded by this revenue, staff believes it would be better to phase in any reductions during the annual budgets that would be considered in 2016 and 2017. The 2016 Recommended Budget before council includes the assumption that revenues from this tax will continue. **Attachment C** to this memo shows the anticipated General Fund balance through 2021 including the General Fund portion of Utility Occupation Tax revenues and the impact to the fund balance if the General Fund portion of the Utility Occupation Tax is not renewed.

Reserves

Each year, the budget process includes evaluation of reserve levels to ensure that sufficient fund balances are available to provide necessary funding for unanticipated needs and to ensure continued long-term stability. Appropriate reserve levels also help maintain a strong bond rating, helping to reduce the cost of debt. Acknowledging increased global economic volatility and increased challenges as a result of climate change, the 2016 Recommended Budget proposes an ongoing increase of General Fund reserves to 16 percent, one percent higher than the reserve goal of 15 percent prior to the September 2013 Flood.

It also includes a temporary reserve in the seven funds receiving substantial FEMA and State reimbursement for 2013 Flood recovery costs, equal to 7 percent of reimbursement received. The FEMA process includes substantial auditing well after reimbursements are received and it is not uncommon for this process to result in FEMA requesting some amount of funds be returned, or “de-obligated”. This reserve, in place until after all audits are completed, provides an off-set for potential de-obligation of FEMA and State funding. Once audits are completed, funds not needed would be available for use.

Police and Fire Old Hire Pensions

In the 2014 budget, City Council approved supplemental payments to the Police and Fire Old Hire retirement plan. The supplemental payment was designed to allow for periodic increases to retirees that would be financially feasible. As such, this payment, is not considered part of the pension payment, but it is a separate payment budgeted in the General Fund and provided directly to plan participants (retirees and beneficiaries). Proposed in this supplement to the Police and Fire Old Hire retirement plan, was a 2 percent increase to the supplemental payment every other year, provided funds are available. The 2016 Recommended Budget includes this 2 percent increase to the supplemental payment.

Upcoming Organization Change

Over the course of the last several months, the city has been engaged in organizational assessment of a few key areas serving the public in multiple ways. These assessments have resulted in some re-organization recommendations that will be included in a separate report to council in the next week. The 2016 Recommended Budget reflects the current organizational structure and corresponding budget. Some minor budget changes may be needed to support the re-organization and will be brought forward to council in advance of the First Reading of the 2016 Budget on October 6. More comprehensive budget changes to reflect the new organizational structure will be addressed through a supplementary budget in early 2016.

Organizational Capacity

The 2016 Recommended Budget includes additional investments in the city organization, across all departments and funds, with the goal of ongoing service excellence and meeting community priorities. These continued investments in the organizations facilitate opportunities to improve efficiencies and develop innovative solutions that reduce the cost of services long-term and increase capacity to implement existing Master and Strategic Plans that build community resilience.

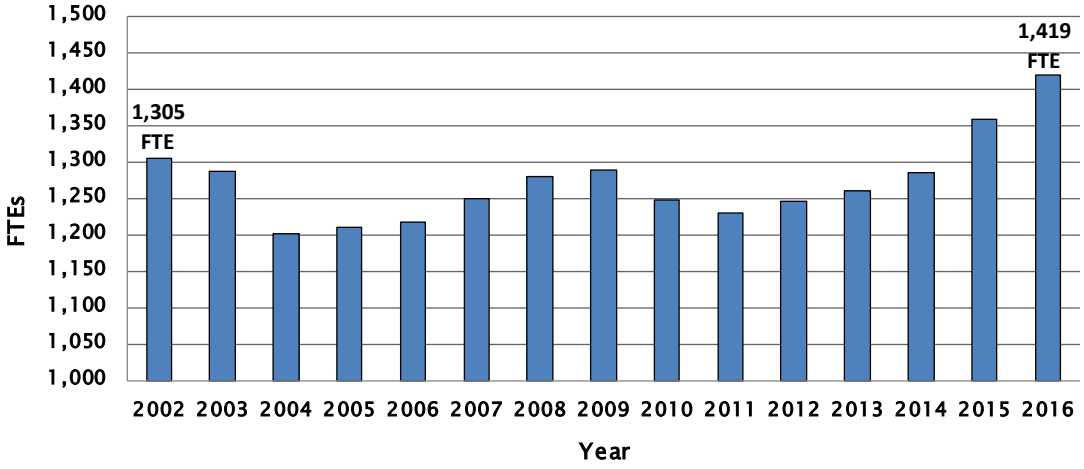
The budget includes a combination of:

- repurposing of positions to higher priorities in the areas of internal service support – 6.5 FTEs
- extension of fixed-term positions working on specific projects, such as trails work, major software replacements, and development/planning efforts – 8.50 FTEs
- addition of fixed-term positions for new projects or in anticipation of strategic plans and other studies that will help inform the best ongoing allocation of resources – 11.75 FTEs
- addition of non-personnel funds for seasonal employment in support of strategic and master plans
- conversion of fixed-term staff to ongoing, as strategic plans and studies have been completed, and recognizing ongoing service-level demands – 3.50 FTEs
- addition of ongoing positions for new initiatives, in support of increased programming and service demand, and in support of work plans, council goals and community priorities – 24.25 FTEs:
    - 3.5 for Master Plan implementation in Parks and Recreation
    - 7 FTE for public safety (Police and Fire);
    - 1.0 FTE for Arts and Culture programming administration and support
    - 1.0 for transportation improvement and maintenance

- 11.75 FTE for increased service demand of support services (City Manager's Office, Communications, Finance, City Clerk, Facilities and Asset Management, and Information Technology).

The total FTE impact is an increase of 48 FTE (3.5 percent), of which 19.25 FTE are fixed-term (1.5 percent) and 27.75 FTE are ongoing (2.0 percent). The chart below shows staffing levels in the city from 2002 to 2016 (recommended) including staffing resources dedicated to CIP projects.

City Staffing Levels 2002-2016



Transportation Capital Investment

At the Aug. 11 CIP study session, council asked that staff bring back information to provide greater clarity on the progress of the Pavement Management Program (PMP), and provide additional information, outlining the capital investment in Transportation planned for the next six years.

The City of Boulder's Transportation Master Plan provides the guiding principles upon which the Draft 2016-2021 Capital Improvement Program (CIP) is based. The CIP for the Transportation Department is focused upon four categories, including Capital Enhancement, Capital Maintenance, Capital Planning Studies and New Facilities/Infrastructure. Of the $56.34 million identified for the 2016-2021 program, nearly half is programmed toward preservation of the system, including major capital maintenance, bikeways maintenance/enhancements, and sidewalk and ADA repairs. Funding for the maintenance and capital enhancement projects is fairly consistent over the six year planning horizon, save for a larger 2020 budget which includes major Capital Maintenance for the Airport.

Within the new facilities/infrastructure category, the funding range is between $2.8 million to $4.35 million, except in 2018, which includes construction funding for three major projects: 30th and Colorado Pedestrian Underpass, North Broadway Reconstruction, and the Boulder Slough Multi-Use Path. These projects represent significant leveraging of local funding to procure federal funds for a larger project with greater scope and impact.

Sample projects in the capital improvements program for the current 2015 year as well as the 2016 year include the following projects, all which include a multimodal focus:

- Pearl Parkway Multi-use Path TIP Project

- Diagonal – 28th Street to Foothills Complete Street
- Foothills/Valmont Operational Improvements
- 63rd Street widening between Arapahoe and Valmont
- 28th Street Improvements from Pearl to Valmont
- 28th Street Multi-Use Path and On-Street Bicycle Facility Improvements from Iris to Yarmouth
- Baseline Underpass
- 29th/Valmont Safety Project

Another significant highlight this year is funding in support of the Arapahoe Ave. /Boulder Creek Path Underpass improvements funded through the Community Culture and Safety Ballot Initiative. Funding of $5.2 million was identified in the ballot item to enhance (widen and improve lighting) the Boulder Creek Path from Eben Fine Park through the Civic Center to 17th Street including replacing the Arapahoe Avenue underpass. In concert with this investment, $2.5 million has been programmed for associated complete street and reconstruction elements to complete the previous Capital Bond project from 15th Street to Broadway.

In addition to the CIP, the Transportation Division is charged with the management of the pavement street system. In order to manage this endeavor, staff have developed a Pavement Management Program (PMP) that uses a database of the city's streets where an Overall Condition Index (OCI) rating system is used to assign quality of that streets pavement. The goal of the City PMP is to identify the optimal level of funding, timing, and renewal strategies that will keep the roadway network at or above a "Good" rating. The end result is that the best strategy may be to defer a costly reconstruction on one street in order to complete less expensive treatments on other streets to minimize its deterioration into a more costly type of treatment, such as reconstruction.

Currently, about half of the City's streets have a pavement rating in the Very Good and Excellent ranges, with nearly 80 percent of the street system rated "Good" or better. For the 2015 calendar year, approximately 8.3 miles of street resurfacing, 7.5 miles of chip seal, and 0.5 miles of street reconstruction are planned and /or underway.

The one-time $12.5 million Capital Improvement Bond funding for the pavement management program allowed the city to address deferred maintenance needs throughout the street network. An annual sales tax based appropriation of $1.6 million, from additional taxes for Transportation approved by voters in 2013, is now in place, with the purpose being to address ongoing pavement maintenance needs. The $1.6 million funding level is a recommendation from city staff as the investment needed to maintain good pavement conditions throughout the city. This funding recommendation is based on estimates from best available information and industry standards and practices. It should be noted that the city has only had an actively managed pavement management system in place since 2011. The limited historic data, coupled with rising material and construction cost indexes, may mean that this funding level will need to be revisited in the future. However, the level is appropriate for the present and near future. While the program evolves, city staff will use pavement and asset management software and newly implemented tools to monitor pavement condition levels and evaluate needed budget ongoing.

Information regarding the PMP was included in the 2016 Recommended Budget and in the Aug. 25 update to council on the Transportation Master Plan Implementation.

A complete list of new funding initiatives for 2016 is included in Attachment A (listed by department) and Attachment B (listed by fund) of the 2016 Recommended Budget City Manager's Budget Message.

NEXT STEPS

- Thursday, Sept. 17 – Second 2016 budget study session, if needed
- Tuesday, Oct. 6 – Public hearing and first reading of the 2016 City of Boulder budget ordinance
- Tuesday, Oct. 20 – Public hearing and second reading of the 2016 City of Boulder budget ordinance; General Improvement District budget resolutions.

ATTACHMENTS

A. 2016 Recommended Budget City Manager's Budget Message
B. Additional Information – Draft 2016-2021 CIP
C. General Fund fund financials with UOT and without UOT

Dear Members of City Council and Residents of Boulder,

I am pleased to present to you the City Manager's 2016 Recommended Budget for review and consideration. This budget reflects City Council adopted goals and was developed in accordance with the City Charter, city Financial Management Policies, Operating Budget guiding principles, and Capital Improvement Program (CIP) guiding principles.

The total annual budget of $327 million (excluding transfers) across all funds and areas represents a 2.5 percent increase in spending over 2015. Of this, $4.6 million, or approximately two thirds, comes from increased capital spending over 2015. Other one-time expenditures remain flat, and about one third of the increase is for ongoing expenditures. The increase in one-time capital spending reflects focused savings that have been set aside in funds such as the Utilities, Parks and Recreation and Open Space funds over several years - and includes significant leveraged funding, particularly in Transportation, as well as continued funding for ongoing flood recovery and resilience. The net ongoing increase includes important, strategic investment in the community, outlined below, but also represents cyclical decreases in some operating areas, such as fleet replacement, as well as realized savings in areas such as health care costs.

Projected 2016 General Fund expenditures of $132.2 million will increase by 2.9 percent over the 2015 Approved Budget. This represents a 4.2 percent increase in ongoing spending, with a slight reduction in one-time spending over 2015. The 2015 budget included higher one-time dollars to provide flexibility in covering unknown expenditure timelines for costs incurred for the municipalization project.

The economic outlook for the city continues to be positive, with stable revenues projected in the coming years. Boulder's fiscal health is reflected in its tax revenue collections and the community's unemployment level of 3.8 percent as of June, 2015, down 0.5 percent from the previous year. Total sales and use tax collections were up 4.2 percent through June 2015 when compared to collections through June 2014. Retail sales tax revenues, which are the largest portion of total revenues and most indicative of ongoing revenue trends, are up 5.76 percent over 2014, through June 2015. It is anticipated that 2015 revenues will meet revenue projections. Although there have been recent fluctuations in the markets, these are not necessarily indicative of any overall change in the economic picture. Staff will continue to monitor revenues closely.

The table below shows General Fund revenue collections compared to budget projections since 2009.

Table 1-01: General Fund Revenues 2009-2016
(in $1,000s)

	2009	2010	2011	2012	2013*	2014*	Projected 2015**	Proposed 2016
Revised Budget	$104,611	$107,908	$100,312	$110,424	$112,516	$118,861	$124,824	$128,264
Actuals	$104,387	$107,928	$103,112	$112,520	$117,082	$123,484		

* excluding insurance, FEMA and State reimbursements related to the 2013 Flood
** excluding reimbursement for earnest money for Boulder Community Hospital Property bid

Revenues in 2013 and 2014 came in above projections, though much of the excess revenues came from one-time, non-recurring collections, primarily from construction use tax collections, as a result of the recovering economy. It is not expected that these higher levels of one-time revenues from construction use tax will continue in the years ahead. Additionally, 2014 revenues reflect new revenues from retail marijuana, which had not been included in projections. 2014 retail sales tax collections came in strong for the year and economists are now fairly consistent in projecting a stable economy for the next few years. The city's 2015 and 2016 revenue projections have been revised to reflect this information. City staff projects a 5.9 percent increase in total sales and use tax revenues for 2015, which includes a 5.75 percent increase in retail sales tax revenues. While sales and use taxes are the largest component of General Fund revenues, other revenues and trends also impact overall General Fund revenue collections. Property tax revenues are based on prior year assessments and the expected collection in 2015 still reflects the lower assessment values coming out of the Great Recession. Those values are anticipated to increase in the years beyond 2015, with a substantial increase in 2016. Finally, the city continues to implement the financial policy of using one-time revenue only for one-time expenditures, which has served the city well during and since the last recession.

Over the last three years, City Council has adopted a number of Master and Strategic Plans that reflect extensive public input in support of community priorities. This has helped to provide the road map for strategic investments. Based on these strategic plans, as well as a number of other studies and plan work in progress – such as the Fire Community Risk Assessment and flood mapping studies and mitigation plans – the city is moving forward to implement strategic investments in staffing and infrastructure, which will make the community more resilient in the face of economic challenges and environmental impacts.

I am proud to say that the city's leadership team has worked extensively this year on aligning resources with achieving community priorities, and working toward a long-term, citywide strategic plan, guided by the sustainability framework and in conjunction with the update to the Boulder Valley Comprehensive Plan. The 2016 Recommended Budget continues the multi-year approach of allocating funds to the highest council and community priorities, with ongoing focus on strengthening resilience within the city organization and community infrastructure. It

includes increased and strategic investment in all outcome areas of the Sustainability Framework:

Figure 1-01: Community Sustainability Framework

<u>2016 Recommended Budget highlights include:</u>

Safe Community

In part, the 2016 Recommended Budget, is informed by the effects of the September 2013 Flood which caused significant flooding and extensive damage to many Colorado communities. In Boulder, total damage to city infrastructure and public lands is estimated at $28 million, and private-property damage is estimated at $200 million.

The 2016 budget continues to reflect ongoing investment for recovery and mitigation necessary to strengthen the city's long-term resilience. In particular, flood recovery on Open Space will continue throughout 2016 and additional funding approved in the 2015 budget process is being applied to an accelerated CIP in water, wastewater and stormwater/flood management systems, which will continue in 2016 and beyond. As a result of strong fiscal policy, the city has been in the position to provide an enhanced capital investment in these areas, which is expected to continue into the foreseeable future. Additional information has been included in the Draft 2016-2021 CIP.

In continued support of the Police and Fire Master Plans and in response to information gathered through the Fire Community Risk Assessment, the 2016 Recommended Budget includes funding for a number of items specific to public safety and bolstering the city's ability to provide appropriate enforcement of its code and protection of its residents.

Two new police officers and one new communications supervisor in dispatch are proposed in the Police Department. This is the next step in the multi-year staffing plan for the department, which includes adding eight police officers, one commander and two non-sworn employees by 2018. Through 2015, five new officers, one commander and one criminalist were added.
As a part of a multi-year approach, additional funding is recommended for a Fire Safety Educator, a Senior Planner, and a Hazmat and Marijuana Inspector in the Fire Department. These positions will provide community outreach, important data analysis and hazardous materials inspection, for improved risk reduction in the community. Additionally, a minimal investment in new technologies will provide the potential for significant improvement in cardiac survival through the pulse point program.

Funding for a study of the city's radio system infrastructure and the development of a strategic plan to replace and upgrade the aging infrastructure is included in the 2016 Recommended Budget. This system serves multiple units in Police, Fire, Open Space and Mountain Parks (OSMP), Parks and Recreation and Public Works and provides them with critical communications tools for their safety and the safety of the community.

Funding from the voter-approved Community, Culture and Safety tax will be applied to several projects enhancing safety. Lighting will be improved and added along the Boulder Creek Path, University Hill and at Chautauqua. Projects also include: Boulder Creek Path improvements, separating pedestrian and bicycle traffic; improved pedestrian safety along Baseline Road via new sidewalks, realigned parking, enhanced pedestrian crossing treatments, and related safety enhancements like lighting and wayfinding signs; and design and construction to renovate the pedestrian and bicycle underpass at the Boulder Creek Path, between Boulder Creek and 13th Street. This work will begin in 2015 and continue through2017.

Finally, funding to address increased costs for ongoing mosquito control efforts, and for disposal of treatment residuals from the Betasso Water Treatment Facility, is included in the 2016 Recommended Budget.

Environmentally Sustainable Community

The City of Boulder, under council direction, is moving forward with the potential creation of a municipal electric utility. Funding for the current phase of this project, implementation of the Transition Work Plan, including regulatory proceedings, was provided in the 2015 budget and is expected to carry over into 2016, in continued support of the Transition Work Plan. While no new funding is included in the 2016 Recommended Budget, the implementation of the Transition Work Plan does include the addition of key positions, supported by existing funding. Due to uncertainties, including timing and potential outcomes related to legal and regulatory processes, funding was provided upfront in 2015, through the use of General Fund reserves, to provide flexibility to ensure funds would be available when needed to support litigation and a seamless transition for customers. As Utility Occupation tax revenues are collected in 2016 and 2017, these will be returned to the General Fund. The 2016 Recommended Budget again

includes contingency funding, set aside and not allocated to the project.

As a result of continued resource needs in OSMP related to 2013 Flood recovery and ongoing Trail Study Area (TSA) implementation and planning, the 2016 budget includes the extension of a number of fixed-term positions in support of trails design, repair, and maintenance. Part of the need for these extensions is continued work with FEMA for better understanding of Boulder's natural land assets and to ensure appropriate reimbursement for flood damage and repair costs. In response to public feedback and a recent OSMP organizational assessment, additional investment is proposed in the areas of agricultural resource management, signage, additional planning support for the upcoming East TSA, cultural and water resources, and data management. These investments will support more robust public process and community outreach, provide support for community agricultural efforts, and help the city garner better understanding of climate impact on our periodic biological phenomena, now and in the future. Funding for this comes from dedicated sales and use taxes.

Regional efforts are being explored to form a coalition/joint lobbying effort to advocate for policy and regulatory changes that promote and support local decision making in pursuit of a low carbon energy future. These efforts may include simultaneously promoting community resilience, economic vitality and job creation. Funding is proposed for the City of Boulder's contribution to the Colorado's Climate Future coalition.

Livable Community

The 2016 Recommended Budget proposes increased funding to support a livable community with continued investment in affordable housing, Hill revitalization, land use planning, development review process and enforcement improvements, code updates, and rental housing licensing. It also provides funding for new neighborhood initiatives and in support of improved communication with the community around key areas of interest.

Funding to continue Hill community development coordination is included in the 2016 Recommended Budget. The budget also includes the conversion of a fixed-term position to ongoing in support of the city's continued work to develop and implement housing policies in response to new and emerging needs and the ongoing challenge of affordability. Implementation of the affordable housing linkage fee on non-residential development will provide additional revenue for the city to invest in existing and new affordable housing efforts.

The extension of two fixed-term positions is proposed to support high-priority work plan items including revisions to the city's land use regulations and codes (e.g., the Form Based Code pilot), and improvements to the rental housing licensing program. A neighborhood grant program is proposed to continue that would provide project funding to address specific needs and encourage more sustainable neighborhoods. The program would continue to be administered by the Neighborhood Liaison and evaluated annually for effectiveness. Communications support, specifically regarding Human Services and Housing initiatives and issues, is also being proposed on a fixed-term basis.

Healthy and Socially Thriving Community

The Community Cultural Plan, presented to council on July 14, includes various elements of a re-envisioned and expanded approach to city support for the arts and culture within Boulder. The voter-approved Community, Culture and Safety tax will provide 2016 funding for public art. Additional funding to begin implementation of this plan, specifically, increased funding for arts and culture grants to the community, a program specialist position to help administer the public art program, and funding to develop and implement a marketing plan, are proposed in the 2016 Recommended Budget.

The 2016 Recommended Budget also includes additional funding for library collections, to keep pace with changing patron demands (especially for electronic media), expand offerings across multiple library branches, and to better align library operations with industry best practices.

In 2014 the city entered into the Harvest Bucks Program in collaboration with Boulder County and Boulder County Farmers' Market (BCFM). The program seeks to improve health equity by expanding access to fresh, local produce for Boulder's low-income residents and promote local food production and distribution. As a result of the success of the 2014 pilot program, the city participated again in 2015. The city's participation in the first two years has been funded through budget savings in Human Services. The 2016 Recommended Budget includes ongoing funding for this program. Boulder County Public Health will continue to provide staff support and coordination, along with Boulder County Farmers' Market.

The Parks & Recreation Master Plan, approved by City Council in 2014, establishes direction for the department in better serving the health and wellbeing interests of the entire community. Ongoing implementation of the plan includes proposed repurposed and new funding in 2016 for an Events Manager, Philanthropy Manager and Business Analyst to strategically develop and leverage community partnerships and optimize service provision to the community. These positions will enhance inclusive and transparent community engagement practices that encourage participation by all community members, and promote data driven decision making to benefit the community.

With the passage of the Community, Culture and Safety tax in November 2014, the first phase of capital improvements in the Civic Area are moving forward. The park development combines all the elements supported by the community and City Council, such as a promenade along Canyon, 11th Street connector, creek terraces, nature play, improved creek path, plaza spaces and an enhanced Farmers' Market. The Phase I park implementation will be coordinated with the investment from the Community, Culture and Safety tax initiative devoted to the Boulder Creek Path, 11th Street lighting, public art and Arapahoe underpass improvements. The 2016 Recommended Budget continues the 2015 call for activation and programming funding in the Civic Area, in conjunction with the capital improvements.

Economically Vital Community

The 2016 Recommended Budget includes proposed investments to support economic vitality,

including Hill reinvestment, citywide special events management, and support to businesses.

Since the initial funding plan for the Hill Reinvestment Strategy was brought forward, further analysis has identified additional programs and strategies that could benefit the area. The 2016 Recommended budget includes funding for a pilot EcoPass program for Hill employees and increased one-time funding to support the Hill Reinvestment working group, as it determines how to implement the evolving strategy. Recommendations for on-going funding strategies for the Hill will be included in the 2017 Budget.

Events such as IronMan, BolderBoulder, Ride the Rockies, among others, are an integral part of the city's economic vitality; the 2016 Recommended Budget includes funding in continued support of the city-wide approach that helps maximize the benefits of these types of events for our community.

To directly support businesses in the community, the 2016 Recommended Budget proposes converting the fixed-term business liaison position to an ongoing position, restoring the paid Economic Vitality intern position, and increasing the Economic Vitality operating budget. The Business Liaison responds to business assistance requests, coordinates business resources for small business owners, monitors progress on the Economic Sustainability Strategy, develops economic vitality metrics and supports city business incentive programs. Additional Economic Vitality operating funding will support innovation and entrepreneurship in Boulder, including new sponsorships for organizations like the Latino Chamber.

Accessible and Connected Community

The 2016 Recommended Budget includes funding for several initiatives and tools to enhance public outreach and communication, and access to information for residents. Channel 8 provides regular information through Comcast and video streaming over the city website to residents on programs, public meeting coverage, and other city news. An additional producer/engineer will help ensure consistent video production and technical support in these areas to meet existing demand and to increase capacity for additional broadcast services and coverage. The addition of closed captioning services to Channel 8 will allow for a broader reach in communication with Boulder residents. In response to community and council input, the 2016 Recommended Budget includes funding for a bimonthly newsletter and supporting staff. The newsletter will be mailed to residences and is expected to foster direct community engagement by providing information on city news, events, items before council, and quality of life issues. Additional funding also is proposed for improved web content management and to continue coverage of board and commission meetings.

Funding to implement public Wi-Fi services in three city park locations is included in the 2016 Recommended Budget. In November of 2014, the city, through public vote, was able to gain exemption from a state law that prevented municipalities from competing with telecommunications broadband service providers. The city is now able to study potential uses

and business models for using its fiber optic and conduit infrastructure, along with needed enhancements to better serve the telecommunication needs of the community, including broadband and wireless services. In March of 2015, with the support of City Council, free Wi-Fi services were implemented in the parks within the downtown Civic Area. This first phase was intended as a proof of concept and if successful, other locations would be investigated for future deployments. With the success of this implementation, three additional sites have been identified for public Wi-Fi installation in 2016: Boulder Reservoir, Scott Carpenter Park & pool area, and the South Boulder Recreation Center main building area and adjacent park pavilion. Additional Information on Community Broadband is included in the 2015 Council Action Guide.

Due to a robust statewide residential, commercial, and public works construction marketplace, bid pricing for transportation infrastructure projects is averaging 15 to 20 percent higher than engineer estimates. The 2016 Budget includes an increase in Transportation funding to cover these increases and to keep pace with goals and objectives of the street overlay, major street reconstruction, bikeways maintenance, and sidewalks repair programs. Funding for this comes from dedicated sales and use taxes and meets the goal of taking care of current community assets. Funding also is proposed to replace school zone flasher systems and to support traffic signal infrastructure operation and maintenance.

One-time funding is proposed in continued support of the multi-year, inter-departmental project to develop citywide access management and parking strategies (AMPS). These funds will be used to complete the public process and finalize strategy recommendations.

Good Governance

The Recommended Budget carries forward Boulder's conservative fiscal approach that earned its AAA rating for general obligation bonds issued by the city, and maintains needed resources to sustain operations during emergencies. This careful and conservative planning ensured the city had adequate reserves across most funds when the 2013 Flood occurred. A strong economy, appropriate insurance levels and diligent efforts to ensure federal and state reimbursement, have provided the needed funds to restore all reserves back to previous target levels. For 2016, we continue to acknowledge the importance of evaluating appropriate reserve levels, in the context of increased global economic volatility and increased challenges as a result of climate change. The 2016 Recommended Budget proposes an ongoing increase of General Fund reserves to 16 percent. It also includes a temporary reserve in the seven funds receiving substantial FEMA and state reimbursement for 2013 Flood recovery costs, equal to 7 percent of reimbursement received.

The 2016 Recommended Budget also includes a number of proposed investments throughout the organization enhancing good governance. Two key focus areas have guided proposed investments this year: innovation and data.

A new Senior Project Manager position is recommended to coordinate citywide innovation efforts and data management. Technology provides tremendous potential for innovative

solutions and process efficiencies. Key investment in Information Technology staffing and systems will help strengthen and protect the city's ability to collect and analyze critical performance data and provides important stability and capacity to meet constantly evolving technological changes and opportunities.

In a next step toward ensuring the City of Boulder budget supports community priorities, as identified through council and public input and defined in the Sustainability Framework Outcomes, enhancements are proposed that increase transparency in governance performance, by developing a community dashboard that illustrates progress around key focus areas.

Funding is proposed for citywide leadership training, building on the foundations of a high performance organization, and a new well being program for employees, which will be highly subsidized by the city's new health insurance provider, is designed to continue to improve the health and well being of city staff and to continue to manage health care costs.

These continued investments in the organizations facilitate opportunities to improve efficiencies and develop innovative solutions that reduce the cost of services and increase capacity to implement existing Master and Strategic Plans that build community resilience.

A complete list of new funding initiatives for 2016 is included in **Attachment A** (listed by department) and **Attachment B** (listed by fund).

Our organization's collaborative approach ensures that the city will maintain an efficient, effective and transparent government that delivers the highest outcomes as identified by the Boulder community. The leadership team and I are committed to meeting the goals of City Council and to ensuring that high-quality services and innovation remain a community hallmark. The 2016 Recommended Budget allocates resources, recognizing these commitments, while exercising strong fiscal responsibility to the community.

Respectfully submitted,

Jane S. Brautigam
City Manager

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
CITY ATTORNEY'S OFFICE						
GENERAL FUND						
Case Management, Discovery and Legal Research Software & Database	$ -	$ 16,954	$ 16,954	-	-	-
Total Changes, City Attorney's Office			$ 16,954			-
CITY COUNCIL						
GENERAL FUND						
Sister City Funding	$ 3,000	$ 7,000	$ 4,000	-	-	-
Council Meals/Local Foods	20,500	29,500	9,000	-	-	-
Total Changes, City Clerk			$ 13,000			-
CITY MANAGER'S OFFICE						
GENERAL FUND						
Deputy City Manager	$ -	$ 208,935	$ 208,935	-	1.00	1.00
Administrative Assistant II - Convert from Fixed-Term to Ongoing	33,721	67,442	33,721	0.50	1.00	0.50
Sr. Project Manager (Innovation and Data)	-	293,400	293,400	-	1.00	1.00
Neighborhood Partnership Grant Program	-	50,000	50,000	-	-	-
Total Changes, City Manager's Office			$ 586,056			2.50
GENERAL GOVERNANCE						
GENERAL FUND						
Colorado's Climate Future	$ -	$ 30,000	$ 30,000	-	-	-
Intercity Visit	-	40,000	40,000	-	-	-
Citywide Event Management	115,000	115,000	-	-	-	-
Citywide Memberships	139,554	144,554	5,000	-	-	-
Mosquito Control Contract	250,000	258,750	8,750	-	-	-
Museum of History	23,609	-	(23,609)	-	-	-
Total Changes, General Governance			$ 60,141			-
COMMUNICATIONS						
GENERAL FUND						
Producer Engineer	$ -	$ 75,302	$ 75,302	-	1.00	1.00
Administrative Assistant II	-	61,942	61,942	-	1.00	1.00
Closed Captioning Services	-	68,000	68,000	-	-	-
Communications Specialist III (split 25/75 with Housing Dept.)	-	25,750	25,750	-	0.25	0.25

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
COMMUNICATIONS CONTINUED						
GENERAL FUND						
Community Newsletter including Communications Specialist II	-	198,762	198,762	-	1.00	1.00
Administrative Assistant II - City Clerk's Office	-	61,942	61,942	-	1.00	1.00
HD Video Streaming*	-	-	-	-	-	-
Boards and Commissions Meeting Coverage	-	60,000	60,000	-	-	-
Total Changes, Communications			$ 551,698			4.25
*$11,600 in annual budget impact will begin ongoing in 2017 due to Comcast reimbursement in 2016.						
COMMUNITY PLANNING AND SUSTAINABLITY						
GENERAL FUND						
Business Liaison - Convert from Fixed-Term to Ongoing	$ 87,112	$ 100,335	$ 13,223	1.00	1.00	-
Communications Specialist II - Extend Fixed-Term For Two Years	34,576	37,410	2,834	0.50	0.50	-
Intern Program	-	60,000	60,000	-	-	-
Economic Vitality Operating Budget	-	45,000	45,000	-	-	-
PLANNING AND DEVELOPMENT SERVICES FUND						
Development Code Update Staffing	$ 59,513	$ 64,702	$ 5,189	1.00	1.00	-
Development Review Specialist	-	83,161	83,161	-	1.00	1.00
CLIMATE ACTION PLAN FUND						
Communications Specialist II - Extend Fixed-Term for Two Years	34,576	37,410	2,834	0.50	0.50	-
Total Changes, Community Planning and Sustainability			$ 212,241			1.00
DOWNTOWN AND UNIVERSITY HILL MANAGEMENT DIVISION / PARKING SERVICES						
GENERAL FUND						
Hill Reinvestment Strategy	$ -	$ 97,000	$ 97,000	-	-	-
Hill Community Development Coordinator Workplan	23,000	50,000	27,000	-	-	-
EcoPass Program	-	50,000	50,000	-	-	-
Boulder Junction On-Street Pay Station	-	27,484	27,484	-	-	-
Access Management and Parking Strategy	-	62,000	62,000	-	-	-
BOULDER JUNCTION GENERAL IMPROVEMENT DISTRICT - PARKING FUND						
Travel Demand Programs at Boulder Junction	$ -	$ 26,587	$ 26,587	-	-	-
DOWNTOWN COMMERCIAL DISTRICT (CAGID) FUND						
Trinity Commons Construction Partnership	$ -	$ 1,425,765	$ 1,425,765	-	-	-
Garage Elevator Repair	-	609,000	609,000	-	-	-
Access Management and Parking Strategy	-	31,000	31,000	-	-	-

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
DOWNTOWN AND UNIVERSITY HILL MANAGEMENT DIVISION / PARKING SERVICES CONTINUED						
DOWNTOWN COMMERCIAL DISTRICT (CAGID) FUND						
EcoPass Program	843,125	959,560	116,435	-	-	-
UNIVERSITY HILL COMMERCIAL DISTRICT (UHGID) FUND						
Access Management and Parking Strategy	-	7,000	7,000	-	-	-
Total Changes, Downtown and University Hill Management Division/Parking Services			$ 2,479,271			-
ENERGY STRATEGY AND ELECTRIC UTILITY DEVELOPMENT PROJECT						
GENERAL FUND						
Replenish Contingency Funding	$ -	$ 277,726	$ 277,726	-	5.75	5.75
Total Changes, ES/EUD Project			$ 277,726			5.75
FINANCE						
GENERAL FUND						
Relocation of Payroll from HR	$ -	$ 285,348	$ 285,348	-	3.50	3.50
Old Hire Police and Fire Pension Supplemental	-	54,000	54,000	-	-	-
Purchasing Coordinator/Buyer	-	72,853	72,853	-	1.00	1.00
Training and Professional Development	19,000	39,000	20,000	-	-	-
Financial Audit Cost Increases	-	20,000	20,000	-	-	-
Licensing Software	-	11,903	11,903	-	-	-
WORKERS COMPENSATION FUND						
Safety Administrator	-	91,725	91,725	-	1.00	1.00
Total Changes, Finance			$ 555,829			5.50
FIRE						
GENERAL FUND						
Senior Planner Analyst	$ -	$ 100,559	$ 100,559	-	1.00	1.00
Haz-mat/Marijuana Fire Inspector	-	143,732	143,732	-	1.00	1.00
Fire Safety Educator	-	132,782	132,782	-	1.00	1.00
Administrative Specialist II	-	82,582	82,582	-	1.00	1.00
Pulse Point Cardiac Event Alerting System	-	22,000	22,000	-	-	-
Boulder County Office of Emergency Managmenet Funding	-	42,000	42,000	-	-	-
Total Changes, Fire			$ 523,655			4.00

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
HOUSING						
AFFORDABLE HOUSING FUND						
Planner I - Convert from Fixed-Term to Ongoing	$ 61,973	$ 66,489	$ 4,516	1.00	1.00	-
Data Management System	-	75,000	75,000	-	-	-
Communications Specialist III (split 25/75 with Housing Dept.)	-	77,250	77,250	-	0.75	0.75
Total Changes, Housing			$ 156,766			0.75
HUMAN RESOURCES						
GENERAL FUND						
Administrative Specialist II	$ -	$ 65,004	$ 65,004	-	1.00	1.00
Well-Being Program	-	540,247	540,247	-	0.75	0.75
Learning Management System	-	80,000	80,000	-	-	-
Citywide Learning and Leadership Academy	-	110,000	110,000	-	-	-
Citywide Tuition Reimburesment	-	100,000	100,000	-	-	-
Relocation of Payroll to Finance	285,348	-	(285,348)	3.00	-	(3.00)
Total Changes, Human Resources			$ 609,903			(1.25)
HUMAN SERVICES						
GENERAL FUND						
Administrative Specialist II - Convert from Fixed-Term to Ongoing	$ 66,171	$ 72,500	$ 6,329	1.00	1.00	-
Harvest Bucks - Low Income Food Subsidy Program	-	15,000	15,000	-	-	-
Total Changes, Human Services			$ 21,329			-
INFORMATION TECHNOLOGY						
GENERAL FUND						
Chief Information Security Officer	$ -	$ 133,325	$ 133,325	-	1.00	1.00
Application Developer II - Geographic Information Systems	-	101,325	101,325	-	1.00	1.00
Internship Program	-	45,000	45,000	-	-	-
Web Content Management Support	-	50,000	50,000	-	-	-
Security Assessments	-	25,000	25,000	-	-	-
Wi-Fi Statistical Usage Analysis Software	-	69,000	69,000	-	-	-
Public Wi-Fi Expansion	-	126,000	126,000	-	-	-
Network Enhancements	-	195,000	195,000	-	-	-
Upgrade Citywide Virtual Server and Network Attached Storage Infrastructure	-	121,000	121,000	-	-	-
Total Changes, Information Technology			$ 865,650			2.00

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
LIBRARY AND ARTS						
GENERAL FUND						
Community Cultural Plan (CCP) Implementation	$ -	$ 348,031	$ 348,031	-	1.00	1.00
LIBRARY FUND						
Library Collections	824,289	974,289	150,000	-	-	-
Library Marketing	-	40,000	40,000	-	-	-
Reallocation of Library Facilities Maintenance to Public Works-DSS	454,237	-	(454,237)	1.00	-	(1.00)
Total Changes, Library and Arts			$ 83,794			-
MUNICIPAL COURT						
GENERAL FUND						
Deliquent Account Collection Services Contract	$ -	$ 41,000	$ 41,000	-	-	-
Total Changes, Municipal Court			$ 41,000			-
OPEN SPACE AND MOUNTAIN PARKS						
OPEN SPACE FUND						
Agricultural Resources Management Plan Implementation	$ -	$ -	$ 15,000	-	-	-
Climate Change Adaption	-	5,000	5,000	-	-	-
Associate Planner - Extend Fixed-Term for Three Years	100,056	73,969	(26,087)	1.00	1.00	-
Cultural Resources Technician - Upgrade to 1.0 FTE and Extend Fixed-Term for Three Years	36,466	54,845	18,379	0.50	1.00	0.50
Maintenance III Trails Specialist	41,914	63,000	21,086	-	1.00	1.00
Trail Contract and Project Manager - Extend Fixed-Term for One Year	91,151	97,000	5,849	1.00	1.00	-
Water Resources Technician - Extend Fixed-Term for Three Years	61,385	52,400	(8,985)	1.00	1.00	-
Administrative Specialist III - Two-Year Fixed-Term	-	73,500	73,500	-	1.00	1.00
Ranger On-call/Standby	300,000	303,000	3,000	-	-	-
Seasonal Resource Information Staff	-	55,000	55,000	-	-	-
Seasonal Sign Group Increase	-	38,500	38,500	-	-	-
Addition of 25 Vehicles to Fleet - Shift from Lease to Ownership	-	900,000	900,000	-	-	-
Reduction in Lease Vehicle Costs	165,000	-	(165,000)	-	-	-
Junior Ranger Seasonal Funding	-	177,500	177,500	-	-	-
Shift Trails Seasonal Funding from CIP to Operating Budget (no net budget impact)	237,154	237,154	-	-	-	-
Total Changes, Open Space and Mountain Parks			$ 1,112,742			2.50

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
PARKS AND RECREATION						
.25 CENT SALES TAX FUND						
Volunteerism	$ 43,467	$ 95,844	$ 52,377	0.50	1.00	0.50
Reallocation of Positions from Rec Activity Fund	-	339,946	339,946	-	3.00	3.00
Convert Seasonal Pool Manager to Standard Positions	-	70,000	70,000	-	2.00	2.00
RECREATION ACTIVITY FUND						
Reallocation of Positions to 0.25 Cent Sales Tax Fund	339,946	-	(339,946)	2.50	-	(2.50)
Total Changes, Parks and Recreation			$ 462,323			3.00
POLICE						
GENERAL FUND						
Additional Police Officers	$ -	$ 203,585	$ 203,585	-	2.00	2.00
Patrol Vehicle	-	47,805	47,805	-	-	-
Communication Administrative Supervisor	-	88,483	88,483	-	1.00	1.00
Total Changes, Police			$ 339,873			3.00
PUBLIC WORKS - DEVELOPMENT AND SUPPORT SERVICES						
GENERAL FUND						
Citywide Radio Infrastructure Analysis and Strategic Plan	-	75,000	75,000	-	-	-
Reallocation of Facilities Maintenance Budget from Library	-	454,237	454,237	-	1.00	1.00
Facilities Maintenance Person II	-	100,541	100,541	-	1.00	1.00
Facilities and Asset Management - Project Management Support	-	57,000	57,000	-	-	-
PLANNING AND DEVELOPMENT FUND						
Landlink Development and Information Tracking System - Extend Backfill Positions for Two Years	$ 137,000	$ 159,573	$ 22,573	2.00	2.00	-
Rental Housing License Program - Extend Fixed-Term Administrative Specialist II for Two Years	63,410	73,984	10,574	1.00	1.00	-
Total Changes, Public Works - Development and Support Services			$ 719,925			2.00
PUBLIC WORKS - TRANSPORTATION						
TRANSPORTATION FUND						
Construction Cost Inflation	$ -	$ 570,053	$ 570,053	-	-	-
School Zone Flasher System Replacement	-	105,000	105,000	-	-	-
Signal Technical Apprentice	-	70,000	70,000	-	1.00	1.00
Total Changes, Public Works - Transportation			$ 745,053			1.00

ATTACHMENT A Department / Fund / Action	2015 Approved Budget	2016 Recommended Budget	Total Change	2015 FTE	2016 FTE	FTE Change
PUBLIC WORKS - UTILITIES						
WATER UTILITY FUND						
Nederland Wastewater Treatment Facility Improvement Intergovernmental Agreement Reimbursement	$ -	$ 17,300	$ 17,300	-	-	-
Betasso Water Treatment Plant Residuals Disposal	180,000	270,000	90,000	-	-	-
Xcel Standby Electric Service Charges for Boulder Canyon Hydro	-	35,000	35,000	-	-	-
Northern Water Colorado Big Thompson Project Rate Increase	289,000	361,000	72,000	-	-	-
Total Changes, Public Works - Utilities			$ 214,300			-
CIVIC AREA						
GENERAL FUND						
Civic Area Access/TDM/Parking Management Strategies	$ -	$ 50,000	$ 50,000	-	-	-
.25 CENT SALES TAX FUND						
Civic Area Activation	$ 143,920	$ 50,000	$ (93,920)	-	-	-
COMMUNITY CULTURAL AND SAFETY TAX*						
Landscape Designer - Two-Year Fixed-Term	$ -	$ 101,000	$ 101,000	-	1.00	1.00
Civic Area Access/TDM/Parking Management Strategies	-	311,000	311,000	-	-	-
Total Changes, Civic Area			$ 368,080			1.00

*This is not a fund. The 2016 budget will be appropriated separately in an Adjustment-to-Base.

ATTACHMENT B Fund / Department	Action	Ongoing Funds	Ongoing FTE	One Time Funds	Fixed Term FTE	Additional Information
GENERAL FUND						
City Attorney's Office	Case Management, Discovery and Legal Research Software & Database	16,954	-	-	-	
City Council	Sister City Funding	4,000	-	-	-	
City Council	Council Meals/Local Foods	9,000	-	-	-	
City Manager's Office	Deputy City Manager	208,935	1.00	-	-	
City Manager's Office	Administrative Assistant II - Convert from Fixed-Term to Ongoing	33,721	1.00	-	-	Conversion from fixed-term to ongoing starting in 2nd half of the fiscal year
City Manager's Office	Sr. Project Manager (Innovation and Data)	293,400	1.00	-	-	Includes $110,000 in NPE to support citywide innovation initiatives.
City Manager's Office	Neighborhood Partnership Grant Program	50,000	-	-	-	
Citywide	Payroll System Implementation		-	500,000	-	
Communications	Producer Engineer	75,302	1.00	-	-	
Communications	Administrative Assistant II	61,942	1.00	-	-	
Communications	Closed Captioning Services	60,000	-	8,000	-	
Communications	Communications Specialist III (split 25/75 with Housing Dept.)	-	-	25,750	0.25	2yr fixed-term
Communications	Community Newsletter including Communications Specialist II	-	-	198,762	1.00	Communications Specialist II is a 2yr fixed-term
Communications	Administrative Assistant II - City Clerk's Office	-	-	61,942	1.00	2yr fixed-term
Communications	HD Video Streaming*	-	-	-	-	$11,600 in ongoing budget impact in 2017 onward. Comcast will reimburse the city in 2016.
Communications	Boards and Commissions Meeting Coverage	60,000	-	-	-	
Community Planning and Sustainablity	Business Liaison - Convert from Fixed-Term to Ongoing	100,335	1.00	-	-	
Community Planning and Sustainablity	Communications Specialist II - Extend Fixed-Term For Two Years	-	-	37,410	0.50	Funding is split 50/50 with Climate Action Plan Fund
Community Planning and Sustainablity	Intern Program	60,000	-	-	-	
Community Planning and Sustainablity	Economic Vitality Operating Budget	45,000	-	-	-	
Downtown-University Hill Mgmt. District	Hill Reinvestment Strategy	-	-	97,000	-	
Downtown-University Hill Mgmt. District	Hill Community Development Coordinator Workplan	-	-	27,000	-	
Downtown-University Hill Mgmt. District	EcoPass Program	50,000	-	-	-	
Downtown-University Hill Mgmt. District	Boulder Junction On-Street Pay Station	2,784	-	24,700	-	

ATTACHMENT B Fund / Department	Action	Ongoing Funds	Ongoing FTE	One Time Funds	Fixed Term FTE	Additional Information
GENERAL FUND CONTINUED						
Downtown-University Hill Mgmt. District	Access Management and Parking Strategy (AMPS)	-	-	62,000	-	$50,000 will fund the Alley Master Plan and $12,000 will fund finalization of AMPS strategy.
Energy Strategy and Electric Utility Development	Replenish Contingency Funding	-	-	277,726	5.75	
Finance	Relocation of Payroll	285,348	3.00	-	-	Relocated from Human Resources
Finance	Old Hire Police and Fire Pension Supplemental	54,000	-	-	-	
Finance	Purchasing Coordinator/Buyer	72,583	1.00	-	-	
Finance	Training and Professional Development	20,000	-	-	-	
Finance	Financial Audit Cost Increases	20,000	-	-	-	
Finance	Licensing Software	11,903	-	-	-	
Fire	Senior Planner Analyst	98,559	1.00	2,000	-	
Fire	Haz-mat/Marijuana Fire Inspector	108,732	1.00	35,000	-	Includes one-time NPE for purcahse of vehicle.
Fire	Fire Safety Educator	97,782	1.00	35,000	-	Includes one-time NPE for purcahse of vehicle.
Fire	Administrative Specialist II	87,000	1.00	-	-	
Fire	Cardiac Event Alerting System	8,000	-	14,000	-	
Fire	Boulder County Office of Emergency Management Funding	42,000	-	-	-	
General Governance	Colorado's Climate Future	-	-	30,000	-	
General Governance	Intercity Visit	-	-	40,000	-	
General Governance	Citywide Event Management	-	-	115,000	-	
General Governance	Citywide Memberships	5,000	-	-	-	
General Governance	Mosquito Control Contract	8,750	-	-	-	
General Governance	Museum of History	(23,609)	-	-	-	Transferred to Library and Arts
Human Resources	Administrative Specialist II	65,004	1.00	-	-	
Human Resources	Well-Being Program	540,247	0.75	-	-	Health insurer will provide $200,000 in wellness credit to offset cost.
Human Resources	Learning Management System	30,000	-	50,000	-	
Human Resources	Citywide Learning and Leadership Academy	110,000	-	-	-	
Human Resources	Citywide Tuition Reimburesment	100,000	-	-	-	
Human Resources	Relocation of Payroll to Finance	(285,348)	(3.00)	-	-	
Human Services	Administrative Specialist II - Convert from Fixed-Term to Ongoing	72,500	1.00	-	-	
Human Services	Harvest Bucks - Low Income Food Subsidy Program	15,000	-	-	-	
Information Technology	Chief Information Security Officer	130,825	1.00	2,500	-	
Information Technology	Application Developer II - Geographic Information Systems	98,825	1.00	2,500	-	
Information Technology	Internship Program	45,000	-	-	-	
Information Technology	Web Content Management Support	50,000	-	-	-	
Information Technology	Security Assessments	25,000	-	-	-	
Information Technology	Wi-Fi Statistical Usage Analysis Software	-	-	69,000	-	

ATTACHMENT B Fund / Department	Action	Ongoing Funds	Ongoing FTE	One Time Funds	Fixed Term FTE	Additional Information
GENERAL FUND CONTINUED						
Information Technology	Public Wi-Fi Expansion	-	-	126,000	-	Funding to expand public Wi-Fi at Boulder Reservoir, Scott Carpenter Park and the South Boulder Rec Center.
Information Technology	Network Enhancements	-	-	195,000	-	Fund the installation of redundant internet connections citywide, installation of resilient fiber connections at the Public Safety Building and installation of fiber connections to Fire Station 3 and Scott Carpenter Park.
Information Technology	Upgrade Citywide Virtual Server and Network Attached Storage Infrastructure	-	-	121,000	-	
Library and Arts	Community Cultural Plan (CCP) Implementation	73,031	1.00	275,000	-	Includes $225,000 in additional one-time funding for the Arts/Culture Grants program, $50,000 in one-time funding for CCP marketing and an ongoing 1.0 FTE Program Specialist.
Library and Arts	Museum of Boulder	23,609	-	-	-	Transferred from General Governance (see above).
Municipal Court	Deliquent Account Collection Services Contract	41,000	-	-	-	
Police	Additional Police Officers	203,585	2.00	-	-	This includes $17,000 in NPE for uniforms and equipment.
Police	Patrol Vehicle	11,889	-	39,516	-	
Police	Communication Administrative Supervisor	87,608	1.00	-	-	
PW-Development and Support Services	Citywide Radio Infrastructure Analysis and Strategic Plan	-	-	75,000	-	
PW-Development and Support Services	Reallocation of Facilities Maintenance Budget from Library	454,237	1.00	-	-	Transfer of library facilities maintenance from Library Fund; includes $365,450 of NPE and 1.0 FTE Building Maint. Supervisor
PW-Development and Support Services	Facilities Maintenance Person II	58,541	1.00	42,000	-	Includes $42,000 in one-time NPE for a maintenance truck and $5,000 in ongoing NPE to supplement Library maintenance (above)
PW-Development and Support Services	Facilities and Asset Management - Project Management Support	-	-	57,000	-	To fund staffing overlap for succession planning
Civic Area/Transportation	TDM and Parking Management Strategies	-	-	50,000	-	
	Total Changes, General Fund	$ 3,977,974	21.75	$ 2,695,806	8.50	

ATTACHMENT B Fund / Department	Action	Ongoing Funds	Ongoing FTE	One Time Funds	Fixed Term FTE	Additional Information
0.25 CENT SALES TAX FUND						
Parks and Recreation	Volunteer Coordination	52,377	0.50	-	-	
Parks and Recreation	Reallocation of Positions from Recreation Activity Fund	289,946	3.00	50,000	-	Shifts funding for positions more suited to 0.25 Cent Sales Tax Fund including Events Manager, Philanthropy Manager, and Business Analyst (upgraded from 0.50 FTE to 1.0 FTE).
Parks and Recreation	Convert Seasonal Pool Manager to Standard Positions	70,000	2.00	-	-	
Civic Area/Parks and Recreation	Civic Area Activation/Events Contribution	-	-	50,000	-	
	Total	$ 412,323	5.50	$ 100,000	-	
AFFORDABLE HOUSING FUND						
Housing	Planner I - Convert from Fixed-Term to Ongoing	66,489	1.00	-	-	
Housing	Data Management System	-	-	75,000		
Housing	Communications Specialist III (split 25/75 with Housing Dept.)	-	-	77,250	0.75	2yr fixed-term
	Total	$ 66,489	1.00	$ 152,250	-	
BOULDER JUNCTION ACCESS GENERAL IMPROVEMENT DISTRICT - TRAVEL DEMAND MANAGEMENT FUND						
Downtown-University Hill Mgmt. District	Travel Demand Programs at Boulder Junction	26,857	-	-	-	
	Total	$ 26,857	-	$ -	-	
CLIMATE ACTION PLAN FUND						
Community Planning and Sustainablity	Communications Specialist II - Extend Fixed-Term for Two Years	-	-	37,410	0.50	Funding is split 50/50 with General Fund
DOWNTOWN COMMERCIAL DISTRICT (CAGID) FUND						
Downtown-University Hill Mgmt. District	Trinity Commons Construction Partnership	-	-	1,427,765	-	Final construction costs exceeded original estimate
Downtown-University Hill Mgmt. District	Garage Elevator Repair	-	-	609,000	-	Repair and modernize elevators at 1100 Spruce and 1500 Pearl
Downtown-University Hill Mgmt. District	Access Management and Parking Strategy	-	-	31,000	-	
Downtown-University Hill Mgmt. District	EcoPass Program	116,435	-	-		
	Total	$ 116,435	-	$ 2,067,765	-	
UNIVERSITY HILL COMMERCIAL DISTRICT (UHGID) FUND						
Downtown-University Hill Mgmt. District	Access Management and Parking Strategy	-	-	7,000	-	
	Total	$ -	-	$ 7,000	-	

ATTACHMENT B Fund / Department	Action	Ongoing Funds	Ongoing FTE	One Time Funds	Fixed Term FTE	Additional Information
LIBRARY FUND						
Library and Arts	Library Collections	-	-	150,000	-	
Library and Arts	Library Marketing	-	-	40,000	-	
Library and Arts	Reallocation of Library Facilities Maintenance to Public Works-DSS (General Fund)	(454,237)	(1.00)	-	-	See PW - Development and Support Services in the General Fund.
	Total	$ (454,237)	(1.00)	$ 190,000	-	
OPEN SPACE FUND						
OSMP	Agricultural Resources Management Plan Implementation	15,000	-	-	-	
OSMP	Climate Change Adaption	5,000	-	-	-	
OSMP	Associate Planner - Extend Fixed-Term for Three Years	73,969	1.00	-	-	This position replaces the Visitor Master Plan Coordinator position that expired in 2015.
OSMP	Cultural Resources Technician - Upgrade to 1.0 FTE and Extend Fixed-Term for Three Years	-	-	54,845	1.00	3yr fixed-term
OSMP	Maintenance III Trails Specialist	-	-	63,000	1.00	2yr fixed-term
OSMP	Trail Contract and Project Manager - Extend Fixed-Term for One Year	-	-	97,000	1.00	1yr fixed-term
OSMP	Water Resources Technician - Extend Fixed-Term for Three Years	-	-	52,400	1.00	3yr fixed-term
OSMP	Administrative Specialist III - Two-Year Fixed-Term			73,500	1.00	2yr fixed-term
OSMP	Ranger On-call/Standby	3,000	-	-	-	
OSMP	Seasonal Resource Information Staff	55,000	-	-	-	
OSMP	Seasonal Sign Group Increase	38,500	-	-	-	
OSMP	Addition of 25 Vehicles to Fleet - Shift from Lease to Ownership	150,000	-	750,000	-	Shift to ownership model will generate ongoing departmental savings (see below)
OSMP	Reduction in Vehicle Lease Costs	(165,000)	-	-	-	
OSMP	Junior Ranger Seasonal Funding	177,500	-	-	-	
OSMP	Shift Trails Seasonal Funding from CIP to Operating Budget	237,154	-	-	-	This is a transfer of budget from Capital to Operating. No net impact.
	Total	$ 590,123	1.00	$ 1,090,745	5.00	
PLANNING AND DEVELOPMENT FUND						
Community Planning and Sustainability	Development Code Update Staffing	-	-	64,702	1.00	Extension of Associate Planner fixed-term position for an additional two years to play key role in form-based code pilot program.
Community Planning and Sustainability	Development Review Specialist	-	-	83,161	1.00	2yr fixed-term to conduct landscape plan review and inspection.

ATTACHMENT B Fund / Department	Action	Ongoing Funds	Ongoing FTE	One Time Funds	Fixed Term FTE	Additional Information
PLANNING AND DEVELOPMENT FUND CONTINUED						
PW-Development and Support Services	Landlink Development and Information Tracking System - Extend Backfill Positions for Two Years	-	-	159,573	2.00	Extension of a fixed-term Engineering Specialist and an Associate Project Specialist to backfill for staff assigned to Landlink implementation. Landlink is a development information tracking system.
PW-Development and Support Services	Rental Housing License Program - Extend Fixed-Term Administrative Specialist II for Two Years	-	-	73,984	1.00	Extension of fixed-term to support SmartRegs Ordinance compliance.
	Total	$ -	-	$ 381,420	5.00	
RECREATION ACTIVITY FUND						
Parks and Recreation	Reallocation of Positions to 0.25 Cent Sales Tax Fund	-	(2.50)	(339,946)	-	
	Total	$ -	(2.50)	$ (339,946)	-	
TRANSPORTATION FUND						
PW - Transportation	Construction Cost Inflation	570,053	-	-	-	Bid pricing for transportation projects are averaging 15-20% higher than engineering estimates due to increasing materials costs.
PW - Transportation	School Zone Flasher System Replacement	105,000	-	-	-	
PW - Transportation	Signal Technical Apprentice	70,000	1.00	-	-	
	Total	$ 745,053	1.00	$ -	-	
WATER UTILITY FUND						
PW-Utilities	Nederland Wastewater Treatment Facility Improvement Intergovernmental Agreement Reimbursement	17,300	-	-	-	
PW-Utilities	Betasso Water Treatment Plant Residuals Disposal	90,000	-	-	-	
PW-Utilities	Xcel Standby Electric Service Charges for Boulder Canyon Hydro (BCH)	35,000	-	-	-	BCH used to sell power to Xcel and receive payment that was net of the facility's stand-buy power costs. BCH is now contracted to sell energy to Tri-State and can no longer net the transactions.
PW-Utilities	Northern Water Colorado Big Thompson Project Rate Increase	-	-	72,000	-	Northern Water's Cost-of-Service Study called for rate increases between 2014 and 2018.
	Total	$ 142,300	-	$ 72,000	-	
WORKERS COMPENSATION FUND						
Finance	Safety Administrator	91,725	1.00	-		
	Total	$ 91,725	1.00	$ -	-	

Follow up to review of the Draft 2016-2021 Capital Improvement Program (CIP) at the Planning Board Meeting on August 6, 2015

Note: Planning Board minutes from this meeting will be distributed to council when they are available.

The Planning Board recommended the Draft 2016-2021 CIP with two amendments:

a. That the 19th Street–Sumac to Norwood Complete Streets Project be extended to Yarmouth.
b. That staff consider options to include a trail along the Carter Lake Pipeline.

Responses to the proposed amendments are as follows:

a. The 19th Street (Sumac to Norwood) Sidewalk project was submitted and awarded a Transportation Alternatives Program (TAP) grant which is administered by the Colorado Department of Transportation. The budget and funding is scoped to pay for the sidewalk improvements on 19th Street between Sumac and Norwood avenues and the estimated project cost is $860,000. Staff recommends that the study area for the project be expanded to Yarmouth Avenue. Any required adjustments to project funding would be made in next year's CIP.

b. Staff's understanding is that the intent of Planning Board's request is for a trail to be considered from Boulder to Lyons along the alignment of the existing Boulder Feeder Canal. The proposed Carter Lake Pipeline would be constructed in a substantially different alignment than the existing canal and would not pass through the Town of Lyons. The pipeline alignment approved by the Boulder County Commissioners follows the right-of-way of the existing Southern Water Supply Pipeline I (Carter Lake Pipeline is officially the Southern Water Supply Pipeline II) before diverging from that alignment just west of Longmont to serve the City of Boulder and Left Hand Water District. A map showing the existing canal alignment and proposed pipeline alignment is attached. A trail along the pipeline corridor does not appear to meet the desired transportation objective nor is it likely to be feasible based on agricultural restoration requirements. The Boulder Feeder Canal, which is owned and operated by the Northern Colorado Water Conservancy District, will remain in operation to serve other customers. While the removal of water intended for municipal water supply from the canal could reduce some concern about contamination risk, Northern has indicated that they are not supportive of opening the canal corridor to public use, primarily due to safety concerns.

Other Comments from Planning Board (Staff responses are indicated in italics):

1. The Planning Board requested a list of projects in the CIP that either reduce energy consumption or produce energy. One member of the board specifically "encouraged" staff to have this information available for council at our CIP study session.
Staff is working on this and will come back with additional information by the Sept. 8 council Budget Study Session. The information will also be provided to Planning Board at that time.

2. The Planning Board asked if the city will own the Carter Lake pipeline.
   It would be owned and operated by Northern Water with the exception of the portion between Left Hand Water District's branch and Boulder Reservoir Water Treatment Facility.

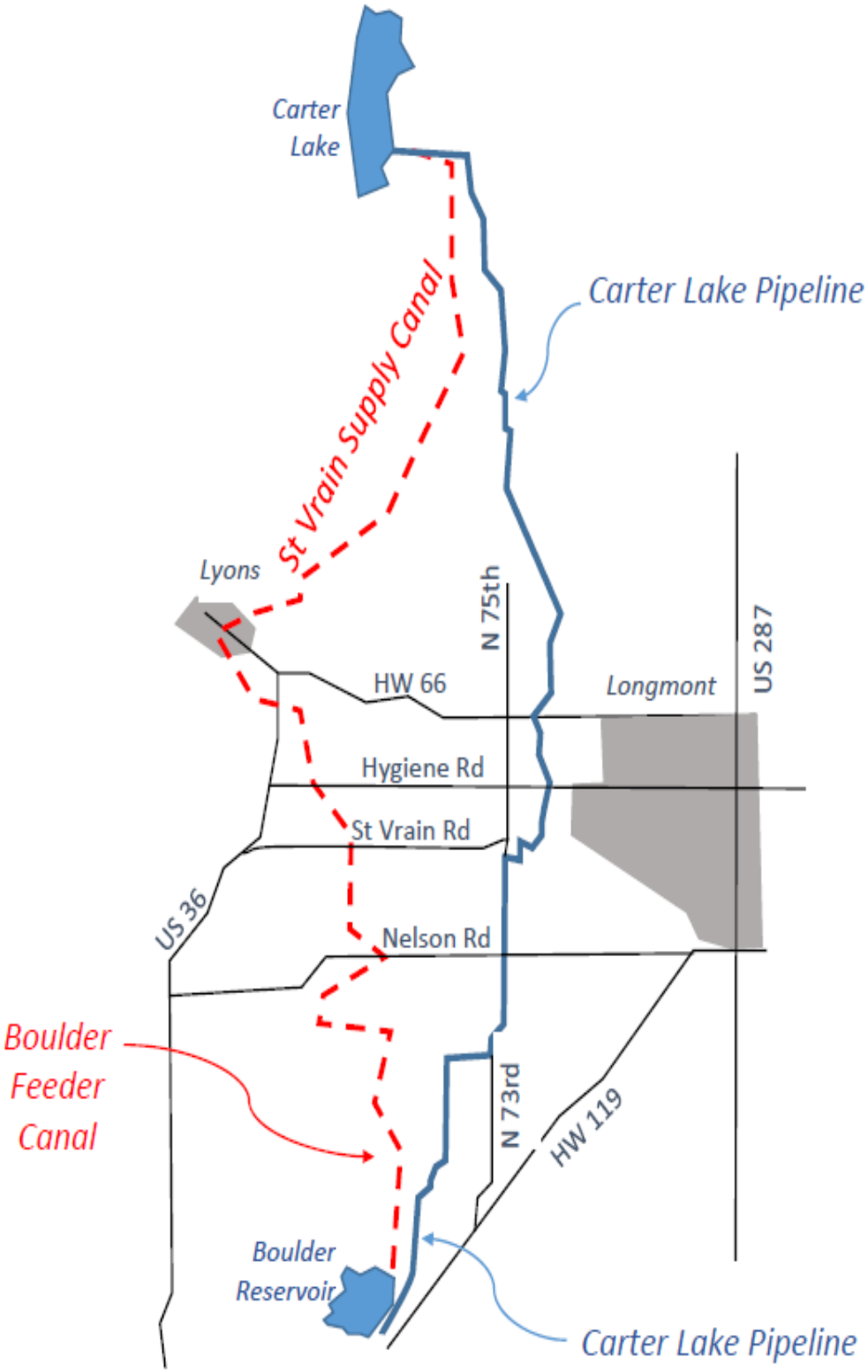
3. The Planning Board made the statement that they would like to see historic preservation budgeted for in the CIP.
   Some communities have historic preservation funding for city-owned facilities. The city has some historic preservation funding in Open Space and Mountain Parks (OSMP), where there is funding for historical structures (operating), and acquisition funding (CIP) can be used to purchase property of historical value for preservation. Staff can look into what other communities do and come back with further information at a later date. Additionally, as a part of the strategic asset inventory and assessment work, potential historic preservation funding options could be included in the research.

4. In general, the Planning Board indicated that they'd like to see more detail as to the sources of funding within funds; specifically they were interested in Development Excise Tax and impact fee funding in support of the Boulder Junction project, and even more specifically, as it relates to the pocket park and the signal. There was also a question about what funding is needed per unit from development, to ensure that development is paying for growth related impact.
   In 2010, the city implemented impact fees for residential units based on the full amounts that were included in the 2009 Tischler Bise study to ensure development is paying for its growth related impact. The city also reallocated the capacity in the residential component of the excise tax to increase the Transportation excise tax on residential units.

   It is best practices to update impact studies on a regular basis. The city has issued an RFP to solicit bids and is in the process of finalizing the contracts with two firms to complete several studies to update the city's current development-related impact fees and excise taxes.

5. The Planning Board indicated that they would like to see more information about resilience in the CIP.
   Staff will incorporate this into future CIPs.

6. The Planning Board indicated that they would like to see a summary of projects that "pay for themselves."
   Staff will incorporate more detailed information on leveraged funding into future CIPs.


Carter
Lake
Carter Lake Pipeline
St Vrain Supply Canal
Lyons
N 75th
US 287
HW 66
Longmont
Hygiene Rd
St Vrain Rd
US 36
Nelson Rd
Boulder
Feeder
Canal
N 73rd
HW 119
Boulder
Reservoir
Carter Lake Pipeline

Follow up to the City Council Study Session on August 11, 2015 on the Draft 2016-2021 Capital Improvement Program (CIP)

At the Aug. 11 City Council study session on the Draft 2016-2021 CIP, council asked the following questions relating to the proximity of the Boulder Rural Fire District Station and the City of Boulder Fire Station 6 (staff responses are in italics):

1. What is the square footage of the Boulder Rural Fire District station ?
   The Boulder Rural Fire District Station is approximately 18,000 square feet.

2. What are the costs associated with potential co-location of the two stations and combined communication systems?
   a. *The City of Boulder Fire Department has restarted conversations on different ways to collaborate with Boulder Rural Fire. The range of potential options could be from increased cooperation in training and response, to full consolidation, and anything in between. There are differing capital and operating costs with any option, and related costs are not yet known. The Fire Department will continue to explore these options and analyze costs.*
   b. *The potential costs of combined communications, in relation to dispatching systems, are also variable. It would depend on whether fire/rescue communications for the whole county were combined, or all county agencies were located on one system again. There are both operating and capital costs associated with each scenario and these are not known at this time. Along with financial factors, there are other considerations associated with combining communications that would need to be fully researched and vetted.*

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Beginning Fund Balance	38,571	$ 46,320	$ 31,428	$ 27,432	$ 28,201	$ 28,077	$ 33,279	$ 40,759
Sources of Funds								
Current Revenue-								
Sales/Use Tax	$ 54,048	$ 56,858	$ 58,366	$ 60,451	$ 62,611	$ 69,094	$ 71,565	$ 74,125
Tax Increment (10th & Walnut) surplus	1,317	-	-	-	-	-	-	-
Food Service Tax	631	656	682	710	738	768	798	830
Property Tax	20,087	20,453	21,067	21,699	22,350	23,021	23,711	24,423
Public Safety Property Tax	5,072	5,147	5,301	5,460	5,624	5,793	5,966	6,145
Cable TV Franchise & PEG Fees	1,419	1,433	1,448	1,462	1,477	1,491	1,506	1,521
Liquor Occupation Tax	307	316	326	335	346	356	367	378
Telephone Occupation Tax	729	729	729	729	729	729	729	729
Utility Occupation Tax[1]	6,180	6,365	6,365	6,556	4,550	4,687	4,828	4,972
Accommodation Tax	5,898	6,192	6,502	6,827	7,168	7,527	7,903	8,298
Admission Tax	546	560	574	588	603	618	633	649
Xcel Franchise Fee	-	-	-	-	-	-	-	-
Specific Ownership Tax	1,651	1,500	1,530	1,561	1,592	1,624	1,656	1,689
Tobacco Tax	303	303	303	303	303	303	303	303
Rec Marijuana Tax, Fees & Licenses	1,723	1,500	1,560	1,623	1,689	1,759	1,832	1,908
NPP and Other Parking Revenue	223	223	253	253	253	253	253	253
Meters-Out of Parking Districts	631	540	596	596	596	596	596	596
Sale of Other Services[3]	939	500	510	520	531	541	552	563
Sale of Goods	71	73	75	78	80	82	85	87
Licenses	493	508	523	539	555	572	589	606
Court Fees and Charges	1,590	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Parking Violations	1,764	2,003	2,003	2,003	2,003	2,003	2,003	2,003
Other Fines & Penalties	5	5	5	5	6	6	6	6
Court Awards-DUI, No Ins. & Seized Property	149	153	158	163	168	173	178	183
Photo Enforcement Revenue	1,670	1,507	1,522	1,522	1,522	1,522	1,522	1,522
Other Governmental	417	430	442	456	469	483	498	513
Interest Income	216	220	225	229	234	238	243	248
Rental Income	129	133	137	141	145	150	154	159
Other Revenue[5]	470	3,325	525	525	525	525	525	525
Housing/Human Services Fees	343	146	136	139	141	144	147	150
Parks Fees (see Other Revenue)	223	225	226	227	228	230	231	232
Sub-Total Revenue	$ 109,244	$ 113,605	$ 113,690	$ 117,300	$ 118,835	$ 126,886	$ 130,979	$ 135,218
Other Revenue-								
Grants[4]	$ 3,031	$ 681	$ 687	$ 649	$ 649	$ 649	$ 649	$ 649
Carryovers and Supplementals from Add'l Revenue	-	559	-	-	-	-	-	-
Meters-Within Parking Districts	2,885	2,845	2,845	2,845	2,845	2,845	2,845	2,845
Trash Hauler Occupation Tax	1,774	1,670	1,766	1,784	1,802	1,820	1,838	1,856
Disposable Bag fees	350	275	261	248	236	224	213	202
Education Excise Tax (to Fund Balance Reserves)	6	-	-	-	-	-	-	-
Sub-Total Other Revenue	$ 8,046	$ 6,030	$ 5,559	$ 5,526	$ 5,532	$ 5,538	$ 5,545	$ 5,552

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Transfers In-								
Cost Allocation - Current Opr Costs-All Funds	$ 7,822	$ 8,037	$ 8,854	$ 9,208	$ 9,576	$ 9,960	$ 10,358	$ 10,772
Other Transfers	142	152	161	180	184	188	168	147
Mall Reimbursement from CAGID (see Revenue)	-	-	-	-	-	-	-	-
Sub-Total Transfers In	$ 7,964	$ 8,189	$ 9,015	$ 9,388	$ 9,760	$ 10,148	$ 10,526	$ 10,919
Total Annual Sources	**$ 125,254**	**$ 127,824**	**$ 128,264**	**$ 132,214**	**$ 134,128**	**$ 142,571**	**$ 147,049**	**$ 151,690**
Total Sources (Including Beginning Fund Balance)	**$ 163,825**	**$ 174,143**	**$ 159,692**	**$ 159,646**	**$ 162,329**	**$ 170,648**	**$ 180,328**	**$ 192,449**
Uses of Funds								
Allocations (excluding debt and transfers) -								
City Council	$ 196	$ 223	$ 238	$ 245	$ 252	$ 260	$ 268	$ 276
Municipal Court	1,897	2,214	2,316	2,249	2,319	2,392	2,466	2,543
City Attorney	2,441	2,881	2,949	3,041	3,136	3,234	3,335	3,439
City Clerk's Office	594	530	526	542	499	514	530	547
City Manager	1,246	1,373	2,021	2,084	2,149	2,216	2,285	2,357
West Nile Virus Program	244	250	259	250	250	250	250	250
Energy Strategy[1, 2]	1,923	6,943	-	-	-	-	-	-
Conference and Visitors Bureau	1,527	1,754	1,856	1,928	2,018	2,119	2,219	2,325
Non-departmental	467	248	318	318	318	318	318	318
Cyber Café Loan Repayments	248	-	-	-	-	-	-	-
Citywide Memberships	125	154	159	159	159	159	159	159
Contingency	114	146	146	146	146	146	146	146
Fuel Contingency	-	190	190	190	190	190	190	190
Extraordinary Personnel Expense	-	120	120	120	120	120	120	120
Waste Reduction Project (6400 Arapahoe)	52	-	-	-	-	-	-	-
DUHMD/Parking Svcs	1,274	1,582	1,685	1,738	1,792	1,848	1,905	1,965
Communications	792	1,076	1,711	1,764	1,707	1,760	1,815	1,872
Unemployment & Volunteer Ins	199	107	107	110	114	117	121	125
Property & Casualty Ins.	1,610	1,658	1,741	1,759	1,812	1,866	1,922	1,980
Compensated Absences	730	764	819	845	871	898	926	955
Worker's Compensation (Refund)	-	-	-	-	-	-	-	-
Information Technology	5,024	4,780	5,746	5,848	6,030	6,218	6,412	6,613
IT/Technology Funding	340	340	404	404	404	404	404	404
IT/Telecommunications Funding	48	48	48	48	48	48	48	48
Human Resources	2,281	2,948	3,870	3,776	3,894	4,016	4,141	4,270
Finance	4,015	3,875	4,605	4,749	4,897	5,050	5,207	5,370
Campaign Financing	-	46	-	46	-	46	-	46
Police	31,545	33,666	33,930	34,989	36,081	37,208	38,369	39,567
Fire	18,139	18,339	18,814	19,401	20,007	20,631	21,275	21,939
Public Works	5,488	3,852	4,196	4,327	4,462	4,601	4,745	4,893
Municipal Facilities Fund	-	880	880	880	880	880	880	880
Equipment Replacement	-	26	34	34	34	34	34	34
Facilities Renovation & Replacement	-	1,669	1,669	1,669	1,669	1,669	1,669	1,669
Parks & Recreation	4,580	4,643	4,699	4,846	4,997	5,153	5,314	5,480

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Library and Arts	646	578	921	950	979	1,010	1,041	1,074
Real Estate (Open Space)	153	149	154	159	164	169	174	180
Human Services	6,474	6,630	7,002	7,221	7,446	7,678	7,918	8,165
Housing	14	176	191	197	203	209	216	223
Humane Society Bldg Loan	60	60	60	60	60	60	60	60
Community Sustainability	2,363	2,250	3,241	3,258	3,322	3,425	3,532	3,643
Police/Fire Old Hire Contribution	368	626	680	630	628	627	628	630
13th Street Voluntary Cleanup Loan repayment	517	811	811	811	811	334	-	-
Education Excise Tax programs	412	-	-	-	-	-	-	-
Carryovers and Supplementals - Add'l Revenue	-	2,059	-	-	-	-	-	-
Energy Contingency	-	1,000	278	-	-	-	-	-
Boulder Community Hospital[5]	-	3,000	3,000	-	-	-	-	-
Other one-time	488	1,090	500	-	-	-	-	-
Ongoing Adjustments	-	-	-	-	-	-	-	-
Sub-Total Uses of Funds	$ 98,634	$ 115,754	$ 112,894	$ 111,790	$ 114,869	$ 117,878	$ 121,045	$ 124,753
Debt-								
Existing Debt	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Pension Obligation Bonds	689	687	686	685	687	688	687	685
CIS Bonds	3,995	3,995	3,994	3,995	3,334	3,331	3,331	3,333
Waste Reduction Project (6400 Arapahoe)	428	423	421	424	421	423	424	424
Misc One-time Transfers	-	-	-	-	-	-	-	-
Sub-Total Debt	$ 5,112	$ 5,105	$ 5,101	$ 5,104	$ 4,442	$ 4,442	$ 4,442	$ 4,442
Transfers Out-								
Recreation Activity Fund	$ 1,453	$ 1,378	$ 1,466	$ 1,512	$ 1,559	$ 1,608	$ 1,658	$ 1,710
Planning and Development Services Fund	2,125	2,192	2,293	2,365	2,438	2,514	2,593	2,674
Affordable Housing Fund	240	240	240	240	240	240	240	240
Library Fund	6,587	6,586	6,356	6,554	6,759	6,970	7,188	7,412
Open Space Fund (Mountain Parks)	1,103	1,141	1,166	1,202	1,240	1,279	-	-
CAGID and UHGID Funds (Parking Meter Revenue)	1,950	1,950	2,000	2,000	2,000	2,000	2,000	2,000
CAGID 10th & Walnut debt/costs	-	285	193	201	180	191	166	185
Utilities Fund (Fire Training Center property)	93	93	93	93	93	93	93	93
Prop and Casualty Fund	-	-	-	-	-	-	-	-
Transportation Fund (excess Photo Enforcement Rev)	63	-	-	-	-	-	-	-
Fleet Fund (interfund loan for Valmont Butte, hail damage)	145	145	145	145	145	145	145	145
Boulder Junction GID - Parking (interfund loan)	-	324	313	238	287	9	-	-
Adjustment to balance Pay Period 27 Reserve	-	-	-	-	-	-	-	-
Sub-Total Transfers Out	$ 13,759	$ 14,334	$ 14,265	$ 14,550	$ 14,941	$ 15,049	$ 14,082	$ 14,458
.15% Sales Tax Expenditures- Fund 117	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-Total .15 Sales Tax	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Total Uses of Funds	**$ 117,505**	**$ 135,193**	**$ 132,260**	**$ 131,445**	**$ 134,252**	**$ 137,369**	**$ 139,569**	**$ 143,653**
Current Surplus (Deficit)	$ 7,749	$ (7,369)	$ (3,996)	$ 769	$ (124)	$ 5,203	$ 7,480	$ 8,037
Less One-Time Expenditures	$ -	$ (10,535)	$ (6,757)	$ (1,146)	$ (811)	$ (334)	$ -	$ -
Annual Surplus (Deficit)	$ 7,749	$ 3,166	$ 2,761	$ 1,915	$ 687	$ 5,537	$ 7,480	$ 8,037
Carryovers and Supplementals	$ -	$ 6,782	$ -	$ -	$ -	$ -	$ -	$ -
Encumbrance Carryovers	-	741	-	-	-	-	-	-
Total Carryovers	$ -	$ 7,523	$ -	$ -	$ -	$ -	$ -	$ -
Use of Pay Period 27 Reserve	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ending Fund Balance Before Reserves	**$ 46,320**	**$ 31,428**	**$ 27,432**	**$ 28,201**	**$ 28,077**	**$ 33,279**	**$ 40,759**	**$ 48,796**
Reserves								
Reserved per reserve policy	$ 17,171	$ 20,177	$ 21,052	$ 20,927	$ 21,376	$ 21,875	$ 22,227	$ 22,881
Legally restricted fund balance	1,268	1,268	1,268	1,268	1,268	1,268	1,268	1,268
Restricted by Management	2,545	2,545	2,545	2,545	2,545	2,545	2,545	2,545
Wage Accrual Reserve (PP27)	1,431	1,792	2,153	2,514	2,875	3,236	3,597	3,958
Total Designations	$ 22,416	$ 25,782	$ 27,018	$ 27,255	$ 28,065	$ 28,925	$ 29,638	$ 30,652
Ending Fund Balance After Reserves	**$ 23,904**	**$ 5,645**	**$ 414**	**$ 946**	**$ 12**	**$ 4,354**	**$ 11,121**	**$ 18,143**

[1] The Utilities Occupation Tax expires at the end of 2017. Starting in 2018, if funding were not continued, either through contribution from a municipal electric utility or, barring the creation of a municipal electric utility, through tax renewal or other means, adjustments to expenditure would be made. For the purposes of current fund balance analysis, we have included ongoing revenue and corresponding expenditure in these years. This will be reviewed in the 2016 budget process.

[2] Previously titled Clean Energy Study.

[3] Includes $738,410 in insurance proceeds related to 2013 Flood damage

[4] Includes $1.8 million FEMA and State reimbursement for 2013 Flood damages in 2014.

[5] In 2015 $3 million appropriated in earnest money. It is expected that this will be returned to the city either as a part of a reimbursement resolution if bonds or COPs are issued, or return of earnest money from BCH if property not purchased. It is unknown at this time if the equivalent of a 1st year's debt payment would need to be reserved in order for COP financing. 2016 shows this coverage.

General Fund Portion of Utility Occupation Tax Not Renewed

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Beginning Fund Balance	38,571	$ 46,320	$ 31,428	$ 27,432	$ 28,201	$ 23,526	$ 24,042	$ 26,694
Sources of Funds								
Current Revenue-								
Sales/Use Tax	$ 54,048	$ 56,858	$ 58,366	$ 60,451	$ 62,611	$ 69,094	$ 71,565	$ 74,125
Tax Increment (10th & Walnut) surplus	1,317	-	-	-	-	-	-	-
Food Service Tax	631	656	682	710	738	768	798	830
Property Tax	20,087	20,453	21,067	21,699	22,350	23,021	23,711	24,423
Public Safety Property Tax	5,072	5,147	5,301	5,460	5,624	5,793	5,966	6,145
Cable TV Franchise & PEG Fees	1,419	1,433	1,448	1,462	1,477	1,491	1,506	1,521
Liquor Occupation Tax	307	316	326	335	346	356	367	378
Telephone Occupation Tax	729	729	729	729	729	729	729	729
Utility Occupation Tax[1]	6,180	6,365	6,365	6,556	0	0	0	0
Accommodation Tax	5,898	6,192	6,502	6,827	7,168	7,527	7,903	8,298
Admission Tax	546	560	574	588	603	618	633	649
Xcel Franchise Fee	-	-	-	-	-	-	-	-
Specific Ownership Tax	1,651	1,500	1,530	1,561	1,592	1,624	1,656	1,689
Tobacco Tax	303	303	303	303	303	303	303	303
Rec Marijuana Tax, Fees & Licenses	1,723	1,500	1,560	1,623	1,689	1,759	1,832	1,908
NPP and Other Parking Revenue	223	223	253	253	253	253	253	253
Meters-Out of Parking Districts	631	540	596	596	596	596	596	596
Sale of Other Services[3]	939	500	510	520	531	541	552	563
Sale of Goods	71	73	75	78	80	82	85	87
Licenses	493	508	523	539	555	572	589	606
Court Fees and Charges	1,590	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Parking Violations	1,764	2,003	2,003	2,003	2,003	2,003	2,003	2,003
Other Fines & Penalties	5	5	5	5	6	6	6	6
Court Awards-DUI, No Ins. & Seized Property	149	153	158	163	168	173	178	183
Photo Enforcement Revenue	1,670	1,507	1,522	1,522	1,522	1,522	1,522	1,522
Other Governmental	417	430	442	456	469	483	498	513
Interest Income	216	220	225	229	234	238	243	248
Rental Income	129	133	137	141	145	150	154	159
Other Revenue[5]	470	3,325	525	525	525	525	525	525
Housing/Human Services Fees	343	146	136	139	141	144	147	150
Parks Fees (see Other Revenue)	223	225	226	227	228	230	231	232
Sub-Total Revenue	$ 109,244	$ 113,605	$ 113,690	$ 117,300	$ 114,285	$ 122,199	$ 126,151	$ 130,246
Other Revenue-								
Grants[4]	$ 3,031	$ 681	$ 687	$ 649	$ 649	$ 649	$ 649	$ 649
Carryovers and Supplementals from Add'l Revenue	-	559	-	-	-	-	-	-
Meters-Within Parking Districts	2,885	2,845	2,845	2,845	2,845	2,845	2,845	2,845
Trash Hauler Occupation Tax	1,774	1,670	1,766	1,784	1,802	1,820	1,838	1,856
Disposable Bag fees	350	275	261	248	236	224	213	202
Education Excise Tax (to Fund Balance Reserves)	6	-	-	-	-	-	-	-
Sub-Total Other Revenue	$ 8,046	$ 6,030	$ 5,559	$ 5,526	$ 5,532	$ 5,538	$ 5,545	$ 5,552

General Fund Portion of Utility Occupation Tax Not Renewed

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Transfers In-								
Cost Allocation - Current Opr Costs-All Funds	$ 7,822	$ 8,037	$ 8,854	$ 9,208	$ 9,576	$ 9,960	$ 10,358	$ 10,772
Other Transfers	142	152	161	180	184	188	168	147
Mall Reimbursement from CAGID (see Revenue)	-	-	-	-	-	-	-	-
Sub-Total Transfers In	$ 7,964	$ 8,189	$ 9,015	$ 9,388	$ 9,760	$ 10,148	$ 10,526	$ 10,919
Total Annual Sources	**$ 125,254**	**$ 127,824**	**$ 128,264**	**$ 132,214**	**$ 129,577**	**$ 137,885**	**$ 142,221**	**$ 146,717**
Total Sources (Including Beginning Fund Balance)	**$ 163,825**	**$ 174,143**	**$ 159,692**	**$ 159,646**	**$ 157,778**	**$ 161,411**	**$ 166,263**	**$ 173,411**
Uses of Funds								
Allocations (excluding debt and transfers) -								
City Council	$ 196	$ 223	$ 238	$ 245	$ 252	$ 260	$ 268	$ 276
Municipal Court	1,897	2,214	2,316	2,249	2,319	2,392	2,466	2,543
City Attorney	2,441	2,881	2,949	3,041	3,136	3,234	3,335	3,439
City Clerk's Office	594	530	526	542	499	514	530	547
City Manager	1,246	1,373	2,021	2,084	2,149	2,216	2,285	2,357
West Nile Virus Program	244	250	259	250	250	250	250	250
Energy Strategy[1, 2]	1,923	6,943	-	-	-	-	-	-
Conference and Visitors Bureau	1,527	1,754	1,856	1,928	2,018	2,119	2,219	2,325
Non-departmental	467	248	318	318	318	318	318	318
Cyber Café Loan Repayments	248	-	-	-	-	-	-	-
Citywide Memberships	125	154	159	159	159	159	159	159
Contingency	114	146	146	146	146	146	146	146
Fuel Contingency	-	190	190	190	190	190	190	190
Extraordinary Personnel Expense	-	120	120	120	120	120	120	120
Waste Reduction Project (6400 Arapahoe)	52	-	-	-	-	-	-	-
DUHMD/Parking Svcs	1,274	1,582	1,685	1,738	1,792	1,848	1,905	1,965
Communications	792	1,076	1,711	1,764	1,707	1,760	1,815	1,872
Unemployment & Volunteer Ins	199	107	107	110	114	117	121	125
Property & Casualty Ins.	1,610	1,658	1,741	1,759	1,812	1,866	1,922	1,980
Compensated Absences	730	764	819	845	871	898	926	955
Worker's Compensation (Refund)	-	-	-	-	-	-	-	-
Information Technology	5,024	4,780	5,746	5,848	6,030	6,218	6,412	6,613
IT/Technology Funding	340	340	404	404	404	404	404	404
IT/Telecommunications Funding	48	48	48	48	48	48	48	48
Human Resources	2,281	2,948	3,870	3,776	3,894	4,016	4,141	4,270
Finance	4,015	3,875	4,605	4,749	4,897	5,050	5,207	5,370
Campaign Financing	-	46	-	46	-	46	-	46
Police	31,545	33,666	33,930	34,989	36,081	37,208	38,369	39,567
Fire	18,139	18,339	18,814	19,401	20,007	20,631	21,275	21,939
Public Works	5,488	3,852	4,196	4,327	4,462	4,601	4,745	4,893
Municipal Facilities Fund	-	880	880	880	880	880	880	880
Equipment Replacement	-	26	34	34	34	34	34	34
Facilities Renovation & Replacement	-	1,669	1,669	1,669	1,669	1,669	1,669	1,669
Parks & Recreation	4,580	4,643	4,699	4,846	4,997	5,153	5,314	5,480

General Fund Portion of Utility Occupation Tax Not Renewed

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Library and Arts	646	578	921	950	979	1,010	1,041	1,074
Real Estate (Open Space)	153	149	154	159	164	169	174	180
Human Services	6,474	6,630	7,002	7,221	7,446	7,678	7,918	8,165
Housing	14	176	191	197	203	209	216	223
Humane Society Bldg Loan	60	60	60	60	60	60	60	60
Community Sustainability	2,363	2,250	3,241	3,258	3,322	3,425	3,532	3,643
Police/Fire Old Hire Contribution	368	626	680	630	628	627	628	630
13th Street Voluntary Cleanup Loan repayment	517	811	811	811	811	334	-	-
Education Excise Tax programs	412	-	-	-	-	-	-	-
Carryovers and Supplementals - Add'l Revenue	-	2,059	-	-	-	-	-	-
Energy Contingency	-	1,000	278	-	-	-	-	-
Boulder Community Hospital[5]	-	3,000	3,000	-	-	-	-	-
Other one-time	488	1,090	500	-	-	-	-	-
Ongoing Adjustments	-	-	-	-	-	-	-	-
Sub-Total Uses of Funds	$ 98,634	$ 115,754	$ 112,894	$ 111,790	$ 114,869	$ 117,878	$ 121,045	$ 124,753
Debt-								
Existing Debt	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Pension Obligation Bonds	689	687	686	685	687	688	687	685
CIS Bonds	3,995	3,995	3,994	3,995	3,334	3,331	3,331	3,333
Waste Reduction Project (6400 Arapahoe)	428	423	421	424	421	423	424	424
Misc One-time Transfers	-	-	-	-	-	-	-	-
Sub-Total Debt	$ 5,112	$ 5,105	$ 5,101	$ 5,104	$ 4,442	$ 4,442	$ 4,442	$ 4,442
Transfers Out-								
Recreation Activity Fund	$ 1,453	$ 1,378	$ 1,466	$ 1,512	$ 1,559	$ 1,608	$ 1,658	$ 1,710
Planning and Development Services Fund	2,125	2,192	2,293	2,365	2,438	2,514	2,593	2,674
Affordable Housing Fund	240	240	240	240	240	240	240	240
Library Fund	6,587	6,586	6,356	6,554	6,759	6,970	7,188	7,412
Open Space Fund (Mountain Parks)	1,103	1,141	1,166	1,202	1,240	1,279	-	-
CAGID and UHGID Funds (Parking Meter Revenue)	1,950	1,950	2,000	2,000	2,000	2,000	2,000	2,000
CAGID 10th & Walnut debt/costs	-	285	193	201	180	191	166	185
Utilities Fund (Fire Training Center property)	93	93	93	93	93	93	93	93
Prop and Casualty Fund	-	-	-	-	-	-	-	-
Transportation Fund (excess Photo Enforcement Rev)	63	-	-	-	-	-	-	-
Fleet Fund (interfund loan for Valmont Butte, hail damage)	145	145	145	145	145	145	145	145
Boulder Junction GID - Parking (interfund loan)	-	324	313	238	287	9	-	-
Adjustment to balance Pay Period 27 Reserve	-	-	-	-	-	-	-	-
Sub-Total Transfers Out	$ 13,759	$ 14,334	$ 14,265	$ 14,550	$ 14,941	$ 15,049	$ 14,082	$ 14,458
.15% Sales Tax Expenditures- Fund 117	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-Total .15 Sales Tax	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

General Fund Portion of Utility Occupation Tax Not Renewed

CITY OF BOULDER
2016 FUND FINANCIAL (in 1000's)

GENERAL

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Total Uses of Funds	**$ 117,505**	**$ 135,193**	**$ 132,260**	**$ 131,445**	**$ 134,252**	**$ 137,369**	**$ 139,569**	**$ 143,653**
Current Surplus (Deficit)	$ 7,749	$ (7,369)	$ (3,996)	$ 769	$ (4,675)	$ 516	$ 2,652	$ 3,065
Less One-Time Expenditures	$ -	$ (10,535)	$ (6,757)	$ (1,146)	$ (811)	$ (334)	$ -	$ -
Annual Surplus (Deficit)	$ 7,749	$ 3,166	$ 2,761	$ 1,915	$ (3,864)	$ 850	$ 2,652	$ 3,065
Carryovers and Supplementals	$ -	$ 6,782	$ -	$ -	$ -	$ -	$ -	$ -
Encumbrance Carryovers	-	741	-	-	-	-	-	-
Total Carryovers	$ -	$ 7,523	$ -	$ -	$ -	$ -	$ -	$ -
Use of Pay Period 27 Reserve	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ending Fund Balance Before Reserves	**$ 46,320**	**$ 31,428**	**$ 27,432**	**$ 28,201**	**$ 23,526**	**$ 24,042**	**$ 26,694**	**$ 29,758**
Reserves								
Reserved per reserve policy	$ 17,171	$ 20,177	$ 21,052	$ 20,927	$ 21,376	$ 21,875	$ 22,227	$ 22,881
Legally restricted fund balance	1,268	1,268	1,268	1,268	1,268	1,268	1,268	1,268
Restricted by Management	2,545	2,545	2,545	2,545	2,545	2,545	2,545	2,545
Wage Accrual Reserve (PP27)	1,431	1,792	2,153	2,514	2,875	3,236	3,597	3,958
Total Designations	$ 22,416	$ 25,782	$ 27,018	$ 27,255	$ 28,065	$ 28,925	$ 29,638	$ 30,652
Ending Fund Balance After Reserves	**$ 23,904**	**$ 5,645**	**$ 414**	**$ 946**	**$ (4,539)**	**$ (4,883)**	**$ (2,944)**	**$ (894)**

[1] The Utilities Occupation Tax expires at the end of 2017. Starting in 2018, if funding were not continued, either through contribution from a municipal electric utility or, barring the creation of a municipal electric utility, through tax renewal or other means, adjustments to expenditure would be made. For the purposes of current fund balance analysis, we have included ongoing revenue and corresponding expenditure in these years. This will be reviewed in the 2016 budget process.

[2] Previously titled Clean Energy Study.

[3] Includes $738,410 in insurance proceeds related to 2013 Flood damage

[4] Includes $1.8 million FEMA and State reimbursement for 2013 Flood damages in 2014.

[5] In 2015 $3 million appropriated in earnest money. It is expected that this will be returned to the city either as a part of a reimbursement resolution if bonds or COPs are issued, or return of earnest money from BCH if property not purchased. It is unknown at this time if the equivalent of a 1st year's debt payment would need to be reserved in order for COP financing. 2016 shows this coverage.

STUDY SESSION
MEMORANDUM

To: Members of City Council

From: Jane S. Brautigam, City Manager
Yvette Bowden, Director, Parks and Recreation
Therron Dieckmann, Deputy Director, Parks and Recreation
Kathleen Alexander, City Forester
Jeff Haley, Parks Planning Manager
Rella Abernathy, City Integrated Pest Management Coordinator
Brett KenCairn, Senior Environmental Planner
Elizabeth Lokocz, Landscape Architect II

Date: September 8, 2015

Subject: Study Session: Emerald Ash Borer in the City of Boulder

---

I. PURPOSE

The purpose of the study session is to discuss and obtain City Council's feedback on anticipated long term impacts of the detected local emerald ash borer (EAB) infestation, city response to date, and recommendations on next steps including, but not limited to, the development of a City of Boulder Urban Forest Strategic Plan.

II. QUESTIONS FOR CITY COUNCIL

1. Does council have any questions or feedback on the Parks and Recreation Forestry Division strategy in response to emerald ash borer?
2. Does council have any feedback on the approach to inform/educate the public

III. EXECUTIVE SUMMARY

In September 2013, City of Boulder Parks and Recreation Department Forestry staff (Forestry staff) discovered an EAB infestation within the city. The inter-agency delimitation survey found EAB within several neighborhoods in central Boulder. Subsequent detection efforts by Forestry staff also found EAB at low levels outside the original detection area.

Forestry staff consulted with leading EAB experts from across the United States and Canada to develop the initial emergency EAB response. An Interdepartmental EAB Strategic Group was

formed and developed the proposed long term strategy for EAB including public education/outreach, tree planting, ash tree removals, limited pesticide applications, release of biocontrols, and collaborative research projects. Both the short term emergency response and the proposed long term strategy are outlined in this memo.

IV. FEEDBACK FROM ADVISORY BOARDS

The EAB impacts and city response to date were presented to three boards providing an opportunity for discussion and feedback prior to this council study session. The following is a brief summary of key points of input from each board:

Downtown Management Commission (8/3/2015)

- Pleased that Forestry staff can take "a negative" such as EAB and turn it into "a positive" with a bigger Urban Forest Strategic Plan.
- The Commission was also pleased with efforts to date to reach out to commercial business owners but recommended a representative from Forestry staff attend an upcoming Downtown Boulder (DBI) meeting to discuss further.
- Asked a question about the support the city has received from other agencies.

Environmental Advisory Board (8/5/2015)

- Support for the comprehensive view taken by the Forestry staff.
- Support for the balanced approach proposed by the Forestry staff.
- Recommendation to increase public awareness; concern that the message to date has been focused on the EAB detection and problem (e.g., ribbons around trees) and not on what residents can do about it.
- Advocate for free tree days (Boulder County program) and distribute trees where residents can pick them up more easily.
- The board had questions about what University of Colorado (CU) was doing for their ash trees and was concerned because the campus has various large ash trees.

Parks and Recreation Advisory Board (4/27/2015)

- Approved the proactive and environmentally sensitive approach to handling wood debris.
- The board had questions related to coordination with CU.
- The board expressed a preference that Forestry staff explore options to better notify neighbors when public trees will be removed in their neighborhood.

V. BACKGROUND

Forestry staff directly maintains a total of 50,725 public trees; 13,013 in city parks and 37,712 in street rights-of-way with a total appraised value of over $110 million[1]. The workgroup administers the following programs for public trees: tree planting, tree safety inspections, commercial tree program, rotational pruning for trees in city parks and in public street rights-of-way, tree removal, integrated pest management, arborist licensing, tree-related emergency response, enforcement for tree protection codes, and development review for park, transportation

[1] Urban Forest Resource Analysis, Boulder, Colorado, 2015; Davey Resource Group

and private projects. The workgroup indirectly manages the estimated 600,000 trees on private property through the enforcement of diseased and dangerous tree codes and the arborist licensing program. Urban foresty staff includes five FTEs: one city forester and four forestry field technicians supplemented by qualified contractors as appropriate.

Boulder's urban forest is a legacy that was largely created by the tree planting and stewardship efforts of previous generations. With the exception of trees native to the streamside corridors, Boulder's trees were planted and tended by residents who valued the trees shade and beauty.

The city's urban forest is one of the few city assets that appreciate in value over time. Trees are not just a luxury for the City of Boulder; they are part of the city infrastructure. Boulder's urban forest provides nearly $5.2 million in annual environmental, economic, and social services benefits ($50.39 per capita, an average of $102.48/tree). These beneficial services include air quality improvements, energy savings, stormwater runoff reduction, atmospheric CO_2 reduction, and aesthetic contributions to the social and economic health of the community. With an established tree population in overall good condition, a high percentage of young trees, and a diverse tree canopy including 237 different species, the community urban forest in Boulder will continue to be a vital asset to the city and neighboring communities.

The community urban forest reduces electric energy consumption by 3,909 MWh and annual natural gas consumption by 137,736 therms, for a combined value of $442,432 annually. In addition, these trees are removing 17.2 tons of pollutants from the air, including ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulates (PM_{10}) for an overall annual air quality benefit of $66,282. The urban tree canopy from the public tree population covers 651 acres. This canopy reduces annual stormwater runoff by more than 30.6 million gallons and protects local water resources by reducing sediment and pollution loading. To date, community trees have sequestered 36,892 tons of carbon (CO_2). They continue to sequester an additional 2,254 tons of CO_2 each year for an annual net benefit valued at $43,084.[2]

The annual investment (cost) to maintain publicly-owned trees is approximately $1.17 million. For every $1 invested in the community urban forest, Boulder receives $4.46 in benefits. The fact that Boulder's benefit–cost ratio of 4.46 exceeds ratios reported for five comparable cities (3.09 in Bismarck, ND, 2.41 in Glendale, AZ, 2.18 in Fort Collins, 2.09 in Cheyenne, WY, and 1.37 in Berkeley, CA) indicates that the program is not only operationally efficient, but capitalizing on the functional services its trees can produce.[3]

Infestation Impacts to the Urban Tree Canopy

One of the largest threats faced by urban forests across the U.S. is from invasive insects and disease pests. The impacts from these pests can be both environmentally and economically devastating. Pests are not the only threat faced by urban forests. Others include climate change and individual severe weather events such as the 2002 drought and the extreme temperature

[2] Urban Forest Resource Analysis, Boulder, Colorado, 2015; Davey Resource Group
[3] City of Boulder, Colorado Municipal Tree Resource Analysis, US Forest Service, 2005

fluctuation experienced in November, 2014, when the temperature dropped from a high of 64 degrees to a low of -11 degrees within 48 hours.

Invasive pests are not new to the Boulder landscape. Dutch elm disease (DED) was introduced into Colorado in the 1970's and first discovered in Boulder in 1978. Over the past 40 years, more than 1,000 American elms have been removed in the city and approximately 30,000 elms across the state have been eradicated due to the disease. The best management practice for DED to prevent spread on a citywide scale has proved to be early detection, prompt tree removal, and proper disposal of wood. This tactic prevents the beetles that vector the DED fungus from breeding and emerging from infested material and vectoring the fungus to nearby healthy elm trees. Several hundred mature American elms remain in Boulder due to proper management through the years.

Other pests that have caused tree mortality in Boulder over the past ten years, or are expected to cause tree mortality, include: thousand cankers disease of walnut, drippy blight of red oak, Japanese beetle, pine wilt nematode, Douglas-fir tussock moth, ips beetle in spruce and mountain pine beetle.

Emerald Ash Borer in Boulder

Emerald ash borer was most likely introduced to the U.S. in the mid to late 1990's through wooden shipping or packaging materials originating in China. It was first detected in 2002 and since then, it has moved across the country to 25 states and two Canadian provinces. Although EAB spreads short distances (.5 to 6 miles) annually through the flight of adult beetles, long distance spread occurs mainly through the movement of infested material. North American ash trees have shown little resistance to EAB and an estimated 50-70 million ash trees across the Midwest have died from this pest since the initial introduction.

It is assumed that EAB was brought to Boulder in infested firewood approximately 6-7 years ago. In late September 2013, City Forestry staff discovered an EAB infestation within the city. The beetles were detected by staff when sampling a dead ash tree prior to its removal. This was the first detection of this insect in Colorado and is the western-most occurrence of this invasive pest in North America. The subsequent delimitation survey showed EAB was well established at the time of discovery within a corridor in central Boulder.

Ash is one of the most abundant tree species in Colorado comprising approximately 15% of all deciduous trees in many urban areas and approximately 12% in the City of Boulder.[4] There are an estimated 1.45 million ash trees in the Denver metro area alone. The 2013 U.S. Forest Service (USFS) Metro Denver Urban Forest Assessment Report estimates there are 656,000 trees in the City of Boulder with an appraised value of $1.2 billion.[5] There are 50,725 total city park and public street rights-of-way trees; 6,016 (11.9%) are either green or white ash trees with an appraised value of $14.6 million. Assuming a similar percent of ash on private property, the estimated number of public, private, and naturalized ash in Boulder is over 70,000 trees.

---

[4] Urban Forest Resource Analysis, Boulder, Colorado, 2015; Davey Resource Group
[5] 2013 Metro Denver Urban Forest Assessment Report, US Forest Service

Over the next 15 years, the proposed EAB management, including tree removal, tree replacement, wood disposal, and pesticide treatments is anticipated to have a significant direct budgetary impact to the City of Boulder and private residents. Additionally, the transforming tree canopy will have considerable economic, social, and environmental impacts for decades.

EAB Management

In terms of invasive forest pests, EAB may well represent the worst-case scenario. EAB management differs from other invasive tree pest management strategies in four major ways:

1. **Mortality of susceptible hosts**: There is very little resistance to EAB in North American ash species. Researchers have found almost 100% mortality in most species of ash especially green ash which is the prevalent ash species across Colorado. EAB also kills ash trees quickly; at high EAB populations EAB can kill mature trees in 1-2 years.
2. **Scale of infestation**: There are more trees susceptible to EAB than any other invasive pest to date. Dutch elm disease in Colorado killed approximately 30,000 American elm trees over a 40 year period and threatened 200 million elms across the U.S. EAB threatens 1.45 million ash trees in the metro Denver area alone and threatens an estimated 7.5 billion ash trees across the U.S.
3. **Difficulty in detection**: Dendrochronological evidence indicates EAB is typically established in an area for 3-8 years before discovery. The difficulty is because beetles attack in the upper canopies first; at low beetle populations, trees often do not show symptoms until several years after initial infestation; there is no available pheromone for trapping purposes; and EAB symptoms are similar to those of other insect pests and environmental problems.
4. **Speed of infestation within community:** EAB populations expand exponentially. Mated female beetles produce 40-70 eggs on average but can produce more than 200 eggs. Populations can therefore expand quickly before detection. Midwest cities report that without the use of pesticides, all ash within a community are dying after just 10-12 years after introduction.

Before deciding upon an EAB strategy for Boulder, Forestry staff researched and spoke to city foresters across the Midwest and Canada (Attachment A, Municipal Benchmarking). Very few cities opted for one of the extremes of either removing or treating all public ash trees. Most cities across the Midwest opted for a combination approach, treating some percentage of larger diameter ash trees that provide the most community benefit and phasing out declining ash over a longer period of time to slow the spread of EAB and spread out the removal and replacement costs over a longer period of time. The specifics for each city including percent of ash trees treated, pesticides used, tree size limitations for pesticide treatments, and timing of ash removals varied widely.

The Forestry Division has six main themes for EAB management in Boulder:

- Protect public safety and minimize liability;
- Maintain a healthy, diverse and sustainable urban forest;

- Maintain or increase the urban tree canopy to maximize the environmental, social and economic services provided to Boulder;
- Minimize risks to non-target organisms from pesticide applications;
- Minimize costs; and
- Minimize disruption to other forestry operations.

VI. ANALYSIS

Forestry staff collaborated with multiple state and federal agencies and with leading EAB experts from across the U.S. and Canada to develop a short term emergency response to EAB. Informational memos outlining the emergency response were submitted to City Council in February and April, 2014. An Interdepartmental EAB Strategic Team was formed and developed the long term strategies presented in this memo to manage EAB on a citywide scale and ensure consistency across departments.

The strategy includes the following response measures:

A. EAB Multi Agency Response
B. Quarantine
C. Detection Surveys and On-Going Monitoring
D. Public Education / Outreach
E. Tree Plantings
F. Tree Removals
G. Pesticide Applications
H. Biocontrols
I. Wood Utilization
J. Enforcement
K. Collaborative Research Projects
L. Urban Forest Strategic Plan

A. EAB Multi-Agency Response

After the initial discovery of EAB in Boulder, the USDA Animal and Plant Health Inspection Service (APHIS), the agency responsible for the federal EAB quarantine, declared EAB in Colorado as an "incident" similar to a wildfire and instituted the Incident Command System (ICS). The ICS allowed all affected agencies to share communication while developing mitigation and management strategies and outreach materials for EAB in Colorado. The EAB ICS was in place from September, 2013 through April, 2015, when it transitioned to the Colorado EAB Response Team. Agencies participating in the EAB ICS and in the Colorado EAB Response team include: APHIS, Colorado Department of Agriculture (CDA), City of Boulder, Boulder County, University of Colorado (CU), Colorado State Forest Service (CSFS), and Colorado State University (CSU).

To assist staff with EAB monitoring and management in Boulder, forestry staff consulted with two of the leading national EAB researchers and two local experts in entomology and tree pest management: Dr. Deb McCullough, Michigan State University; Dr. Krista Ryall, Canadian

Forest Service (CFS); Dr. Whitney Cranshaw, Colorado State University; and Dr. Sky Stephens, U.S. Forest Service. The group provided research documents, guidance on EAB strategies and information on possible differences in EAB behavior in Colorado.

A city EAB Interdepartmental Strategic Team was formed and developed long term strategies to manage EAB on a citywide scale and to ensure consistency across departments. Core staff included those below, but discussions also included staff from Open Space Mountain Parks, Public Works Transportation, Greenways, Risk Management, the City Attorney's Office, and the Boulder Police Department:

- Kathleen Alexander, City Forester
- Rella Abernathy, City Integrated Pest Management Coordinator
- Jeff Haley, Parks Planning Manager
- Brett KenCairn, Senior Environmental Planner
- Elizabeth Lokocz, Landscape Architect II

B. Quarantine

Exotic and native forest pests such as emerald ash borer, Asian longhorned beetle, and others cause serious damage to urban and natural forests in the U.S. These pests and many others disperse various distances through multiple pathways including movement of nursery stock and firewood. Firewood is a raw forest product that is widely utilized and moved throughout the U.S. with relatively limited consideration of the potential pests within or the associated risks. In an attempt to restrict movement of these pests, state and federal quarantines are established.

EAB is a federally quarantined pest. There are federal and state quarantines in effect that prohibit the movement of firewood and other ash wood materials outside quarantined areas. A map of the current EAB federal quarantine areas can be found in Attachment B.

<u>EAB Response 2013 - 2015</u>
Because EAB is a federally quarantined pest, APHIS works with State cooperators to detect, control, and prevent the human spread of EAB. To restrict intrastate movement of regulated articles including live plants and wood from ash and EAB, the Colorado Department of Agriculture (CDA) has imposed and is enforcing a quarantine on the movement of all ash tree products and hardwood firewood out of Boulder County. After discussions with local trash haulers, CDA also included small portions of Jefferson and Weld Counties to gain access to two landfills within the quarantine area to facilitate movement of flood debris and EAB-infested material. The state quarantine took effect on November 12, 2013 and a federal quarantine was enacted in April, 2014. A map of the Colorado quarantine area can be found in Attachment C.

CDA enforces the quarantine by entering into compliance agreements and inspecting arborists, wood workers, firewood dealers, and others handling regulated articles. Regulated articles include EAB specimens, ash nursery stock, ash logs, branches and chips, green lumber, all hardwood firewood or any other article, product or means of conveyance that may present a risk of spreading EAB. Sale and/or movement of regulated articles out of a quarantined area is

prohibited. Movement of regulated articles, other than nursery stock, is allowed if the regulated material meets certain specifications verified during inspection.

Long Term

The individual county quarantines are expected to expand as EAB progresses through Colorado. Once EAB is detected within the Denver metro area, the entire six county region will most likely be quarantined. CDA will continue to regulate movement of materials between counties through compliance agreements. Eventually, a large enough portion of the state will be considered infested and the entire state will be quarantined and APHIS will then regulate movement of materials between Colorado and other states.

C. Detection Surveys and On-Going Monitoring

Forestry staff conducts periodic risk assessments for high priority tree pest species to determine which ones are at higher risk of introduction into Boulder and prepares on-going monitoring criteria. Monitoring activities include trapping either with or without pheromones, visual surveys, and destructive sampling at time of tree removal. Over the past 10 years, Forestry staff has monitored for the presence of DED, EAB, thousand cankers disease of walnut, Japanese beetle, drippy blight of red oak, ips beetle in spruce, mountain pine beetle, pine wilt nematode, and Douglas-fir tussock moth. Often, the earlier a pest problem is detected, the more management options are available. In 2015, staff detected and will be removing public trees infected with drippy blight of red oak, thousand cankers disease of walnut, and ips beetle in spruce. Staff also responded to many questions from the public in east Boulder about Japanese beetle damage.

While prevention is the first line of defense, even the best prevention efforts will not stop all invasive species' introductions. Early detection and rapid response (EDRR) efforts increase the likelihood that invasions will be halted and eradicated. Once a species becomes widely established, the only action possible is the mitigation of negative impacts.

EAB is very difficult to detect in the early stages and is not typically found until 3-8 years after initial introduction into a location. For example, in 2012, EAB was detected in Kansas City, KS. The detection in a neighboring state led to a change in city Forestry EAB monitoring protocols in late 2012 to improve chances of EAB detection. Forestry staff found it in fall 2013 while sampling a dead public ash tree. There is no effective pheromone to detect EAB and the effectiveness of non-baited traps is low. Forestry staff, in cooperation with APHIS, had placed EAB traps throughout Boulder since 2007 with no positive detections. All early eradication attempts for EAB in the Midwest failed because the pest had already spread beyond the targeted eradication areas.

EAB Response 2013 - 2015

After initial detection in fall 2013, an EAB delimitation survey was conducted to establish the boundaries of the area considered to be infested by EAB. City Forestry staff collaborated with the Canadian Forest Service (CFS), CDA, APHIS, CSU Extension, and forestry staff from nine nearby cities to complete an EAB delimitation survey within the city.

The city was divided into plots or grids that are one square mile each. Crews removed two 3-4" diameter branches from each of 10 public ash trees within each plot. The bark was peeled from the branch samples and the wood examined closely for the presence of EAB larvae. All larvae found were sent to CSU for identification. Branch sampling protocols were developed by CFS staff; they found by performing random branch sampling on asymptomatic trees with this technique, they were able to detect EAB several miles away from the original location before trees become symptomatic. EAB was detected in five of the thirty-eight square mile grids.

EAB Monitoring continued through 2014 and summer 2015. By July 2015, detections spread from the initial five square mile grids to sixteen grids within city limit (See Attachment D). Detection efforts included:

- Tree Climbing: Forestry staff inspected symptomatic public ash trees when found during visual surveys or through requests from adjacent property owners.
- Destructive sampling: All declining public ash trees removed in EAB non-detect grids were sampled for the presence of EAB life stages.
- Branch sampling: Additional branch sampling was conducted in fall 2014 and spring 2015 in EAB non-detect grids.
- Trapping: Several types of EAB detection traps were deployed throughout Boulder in 2014 and 2015 in an attempt to detect its presence.
- Rotational pruning: Tree care contractors conducting pruning on city Forestry contracts looked for signs of EAB infestation when working on ash trees.

The city response to initial detection in the five grids included public education / outreach proactive tree planting, pesticide applications, removal of declining public ash trees, and the release of biocontrols. More detail on each of the response measures is included below.

<u>Long Term</u>
Due to the flight ability of the insect, rate of spread, and current detected areas, it is assumed EAB is widespread throughout the city of Boulder and Forestry staff proposes to cease detection efforts at the end of 2015. Colorado Department of Agriculture (CDA) staff, in coordination with city and county foresters, are continuing to trap and sample symptomatic trees in other parts of Boulder County and in other counties along the Front Range.

D. Education/Outreach

Education and outreach are critical components of response to an invasive tree pest. Because Colorado is considered a moderate risk for importation of invasive pests due to the tourist industry, the Emerging Pests in Colorado (EPIC) statewide working group was formed in 2009. Participants included staff from the CDA, CSFS, CSU, APHIS, and foresters from several cities including Boulder, Denver, and Fort Collins. Since 2009, the agencies have collaborated to raise industry and public awareness about the threat of EAB and other invasive pests. Specific activities included:

- Developing pest factsheets for EAB, Thousand Cankers Disease of walnut, and gypsy moth;

- Planning the 2013 and 2015 Invasive Species workshops to educate regional industry professionals;
- Developing the Colorado State Response Plan for EAB;
- Drafting the community response plan template for EAB; and
- Developing general guidelines for wood disposal when dealing with invasive pests.

EAB Response 2013 – 2015

Initial efforts were undertaken through the EAB Incident Command System and subsequently the multi-agency CO EAB Response Team. Efforts since the pest discovery include:

- Initial Meetings: In the weeks after receiving official confirmation of the pest in Boulder, city Forestry staff, CDA, CSFS, and APHIS participated in meetings with pertinent city of Boulder staff, Boulder County personnel, Front Range city foresters, Boulder County tree care companies and local trash haulers to educate about EAB and gather input on the proposed quarantine.
- Websites: CDA has posted educational material about EAB on their website: www.EABColorado.com.
- News Releases: The CO EAB Response Team and City of Boulder have distributed fourteen news releases since the initial detection. All news releases can be found at: www.EABColorado.com.
- Educational material produced included: Emerald Ash Borer Quick Guide, EAB Decision Matrix, Revised Edition of Insecticide Options for Protecting Ash Trees from Emerald Ash Borer, Colorado specific EAB FAQ's, EAB identification cards, utility billing inserts, and RTD bus advertisements.
- EAB Workshops: City Forestry hosted a series of EAB Identification and branch peeling workshops in cooperation with CSU Extension, CDA, and APHIS staff and trained over 350 foresters, arborists, and landscape professionals from six states on EAB symptoms and branch peeling techniques.

Additional efforts by Forestry staff included:

- HOA Meetings: Meeting with 15 local HOA groups to discuss management of public ash;
- Hosting three open houses for the public in 2014 and staffed information tables at Farmers Market and McGuckins through the summer of 2014 and spring of 2015.
- Websites: A website was also created for Boulder specific EAB information at: www.EABBoulder.org.
- News Releases: Collaboration on the fourteen EAB news releases since the initial detection and response to over 50 media requests since the EAB discovery.
- Channel 8: Conducted interviews for four Channel 8 informational videos on EAB since its detection.
- EAB presentations to Parks and Recreation and Environmental Advisory boards and the Downtown Management Commission.
- Reaching out to individual downtown commercial business owners as opportunities arise to replace declining public ash trees.

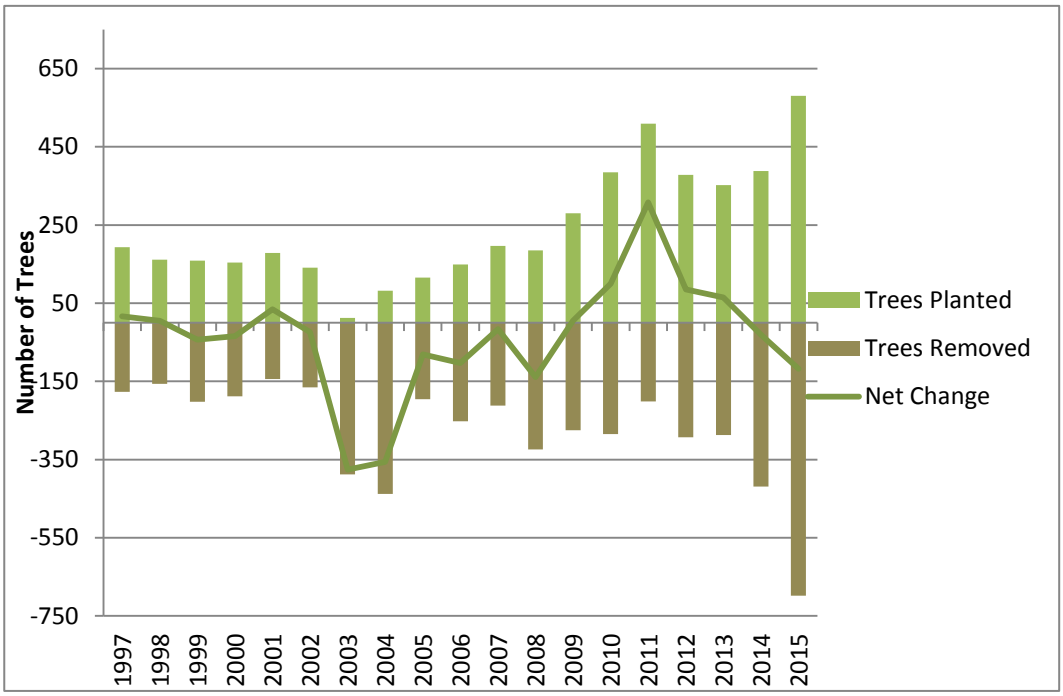
Long Term

Consistent with the Master Plan themes, the department will continue to implement strategies that 'Take Care of What We Have' and proactively engage in 'Community Building' as methods of addressing the sustainability of Boulder's Urban Tree Canopy. Initiatives explored by the department will include additional awareness efforts, community-collaborative tree plantings, environmentally sensitive methods of dealing with wood debris, and efforts that create investments in tree care and/or replacement over time.

E. Tree Planting

It is expected that all untreated ash trees on both public and private property and naturalized areas along the creeks and ditches will die from EAB over time. Ash trees contribute more to the urban tree canopy on an individual tree basis than many other tree species as ash trees are large maturing, long-lived, and have large canopies. These factors combined will lead to a significant decrease to the urban tree canopy and, as such, should be proactively addressed.

To adequately maintain the urban tree canopy, it is imperative to plant trees in anticipation of losses. Newly planted trees are significantly smaller than most removed trees and contribute less environmental services on a per tree basis than mature trees. Therefore, trees should be replaced at a minimum 1:1 ratio (trees planted: trees removed). It has been difficult however to maintain a 1:1 ratio in some years due to a high number of tree removals from various factors and constraints on tree planting due to budget, staffing, and irrigation limitations. The chart below represents only those trees planted through city Forestry and through parks development projects, not those trees planted through development or transportation projects.



Comparison of number of trees planted and trees removed

As pests and severe weather events continue to impact trees, maintaining and increasing tree diversity over time is key to a resilient urban tree canopy. Boulder is fortunate to have better soils than most other Front Range cities and can therefore grow a larger diversity of tree species. The latest tree inventory shows there are 237 distinct tree species on public property.

EAB Response 2013 – 2015

Letters were mailed to property owners within portions of the known infested detailing areas in the public street rights-of way that are good tree planting sites. Good planting sites include those with enough public right-of-way to support a large maturing tree, an irrigation system, and no overhanging private trees. The letter educated residents on the Forestry tree replacement program, the services provided by the urban tree canopy, and offered to plant a tree, free of charge, into the rights-of-way adjacent to their home. Ash trees were replaced with a variety of tree species such as western catalpa, hackberry, swamp white oak, London planetree, English oak and sugar maple among others to ensure diversity in the urban tree population.

In 2014, Forestry staff planted 359 trees into city parks and street rights-of-way including 101 trees into the neighborhoods most heavily impacted by EAB. An additional 106 trees were planted through parks development projects. Thirty-five species were represented with 81% large maturing tree species to maximize environmental services provided.

In 2015, Forestry staff planted 580 trees into city parks and street rights-of-way. This included 225 into Parks and Recreation city parks and facilities with existing ash trees and 260 trees into the neighborhoods most heavily impacted by EAB. Forty-two different species were represented with 89% large maturing species to maximize services provided.

Columbia Cemetery and Flatirons Golf Course will be especially impacted by EAB as both locations have a high number of ash trees. Some large ash trees will be preserved and Forestry staff is planting 25 new trees annually in each location to replace the urban tree canopy that will eventually be lost to EAB.

	Flatirons Golf Course	**Columbia Cemetery**
Total # Ash Trees	121	165
% Ash Trees	9	46
# Ash Trees > 10” Diameter	112	117
# Ash Trees > 20” Diameter	46	75

Long Term

Forestry staff is proposing a goal to plant approximately 500 trees annually. Additional trees will be added to public property annually however through private development projects and capital projects by Transportation, UHGID and Parks and Recreation.

The current inventory analysis will help identify species distribution across the city and help achieve future diversification goals. One goal of the upcoming urban tree canopy assessment and Urban Forest Strategic Plan is to identify areas in need of additional tree planting to assist in tree planting prioritization.

F. Tree Removals

There are 6,016 ash trees in city parks and in public street rights-of-way in Boulder. Forestry staff is proposing a target of approximately 25% for pesticide application and possible long term future removal; the remaining approximately 4,500 ash will be phased out over a 6-10 year period of time depending upon success of slowing the spread of EAB. Forestry staff is proactively removing ash trees that have been identified as being in poor or very poor condition. Ash trees are also being phased out when possible through private development, and Transportation, Parks and Recreation and UHGID capital improvement projects. The remaining trees will be removed as they become infested.

The proactive ash removal is targeting trees that meet the following criteria:

- High risk ash trees;
- Ash trees in poor condition, those compromised by other insect pests or exhibiting two or more known EAB signs;
- Trees with poor placement (i.e., under power lines);
- Trees with poor structure that will mature into a higher maintenance tree; and/or
- Any topped or improperly pruned ash trees.

Since the initial EAB detection, 192 public ash trees in poor condition have been removed. An additional estimated 50 declining ash trees will be removed in fall 2015 and replaced in 2016. The most heavily EAB impacted areas have few public ash resulting in minimal public property impact to date. Hundreds of private ash trees were symptomatic during surveys in 2014 and 2015; some have been removed but exact numbers are not known.

Because EAB populations expand exponentially, the number of annual public ash tree removals is not expected to remain constant or predictable. In the absence of pesticide use, cities in the Midwest have lost the majority of their ash trees within 5-6 years after detection. If the Boulder strategy is successful, the removals may be spread out over an 8-10 year period of time.

Forestry staff will survey each July and create a list of ash trees to be removed. Larger removals and stump grinding will then be contracted during the winter months when costs are typically lower. Staff is proposing to remove smaller diameter trees with in-house seasonal crews.

G. Pesticide Applications

EAB infestation is almost 100 percent fatal to North American species of ash trees, leaving pesticide application as the only option to save the life of a tree. However, pesticides are only effective against EAB if used before a tree is compromised by damage from EAB larval feeding and the timing for effective pesticide intervention may vary depending on the climate. Early evidence suggests that due to the local arid climate, infested trees in Boulder may decline more rapidly than in other EAB-infested regions of the country.

Pesticides are an important component of EAB management programs for a number of reasons as they can:

- Preserve ash trees long term;
- Reduce community-wide EAB populations and therefore slow the progression of EAB;
- Spread the tree removal and replacement costs over a longer time period;
- Lower the risk and public safety concerns associated with large numbers of dying trees; and
- Spread the loss of the urban tree canopy and the subsequent loss of the environmental and economic services provided by the urban tree canopy over a longer period of time.

EAB researchers have evaluated the effects of treating varying proportions of ash trees with the pesticide, TREE-äge, in residential neighborhoods with simulation models of EAB dispersal and population dynamics developed from numerous field studies in the Midwest. The simulation showed that if 20% of community trees were treated, then 90% of the trees (including untreated trees) will still be alive after ten years due to area-wide reduction in EAB population growth. Results have shown, however, that without any insecticide treatment, within ten years of the initial EAB introduction, all ash trees will die, a pattern consistent with mortality rates observed in many communities in southern Michigan and northern Ohio. Therefore, to confer broad protection not all ash trees require treatment.

Pesticide Evaluation Criteria

The city EAB strategy complies with the city's Integrated Pest Management Policy takes into account non-target effects, environmental impacts, and long-term objectives of any pest management decision. Pesticides are only used if other options are not feasible and must be evaluated prior to use. Forestry staff, using data from the EPA and other regulatory agencies, advice from leading experts in EAB management, and open literature, assessed four of the commonly used pesticides. The decision making process for EAB treatment is complex due to differences between products, different use rates, multiple methods of application, timing of applications, pest control efficacy, and environmental considerations. Pesticide products used for treating EAB include:

- **TREE-äge (emamectin benzoate)** – a "semi-synthetic" product derived from a soil bacterium that is a restricted use pesticide (may only be applied by a certified pesticide applicator). This product is only applied via tree injection.
- **TreeAzin (azadirachtin)** – a natural product derived from the seeds of the neem tree – certified for use under the USDA's National Organic Program. This product is only applied via tree injection.
- **Safari (dinotefuran)** – a neonicotinoid insecticide applied as a low pressure, lower bark spray.
- **Merit (imidacloprid)** – a neonicotinoid insecticide that is commonly used for EAB treatments by trunk injection or soil treatments.

The analysis of EAB pesticide options indicates that imidacloprid, a neonicotinoid insecticide, posed a high risk to pollinators and other non-target organisms while showing inconsistent efficacy for EAB control over only one season. In March 2014, Forestry and Integrated Pest

Management staff recommended that the city manager prohibit the use of imidacloprid for EAB control on city properties, including public street rights-of-way.

In January 2015, Bee Safe Boulder members presented City Council with a proposed resolution pertaining to the use of neonicotinoid pesticides on city owned properties. This resolution was adopted (Resolution 1159) and formalized the city managers earlier ban on imidacloprid use. The resolution also requires a formal exemption process if any neonicotinoid, such as dinotefuran, is used for either research studies or application to control any pest, including EAB.

Of the four products that were evaluated for EAB, only two are currently being used by Forestry staff for EAB treatment: TREE-äge and TreeAzin. There are knowledge gaps about each of these products. The non-target impacts are well-studied for TreeAzin with favorable results, but information about its efficacy is limited. Forestry staff is testing TreeAzin to determine if and how long it is effective (1 vs. 2 year control) for EAB control in the local climate. TREE-äge has demonstrated excellent efficacy in multiple studies. However, studies for impacts to non-target organisms are lacking.

Forestry staff is seeking partnerships and research opportunities to investigate potential environmental impacts from TREE-äge. In 2014 and 2015, TREE-äge was applied to a public ash trees within the known infested areas in a targeted strategy. This product will continue to be evaluated as more information becomes available. As local EAB populations decline due to mortality of untreated ash trees, it is likely that application frequency will be reduced each year for both of these products.

<u>EAB Response 2013 - 2015</u>
Forestry staff, in consultation with the city EAB Strategic Team, made the decision to start EAB treatments of significant ash trees within the original five grids where EAB was detected in spring 2014. The rationale for treatment included:

- Target 25% of the public ash tree population to slow the spread of EAB within Boulder and to other communities;
- Stage removals to spread out costs over a longer period of time;
- Stage the loss of the environmental and economic services provided by the urban tree canopy over a longer period of time; and
- Lower the risk and public safety concerns associated with large numbers of dying trees;
- Potential long term preservation of significant trees.

Forestry staff, in consultation with national EAB researchers, local entomologists from Colorado State University (CSU), the US Forest Service, and the city EAB Strategic Team, developed criteria to determine whether ash trees were candidates for long term preservation. The criteria included:

- **Tree health and condition**: Because EAB larvae feed under the bark, the most effective pesticides are systemic insecticides. Systemic insecticides are transported throughout the tree within its vascular tissues. Feeding by EAB larvae damages the tree's vascular

system, as does damage from wounds and other pests. If the vascular system has been compromised the pesticide will not translocate and be effective.

- **Tree defects**: Ash trees in the Tree Safety Inspection program with poor structure or defects are not feasible for preservation and will be phased out.
- **Tree Size**: The pesticides used are trunk injected. The injection process requires drilling small holes into the lower trunk to inject the product. Larger, healthy ash trees have a better chance to close off wounds long term. Ash trees less than 10" diameter will not be injected and will be phased out as they are infested due to reduced ability to close wounds and the economics favoring planting a replacement tree over treatment with pesticides long term.
- **Location**: If a tree has a poor location (e.g., under power lines, restricted growth, causing significant hardscape damage) it would not be considered for long term preservation.
- **Irrigation**: All systemic pesticides require water to be taken up internally within the tree. Ash trees must be in an irrigated site or the site requires easy access for tank watering prior to the application. Fortunately, due to adequate precipitation in spring 2014 and 2015 tank watering was not necessary.

All public street trees and most city park trees meeting the criteria have been treated with TREE-äge (Attachment E). Those park trees in environmentally sensitive areas (e.g., within 100 feet of a waterway) were treated with TreeAzin. Letters were sent to both property owners and renters of properties with significant ash trees targeted for treatment in the public street right-of-way. The letters explained EAB impact, the pesticide product chosen, the treatment rationale and gave property owners and renters the opportunity to opt-out of treatments for any reason.

2014 and 2015 EAB Treatments

	2014	**2015**
Grids Managed (square miles)	5	12
Total # Public Ash Trees Evaluated	745	2057
Total # Ash Trees Treated	199	573
% Total of Ash Evaluated	27	22
# Notification Letters Sent to Property Owners/Tenants	80	436
# Property Owners Opting Out of Treatment	4	35

<u>Public Feedback on Pesticide Use</u>

Because pesticides are used to treat pests other than just EAB, public input on the broader use of pesticide applications to public trees will be requested through the Urban Forest Strategic Plan process in 2016. General feedback about pesticide use since the Boulder EAB detection includes:

- At the public meeting for the neonicotinoid resolution (Resolution 1159), residents were supportive of city Forestry not using neonicotinoid pesticides for EAB.
- Between fall 2013 and summer 2015, Forestry staff received over 400 calls from residents with questions about EAB and pesticide use. Most callers indicated they were

planning to treat their private trees but had questions about whether their ash trees were worthy of preservation, available pesticide options, effectiveness, and which products were the least impactful to non-target organisms.

- In 2014, of the 80 pesticide notification letters sent, four property owners chose to opt out of the treatment; three were due to a concern over pesticide use.
- In 2015, of the 436 pesticide notification letters sent, 35 of the property owners who received a letter chose to opt out of treatment; ten were due to a concern over pesticide use.
- Forestry staff held three EAB open houses in 2014; individual resident responses were not tracked but generally most were supportive of the emergency response to EAB.
- Forestry staff met with fifteen HOA groups in 2014 and 2015 to discuss management of public ash trees; generally most HOAs were supportive of the proposed plan to treat only 25% of public ash trees and only those significant trees worthy of preservation and to phase out the remaining ash over time.

Long Term

Research has shown that TREE-äge provides for multi-year EAB control. Twenty-five percent of public ash trees will be treated on a three year rotation; approximately eight percent of trees each year. After the initial wave of EAB mortality, and as replacement trees become established, the number of ash treated during each rotation will decrease. The percent decrease will depend upon the rate of mortality and available budget.

Based on the criteria for treatment, ash trees on the Pearl Street Mall are not good candidates for treatment. A long term phased replacement plan is in place. Ash on the mall will be removed and replaced with public safety as a priority.

More than 25% of Boulder's public ash trees meet the criteria for EAB treatment. Some property owners have requested to treat public street right-of-way ash trees not treated by the city. Per B.R.C. Chapter 6 Protection of Trees and Plants, 6-6-5 Spraying and Pruning, homeowners are only allowed to treat public street right-of-way trees adjacent to their property with the permission of the City Manager. This authority has been delegated to Forestry staff. Permission shall be granted if the same criteria are met:

- Public ash tree is worthy of long term preservation;
- Applicator is a state licensed pesticide applicator;
- Tree care company is a city licensed certified arborist; and
- Only TREE-äge or TreeAzin is applied.

All requests for pesticide applications are being tracked by Forestry staff.

H. Biocontrols

EAB's native range is Asia where several predators, pathogens, and host tree defenses keep it from becoming a major pest such as it has become in North America. Although the ability of Asian trees to resist infestation provides protection from EAB, there are numerous natural

enemies, notably various species of parasitic wasps, and together this combination effectively limits EAB so that it rarely causes serious damage in Asia.

Host plant resistance is largely absent from the native North American species of ash that greatly limits the potential of natural controls. However, current research is being conducted by federal agencies to identify Asian parasites of the EAB. Some of these have been found suitable for introduction and release into North America. Four of these introduced natural enemies have been released in EAB outbreak areas in the Midwest and in some cases have proven capable of establishing and reproducing.

The work with natural EAB enemies is ongoing. The long term goal for natural enemies is to suppress EAB populations in the post-outbreak phase. If effective, this could result in a reduction of the need for pesticide treatments in the future and possibly allow some ash to survive without treatment.

Local Response

The USDA Animal and Plant Health Inspection Service (APHIS) rears the EAB biocontrols at their Michigan facility and provides the biocontrols at no cost to cities. Local APHIS staff applied for the permits necessary to release four biocontrols in Boulder. The tiny, non-stinging parasitic wasp species *(Tetrastichus planipennisi*) was released in September 2014, the egg parasitoid, *Oobius agrili*, was released over a six week period in spring, 2015, and the two remaining species, *Spathius agrili and Spathius galinae* were released in August, 2015. The release site for all four biocontrol wasp species was along Boulder Creek Path, on CU Boulder property near the CU East Campus, and was approved by APHIS through the permitting process. The biocontrol releases are a cooperative project utilizing staff from city Forestry, CU, CDA and APHIS.

The Colorado EAB Response Team sent out a news release after the first and second wasp releases. Public response was positive; several community members requested an expanded release to include west Boulder and several community members asked if they could purchase and release the wasps on their own property.

The City of Boulder, along with Syracuse, NY and Naperville, IL was invited to participate in a six year research study involving EAB biocontrols. The research question centers on the effectiveness of the combination of insecticide plus biocontrol release to assess if chemical treatment will protect the ash long enough for the parasitoids to build in population sufficiently in the environment and protect larger diameter ash trees. The proposed study is a multi-year project and will require monitoring of sentinel trees over time to evaluate their health under different treatments. The monitoring is conducted by seasonal staff hired by the Colorado Department of Agriculture (CDA).

Long Term

Additional biocontrol releases of all four species are planned for 2016 and early 2017. If by the end of this pilot period, the biocontrols have not become established, the releases could be stopped.

I. Wood Utilization

Throughout the U.S. large amounts of urban forest residues (UFR) including wood chips, brush, logs and leaves, are generated by homeowners, municipal tree care operations, landscape maintenance, and tree care companies as a result of managing urban forests. A 2008 Colorado State University (CSU) study found that 60% of UFR from Fort Collins, Greeley, and Loveland was used to create mulch while the remaining 40% was most likely deposited into landfills.[6] With a resource that is 100% recoverable if markets are established, there is great potential to utilize UFR in a more sustainable manner and to extend the life of nearby landfills.

The utilization and/or disposal or UFRs has been problematic across the country even prior to the introduction of EAB. There are obstacles to the utilization of UFRs including wood quality, wood quantity, utilization plans, and community support. Within urban settings, trees tend to grow around nails, fences, and cables, potentially decreasing the wood quality and damaging wood processing equipment. Many urban trees also lean over homes and other hardscapes, posing safety concerns during tree removal operations prompting tree care companies to remove smaller (and less marketable) sections of wood.

Proper utilization and safe disposal of woody biomass from trees infected with invasive pests - or within areas under quarantines due to invasive pests - presents additional challenges to cities. Urban forestry professionals are increasingly faced with the task of selecting appropriate utilization options for the materials and locating the necessary technical information for making such decisions.

All UFRs generated from Boulder Forestry operations are brought back to the city's Forestry log yard. Through spring 2014, all the logs were tub ground biennially into mulch. The mulch from tub grinding, as well as all mulch generated and dropped off by contractors, was either utilized within the city's parks system or moved offsite for composting by an outside vendor (A-1 Organics in 2014).

In 2014, the City of Boulder entered into an agreement with Boulder County to utilize chips from whole trees as a quality heating fuel. Boulder County owns and operates two heating systems (biomass fueled boilers) at the Boulder County Parks and Open Space facility in Longmont, and the Boulder County Jail in the City of Boulder that burn woody biomass to heat their buildings. It is mutually beneficial for the city and the county to collaborate in this manner as the county is supplied with a source of locally generated biomass and the city has a more sustainable use of the UFRs.

Forestry staff has also been working collaboratively with the Colorado State Forest Service to identify markets for all urban wood, not just for ash. Potential markets include:

- Mulch

[6] Quantifying and Utilizing Urban Forest Residues within Fort Collins, Loveland and Greeley, Colorado, 2008. Kendra Nash, CSU

- Chips for biomass fueled boilers for heating facilities
- BioChar
- Slabs
- Rough cut lumber
- Hardwood flooring
- Landscape timbers
- Blanks
- Wood stakes
- Wood pellets

The feasibility for each option will be explored in more depth during the Urban Forest Strategic Plan process.

J. Private Tree Enforcement

Existing city code, B.R.C. Chapter 6 Protection of Trees and Plants, 6-6-2 Removal of Dead, Diseased or Dangerous Trees, allows city staff to conduct enforcement efforts on private property regarding infested, diseased and/or dangerous trees. In the summer, Forestry staff surveys all city parks, streets, and alleys to identify diseased and dangerous trees on both public and private property. Over the past five years, staff has cited an average of 20 property owners for diseased trees and 25 property owners for dangerous trees threatening public property. In these instances, Forestry staff initiates the compliance case and makes the first notification via certified letter. For non-compliance cases, Forestry staff works with Boulder Police Department (BPD) and the City Attorney's Office (CAO) to obtain an administrative warrant from the court before a tree care contractor may enter onto private property to remove the diseased or dangerous tree. Tree removal costs are then charged back to the property owner.

<u>Current Response</u>
Research from the Midwest indicates that active enforcement for EAB infested trees does not substantially slow the progression of the pest due to the inability to keep up with progressively larger numbers of dying ash trees as the EAB population grows. Due to this research and the growing number of infested ash trees, Forestry staff has not conducted enforcement activities for EAB infested trees on private property.

<u>Long Term</u>
Research indicates that ash trees killed by EAB dry out and start to fail within a few years after tree mortality posing a public safety risk. Discussions with the City Attorney's office (CAO), Risk Management, and Boulder Police Department (BPD), indicate the city has a duty to enforce city regulations for dead ash trees located on private property but have the potential to threaten public property. Forestry staff, in cooperation with BPD and CAO, proposes to enforce removal of dead ash trees as needed. It is anticipated that current staffing levels will not be sufficient to support enforcement efforts as EAB reaches its peak. The city is not proposing to implement enforce efforts on private property where the trees only pose a threat to neighboring private property.

K. Collaborative Research Projects

Colorado is the westernmost state with EAB. Here, the weather patterns and ash tree growth differ from the Midwest where most EAB research has occurred to date. Several research projects are underway in Boulder. Some were initiated by Forestry staff while others are in collaboration with CSU, APHIS or the CFS. Current and past EAB projects include:

- In 2014, assisted the CFS with a project to test a new EAB pheromone.
- In 2014, assisted APHIS with testing new EAB trapping protocols.
- In 2014 and 2015, Forestry staff tested the viability of insect degree day models to predict emergence of EAB in Colorado.
- Research into effects of wounding from trunk injected pesticides on ash trees in Colorado at Columbia Cemetery (ash trees grow more slowly in Colorado and receive less rainfall than in Midwest so wounding may have bigger impact than elsewhere in US).
- Research to determine feasibility of multi-year control with TreeAzin.
- Research to determine feasibility of longer term control with different formulations of emamectin benzoate pesticide products (at Flatirons Golf Course).
- CSU plans to measure amounts of certain pesticide products in ash leaves and pollen to determine potential impacts to non-target organisms.

L. Urban Forest Strategic Plan

EAB is anticipated to cause a loss of approximately 15% of Boulder's urban tree canopy over the next 5-15 years and will have a significant impact on the many environmental, aesthetic, and economic benefits provided by the urban tree canopy. However, EAB is not the only threat to Boulder's urban forest. Other invasive insect and disease pests threaten the urban tree canopy as do individual severe weather events and overall climate change.

The inevitable loss of ash trees also provides an opportunity to replace impacted trees with species that will be well suited to the hotter local conditions now expected as a result of climate change. Many EAB-related factors such as tree diversity, pesticide use, and wood utilization are also not unique to EAB and are applicable for other tree species and pests. Therefore, instead of developing an EAB-specific Management Plan for the city, over the next year, Forestry staff will work with a consultant to develop a broader Urban Forest Strategic Plan that will include long term management for invasive pests including EAB.

The Urban Forest Strategic Plan will also allow for a more comprehensive community-wide discussion of the following topics:

- Establishment of a baseline figure for urban tree canopy and long term canopy goals;
- Tree diversification goals;
- Urban heat island mitigation;
- Prioritization of tree planting activities;
- Pesticide use guidelines for public trees;

- Appropriate pesticide use guidelines for private property owners treating public street trees;
- Placement and selection of tree species that are compatible with optimizing rooftop solar capture capacity;
- Coordination with vegetation management for municipalization of the electric utility;
- Public outreach and education regarding the benefits of the urban canopy; and
- Reforestation of creek corridors with native species.

Tree Inventory

The first step towards an Urban Forest Strategic Plan is to identify the existing public tree resource. In winter 2014 -2015, Forestry staff contracted with Davey Resource Group to update the tree inventory. The data was then imported into tree inventory and asset management software to track not only EAB related maintenance but all tree maintenance for public trees in city parks and in street rights-of-way. Tree benefit and value information in the background section of this memo is from the draft 2015 Urban Forest Resource Analysis report from Davey Resource Group.

Urban Tree Canopy Assessment

To establish baseline figures for urban tree canopy and assist in long term planning, the city is participating in a collaborative Urban Tree Analysis project with Digital Globe and Trimble, partners of the Rockefeller Foundation's 100 Resilient Cities (100RC) initiative.

This project includes two tiers:

1. The first is an effort to understand the nature of the urban tree canopy through the use of Digital Globe (DG) and Trimble's 100RC Platform Partner services offerings. DG will provide high resolution satellite imagery to feed into Trimble's eCognition Essentials software to yield information about urban tree canopy and land use. The software will help map urban tree cover: where it is, where it is damaged and where it can be strengthened, and is a critical step towards the development of an Urban Forest Strategic Plan. Additional benefits may accrue from multi-spectral imagery that will assess individual tree species and health, providing additional forest management opportunities.
2. The second is more experimental and involves exporting the urban canopy assessment data into a 'Resilience Dashboard' pilot project in collaborative development between Trimble, the City of Boulder, 100RC and Socrata, a Seattle-based company that provides on-line solutions to local governments. The Dashboard as conceived is a highly interactive, continuously updated visual display of trends and metrics, many of which can be user driven. The metrics and trends developed through the pilot project can be used in the city's current dashboard effort, or the opportunity may exist to expand the pilot effort in conjunction with other city departments.

VII. BUDGET AND STAFFING

The Parks and Recreation Department's approved 2015 CIP Budget included $230,000 for EAB response. Additionally, the Parks and Recreation Department's proposed 2016-2018 CIP Budget includes $220,000 annually for EAB response.

Planting

The Forestry Division's goal is to plant 500 trees annually. Some trees will be planted by in-house Forestry staff and the remaining trees by contracted services. This year, 300 trees have been planted by in-house staff and 280 via contracted services but as the number of EAB contracted removals increases, the number of trees planted by contracted services is also expected to increase. In 2014, the costs to plant 580 trees (300 with in-house staff and 280 via contractor) was $169,897. Funding for tree plantings is allocated from three sources:

- Tree Planting account
- Tree Mitigation Funding
- EAB Parks and Recreation CIP

Tree Removals

Using tree removal cost averages from the past 10 years, the estimated contracted removal costs for the 4,500 untreated public ash trees is expected to equal approximately $1.64 million. Costs may be reduced if private property owners choose to treat additional significant public trees and/or an additional Forestry seasonal crew is hired to remove smaller diameter (trees <8" diameter). Depending upon how successful the city strategy is to slow EAB spread, the costs may be distributed as follows:

- $274,000/year over 6 years
- $205,000/year over 8 years
- $164,000/year over 10 years

Pesticide Applications

Pesticide applications are only needed every three years; the strategy is to treat 1/3 of the 25% of public trees annually with TREE-äge:

Total cost = $150,000
Annual cost $50,000

Wood Disposal

Wood disposal costs are variable depending upon success of the existing biomass agreement with Boulder County and viability of other utilization options.

Forestry Staff Resources

Discussions with staff from cities in the Midwest indicate a need to prioritize EAB over other forestry related work, due to the large number of trees that will be impacted over the next decade, the documented rate at which EAB populations build and kill trees, and the potential liability from the large number of standing dead ash trees. It is expected that over the next decade, city Forestry services will be impacted and deferred maintenance will become an issue as staff time is directed to EAB management and control. The department will continue to evaluate Forestry Division staffing levels and supplement resources over time to ensure continuation of existing city forestry-related service levels.

VIII. CONCLUSION

Ash is one of the most abundant tree species in urban areas across Colorado including 12% of the city's park and street rights-of-way trees.[7] Assuming a similar percent of ash on private property, the estimated number of public, private and naturalized ash in Boulder is over 70,000 trees. Over the next 15 years, proposed EAB management will have a significant direct budgetary impact, especially to city residents as the majority of ash trees are located on private property. The loss of approximately 15% of the urban tree canopy will have considerable long term economic, social, and environmental impacts.

EAB may well represent the worst-case scenario in terms of invasive forest insect pests for Colorado communities due to the mortality of susceptible hosts, the scale of infestation, the difficulty in detection, and the speed of infestation within the community. Management of EAB on a citywide scale therefore requires an aggressive yet balanced approach. The proposed Parks and Recreation Forestry EAB long term plan includes proactive, continuous community outreach and a balance between tree removal and replacement and pesticide treatments to significant ash trees. If the Boulder strategy is successful, the tree removals and associated costs may be spread out over a longer period of time. Forestry staff will also continue to study the most environmentally sustainable options for urban wood utilization.

EAB and the inevitable loss of many of the community's ash trees has provided the city with an opportunity to create a more diverse urban forest over the long term through the development of a broader scope Urban Forest Strategic Plan.

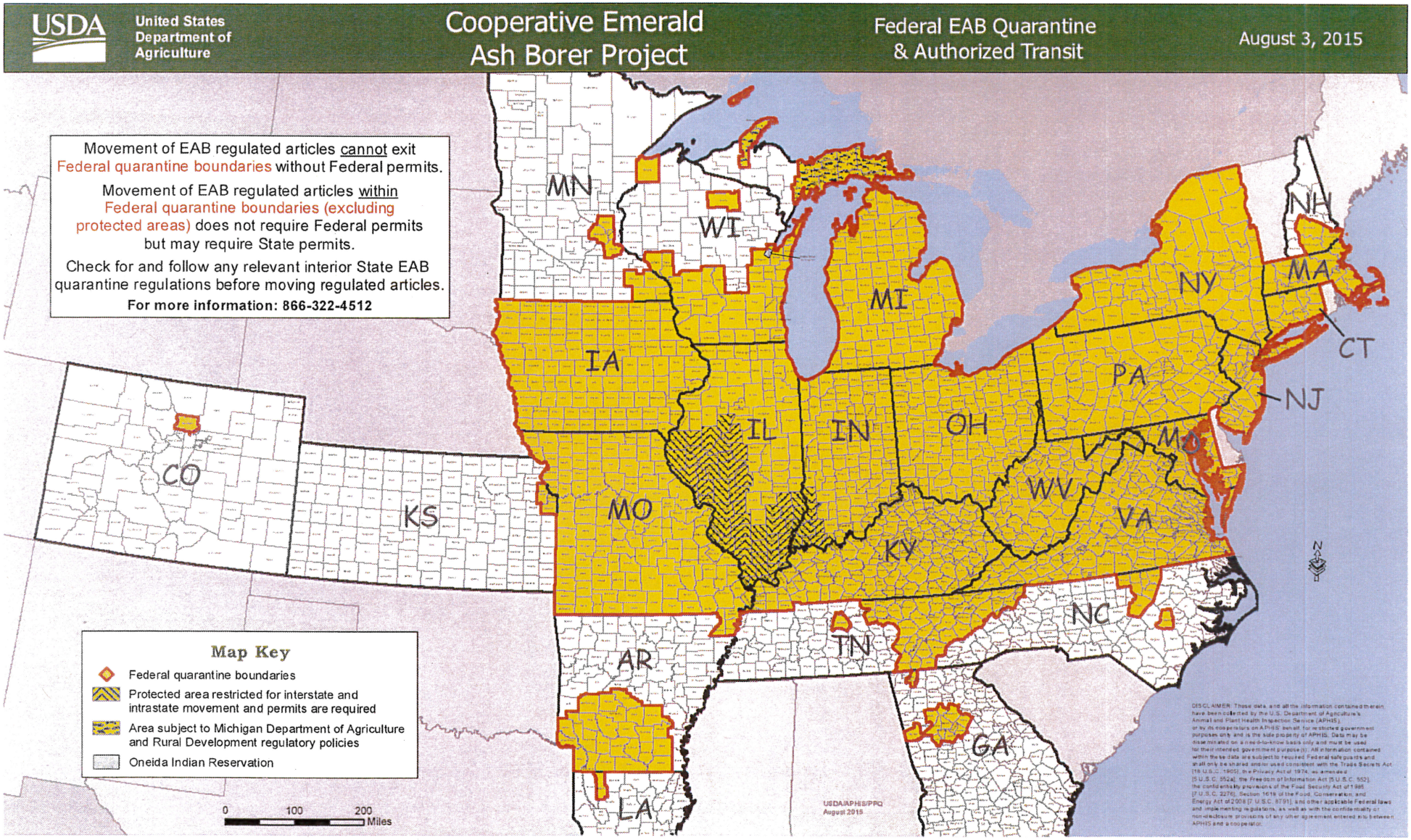
Attachments:
Attachment A – Municipal Emerald Ash Borer Benchmark Chart
Attachment B – Cooperative Emerald Ash Borer Project - Federal EAB Quarantine and Authorized Transit
Attachment C – Colorado Department of Agriculture Emerald Ash Borer Quarantine
Attachment D – City of Boulder Emerald Ash Borer Detection
Attachment E – City of Boulder Public Ash Tree Treatments 2014-2015
Attachment F – Links for additional information on Emerald Ash Borer

[7] Urban Forest Resource Analysis, Boulder, Colorado, 2015; Davey Resource Group

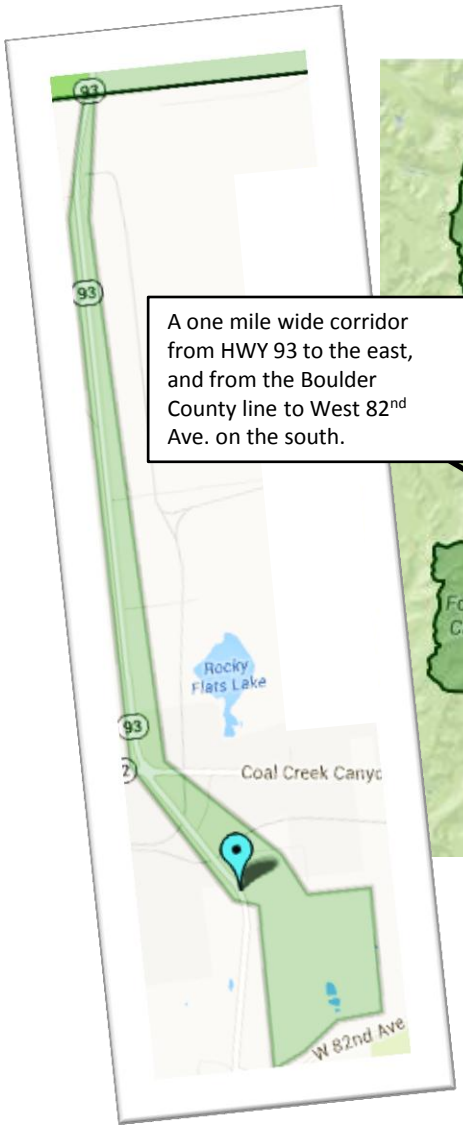
Municipal Emerald Ash Borer Benchmark Chart

Attachment A

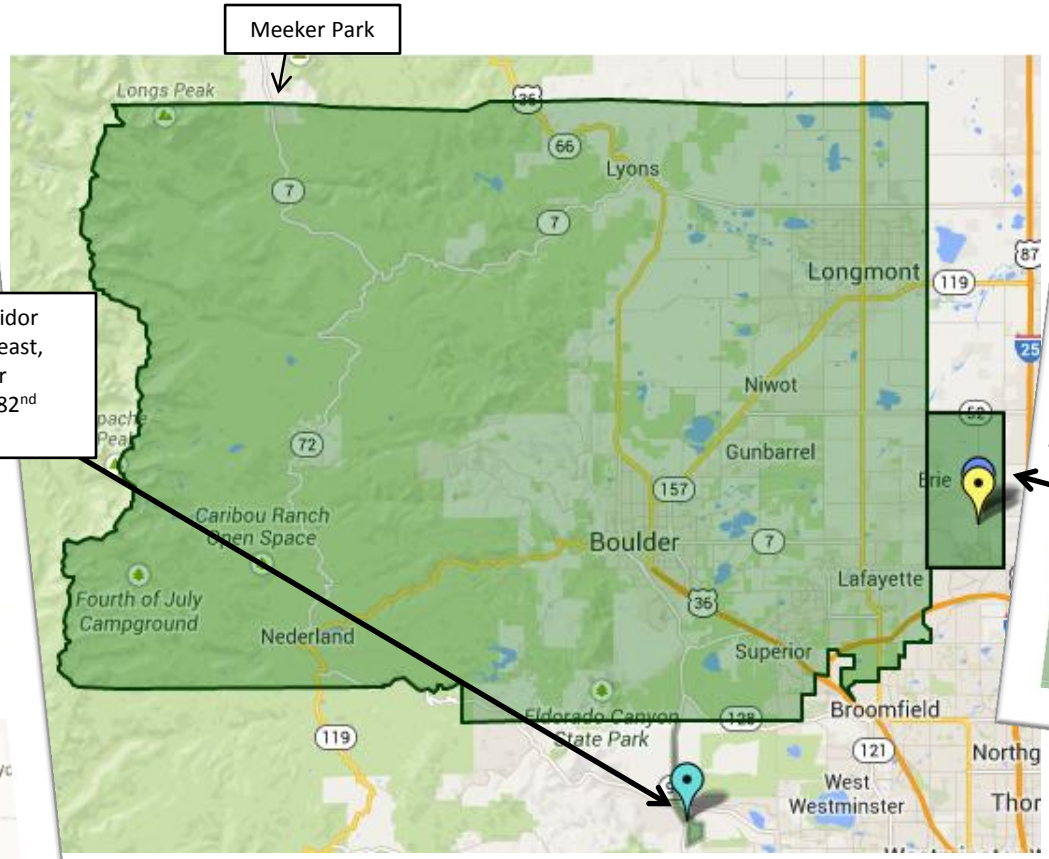
City	Scale	Treatment Plan (public trees)	Public Awareness Efforts					Disposal practices
			City Website	Public Service announcemets & Media Releases	Door Hangings/Fliers/Signage in town	Toll-free phone line	Informational workshops	
Milwaukee, Wisconsin (detected in July, 2012)	•~ 33,000 ash on public streets •~587,000 ash trees at risk in Milwaukee (17% of all trees in state)	• Treat 80% (27,000 trees) of public ash street trees • Only treat trees > 8" diameter (2 yr rotation - 50% annually) while transitioning to alternative species		✓	✓			• No public information
Kansas City, Missouri (detected in July, 2012)	• ~20,000 public ash • 400,000 private ash • 4.6 million+ ash in Greater Kansas City's nine county region	• Partial treatment and removal • Continued monitoring • Replace lost tree canopy	✓	✓	✓	✓	✓	• Two disposal sites for residents and local businesses • Develop new disposal site, operated as public/private partnership
Des Moines, Iowa (detected in November, 2013)	• 47,000 public ash • ~ 100k-120k private ash	• Treat 45% (14,000 trees) of 'high impact' public street and park ash trees • Removal of large ash w/ poor structure and most small ash • Remove 6,000 public ash not suitable for treatment over next 6 years • Plant replacement trees	✓	✓	✓		✓	• Temporarily disposing at city marshalling yards • Final solution uses MWA Compost Center and/or landfill
Madison, Wisconsin (detected in November, 2013)	• 21,700 ash street trees, estimated 30,000 ash in parks and many thousands more on private property	• Treat 50% (10,000 trees) of public ash street trees • Only treat trees >10" diameter in good condition • Preemptively remove street trees in poor condition or under power lines • Replace removed trees	✓ very extensive 'Homeowner's toolkit online	✓	✓			• Residents have option of free wood drop off at city recycling center; keeping wood at home for wood or mulch or work with certified arborist to properly dispose of material • The Sawmill Project: The Streets Division received grant from the Wisconsin Department of Natural Resources to lease portable sawmill – for two years, the City of Madison will work with Dane County and other interested municipalities on testing market for lumber made from urban trees, including those that are removed due to the EAB
Loveland, Colorado (not offically detected yet)	• 800 city park ash trees	• Preemptively remove very young and old ash • Identify heritage trees to treat and preserve • Removal and replacement are one process; if they can't replace they won't remove		✓				N/A
Boulder, Colorado (detected in September, 2013)	• 6,000 public ash street and park trees • Estimated 70,000+ private and naturalized ash • More than 1.45 million ash in metro Denver area	• Treat 25% (1500 trees) of significant public ash; 500/year on 3 yr rotation) • Only treat ash > 10" diameter • Proactively removing ash in poor condition • Remove remaining 4,500 public ash as they get infested • Plant replacement trees	✓	✓	✓		✓	• All chips and logs from public trees brought back to city Forestry wood lot; desirable species milled or chipped and utilized for biomass via Boulder County MOU; larger stumps tub ground into mulch for city use • For private tree removals, residents have option of keeping wood or mulch at home or work with licensed certified arborists to properly dispose of material (each company different); residents may also bundle branches for curbside compost or particpate in yard waste drop off for wood < 6" diameter

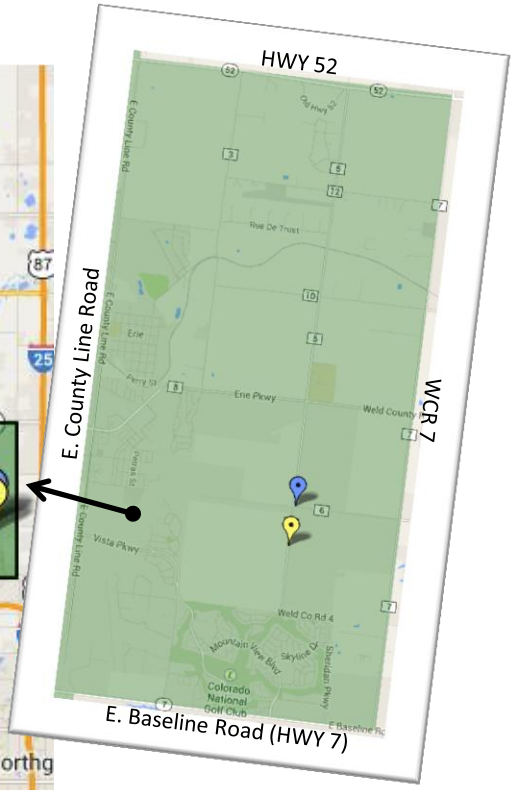

USDA
United States Department of Agriculture
Cooperative Emerald Ash Borer Project
Federal EAB Quarantine & Authorized Transit
August 3, 2015
Movement of EAB regulated articles cannot exit Federal quarantine boundaries without Federal permits.
Movement of EAB regulated articles within Federal quarantine boundaries (excluding protected areas) does not require Federal permits but may require State permits.
Check for and follow any relevant interior State EAB quarantine regulations before moving regulated articles.
For more information: 866-322-4512
MN
WI
MI
IA
IL
IN
OH
PA
NY
NH
MA
CT
NJ
MD
WV
VA
KY
MO
KS
CO
NC
TN
AR
GA
LA
Map Key
Federal quarantine boundaries
Protected area restricted for interstate and intrastate movement and permits are required
Area subject to Michigan Department of Agriculture and Rural Development regulatory policies
Oneida Indian Reservation
0 100 200 Miles
USDA/APHIS/PPQ August 2015

Emerald Ash Borer Quarantine



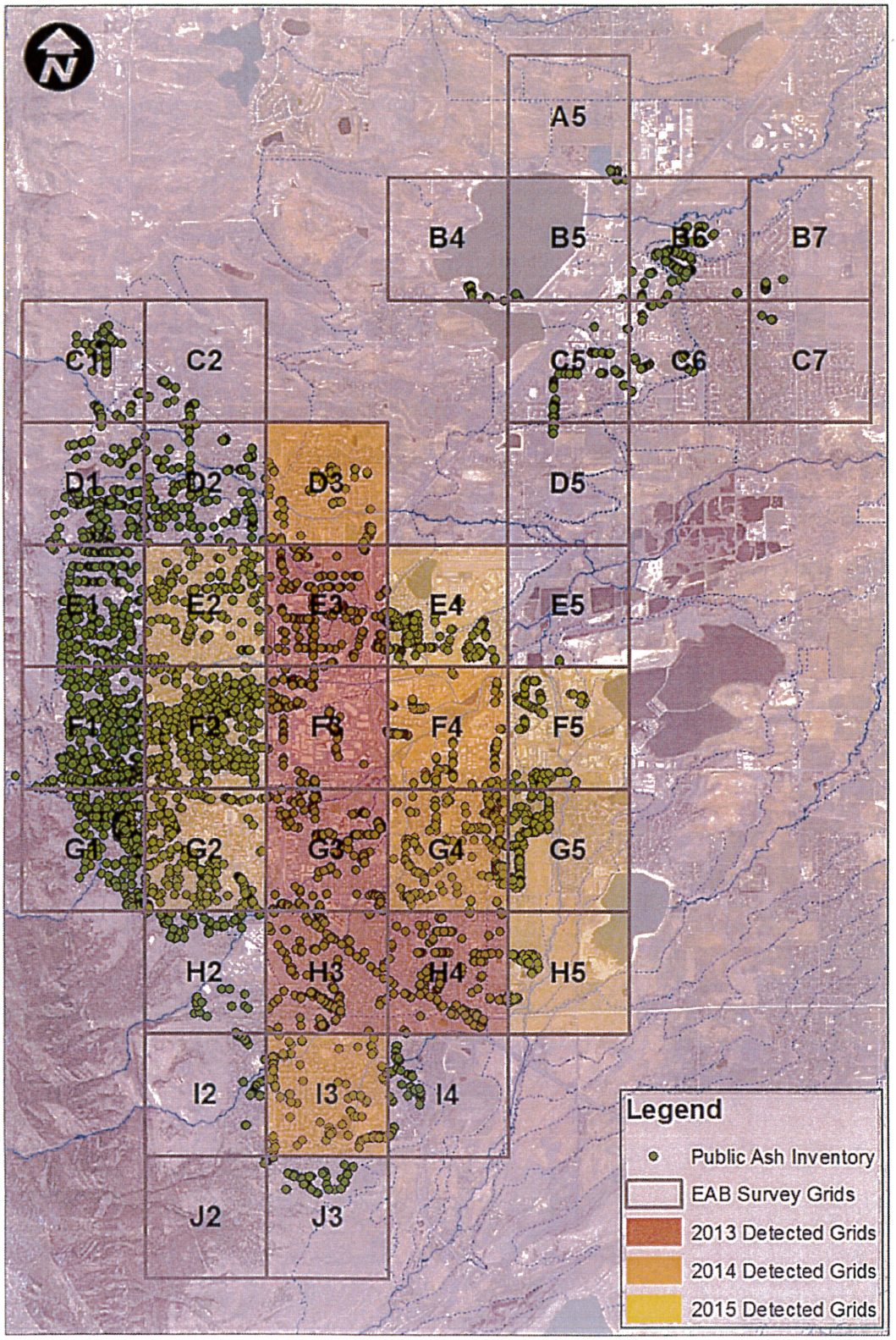
A one mile wide corridor from HWY 93 to the east, and from the Boulder County line to West 82nd Ave. on the south.





- Quarantine Area
- Denver Regional Landfill
- Republic Services Inc
- Front Range Landfill

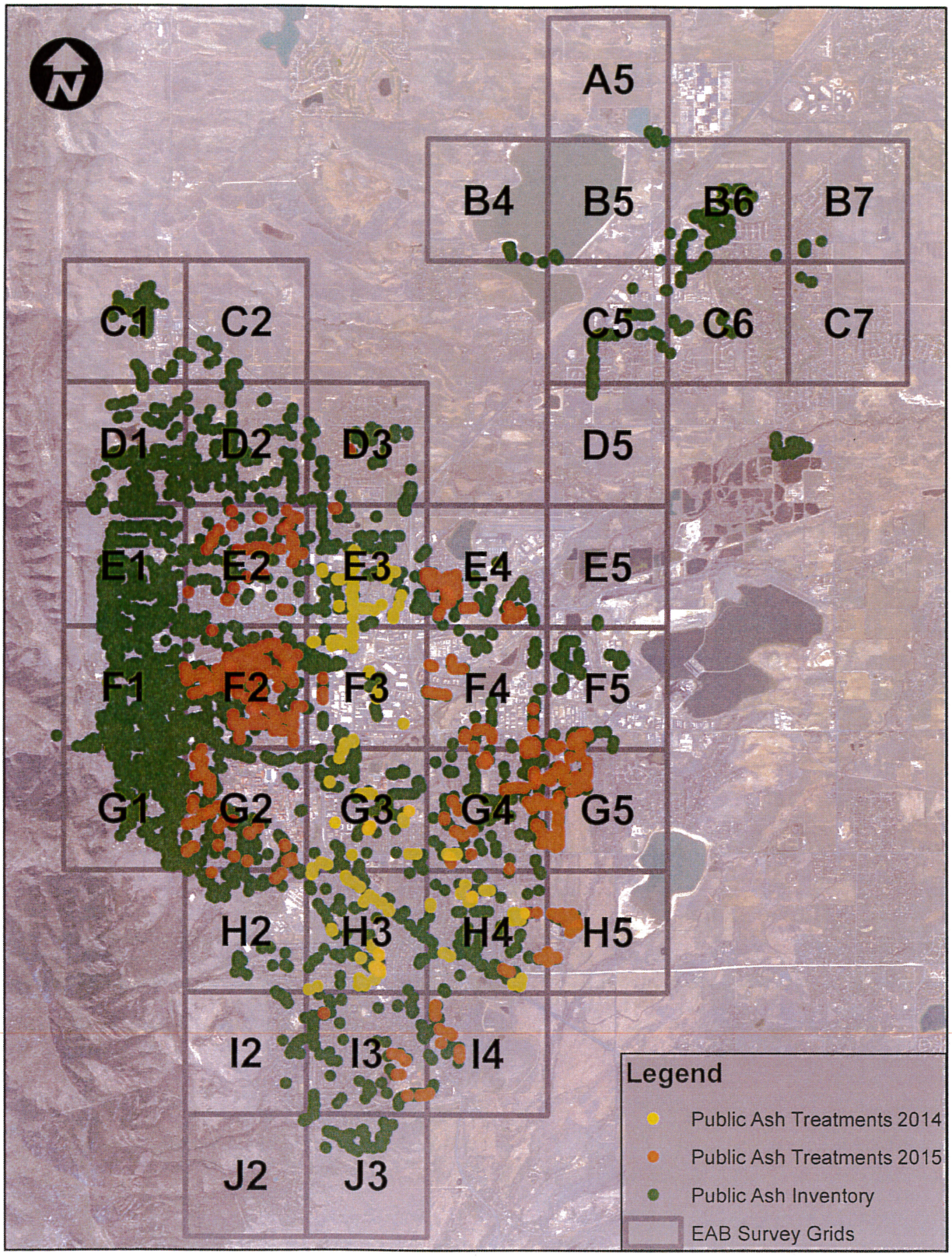
City of Boulder
Emerald Ash Borer Detection



City of Boulder, Forestry Division
5200 Pearl St
Boulder, CO 80301
Author: Kendra Nash
August 3, 2015

0 0.325 0.65 1.3 1.95 2.6 Miles

City of Boulder Public Ash Tree Treatments 2014-2015



City of Boulder, Forestry Division
Boulder, Colorado
Author: Kendra Nash
August 27, 2015

0 0.5 1 2 3 4 Miles

Links for additional information on Emerald Ash Borer

City of Boulder EAB website:
www.EABBoulder.org

Colorado EAB Response Team website (hosted by Colorado Department of Agriculture):
www.EABColorado.com

National EAB website:
www.emeraldashborer.info

Detection of emerald ash borer in urban environments using branch sampling. Canadian Forest Service - Sault Ste. Marie Technical Note No. 111. K.L. Ryall, J.G. Fidgen, J.J. Turgeon
http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/32127.pdf

Questions and Answers: USDA's Emerald Ash Borer Biocontrol Program
http://www.aphis.usda.gov/publications/plant_health/2014/faq_eab_biocontrol.pdf